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Does therapeutic writing help people with long-term conditions? Systematic review, realist synthesis and economic considerations

Olga P Nyssen, Stephanie JC Taylor, Geoff Wong, Elizabeth Steed, Liam Bourke, Joanne Lord, Carol A Ross, Sheila Hayman, Victoria Field, Ailish Higgins, Trisha Greenhalgh and Catherine Meads

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Abstract

Does therapeutic writing help people with long-term conditions? Systematic review, realist synthesis and economic considerations

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Background: Writing therapy to improve physical or mental health can take many forms. The most researched model of therapeutic writing (TW) is unfacilitated, individual expressive writing (written emotional disclosure). Facilitated writing activities are less widely researched.

Data sources: Databases, including MEDLINE, EMBASE, PsycINFO, Linguistics and Language Behaviour Abstracts, Allied and Complementary Medicine Database and Cumulative Index to Nursing and Allied Health Literature, were searched from inception to March 2013 (updated January 2015).

Review methods: Four TW practitioners provided expert advice. Study procedures were conducted by one reviewer and checked by a second. Randomised controlled trials (RCTs) and non-randomised comparative studies were included. Quality was appraised using the Cochrane risk-of-bias tool. Unfacilitated and facilitated TW studies were analysed separately under *International Classification of Diseases*, Tenth Revision chapter headings. Meta-analyses were performed where possible using RevMan version 5.2.6 (RevMan 2012, The Cochrane Collaboration, The Nordic Cochrane Centre, Copenhagen, Denmark). Costs were estimated from a UK NHS perspective and three cost–consequence case studies were prepared. Realist synthesis followed Realist and Meta-narrative Evidence Synthesis: Evolving Standards guidelines.

Objectives: To review the clinical effectiveness and cost-effectiveness of TW for people with long-term conditions (LTCs) compared with no writing, or other controls, reporting any relevant clinical outcomes. To conduct a realist synthesis to understand how TW might work, and for whom.

Results: From 14,658 unique citations, 284 full-text papers were reviewed and 64 studies (59 RCTs) were included in the final effectiveness reviews. Five studies examined facilitated TW; these were extremely heterogeneous with unclear or high risk of bias but suggested that facilitated TW interventions may be beneficial in individual LTCs. Unfacilitated expressive writing was examined in 59 studies of variable or unreported quality. Overall, there was very little or no evidence of any benefit reported in the following conditions (number of studies): human immunodeficiency virus (six); breast cancer (eight); gynaecological and genitourinary cancers (five); mental health (five); asthma (four); psoriasis (three); and chronic pain (four). In inflammatory arthropathies (six) there was a reduction in disease severity [$n = 191$, standardised mean difference (SMD) –0.61, 95% confidence interval (CI) –0.96 to –0.26] in the short term on meta-analysis of four studies. For all other LTCs there were either no data, or sparse data with no or inconsistent, evidence of benefit. Meta-analyses conducted across *all* of the LTCs provided no evidence that unfacilitated emotional writing had any effect on depression at short- ($n = 1563$, SMD –0.06, 95% CI –0.29 to 0.17, substantial heterogeneity) or long-term ($n = 778$, SMD –0.04 95% CI –0.18 to 0.10, little heterogeneity) follow-up, or on anxiety, physiological or biomarker-based outcomes. One study reported costs, no studies reported cost-effectiveness and 12 studies reported resource use; and meta-analysis suggested reduced medication use but no impact on health centre visits. Estimated costs of intervention were low, but there was insufficient evidence to judge cost-effectiveness. Realist synthesis findings suggested that facilitated TW is a complex intervention and group interaction contributes to the perception of benefit. It was unclear from the available data who might benefit most from facilitated TW.

Limitation: Difficulties with developing realist synthesis programme theory meant that mechanisms operating during TW remain obscure.

Conclusions: Overall, there is little evidence to support the therapeutic effectiveness or cost-effectiveness of unfacilitated expressive writing interventions in people with LTCs. Further research focused on facilitated TW in people with LTCs could be informative.

Study registration: This study is registered as PROSPERO CRD42012003343.

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Glossary

Technical terms, abbreviations and/or acronyms are used throughout this report with definitions provided. In some cases, usage may differ in the literature, but the term has a constant meaning throughout this review.

Context In realist synthesis, context refers to the backdrop of programmes and research. As these conditions change over time, the context may reflect aspects of those changes while the programme is implemented. Context can be broadly understood as any condition that triggers and/or modifies the behaviour of a mechanism.

Facilitated therapeutic writing Writing activities involving a facilitator, such as a trained writing practitioner or a psychologist. It may be a group activity or one to one, and can be delivered face to face or remotely, for example over the web.

Mechanism In realist synthesis, mechanisms are underlying entities, processes or structures, which operate in particular contexts to generate outcomes of interest. Mechanisms (1) are usually hidden; (2) are sensitive to variations in context; and (3) generate outcomes.

Positive writing Involves writing about *positive experiences such as events that stimulated happiness or joy* and it may be facilitated or unfacilitated.

Programme theory In realist synthesis, the term programme theory refers to an abstracted description and/or diagram that lays out what a programme (or family of programmes or interventions) comprises and how it is expected to work.

Unfacilitated emotional writing Also known as unfacilitated expressive writing or written emotional disclosure, a type of unfacilitated therapeutic writing, as described by Pennebaker and Beall (Pennebaker JW, Beall SK. Confronting a traumatic event: towards an understanding of inhibition and disease. *J Abnorm Psychol* 1986;**95**:274–81) or a variant thereof.

> *The trauma–emotion subjects were asked to write about a personally upsetting experience and to describe the feelings they had about the experience. It was emphasized that they were to write only about their feelings, with no mention of what actually happened.*

List of abbreviations

AEE	Ambivalence Emotional Expression (or Ambivalence over Emotional Expression)
AIMS2	Arthritis Impact Measurement Scale-2
AIMS2-ps	Arthritis Impact Measurement Scale-2, pain subscale
ALS	amyotrophic lateral sclerosis (in the UK referred to as 'motor neurone disease')
AMED	Allied and Complementary Medicine Database
ART	antiretroviral therapy
AS	ankylosing spondylitis
ASSIA	Applied Social Sciences Index and Abstracts
BAI	Beck Anxiety Inventory
BASFI	Bath Ankylosing Spondylitis Disease Functional Index
BDI	Beck Depression Inventory
BDI-II	revised Beck Depression Inventory
BDI-SF	Beck Depression Inventory-Short Form
BED	binge-eating disorder
BFI	Brief Fatigue Inventory
BN	bulimia nervosa
BPI	Brief Pain Inventory
BSI	Brief Symptom Inventory
CBCL	Child Behavior Checklist
CBT	cognitive–behavioural therapy
CD4+	cluster of differentiation antigen 4-positive
CD4+ count	CD4+ cell count
CDI	Children Depression Inventory
CDSR	Cochrane Database of Systematic Reviews
CENTRAL	Cochrane Central Register of Controlled Trials
CES-D	Centre for Epidemiological Studies Depression Scale
CG-FBD	Functional Bowel Disease-related Cognition
CG-FBD Q31	Functional Bowel Disease-related Cognition questionnaire 31
CI	confidence interval
CINAHL	Cumulative Index to Nursing and Allied Health Literature
CMO	context, mechanism and outcome
CMOC	context, mechanism, outcome and configuration
COPD	chronic obstructive pulmonary disease
C-QoL	Cancer Quality of Life
CRP	C-reactive protein
CRQ-e	Chronic Respiratory Disease Questionnaire, emotion subscale
CSAQ	Cognitive–Somatic Anxiety Questionnaire
CVD	cardiovascular disease
DARE	Database of Abstracts of Reviews of Effects
DAS	Disease Activity Score
DASS-A	Depression Anxiety Stress Scales, anxiety subscale
DASS-D	Depression Anxiety Stress Scales, depression subscale
DBP	diastolic blood pressure
DH	Department of Health
DLQI	Dermatology Life Quality Index
DSM-III-R	*Diagnostic and Statistical Manual of Mental Disorders*-Third Edition, Revised

DSM-IV	*Diagnostic and Statistical Manual of Mental Disorders*-Fourth Edition
DSM-IV-TR	*Diagnostic and Statistical Manual of Mental Disorders*-Fourth Edition, Text Revision
DT	Distress Thermometer
eBT	e-mail bulimia therapy
EQ-5D	European Quality of Life-5 Dimensions
ERIC	Education Resources Information Center
ESR	erythrocyte sedimentation rate
EW	emotional writing
FACIT-F	Functional Assessment of Chronic Illness Therapy, fatigue subscale
FACT	Functional Assessment of Cancer Therapy
FACT-B	Functional Assessment of Cancer Therapy, Breast Cancer Version
FDI	Functional Disability Inventory
FEV_1	forced expiratory volume in 1 second
FEV_1% pred	percentage of predicted forced expiratory volume in 1 second
FM	fibromyalgia
FVC	forced vital capacity
GBB	'Giessener Beschwerdebogen' (Symptomatic Complaints)
GDS	Geriatric Depression Scale
GHQ-12	General Health Questionnaire
GI	gastrointestinal
GI RAP	gastrointestinal recurrent abdominal pain
GP	general practitioner
GSI	Global Severity Index
HADS	Hospital Anxiety and Depression Scale
HADS-A	Hospital Anxiety and Depression Scale, anxiety subscale
HADS-D	Hospital Anxiety and Depression Scale, depression subscale
HAM-D	Hamilton Depression Scale
HIV	human immunodeficiency virus
HIV-OS	HIV-Specific Optimism Scale
HRQoL	health-related quality of life
HTA	Health Technology Assessment
IBS	irritable bowel syndrome
IBSSS	Irritable Bowel Syndrome Severity Scale
ICD-10	*International Classification of Diseases*, Tenth Edition
IES	Impact of Event Scale
IES-Av	avoidance subscale of the IES
IES-I	intrusion subscale of the IES
IL	interleukin
IPF	idiopathic pulmonary fibrosis
ITT	intention to treat
K-10	Kessler Psychological Distress Scale
LTC	long-term condition
MDASI	MD Anderson Symptom Inventory
MI	myocardial infarction
MOS-SF-36	Medical Outcomes Short-Form Health Survey
MPI	Multidimensional Pain Inventory
MPQ-i	McGill Pain Questionnaire, impact
MVA	motor vehicle accident
NHS EED	Economic Evaluation Database
OQ-45.2	Outcome Questionnaire
OR	odds ratio
PANAS	Positive and Negative Affect Schedule
PANAS-NA	Positive and Negative Affect Schedule, negative subscale
PANAS-PA	Positive and Negative Affect Schedule, positive subscale

PASI	Psoriasis Area and Severity Index
PEDro	Physiotherapy Evidence Database
PHQ-9	Patient Health Questionnaire, 9-item subscale
PILL	Pennebaker Inventory of Limbic Languidness
PILOTS	Published International Literature On Traumatic Stress
POMS	Profile of Mood States
POMS-d	Profile of Mood States depression subscale
POMS-SF	Profile of Mood States Short Form
PPMS	Passive Positive Mood Scale
PRISMA	Preferred Reporting Items for Systematic reviews and Meta-Analyses
PSQI	Pittsburgh Sleep Quality Index
PSS	Perceived Stress Scale
PSWQ	Penn State Worry Questionnaire
PTSD	post-traumatic stress disorder
PTSDTOT	The Davidson PTSD scale
QALY	quality-adjusted life-year
QEDD	Questionnaire for Eating Disorders Diagnosis
QoL	quality of life
RA	rheumatoid arthritis
RAMESES	Realist and Meta-review Evidence Synthesis: Evolving Standards
RAP	recurrent abdominal pain
RCC	renal cell carcinoma
RCMAS	Revised Children's Manifest Anxiety Scale
RCT	randomised controlled trial
SAM	Self-Assessment Manikin
SAPASI	Self-Administered Psoriasis Area and Severity Index
SBP	systolic blood pressure
SCI	Science Citation Index
SCID	Structured Clinical Interview for DSM Disorders
SCL-90-R	Symptom Checklist-90-Revised
SD	standard deviation
SDW	self-directed writing
SE	standard error
SF-36	Short Form questionnaire-36 items
SF-36 MCS	Short Form questionnaire-36 items mental composite score
SF-36 PCS	Short Form questionnaire-36 items physical composite score
SF-6D	Short Form questionnaire-6 Dimensions
SGC	Steering Group Committee
SMC	standard medical care
SMD	standardised mean difference
SOC	Sense of Coherence Scale
SOS	Significant Others Scale
SS	statistically significant
SSCI	Social Sciences Citation Index
STAI	State/Trait Anxiety Scale
SUD	substance use disorder
TW	therapeutic writing
VL	viral load
VSQ	Visit Specific Satisfaction Questionnaire
WET	written exposure therapy

Plain English summary

Long-term health conditions (chronic illness) can reduce the quality of people's daily lives and can be costly to the health service. It has been suggested that when patients write about their experiences, this can have positive effects on patients' lives and the health service. We refer to this type of writing as writing therapy. The aim of this study was to see if people with long-term health conditions benefit from writing therapy.

We undertook a thorough search for scientific studies that tested writing therapy in people diagnosed with any long-term condition (LTC). We looked at whether or not writing therapy helped the individuals in the study, if the study was conducted properly, how the writing therapy might produce benefits and if it could lower health service costs.

We found that most of the available evidence looked at writing done by individuals on their own and focused on writing about distressing events. Overall, there was very little evidence that this type of writing therapy had benefits for people with LTCs. A few studies looked at another type of writing therapy, which was done mainly in groups, was led by a leader and which we called facilitated writing. People with LTCs appeared to get some benefits from this type of writing, but much more research needs to be done to see how useful it is. Overall, studies were unclear on how writing therapy might work to produce health benefits or if it reduced health-care spending.

Scientific summary

Background

Long-term conditions (LTCs) may cause reduced health-related quality of life (HRQoL) and considerable health service expenditure. Alternative and complementary therapies, other than the usual medical treatments, are increasingly being introduced within clinical practice. Therapeutic writing (TW) has been widely reported in psychology textbooks and scientific journals as having the potential to improve physical and mental health but its effectiveness in people with LTCs is not clear.

Objectives

To establish the clinical effectiveness and cost-effectiveness of TW in LTCs, through systematic reviews and economic evaluation, and to evaluate context and mechanisms by which it might work, through realist synthesis.

Methods

A protocol was lodged with PROSPERO – CRD42012003343. A group of practitioner experts informed and validated all review phases in regular meetings and compared research findings with their UK clinical experience.

Data sources

Systematic reviews

Electronic searches were conducted for primary studies in the following databases: MEDLINE, EMBASE, PsycINFO, CAB Abstracts, Physiotherapy Evidence Database, Published International Literature on Traumatic Stress, The British Library's Electronic Table of Contents, Science Citation Index (SCI), Social Sciences Citation Index, Linguistics and Language Behavior Abstracts, Periodicals Index Online, Applied Social Sciences Index and Abstracts, Education Resources Information Center, Allied and Complementary Medicine Database, Cumulative Index to Nursing and Allied Health Literature (CINAHL), Cochrane Central Register of Controlled Trials and Database of Abstracts of Reviews of Effects from inception to March 2013. Additional searches to January 2015 were made in those databases yielding all of the previous primary studies (MEDLINE, EMBASE, PsycINFO, CINAHL, The Cochrane Library and SCI). Additional hand-searches and cross-referencing were implemented for both sets of searches. For the realist synthesis, searches were conducted from the database created from the 2013 searches. After initial screening, further purposive and iterative searches linked to the included studies in the effectiveness review were performed: related papers and relevant papers cited in the reference lists were used.

Study selection (inclusion criteria)

One reviewer carried out first and second screenings, and 10% of studies were screened by a second reviewer working independently.

Systematic reviews

We included any type of comparative study of TW compared with no writing, waiting list controls, attention controls or placebo writing, in patients with any diagnosed LTCs. Studies had to report at least one of the following: relevant clinical outcomes; quality of life (QoL); health service use; psychological,

behavioural or social functioning; adherence; or adverse events related to the TW intervention. For the resource-use systematic review, those studies included in the effectiveness systematic review reporting any resource-use outcomes were included.

Realist synthesis

Any type of study design assessing TW in people with LTCs was of interest.

Data extraction

Systematic review

One reviewer performed data extraction in full. All numerical results and each study quality assessment were checked by a second reviewer working independently. Authors of primary studies were contacted for unreported, or inadequately reported, numerical data. Study quality was assessed with the Cochrane risk-of-bias tool [for randomised controlled trials (RCTs) and non-RCTs] or the Newcastle–Ottawa Scale (for cohort and case–control studies). Studies were categorised by facilitated TW/unfacilitated emotional writing (EW) and then by ICD-10 (*International Classification of Diseases*, Tenth Edition) code.

Realist synthesis

One reviewer selected relevant sections on context, mechanisms and outcomes from the included studies, process evaluations and discussion papers to refine the programme theory. Included studies were rescrutinised to search for data that were relevant to the revised theory. Publications were selected if they were relevant, and quality assessment used the concept of rigour.

Data synthesis

Systematic review

Narrative and tabular synthesis was used. Meta-analysis was conducted when three or more studies reported the same outcome, using RevMan version 5.2.6 (RevMan 2012, The Cochrane Collaboration, The Nordic Cochrane Centre, Copenhagen, Denmark).

Economic considerations

Resource use was systematically reviewed using the same methods as outlined above. Costs and resource use were estimated given de novo economic modelling was not possible owing to lack of information.

Realist synthesis

Realist and Meta-review Evidence Synthesis: Evolving Standards methodological standards were followed. Programme theory was developed with extensive input from TW practitioners. Data extracted were used to develop and refine programme theory. This was presented diagrammatically, detailing how and why inferred mechanisms and key contextual influences potentially influence intermediate and final outcomes.

Results

Systematic reviews

From 14,658 unique citations, 284 full-text papers were reviewed and 64 studies (59 RCTs, one non-randomised controlled study, three controlled cohort studies and one matched case–control study) were included in the effectiveness reviews. Thirty-nine studies were conducted in the USA. The largest study had 507 participants, but half of the studies included fewer than 50 participants in each arm. Five studies were in facilitated TW, and examined positive writing, enhanced meaning writing, song, poetry and internet chat forums. Fifty-nine studies were of unfacilitated TW and used either standard EW or an adapted version. Studies reported mainly psychological, physical and QoL outcomes, with 172 instruments used and more than 300 different outcome measures reported. Follow-up was mostly at between 1 and 3 months.

Five studies from different countries were included. Studies used very different TW intervention methods and different instruments or subscales to report relevant outcomes, which included physical and psychological assessments. Data to inform quality assessment were scarcely reported, and all five studies were at unclear risk of detection bias. The studies could not be meta-analysed because of a lack of consistency in measurement and heterogeneity in participants' LTCs and the interventions. However, all studies reported significant improvement in all but one outcomes in favour of the TW group.

Unfacilitated emotional writing

A total of 59 studies assessed an unfacilitated EW intervention. Twenty-seven ICD-10 codes were used to categorise over 30 LTCs in the included studies. The most frequently investigated were breast cancer (eight studies) and human immunodeficiency virus (HIV) (six studies). Only one study was reported on each of the following ICD-10 categories: type 2 diabetes mellitus, sickle cell disease, cystic fibrosis, dementia, bulimia nervosa, amyotrophic lateral sclerosis, tension and migraine headaches, and chronic obstructive pulmonary disease.

Overall there was no, or very little, evidence of any benefit reported in the following conditions: HIV (six studies, overall unclear risk of bias); breast cancer (eight studies, overall low or unclear risk of bias); gynaecological and genitourinary cancers (five studies, variable risk of bias); asthma (four studies, low or unclear risk of bias); psoriasis (three studies, unclear or high risk of bias); inflammatory arthropathies (six studies, high or unclear risk of bias); and chronic pain (four studies, low or unclear risk of bias). There were five small studies of heterogeneous populations with mental health problems (low or unclear risk of bias) for which no clear patterns emerged. For all other LTCs there were either no data, or sparse data with no or inconsistent evidence of benefit.

Meta-analyses by International Classification of Diseases*, Tenth Edition code*

Few meta-analyses could be performed because of heterogeneity. The analyses included different outcomes measured at different follow-ups in the following chronic conditions: HIV (depression at short term in 249 participants); breast cancer (depression in 562 participants, positive and negative mood at short term in 618 participants each); asthma (lung function at short term in 177 participants); mental and psychiatric disorders (anxiety at short term in 127 participants); inflammatory arthropathies (disease activity at both immediate and short term in 146 participants); and fibromyalgia and chronic pain (pain severity at two different short-term assessments in 216 participants).

Differences between EW and control groups were not significant in almost all of the outcome measures meta-analysed, except for disease severity in people with inflammatory arthropathy, for which significant differences in favour of the EW group – at short-term follow-up only – were found [$n = 216$, standardised mean difference (SMD) –0.61, 95% confidence interval (CI) –0.96 to –0.26, with a random-effects model and with non-significant heterogeneity, $I^2 = 1\%$].

Consideration of outcomes across long-term medical conditions

Twenty-four studies among 12 different LTCs reported either physiological or biomarker outcomes. The EW intervention groups did not show better results than controls in any of the physiological and/or biomarker outcomes reported, except for diastolic blood pressure (but not systolic blood pressure) in Willmott *et al.* (Willmott L, Harris P, Gellaitry G, Cooper V, Horne R. The effects of expressive writing following first myocardial infarction: a randomized controlled trial. *Health Psychol* 2011;**30**:642–50), which was significantly better in the EW group at the final follow-up (21 weeks).

The most frequently measured outcomes *across* the LTCs were depression and anxiety. Meta-analyses of depression showed no statistical significance at any duration of follow-up. For example, at 4–17 weeks' follow-up (17 studies) the SMD was –0.09 (95% CI –0.31 to 0.14) with substantial heterogeneity ($I^2 = 71\%$).

Eleven studies assessed anxiety in 527 participants at immediate (197 participants) and short-term (330 participants) follow-up. Differences in anxiety between EW and control groups were not significant in either case.

Economic considerations

No full economic evaluations were found. One study reported cost of EW at US$130 per patient. Twelve studies reported on resource use, covering a wide range of disease areas and populations. Meta-analysis of health centre visits (seven studies) showed no statistical differences between EW groups and control subjects. Meta-analysis of medication use from three studies showed fewer medications with unfacilitated EW (SMD –0.28, 95% CI –0.54 to –0.02) than controls. Cost–consequence analysis suggested that there might possibly be a favourable balance of participant benefits to UK NHS costs for selected interventions in selected LTC groups. There is insufficient evidence to judge cost-effectiveness.

Realist synthesis

The realist synthesis included 59 studies from the systematic review, a further single related paper describing additional aspects of one study, 13 studies excluded from the systematic review, and one additional paper. They provided information on qualitative research, process evaluation, and theoretical or methodological discussions, for the realist synthesis.

Two distinct TW programme theories were developed:

1. *For unfacilitated (individual) EW*, the main mechanisms and contexts were difficult to clarify as relevant explanatory data were not explored and/or reported within the studies – unfacilitated EW appeared to have been treated like a black box. It was unclear why participants would have wanted to undertake EW or what they would hope to gain from it.
2. *For the facilitated (group) TW*, there were multiple potential mechanisms that interacted in a complex way with each other and context to generate (intermediate) outcomes. In brief, mechanisms related to the forming of relationships and the group acting as a safe environment and an audience for TW. Unfacilitated TW was pragmatic in that it did not assume that TW was necessarily appropriate for all people with LTCs but instead provided opportunities for participants to try to see if it helped.

Conclusions and implications for health care

Most interventions evaluated were unfacilitated and did not mirror those currently used by professional TW practitioners in clinical practice in the UK. There is insufficient clinically relevant evidence on facilitated TW to know whether or not it is beneficial. Unfacilitated EW was not effective for most outcomes in most LTCs, although data were very sparse in many areas. The effectiveness of unfacilitated EW in LTCs is not as immediately obvious, as might have been expected from research about this intervention in general populations reported in textbooks.

Recommendations for research

Further research that evaluates facilitated TW interventions currently used in clinical settings is needed, using feasibility or pilot studies and progressing to cluster RCTs or stepped-wedge designs, evaluating patients with chronic physical and mental health conditions. The comparators could be standard practice without TW and also other comparable therapeutic interventions, such as relaxation CDs or reading bibliotherapy. Useful outcomes would be the standard clinical outcome measures or instruments for the patients' medical conditions, patient satisfaction, HRQoL and costs. The study sample sizes would need to be large enough to find a potentially modest effect.

Study registration

This study is registered as PROSPERO CRD42012003343.

Funding

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Chapter 1 Background

Therapeutic writing

Writing as a form of therapy to improve physical or mental health has a long history[1] and is widely reported in psychology textbooks as being of therapeutic value.[2–5] It can take many formats including those from a psychotherapeutic background, such as therapeutic letter writing,[6] specific controlled interventions, such as emotional disclosure/expressive writing,[7] to more recent approaches, such as developmental creative writing[8] and other epistolary approaches, such as blogging.[8] With the development of UK organisations such as Lapidus (Association for Literary Arts in Personal Development), dedicated to the promotion of therapeutic writing (TW) based on the premise that it has health benefits, and an increased interest in the potential of non-pharmacological adjunctive therapies, it is important to evaluate the effectiveness of a variety of different approaches within this field. These include two main categories: written emotional disclosure [or emotional writing (EW)][9] and creative writing, such as poetry.[7] Other forms of creative writing include alpha writes/poems (a poetic device in which each successive line of the poem starts with the next letter of the alphabet, or a predetermined word or phrase written vertically down the page);[10] writing from published poems/narratives; acrostics; and haiku poems (traditionally a haiku contains three lines of five, seven and then five syllables, making a total of 17 syllables; the tradition is modified so that no more than 17 syllables are arranged in no more than three lines, but the shorter the better);[11] autobiographical writing (such as reflective diaries, journaling); descriptive writing; genre writing (e.g. fairy tales); free writing; short stories; drama or fictional narratives; unsent letters; diary/journaling; collaborative writing (workshops); writing accompanying other art forms; life writing or memoirs (such as reminiscence, life review); list writing; redrafting or sentence stems writing; scribing for others; writing from visual/sound stimuli (e.g. writing from mindfulness); writing from the senses; and writing in form and writing from music (as part of a music therapy).[10,12] Newer forms of writing include blogging or participating in web-based forums.[13,14]

Dimensions of therapeutic writing

Within each type of TW there may be significant process variability, for example in the flexibility and number of topics; the dose (frequency and duration); group or individual delivery; computerised compared with handwritten exercises; participant recruitment; and financial compensation. However, a major distinction lies in whether the writing is facilitated or unfacilitated.

Facilitated therapeutic writing

Facilitated TW interventions, when a facilitator is present at some stage before or during the writing, might be delivered in many different ways and contexts: in a health-care centre, as part of a programme in a rehabilitation clinic or within a group of people with common or different chronic conditions, face to face or via the internet. People using these therapeutic tools may receive feedback from someone else, a health-care professional, a group of persons or not receive feedback at all.[10]

Furthermore, the topic of the writing can be varied, from positive to negative expression of emotions through neutral topics (e.g. childhood/birth, life aims and goals, places, relationships).[10] TW can also be used in children, adolescents or adults and among different clients, such as the chronically ill (e.g. cancer, mental health problems, chronic infections) or healthy individuals, and assessed from different angles such as community carers, doctors and nurses, peer training, patient's family and/or friends or the participant him/herself – the most usual perspective.[10]

The writing event should not be considered as solely an isolated exercise but as a sequence of exercises, not necessarily all of which encompass a written component. As such, a common practice is that writing starts with (visual) stimuli[12] or with mindfulness meditation in order to inspire people and to act as a form of distraction from reality.[15] The following examples of the work of facilitated writing practitioners in the UK exemplify the variety of this type of TW (*Box 1*).

Perhaps the last thing to add is that clinicians at Freedom from Torture continue to send more clients than can be coped with, which is some vindication of the practice. As a bridge between intense therapy and the outside world, giving clients a skill they can take with them and a means of self-discovery, self-healing and personal growth, it seems, as the Hippocratic Oath puts it, to do no harm, and a great deal of good.

Unfacilitated emotional writing

Unfacilitated EW means writing, completed without any assistance, feedback, comment or any other form of support. Therefore, in the current review, an unfacilitated writing intervention has been defined as when a facilitator was simply not present in person during the writing exercise, as opposed to facilitated writing (described above). Typically, in unfacilitated writing interventions, participants are instructed to write for 15–30 minutes on 3 to 4 consecutive days (or at weekly intervals). Instructions on these unfacilitated writing assignments can be delivered in writing via leaflets, verbally over the telephone or even via video or the internet. Participants are asked to do their writing unassisted and alone at home or on their own in a given clinic or laboratory setting. In the most commonly evaluated form of unfacilitated EW, there is a single writing topic that can be chosen (usually disease or treatment focused), for which participants are directed to write emotionally and disclose about their deepest thoughts and feelings or about a self-selected trauma. Thereafter, either the writings may be collected by the practitioner without any feedback or the participant can simply decide what to do with the writing. Sometimes, practitioners provide participants the option to make telephone calls during the writing exercise should any concerns emerge; however, this action has not been considered as facilitation in this review.

BOX 1 Examples of facilitated therapeutic writing

Therapeutic writing practice with mental health inpatients: Carol Ross

Writing practitioner Carol Ross (CR) facilitates weekly TW groups for inpatients in mental health units in a UK NHS Foundation Trust. CR has developed her own practice, influenced by a number of published research studies, e.g. on positive writing; and by established therapies such as mindfulness-based cognitive therapy and narrative therapy.

A typical session lasts 60 minutes, attended by one to seven self-referred inpatients, and comprising 25 minutes of writing interventions (duration 5–15 minutes each) and 25 minutes of reading aloud and group discussion, with the remaining time being taken up with introductions, explanations and evaluation forms. Flexible writing interventions are used to allow tailoring of interventions for individuals and give patients some freedom to choose what they write. The writing practitioner writes and reads aloud what they have written with the group.

Many of the writing interventions CR uses in acute mental health settings, e.g. mindful writing, are aimed at calming the individual, decreasing anxiety, increasing mental focus and lifting mood. With some writing interventions, another effect is intended, e.g. broadening of cognitive focus, reframing, insight, improved self-expression.

BOX 1 Examples of facilitated therapeutic writing (*continued*)

CR's TW toolbox includes mindful writing with either an external or internal focus; positive writing about the past, present and future; perspective shift writing, including unsent letters; and responding to published poems. The broadest range of TW is used in the general adult ward. In the older people's assessment unit, some interventions are designed to trigger positive/neutral memories in a low pressure way (see *Appendix 1*, *Table 75*, illustrating the types of TW interventions used by CR).

In the PICU, the sessions are typically one to one or one to two, with individuals experiencing acute symptoms, e.g. of psychosis or mania. The PICU writing group is held in an open area so that patients who decline to do any writing, or even sit at the table, still sometimes take part in a brief conversation with the practitioner or other patients, and look at whatever prompt materials are on display, e.g. photographs or objects. Data from an internal audit suggest that the writing group contributes to a reduction in violent incidents in the PICU.

It will be seen that the practice described differs markedly from the unfacilitated EW method described by Pennebaker and Beall[1] (see section below on EW), e.g. writing interventions are facilitated and take place in a group. Patients are also never directed to write about trauma.

Poetry therapy for people with mild mental health problems: Victoria Field

Poetry therapy practitioner Victoria Field (VF) facilitates a weekly Words for Wellbeing group in the Beaney House of Art and Knowledge in Canterbury (part of Kent Library Service), aimed at people with mild mental health problems, often as a result of LTCs. She ran a similar group for some years at Falmouth Health Centre, with referrals from GPs. VF qualified in 2005 as a Certified Poetry Therapist, with the NFBPT, which works with the therapeutic potential of both the receptive (reading and listening) and expressive (writing and sharing) aspects of writing. The practice can be adapted for individuals and non-writers but is always interactive for reasons outlined.[16] She is now approved as a Provisional Mentor–Supervisor for the NFBPT, training others in these techniques. The aims of the group are closely aligned with the NHS Wellbeing agenda.[17] A typical session lasts 2 hours, including a break, attended by anything from 2 to 18 people. An ideal group size is around 10, fewer when participants are more unwell or distressed. The group follows a set format, and this predictability is valued by attendees:

1. *Reflective writing* This is the activity closest to a written emotional disclosure type of intervention as described by Pennebaker and Beall.[1] However, it is firmly contained. Participants are invited to write for 6 minutes or so from a given prompt. This might be as simple as 'I can see' or 'Here now', or more elaborated, such as a list of statements, 'Then I was, now I am' or working with a metaphor, e.g. a colour or weather 'Today I am' or 'Red is . . .' This initial writing is intended to be private, although participants are invited to talk about what might have come up, and sometimes some wish to read.
2. *The reading aloud of a poem* Not necessarily literary, which VF has chosen for that week, followed by discussion of what it suggests.
3. *Writing in response to the poem* Again for a short period of 6/7 minutes, typically from a choice of prompts. The writing that emerges is often fully formed, powerful, satisfying to the writer and helpful for the listeners.

Writing and reading in this way offers a container for complex emotions, catharsis, pleasure, connection, validation, self-expression and mastery that may improve mood, decrease anxiety, allow reframing, insight and encourage a more nuanced approach to life. The group dynamic is also a powerful therapeutic tool (see *Appendix 1*, outlining VF's professional perspective).

BOX 1 Examples of facilitated therapeutic writing (*continued*)

Write to life at Freedom from Torture: Sheila Hayman

Sheila Hayman is a member of Lapidus, and has run creative and therapeutic workshops for elderly day-care patients, detention centre visitors, children and the general public. However, her main work for the past 11 years has been with Write to Life, a unique therapeutic creative writing programme based at, and funded by, Freedom from Torture, the UK's only national charity dedicated to the support and rehabilitation of torture survivors from around the world.

In 12 years, the group has grown to about 20 members, of whom a dozen regularly attend bi-weekly group workshops and individual one-to-one sessions. Members are referred, while still in clinical treatment, by the clinical key worker, and while they remain in treatment the group works closely with the clinician. However, as the group is open-ended, clients can stay as long as they like, and there are members who have been with the group for 6 years or more. This enables them to make huge strides in what they can achieve.

When they arrive, many are still very traumatised, unable to trust others or communicate freely, unable to talk about their past or present experiences or make friends. Over time, they make friends inside and outside the group, begin to enjoy not just writing but performing their work, and are enabled to address large gatherings of all sorts about the effects of torture, asylum and other aspects of their situation, as well as perform in public in plays and other events. They report improved sleep, reduced headaches and other sorts of pain, and most of all the reduction or even elimination of the flashbacks, nightmares and other symptoms of their post-traumatic condition.

The writing falls into two parts: the first is the public setting of the group, which is run by a group of volunteers who are professional writers rather than clinicians. This group writing sometimes focuses on matters of interest to the client base, such as journeys, poverty, or trust, but equally could be an exercise in literary criticism, or an invitation to reflect on living in London. It usually takes the form of a short exercise and discussion, followed by a longer piece of writing which members are invited to read out. Everybody has to write, but not everybody has to read out, as sometimes they find that the subject has unearthed things they prefer to keep private.

It is noticeable that the framework, often quite unguided as to the form of writing, enables group members to dig as deeply into their feelings, including bad ones, as they wish. Some people will always find a way of writing about the source of their pain, no matter how the exercise is framed. And that is how it should be. Others may want to be more structured, or literary, or metaphorical.

The strong feelings, and the personal exploration and laying of ghosts, are dealt with in the one-to-one element of the work. Usually, on the same day as the workshop, and purely for practicality, each group member is offered one-to-one sessions with one of the six writer/mentors. This is an opportunity to write about whatever they choose, and to dig as deeply as they wish into their past or present trauma. This writing may remain private, or be published, as they choose. Leaving the level of introspection up to them gives much more sense of control and safety, as reported by more than one group member, compared with their clinical therapy sessions, which may leave them distressed when they need to be okay for a meeting, or may make them jump with unexpected reactions.

Sometimes the writing seems to gloss over, or miss out, a crucial painful moment or event, and on these occasions the mentor, in consultation with the writer, may guide them to look again at that portion of the writing and fill in the missing emotion. This is why it's important to collaborate with a clinician, at least in the early stages when clients are still raw and vulnerable. But in practice, our work, and, by their own account, that of our clinical colleagues, is often guided as much by instinct, common sense and experience, as any theory or training.

GP, general practitioner; LTC, long-term condition; NFBPT, National Federation for Biblio/Poetry; PICU, psychiatric intensive care unit.

The Pennebaker writing paradigm: expressive writing or written emotional disclosure

This is the most common form of unfacilitated EW. It is a technique whereby people are encouraged to write (or talk into a tape recorder) in private about a traumatic, stressful or upsetting event, usually from their recent or distant past. They write for 15–30 minutes typically for 3 or 4 days within a relatively short period of time, such as on consecutive days or within 2 weeks. The format has been relatively consistent since the earliest randomised controlled trials (RCTs),[1,18] but more recent studies have varied the duration, number of sessions and topic of writing, including positive events and thoughts and feelings about illnesses.[19] RCTs of expressive/emotional writing have been conducted in a wide variety of participants, including healthy students, people undergoing psychological stressors, such as bereavement or being in a caregiving role, or in people with long-term physical conditions, such as rheumatoid arthritis (RA) and asthma. Variants of the technique include disclosure in front of a listener, who can be a confederate, a researcher or a doctor. For the purposes of this project, these activities are not considered to be EW and lie outside the scope of this review. The presence of a listener is likely to affect outcomes, as it potentially adds a counselling dimension.

Positive writing

Positive writing can be delivered either as part of a facilitated TW or unfacilitated EW intervention. The exercise involves writing about positive topics only, including positive emotions, typically for 20–30 minutes, three or four times per week if delivered as an unfacilitated EW intervention. Otherwise, the duration and length of the positive writing can be very varied when facilitated (see *Appendix 1*). Pennebaker *et al.*[19] found in a review published in 1997 that the description of positive emotions could predict improvements in health outcomes. Since then, researchers have studied the positive effects of the positive emotional disclosure, advocating that participants writing about the positive aspects of past traumas (benefit finding by describing any positive outcomes of the disease experience or treatment in detail) or simply about positive life events, could achieve comparable health improvements as those writing about past traumas.[20]

Bibliotherapy

Although the above require the individual to write as part of therapy, other forms of therapy use existing texts. The most commonly encountered type of bibliotherapy, Reading Bibliotherapy, involves reading material specifically selected for its therapeutic potential for that person.[21] In the UK, Books on Prescription Schemes have been running in primary care for several years, and in 2013 a national scheme was launched in England by the Society of Chief Librarians and the Reading Agency.[22] Such reading bibliotherapy is not covered by this review.

In contrast, interactive bibliotherapy has been defined as the use of literature to bring about a therapeutic interaction between participant and facilitator.[21] The triad of participant, literature and therapist is viewed as critical. In fact, interactive bibliotherapy does not restrict itself to the written word: it can include the spoken word, for example in film or theatre but it must involve the coherent use of language. When interactive bibliotherapy uses poetry, it is synonymous with poetry therapy and they are both encompassed by the term biblio/poetry therapy.[21] Sometimes the literature involved in biblio/poetry therapy is new writing generated by the participants themselves. This type of creative writing biblio/poetry therapy is the principal form of facilitated TW included in this review and it is the form of TW used by the practitioner experts collaborating in the current systematic reviews (see *Box 1*, in which the TW expert practitioners describe their different facilitated biblio/poetry therapy practices).

Nonetheless, little has been published around all the different types of facilitated TW, and literature shows that the most evaluated form of TW is the EW intervention, described by Pennebaker and Beall[1] Comprehensive research around the writing paradigm[18,23–27] and narrative analysis within the health-care setting[28–31] has been performed through the last decades.

Long-term conditions

The prevalence of long-term conditions (LTCs) increases with ageing populations. In 2002, the leading chronic diseases [cardiovascular disease (CVD), cancer, chronic respiratory disease and diabetes] were responsible for 29 million deaths worldwide.[32] According to the UK Department of Health (DH),[33] more than 15 million people in England (including half of all those aged > 60 years) are living with at least one LTC, and the risk of death is particularly high in those with three or more conditions occurring concurrently.[34] LTCs also result in a huge burden on UK NHS resources. Although some are preventable, for most LTCs the only realistic management strategy is continuing care, as biological and psychosocial mechanisms regulating disease progression are not yet fully understood. As LTCs are difficult to improve, especially for elderly populations, health-care programmes, such as self-management support and patient education, often combined with structured clinical follow-up, have been suggested as a way to improve the quality of life (QoL) of such patients.[35] New therapeutic approaches, such as TW, have the potential to improve the QoL in people with LTCs.

Possible pathways linking memory, emotions and physical health

There are several potential ways that writing might impact on physical health. For example, cognitive restructuring or behavioural mechanisms (e.g. reflection on health behaviours) may lead to improvement in outcomes. However, many of the types of TW described above engage emotions and memories (both positive or negative) and there are physiological pathways linking memory, emotions, chronic stress and physical health.

Two interdependent memory systems are thought to be associated with remembering events in humans.[36] Episodic memory is linked to the hippocampus and this structure is vital for processing events that eventually become long-term memories.[37] Emotional memory is linked to the amygdala, part of the limbic system involved with emotions, in particular fear-related responses and general pleasant and unpleasant emotional processing.[38] Although the episodic and emotional memory systems are independent, they affect each other in a variety of ways.[36] Emotion enhances perception of, and attention to, the memory-provoking stimulus, as well as the long-term storage of the memory.[36] Episodic memory also influences emotional memory by, for example, causing the autonomic effects of emotional arousal (e.g. the sweaty palms and dry mouth) when remembering a past situation.[36]

The limbic system has links with the cerebral cortex, the brainstem and the pituitary gland (part of the hypothalamic–pituitary–adrenal axis). Parts of the cerebral cortex have a role in cognitive appraisal and the conscious awareness of emotional states, and can regulate amygdalar activity.[38] Through the brainstem, areas in the limbic system can control many internal conditions of the body, for example cardiovascular regulation. The hypothalamic–pituitary–adrenal axis is both responsive to psychological inputs and has significant influences on the immune system, which, in turn, influences physical health.[39] This pathway may be one of the ways chronic stress is linked to poor health.[39–42] It is therefore possible that a psychological intervention might improve aspects of physical health, and if modification of such pathways had even a small effect then this could have profound public health significance.

Realist synthesis

In this review, a conventional systematic review of the effectiveness of unfacilitated EW and facilitated TW was conducted, but, in addition, the findings of a realist synthesis are reported. Realist synthesis is a theory-driven interpretive approach to evidence synthesis. Rather than producing a judgement on whether (or not) an intervention works, realist syntheses attempt to explain outcome patterns in data using theory (or theories). It is particularly useful when interventions are complex and evidence is mixed or conflicting and provides little or no clues as to why the intervention worked or did not work when used in different contexts, by different stakeholders or when used for different purposes.[43]

In brief, realist syntheses ask what works for whom in what circumstances, how and why? To do so, realist syntheses use a particular logic of analysis that deliberately breaks down how an outcome has arisen. An outcome is considered to have occurred because it is caused to do so by a causal process known as a mechanism. In addition, the contexts in which an outcome has occurred are also considered to be important as they cause mechanisms to be activated. This logic of analysis thus provides an approach for understanding how and why it is that context can influence outcomes. In summary, the realist logic of analysis used in a realist synthesis considers the interaction between context, mechanism and outcome (sometimes abbreviated as CMO). That is how particular contexts have triggered (or, conversely, interfered with) mechanisms to generate the observed outcomes.[43]

To elaborate further, in order to understand how outcomes are generated, the roles of both external reality and human understanding and response need to be incorporated. Realism does this through the concept of mechanisms, whose precise definition is contested but for which a working definition is '. . . underlying entities, processes, or structures which operate in particular contexts to generate outcomes of interest.'[44] Different contexts interact with different mechanisms to make particular outcomes more or less likely – hence, in general, a realist synthesis produces recommendations of the general format 'In situations [X], complex intervention [Y], modified in this way and taking account of these contingencies, may be appropriate'. This approach, when done well, is widely recognised as a robust set of methods, which is particularly appropriate when seeking to explore the interaction between CMO in a complex intervention [e.g. see Berwick's editorial explaining why experimental (RCT/meta-analysis) designs may need to be supplemented (or perhaps in some circumstances replaced) by realist studies aimed at elucidating CMOs].[45]

The philosophical basis underpinning a realist synthesis is realism. Realism assumes the existence of an external reality (a real world) but one that is filtered (i.e. perceived, interpreted and responded to) through human senses, volitions, language and culture. Such human processing initiates a constant process of self-generated change in all social institutions, a vital process that has to be accommodated in evaluating social programmes. In other words, the way individuals interpret and respond (or not) to the world around them has the potential to cause changes to this world around them. Such changes may then cause additional responses from individuals, potentially leading to a series of feedback loops. Within a realist synthesis, where possible, attempts are made to understand these feedback loops.

A realist approach is particularly useful for this project because TW is a complex intervention that could be useful in a variety of patient groups, and currently it is unclear whether it is effective for all or some, and how and why it might be effective.

Realist syntheses often use input from content experts to help develop the programme theories needed to explain how complex interventions work. In this project, input from practitioner experts was deliberately sought. During the second programme theory-building meeting with practitioner experts, they were asked for their feedback on what their views were on how TW was meant to work, for whom and why (see *Chapter 5*, *Methods*, for more details). Two practitioner experts [Carole Ross (CR) and Victoria Field (VF)] provided written responses (see *Appendix 1*, *Tables 76* and *77*, respectively) and have been included in this report as they provide an insight into how facilitated TW is used in the NHS and voluntary sector.

Previous systematic reviews on therapeutic writing in long-term conditions

There have been a number of systematic reviews on expressive writing,[18,23,46,47] published in psychology journals, that have conducted meta-analyses according to normal practice in psychology, combining different types of participants and outcomes across different conditions, and using Cohen's *d* or Hedges' *g* statistics. Their results are difficult to interpret because effect sizes for specific populations and interventions are unclear. There have been three recent systematic reviews on TW in LTCs. One concerned post-traumatic stress disorder (PTSD) only and included five studies.[27] One of the included studies is on cognitive–behavioural therapy (CBT) rather than TW,[48] and another[49] is a very small, non-randomised study with students. A second, unpublished systematic review was accessed via the internet.[26] This assessed TW for psychological morbidity in people with long-term physical conditions. The review included 14 RCTs and searches were conducted up to May 2011. It is unclear why this review did not include a number of potentially includable studies including Abel *et al.*[50] [human immunodeficiency virus (HIV)], Graham *et al.*[51] (chronic pain), Halpert *et al.*[52] [inflammatory bowel syndrome (irritable bowel syndrome, IBS)], Henry *et al.*[53] (breast cancer), Hughes[54] (breast cancer), Kraaij *et al.*[55] (HIV), Petrie *et al.*[56] (HIV), Stark[57] [fibromyalgia (FM)] and Theadom *et al.*[58] (asthma), as all of these studies measure psychological morbidity and were published before the search end date. It may be that they did not include some of these because of their definition of long-term physical conditions, as there is no uniform definition as yet. It is unclear how the results might have differed if some of these studies had been included. The third systematic review evaluated the impact of support on the effectiveness of written cognitive–behavioural self-help[59] and thus was not really focused on TW per se. It included 38 studies, none of which are included in this project.

Hypotheses tested in the review (research questions)

Overall aims and objectives of this review

1. What are the different types of TW that have been evaluated in comparative studies? What are their defining characteristics? How are they delivered? What underlying theories have been proposed for their effect(s)?
2. What is the clinical effectiveness of the different types of TW for LTCs compared with no writing or other suitable comparators?
3. How is heterogeneity in results of empirical studies accounted for in terms of patient and/or contextual factors, and what are the potential mechanisms responsible for the success, failure or partial success of interventions (i.e. what works for whom in what circumstances and why)?
4. What is the cost-effectiveness or cost–consequences of one or more types of TW, in one or more representative LTCs, when there is sufficient information on the intervention, comparator and outcomes to conduct an economic evaluation?

Chapter 2 Systematic effectiveness review methods

Expert advisory group

We invited practitioner experts in the area of the TW who approached us following our contact with Lapidus and/or publicity following the awarding of the grant to contribute to the project. On invitation to join the project we were unaware of the techniques of TW that they were employing. Although they were all working in different fields, and with slightly different techniques and approaches, they were all practitioners of facilitated TW. Indeed, we were unable to identify any UK-based practitioners of clinically-based unfacilitated TW to invite to join us as advisors. However, one of our authors, CM, had previously conducted a trial of unfacilitated TW.[60] The practitioner experts were invited to collaborate during all phases of this project in the role of advisors, in order to inform our understanding of the range of TW interventions and to help reach consensus within the Steering Group Committee (SGC).

Search strategy

All electronic and hand-searches were conducted up to March 2013 by the lead researcher (OPN) in collaboration with a librarian (JB). A mapping search was performed in order to determine the extent of relevant literature (looking for both qualitative and quantitative studies). From the list of studies, appropriately includable studies for the systematic review were selected according to the selection criteria. A single electronic search was performed for both the mapping search and the systematic reviews of effectiveness and economic studies. A further search was conducted by CM in January 2015 to cover the 2 years since the previous search.

Search engines

Studies were systematically identified by searching a total of 22 electronic medical and psychological electronic databases: MEDLINE, EMBASE, PsycINFO, CAB Abstracts, Physiotherapy Evidence Database (PEDro), Published International Literature on Traumatic Stress (PILOTS), The British Library's Electronic Table of Contents (Zetoc), Science Citation Index (SCI), Social Sciences Citation Index (SSCI), Linguistics and Language Behaviour Abstracts, Periodicals Index Online, Applied Social Sciences Index and Abstracts (ASSIA), Education Resources Information Center (ERIC), Allied and Complementary Medicine Database (AMED), Cumulative Index to Nursing and Allied Health Literature (CINAHL), Cochrane Central Register of Controlled Trials (CENTRAL) and Database of Abstracts of Reviews of Effects (DARE) for primary studies, and NHS Economic Evaluation Database (NHS EED) for economic studies. Grey literature was searched because of the possibility that effect size estimates might have been overestimated owing to selective reporting bias and unpublished studies are known to be less likely to have statistically significant results compared with published studies.[61] Information on studies in progress and unpublished research or research reported in the grey literature was also sought by searching relevant databases including the Inside Conferences, Open System for Information on Grey Literature in Europe, Dissertation Abstracts, Current Controlled Trials database and ClinicalTrials.gov, Cochrane Database of Systematic Reviews (CDSR), Health Technology Assessment (HTA) Database, and The Campbell Library was searched for systematic reviews and economic evaluations. In addition, internet searches were also carried out using a specialist search gateway (OMNI), general search engine (Google) and a meta-search engine (ReadCube).The search was first conducted in Ovid for MEDLINE and MEDLINE In-Process & Other Non-Indexed Citations and then translated into the other databases. Similarly, the search in The Cochrane Library retrieved papers from the CDSR, Cochrane DARE and NHS EED.

The update searches (January 2015) included only the databases that had found all of the relevant citations in the previous search (i.e. MEDLINE, EMBASE, PsycINFO, Web of Science and Social SSCI, CINAHL and The Cochrane Library databases).

Additional searches and cross-referencing

Reference lists of included studies and previous reviews of emotional disclosure were screened. Experts in the area were contacted to identify additional unpublished literature. All studies previously included in former systematic reviews were searched for, screened against the inclusion criteria and considered for inclusion in current systematic review.

Search terms

Medical subject headings together with key words and controlled vocabulary were combined to capture two components of the review question: the populations and the interventions of interest. The search was limited to humans and there were no restrictions regarding the study design. The search terms used for each of the databases are listed in *Appendix 3*. In the update searches (January 2015) sensitive searches using very wide search terms (writing, writ*, etc.) were used in order to find all relevant studies that had been recently published.

The population of interest: long-term conditions

No definite list of LTCs was pre-established, as the potential range of diseases of interest was both extensive and diverse and made it difficult to create an exhaustive list. For the purposes of the search strategy and subsequent steps of the review, the UK DH definition of a LTC was adopted.[33] The definition states: 'Long term conditions are those conditions that cannot, at present, be cured, but can be controlled by medication and other therapies. They include diabetes, asthma, and chronic obstructive pulmonary disease'. Where it was unclear whether or not a condition met criteria discussion was held with the SGC and consensus reached (*Table 1*, column 1).

For inclusion, populations had to have received a clinical diagnosis of the condition. In some studies participants had symptoms of LTCs (e.g. student populations) but no formal evidence of a clinical diagnosis and study participants did not report having been diagnosed with these conditions. For such studies the full text was scrutinised before making a decision regarding inclusion. The chronic conditions in these studies included anxiety, chronic stress, closed head injury, depression (usually stated as symptoms of depression), insomnia or poor sleep, migraine or tension headache, and suicidality.

The authors also discussed whether to consider some diagnosed conditions as LTCs, for example newly diagnosed cancer, or whether congenital conditions might be seen by some to reflect a continuum of normality (e.g. congenital deafness). It was decided to include these conditions but to analyse them separately. These are listed below (see *Table 1*, column 3).

It was decided to include all other cancer studies because patients may receive palliative care for prolonged periods, and terminally ill patients in hospices may still be receiving active treatment. Thus the distinction between active treatment and palliation might be difficult to distinguish and, furthermore, disease trajectories are not always predictable. There is a debate around whether or not obesity in the absence of any comorbidity is a disease;[62] therefore, studies in people with uncomplicated overweight and obesity were excluded. Studies of addictive conditions (alcohol, smoking, illegal drugs, legal drugs) and learning disability were also included because the results could be useful to the NHS, although these might not meet the current definition of LTC. The following conditions were excluded:

- personality traits, such as alexithymia, body dissatisfaction
- people who had undergone stressful life events, such as bereavement, domestic violence, child sex abuse (unless PTSD diagnosed)
- people found to be at increased risk of developing a LTC.

TABLE 1 Long-term conditions discussed and considered for the review

Included LTCs after executive decision	Excluded LTCs after executive decision	Included LTCs but analysed in separate group[a]
Acquired brain injury	Acute stress	Addictive conditions (such as drug, alcohol dependence)
Anorexia	Alexythimia	Aphasia/agraphia
Body dysmorphia	Benign prostate enlargement/hypertrophy	Asperger's syndrome
Bulimia	Bereavement	Bladder papilloma resection (low-grade non-invasive cancer)
Chronic pain (at least 3 months)	Body dissatisfaction	Cancers including those newly diagnosed
Cystic fibrosis	Child sex abuse	Learning disabilities
Deafness/blindness	Chronic dieters	
Eating disorders	Domestic violence	
High BP	EBV	
HIV	Lesbian/gay-related stress	
IBS	Mild traumatic brain injury	
Infertility	Obesity	
MI	Overweight	
Serious traumatic brain injury	People found to be at increased risk of developing a LTC	
	Personality traits	
	Smoking	
	Unresolved grief	

BP, blood pressure; EBV, Epstein–Barr virus; MI, myocardial infarction.
a These LTCs were included in the review after discussion. It was decided to group them separately because of their special relevance to the NHS.
A clinical and reliable diagnosis of the LTC had to be performed in order to include the study. Any studies of populations screened for instance for symptoms of a disease using a self-report questionnaire or any non-clinical population (students recruited from a university) not clinically diagnosed with a condition that is not using a validated diagnostic tool were discarded.

The intervention of interest: therapeutic writing

Prior to the drafting of the definitive list of search terms used to develop the search strategy, consensus within the SGC was reached on the relevant and appropriate terms related to TW interventions. The terms under debate had been identified as part of the mapping search. The aim was to capture the published literature related to the different types of TW interventions; therefore the main key terms referring to TW were defined, discussed, agreed and validated with the expert advice (*Table 2*, column 1).

Some terms were not considered because:

- they had been already identified with a more common synonym thought to be equivalent (e.g. writing for healing/writing to cure vs. wellness writing)
- the focus of the writing was thought not to be therapeutic (e.g. written divulgation, written exposé or written material/information).

TABLE 2 Therapeutic writing key words and variants discussed for the search strategy

Terms considered	Terms not considered
Blogging	Bibliotherapy
Catharsis	Emotional announcement
Creative writing	Emotional perspective
Descriptive writing	Emotional revelation, revealment
Diary	e-therapy
EW	Internet writing
Epistolary writing	Moral disclosure
Experimental disclosure	Patient-reported outcomes writing
Expressive writing	Therapeutic (or therapy) disclosure
Forum	Truth disclosure
Handwriting	Wellness writing
Health status writing	Writing (or written) exercise
Journal, journaling	Written confession
Letter writing	Written divulgation
Life reminiscence	Written exposé
Life review	Written information
Life writing	Written material
Memoirs	Written/emotional betrayal
Narratives	Written/emotional declaration
Poetry, poem, poetic	
Reactive writing	
Reflective writing	
Sensitive writing	
Story writing	
Typing, keying	
Writing (as such)	
Writing as self-concealment	
Writing as self-disclosure	
Writing as self-help or self-management	
Writing for healing	
Writing therapy	
Writing to cure	
Writing workshop	
Written (Pennebaker) paradigm	
Written emotion	
written emotional disclosure	
written expression	

Selection of papers

Results from the electronic searches (titles and abstracts where available) were transferred into a spreadsheet using Microsoft Excel® 2010 (Microsoft Corporation, Redmond, WA, USA) following automatic de-duplication within the citation manager EndNote X 4.02 (Thomson Reuters, CA, USA) and the manual removal of other duplicates.

Peer-reviewed articles and non-peer-reviewed papers (e.g. conference abstracts and dissertations) were then selected for potential inclusion in a two-stage process by one reviewer (OPN), with a random 10% selection of citations independently checked by a second reviewer (LB and CM). The two reviewers independently selected studies that met the predefined inclusion criteria. Disagreements were resolved by discussion and/or arbitration involving a third reviewer or by the full team, depending on the complexity of the issues. When it was not possible to determine the study eligibility by title and abstract alone the full text was retrieved for assessment. Authors of conference abstracts were contacted for full articles.

During the selection of studies, the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) approach was used.[63] A diagram was developed to show the numbers of studies in the different categories and the reasons for exclusion of full-text studies. Additionally, an expert in the field of TW was shown the list of included studies to check whether or not they believed that all relevant papers had been identified.

Inclusion criteria

Studies meeting the following inclusion criteria were included in the systematic review:

- Studies assessing participants with at least one LTC as per DH definition.[33]
- Studies assessing any form of TW including emotional disclosure/expressive writing, poetry, diaries, etc., with inactive comparators or comparison groups thought to be inactive:
    - For example, if participants in the control arm were directed to write in a non-emotional way by using, for instance, neutral topics or by describing facts or how they managed their time. When the control group wrote about topics related to their illness or treatment, or when arousal of emotions might occur, these were not considered to be inactive controls and these studies were excluded. However, if descriptions of the comparators used were not provided, the paper was not be excluded on this basis alone.
- Studies reporting any relevant clinical outcomes including both disease-specific outcomes and generic outcomes.
    - Outcomes related to physical (including physiological, haematological/immunological outcomes, pain, or disability), psychological, social and behavioural health. Performance, health-related quality of life (HRQoL), as well as participant mental status, satisfaction and both intervention safety and compliance to treatment for the LTC, were of interest. Resource-use or cost data were also collected for economic consideration. Outcomes could be self-reported or evaluated by a clinician or a carer.
    - If the study could report relevant outcomes without reporting any usable numerical data. In this particular case, the authors were contacted for unpublished data.
- Full versions of prospective randomised or non-randomised trials or observational studies having any form of comparison group including, for instance, RCTs/non-RCTs, cohort, case–control studies and economic evaluations.

Exclusion criteria

The following were excluded:

- Studies including participants with acute conditions, stress, bereavement or any acute event.
- Studies assessing any form of psychotherapy, counselling, talking to a listener, talking into a tape recorder, mobile phone or similar, where this was the primary mode of delivering the intervention, expressive drama, dance or film-making.
    - Any study that evaluated other people's writing.
    - Any study that evaluated any type of writing as a diagnostic tool instead of as a therapeutic tool in the course of a disease treatment (e.g. patients with agraphia).
- A comparative study with any active or probably active control including any form of TW or talking into a tape recorder or mobile telephone.
- Studies assessing only intermediate physiological outcomes such as salivary cortisol, immune parameters not routinely measured in the management of LTCs or studies not reporting relevant numerical and usable data and/or where unpublished data could not be obtained.
- Inappropriate study design for this review: single case reports, case series (as both have no comparator arm) and studies where results for intervention and control groups were not presented separately. Studies only available in brief abstract form.

Data collection

The forms used for the data extraction are shown in *Appendix 4*.

Data extraction methods

Study findings were extracted and entered into a spreadsheet by one reviewer (OPN) and checked by a second reviewer (CM, ST, AH, LS and LB) working independently. A purpose-built data extraction form (Excel) was developed and piloted prior to data collection. Any disagreements were resolved by consensus and/or arbitration involving a third reviewer. Missing information was obtained from investigators if it was crucial to subsequent analysis (this was not possible for the five studies identified in the updated search to January 2015). The software GetData Graph Digitizer version 2.26.0.20 (GETDATA Graph Digitizer, Moscow, Russia) was used when numerical data had to be derived from graphs. To avoid introducing bias, unpublished information was coded in the same fashion as published information.

Quality assessment methods

Quality of studies was assessed based on accepted contemporary standards including the Newcastle–Ottawa Scale for case–control studies.[64] The Cochrane risk-of-bias tool[65] was used for RCTs and quasi-randomised trials. Risk of bias was qualified as high, low or unclear. The first assessment was performed by one reviewer (OPN) on all studies, with a second reviewer (CM, LB, LS, SJCT) independently checking each study.

Data analysis

Synthesis of data

In order to collate, combine and summarise the information from the included studies, narrative and quantitative (meta-analysis) approaches were undertaken. After all included studies were identified, the SGC discussed organisation of the data for analysis. It became clear that the studies fell into two distinct categories: those that were facilitated (such as interactive biblio/poetry therapy) and those that were not (such as unfacilitated TW models and its various elaborations). Discussion with our expert practitioners and consideration of the literature revealed that facilitated and unfacilitated writing interventions are fundamentally different. As explained by the practitioner experts, facilitated TW interventions consist of one or more interactive activities (including TW) between the group facilitator and participant, which allows a live, in-person communication and an element of quality control and tailoring. Usually, the facilitator is in the same room as the participant, and may help with any unexpected concern and/or guide the participant in the usual process of the intervention. For unfacilitated writing, studies were categorised by ICD-10 (*International Classification of Diseases*, Tenth Edition) code according to the LTC assessed (see *Chapter 3*).

Analysis of studies

The numerical results from each of the included studies were checked to identify possible data entry problems. For each study, for continuous measures, either the mean and standard deviation (SD) at the various follow-ups, or any other statistic that could be used to calculate SD, such as the standard error (SE), were extracted for further analysis. For categorical measures, dichotomous or binary data, or counts and rates calculated from the number of events that each individual experienced, were collected.

Meta-analyses

Pooled-effect estimations were conducted using the standard software package Review Manager 5.2.6 (RevMan 2012, The Cochrane Collaboration, The Nordic Cochrane Centre, Copenhagen, Denmark). Analyses were stratified according to the type of outcome measured. A comparison was performed when at least three studies used the same (or a similar) instrument to assess the same (or similar) aspects of a given outcome and when sufficient numerical data were reported. In the case of different follow-up periods, results were combined using threshold intervals of 'immediate', 'short term', 'medium term' and 'long term', as shown in *Table 3*.

In cases where two studies reported short-term follow-up, and one study reported an immediate follow-up assessment, the studies were meta-analysed and combined into a short-term follow-up comparison. For continuous outcomes, standardised mean differences (SMDs) were used when outcomes were measured with different instruments. Random-effects models were used because of clinical heterogeneity. Statistical heterogeneity of results between studies was assessed using the I^2-value. Conclusions regarding the estimates of effect sizes were interpreted cautiously if there was significant heterogeneity.

TABLE 3 Thresholds intervals for follow-up combinations in meta-analysis

Follow-up thresholds[a] for meta-analysis, months		Equivalence, weeks
Immediate	< 1	< 4
Short term	≥ 1 and < 4	≥ 4 and < 17
Medium term	≥ 4 and < 8	≥ 17 and < 34
Long term	≥ 8	≥ 34

a These thresholds were decided by consensus during a SGC meeting.

Unit of analysis issues

Only comparative studies were included. Participants were usually randomised to one group of two groups; however, some studies could compare one experimental TW intervention group against both a standard intervention (such as standard care) and one with placebo writing. Alternatively, two or more experimental interventions could be tested against a standard intervention (or with both a standard intervention and with placebo writing), giving a four-arm trial. There could be also trials with the same outcome assessed at different time points or just measured after the writing session or at the end of the treatment period.

For the systematic review, the interest lay only in the direct comparison between a TW intervention arm and an inactive comparator. If a trial had two intervention groups and two control groups, for meta-analysis the trial was treated as two separate trials one comparing, for instance, a more brief TW intervention against inactive comparator and one comparing a longer TW intervention against inactive comparator. Where there were two intervention groups and one control group, the TW intervention most widely used (i.e. the unfacilitated EW with the standard instructions was the one included in the meta-analysis).

Results across LTCs

Four analyses were performed:

1. physiological, disease-related and biomarker outcomes (results tabulated)
2. positive writing across LTCs (results tabulated)
3. depression (results tabulated and meta-analysed where possible)
4. anxiety (results tabulated and meta-analysed where possible).

Chapter 3 Systematic review results

Study selection

A total of 18,235 citations were initially retrieved from the searches in the different electronic databases. After removal of duplicates, 14,658 citations were initially screened. Based on the review of their corresponding titles and abstracts 14,374 records were excluded, while 284 full papers were marked for retrieval, either because they were potentially relevant or because insufficient information was reported in the title and abstract to make a final decision regarding inclusion in the systematic review. After screening the full papers, 64 publications relating to 64 unique studies were finally included in the systematic review: 58 from database searches and six from hand-searches. The duplicate checking of 10% of the titles and abstracts revealed no studies missed and excellent agreement on excluded studies. Therefore, no further checking was indicated.

All included studies were comparative studies evaluating a TW intervention in patients with different LTCs. A description of the process followed for the identification and selection of studies, and the number of studies identified through each step, is presented in the PRISMA diagram (*Figure 1*).

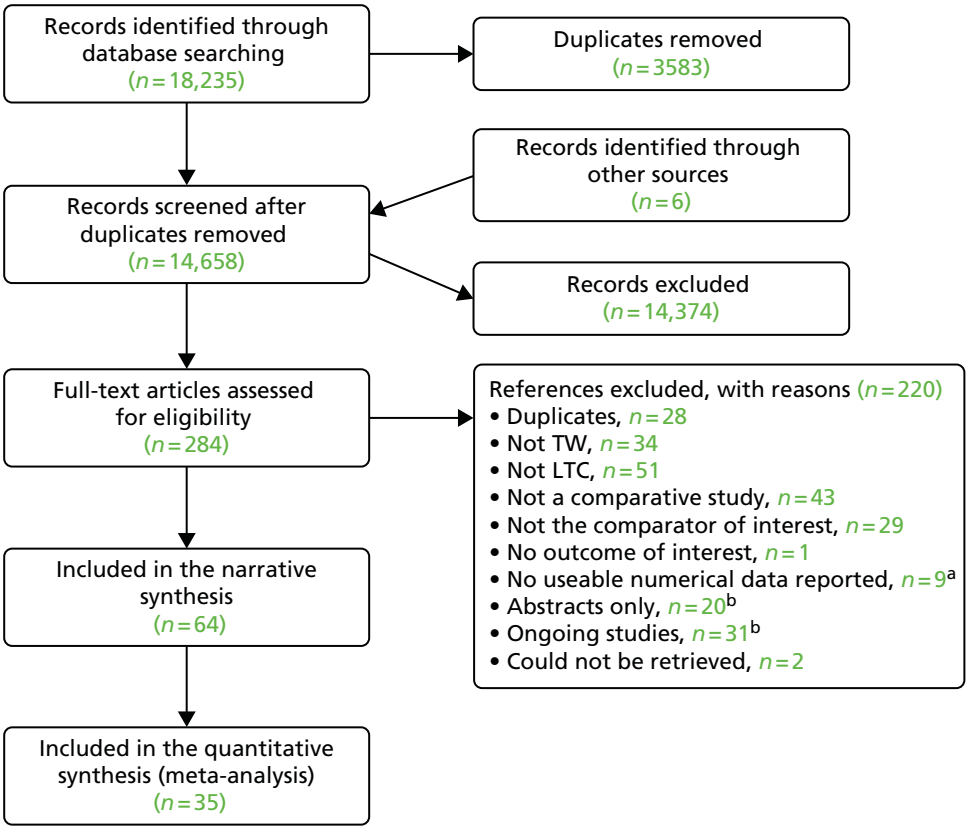

FIGURE 1 Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) diagram. a, Final number of studies with no numerical results (after correspondence with authors); b, authors of the abstracts and ongoing studies were contacted to obtain a full-text version if available.

Included studies

Details on the study design, participants' chronic conditions, intervention types and processes, outcome measures, as well as the quality assessment of the included studies, are reported in *Appendix 5*. The number of studies categorised by ICD-10 code according to the LTC evaluated, together with the names of the studies in each category, are shown in *Table 4*. The number of studies published by year is shown in *Figure 2*, and the frequency of outcomes evaluated across the included studies is shown in *Figure 3*.

TABLE 4 Table of full list of LTCs included, with their ICD-10 codes

Condition	ICD-10 code	Number of unfacilitated EW studies (facilitated TW)	Authors
HIV	B24	6	Abel 2004,[50] Ironson 2013,[71] Kraaij 2010,[55] Mann 2001,[72] Petrie 2004,[56] Wagner 2010[73]
Breast cancer	C50	8	Craft 2013,[74] Gellaitry 2010,[75] Henry 2010,[53] Hughes 2007,[54] Jensen-Johansen 2013,[76] Mosher 2012,[77] Park 2012,[78] Walker 1999[79]
Gynaecological and genitourinary cancers	C57, C61, C62, C64	5 (1)	Arden-Close 2013,[80] Milbury 2014,[81] Pauley 2011,[82] (Rickett 2011[66]), Rosenberg 2002,[83] Zakowski 2004[84]
Other cancers	C80	2	Cepeda 2008,[85] Rini 2014[86]
Sickle cell disease	D57	1	McElligott 2006[87]
Type 2 diabetes mellitus	E11	1	Dennick 2014[88]
Cystic fibrosis	E84	1	Taylor 2003[89]
Dementia	F03	(1)	(Hong 2011[67])
SUD	F14/F19	3	Grasing 2010,[90] Meshberg-Cohen 2010,[91] Van Dam 2013[92]
Psychiatric disorders	F41–60	5 (1)	Bernard 2006,[93] Canna 2006,[94] (Golkaramnay 2007[68]), Graf 2008,[95] Krpan 2013,[96] Richards 2000[97]
PTSD	F43	2 (2)	Gidron 1996,[98] (Lange 2003[69]), (Sloan 2012[70]), Smyth 2008[9]
BN	F50	1	Robinson 2008[99]
Amyotrophic lateral sclerosis	G12	1	Averill 2013[100]
Migraines and tension headaches	G43/G44	1	D'Souza 2008[101]
CVD	I51	3	Bartasiuniene 2011,[102] Hevey 2012,[103] Willmott 2011[104]
COPD and IPF	J44, J84	1	Sharifabad 2010[105]
Asthma[a]	J45	4	Harris 2005,[106] [a]Smyth 1999,[107] Theadom 2010,[58] Warner 2006[108]
IBS	K58	2	Halpert 2010,[52] Wallander 2011[109]
Psoriasis	L40	3	Paradisi 2010,[110] Tabolli 2012,[111] Vedhara 2007[112]
Inflammatory arthropathies[a]	M06/M45	6	Broderick 2004,[113] Hamilton-West 2007,[114] Lumley 2011,[115] Lumley 2014,[116] [a]Smyth 1999,[107] Wetherell 2005[117]
FM and chronic pain	M79	4	Broderick 2005,[118] Gillis 2006,[119] Graham 2008,[51] Stark 2010[57]

BN, bulimia nervosa; COPD, chronic obstructive pulmonary disease; IPF, idiopathic pulmonary fibrosis; SUD, substance use disorder.

a Note that Smyth *et al.*[107] was reported twice separately under both M06/M45 and J45, ICD-10 categories, hence the total count of studies by condition is 65 (instead of the 64 included studies).

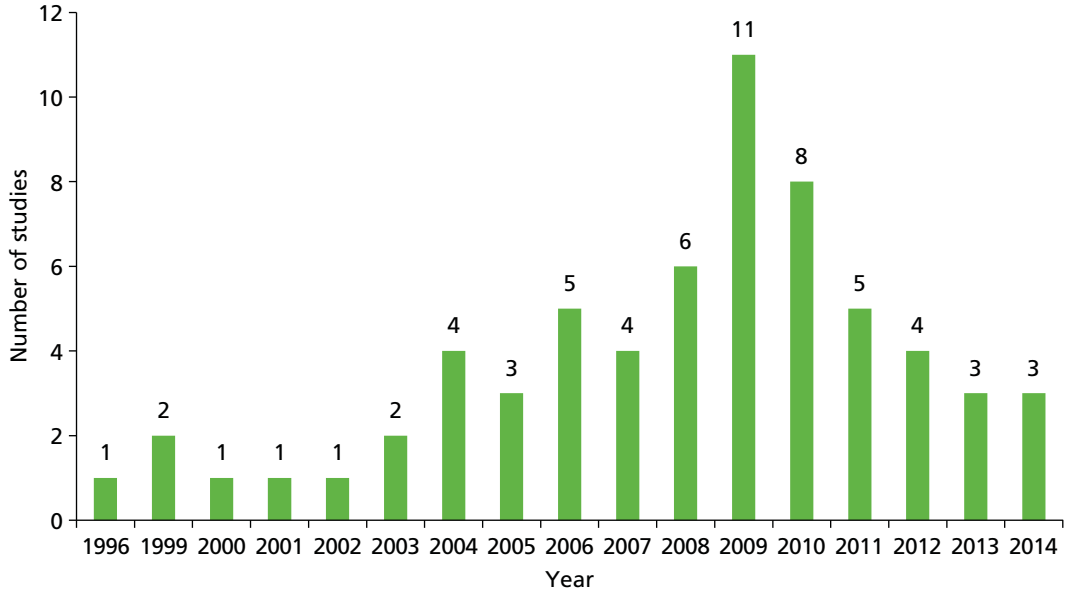

FIGURE 2 Included studies by year of publication.

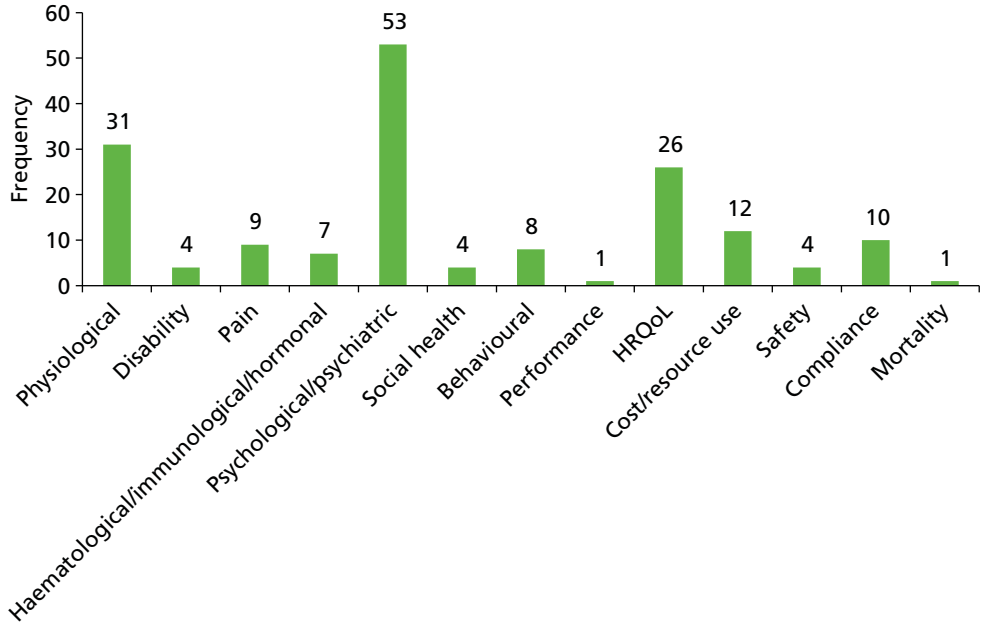

FIGURE 3 Frequency of outcomes evaluated across the included studies.

Regarding interventions, five used a facilitated type of TW[66–70] and 59 studies[71–119] used an unfacilitated type of EW therapy. Participants in the control groups were usually instructed to neutral writing; time-management writing; factual writing; non-writing; or waiting list. Most of the studies were published in the USA and, since 2008, the year with most studies published ($n = 11$) was 2010. Breast cancer and HIV were the most frequently evaluated conditions, followed by PTSD and rheumatoid arthritis (RA). The outcomes most frequently evaluated were, in descending order, psychological, physiological and HRQoL.

Of the 64 included studies,[9,51–58,66–119] 59[9,51,54–58,66–68,71–77,79–86,88,89,91,93–119] were RCTs, and four[52,78,87,92] were non-randomised studies. The remaining study[53] was a matched case–control study. Among the 64 studies,[9,51–58,66–119] one was written not in the English language but in Korean.[78] Smyth *et al.*[107] and D'Souza[120] evaluated the effect of TW in two groups of patients with different conditions and reported relevant outcomes independently. Data were extracted on the most recent paper, or the most complete piece of information in the case of duplicates of an abstract and when the corresponding published article of a PhD thesis was retrieved. Fifty papers required correspondence with authors in order to get relevant unpublished information (or adequate data for meta-analysis purposes): 32 authors could be contacted and 14 provided the sought information. All 64 studies[9,51–58,66–119] provided information (numerical data) relating to the efficacy and/or effectiveness of TW. Among those, numerical results were derived from graphs in nine studies.[51,53,56,70,85,103,110,114,121] Several studies under-reported the numerical data (e.g. reporting the mean with no measure of variability, such as the SD) or used different statistics [such as the median, together with confidence intervals (CIs) and/or ranges or the mean together with the SE] to report the results. All 64 studies[9,51–58,66–119] were considered for the quantitative analysis and 35 were finally included in the meta-analyses.

Excluded studies

Abstracts and ongoing studies were excluded from the systematic review and have been listed separately with details of all excluded papers, with their reasons for exclusion (see *Appendix 6*, *List of excluded studies with reasons for exclusion*).

Nine studies evaluated TW but reported no numerical results for any of the outcomes measured and were therefore excluded from the systematic review, as they could not contribute to estimation of efficacy or effectiveness (see *Appendix 6*, *List of excluded studies with reasons for exclusion*).

Results of the different therapeutic writing interventions

This section is organised as follows:

- facilitated writing (in one or more arms of the study)
- unfacilitated writing (standard type) categorisated by ICD-10 code[122]
- positive unfacilitated writing
- summaries across different LTCs for:
    - physiological, disease-related and biomarker outcomes
    - depression
    - anxiety.

Most of the current published research focuses usually on unfacilitated EW for disease intervention types encompassing many variants. When a study had two groups of patients with different conditions, for example asthma and RA, results for each condition were reported under the separate ICD-10 codes where possible.

Facilitated therapeutic writing

Overview

There were five studies[66–70] evaluating facilitated TW. A summary of their main characteristics is presented in *Table 5*.

All studies[66–70] evaluated one facilitated intervention group against one control group. All studies[66–70] were conducted in a different country. Two studies[69,70] concerned PTSD and involved writing on trauma-related topics, but the remaining studies examined different conditions [dementia,[67] mental health problems[68] and serious physical illness[66] (primarily cancer)]. Although grouped together here as facilitated TW, the interventions studied were all very different and the type and amount of level of facilitation (and indeed actual writing) varied greatly.

The studies conducted by Golkaramnay *et al.*[68] and Lange *et al.*[69] were internet based. Golkaramnay *et al.*[68] studied a chat room through which groups of participants recently discharged from psychiatric hospital communicated with each other in writing during weekly 90-minute sessions, guided by experienced group therapists who knew all of the participants beforehand. The intervention in Lange *et al.*[69] (Interapy) involved psychoeducation and 10 structured writing assignments over 5 weeks, delivered one to one via a website, with seven lots of feedback on the writing assignments from a therapist. Hong and Choi[67] studied weekly group songwriting sessions in care home residents with dementia, but it is not clear how much actual writing was involved. Rickett *et al.*[66] examined the impact of eight weekly 2-hour facilitated poetry-writing workshops. The intervention in Sloan *et al.*[70] involved five 30-minute writing exercises with the first session preceded by some scripted psychoeducation delivered over 1 hour. The facilitation was limited to reading verbatim writing instructions at the start of the session and answering questions at the end.

The duration of the therapy sessions ranged from 45 minutes in Lange *et al.*[69] to 210 minutes in Sloan *et al.*[70] The duration of the intervention varied from five sessions in Sloan *et al.*[70] up to 16 weeks in Hong and Choi.[67]

The outcomes evaluated in the studies with a facilitated intervention are reported in *Table 6*.

Physical symptoms were evaluated in two studies[67,68] using the SCL-90-R (Symptom Checklist-90-Revised) although different subscales. The remaining studies[66,69,70] evaluated different outcomes, although three

TABLE 5 Characteristics of the studies in facilitated TW

First author, year	Country	Study design	LTC	Intervention group	Control group
Golkaramnay 2007[68]	Germany	Matched case–control study	Mental health disorders	Group therapy through internet chat	No intervention[a]
Hong 2011[67]	Korea	RCT	Dementia (Alzheimer's disease/vascular dementia/Parkinson's disease)	Songwriting	Waiting list
Lange 2003[69]	The Netherlands	Non-randomised trial	PTSD	Interapy	Waiting list
Rickett 2011[66]	Australia	Non-randomised trial	Primarily cancer	Poetry writing programme/workshop	Waiting list
Sloan 2012[70]	USA	RCT	PTSD	Written exposure therapy	Waiting list

a Usual care was assumed.

TABLE 6 Outcomes collected in the facilitated writing studies

First author, year	Emotional distress	Physical well-being	Life satisfaction	Cognitive functioning	Intrusions and avoidance	Symptomatic distress/physical symptoms	PTSD symptom severity	Health-care utilisation	Prior trauma exposure
Golkaramnay 2007[68]	OQ-45.2	GBB	FLZ	–	–	SCL-90-R (GSI)	–	LIFE	–
Hong 2011[67]	–	–	–	MMSE-K	–	–	–	–	–
Lange 2003[69]	–	–	–	–	IES	SCL-90	–	–	–
Rickett 2011[66]	K-10	–	–	–	–	–	–	–	–
Sloan 2012[70]	SAM	–	–	–	–	–	CAPS	–	TLEQ[a]

CAPS, Clinician-Administered Post-traumatic Stress Disorder Scale; FLZ, Fragebogen zur Erfassung des Lebenszufriendenheit (Life Satisfaction Scale); GBB, Giessener Beschwerdebogen (Symptomatic Complaints); GSI, Global Severity Index; IES, Impact of Event Scale; K-10, Kessler Psychological Distress Scale; LIFE, Longitudinal Interval Follow-Up Evaluation; MMSE-K, Mini Mental State Examination Korean Version; OQ-45.2, Outcome Questionnaire; SAM, Self-Assessment Manikin; SCL-90, Symptom Checklist-90; SCL-90-R, Symptom checklist-90-Revised; TLEQ, Trauma Life Experience Questionnaire.

a In Sloan *et al.*,[70] TLEQ was measured at baseline as a measure of trauma exposure.

A description of all acronyms is listed in *Appendix 5*, *Table 106*.

studies assessed aspects of the participant's emotional distress using different instruments [Kessler Psychological Distress Scale (K-10), Self-Assessment Manikin (SAM) and Outcome Questionnaire (OQ-45.2)] with different scales and scoring systems.

Quality of the included studies

A summary of the quality of the studies of facilitated TW is shown in *Figures 4* and *5*.

Golkaramnay *et al.*[68] was a matched case–control study; therefore, without allocation concealment (as it was not an RCT, it is not included in the risk-of-bias table). Participants and personnel were not blinded to the intervention performance. Blinding of the outcome assessment was unclear. The information related to the participation rates was unclear, thus the study was likely to introduce attrition bias. Similarity of groups at baseline was unclear. Selection was adequate, as the case definition and comparators were representative and comparable controls were selected from hospital records.

Two studies had allocation concealment. Hong and Choi[67] may have introduced selection bias given the sequence generation was not concealed, whereas in Sloan *et al.*[70] randomisation was computerised and with allocation concealment. Selection bias was unclear in the remaining two studies. Participants and/or personnel masking was not performed in Hong and Choi,[67] as opposed to Lange *et al.*,[69] in which masking was maintained at the intervention performance level. In the remaining studies, the information related to blinding was unclear. Rickett *et al.*[66] was the only study with a high risk of attrition bias. However, reporting bias was absent in all studies[66,68–70] but Hong and Choi,[67] in which it was assessed as unclear.

Numerical results

The numerical results reported in each of the five studies[66–70] are summarised in *Table 7*.

The follow-up assessment ranged from 5 weeks in Lange *et al.*[69] to 52 weeks in Golkaramnay *et al.*[92] In Sloan *et al.*,[70] data are available to only 18 weeks. Total sample sizes varied on each of the outcomes measured in Golkaramnay *et al.*,[68] in which initial total sample sizes were of 228 participants with a dropout rate of 10–15%. The remaining trials used intention-to-treat (ITT) analyses. All of the studies[66–69] reported final mean scores together with corresponding SDs, except Sloan *et al.*,[70] in which SEs were reported in a graph. All studies[66–70] reported improvement in favour of the intervention group across all

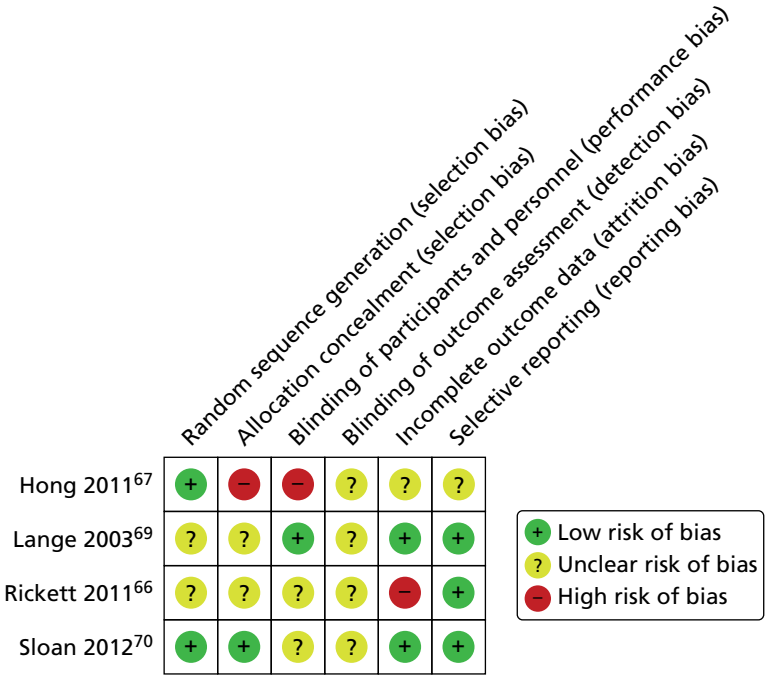

FIGURE 4 Risk-of-bias summary in the studies of facilitated TW.

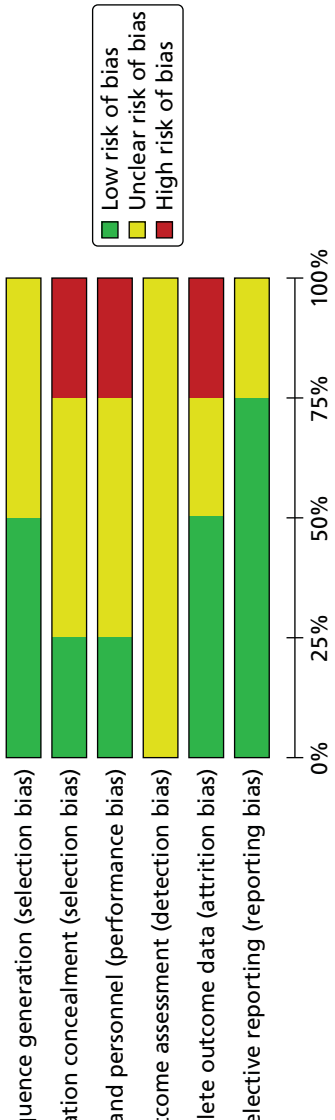

FIGURE 5 Risk-of-bias graph in the studies of facilitated TW.

TABLE 7 Numerical results in the facilitated TW studies

First author, year	Outcome measures	Follow-up[a] (weeks)	Facilitated intervention group			Control group			Author's reported statistical significance (group-by-time interaction)
			n total[b]	Final mean score[a]	SD[a]	*n* total[b]	Final mean score[a]	SD[a]	
Golkaramnay 2007[68]	SCL-90-R	52	97	0.68	0.51	104	0.86	0.68	SS
	OQ-45.2	52	97	56.12	23.35	104	65.83	27.96	SS
	GBB	52	97	19.60	13.90	97	24.68	14.82	SS
	n of patients accessing psychotherapeutic care	52	97	53.60%	NA	94	62.80%	NA	NS
	n of patients who received medication	52	97	55.90%	NA	94	60.40%	NA	NS
Hong 2011[67]	MMSE-K	Just after writing	15	18.40	3.00	15	14.13	2.95	SS
Lange 2003[69]	IES-I	Just after writing	69	11.12	9.27	32	21.97	8.60	SS
	IES-I	6	57	10.46	9.42	32	NR[c]	NR[c]	NA
	IES-Av	Just after writing	69	6.17	7.14	32	17.28	8.29	NS
	IES-Av	6	57	5.70	7.51	32	NR[c]	NR[c]	NA
	SCL-90-D	Just after writing	69	26.42	10.33	32	37.25	9.67	SS
	SCL-90-D	6	57	25.70	12.28	32	NR[c]	NR[c]	NA
	SCL-90-A	Just after writing	69	15.32	5.65	32	20.41	7.38	SS
	SCL-90-A	6	57	14.84	7.33	32	NR[c]	NR[c]	NA
	SCL-90-S	Just after writing	69	17.52	6.34	32	22.88	7.74	SS
	SCL-90-S	6	57	16.34	7.02	32	NR[c]	NR[c]	NA
	SCL-90-SI pb	Just after writing	69	5.80	2.96	32	5.50	2.40	SS
	SCL-90-SI pb	6	57	5.18	2.79	32	NR[c]	NR[c]	NA

continued

TABLE 7 Numerical results in the facilitated TW studies (*continued*)

First author, year	Outcome measures	Follow-up[a] (weeks)	Facilitated intervention group			Control group			Author's reported statistical significance (group-by-time interaction)
			n total[b]	Final mean score[a]	SD[a]	*n* total[b]	Final mean score[a]	SD[a]	
Rickett 2011[66]	K-10	Just after writing	14	4.30	0.62	14	3.90	0.77	SS
Sloan 2012[70]	SAM	6	22	NR[d]	NR[d]	24	NR[d]	NR[d]	NA
	SAM	18	22	NR[d]	NR[d]	24	NR[d]	NR[d]	NA
	SAM	30	22	NR[d]	NR[d]	24	NR[d]	NR[d]	NA
	CAPS	6	22	19.30	22.23	24	73.68	35.43	SS
	CAPS	18	22	10.29	17.54	24	57.41	57.43	SS
	CAPS	30	22	10.46	17.54	24	No follow-up at week 30 in control group		NA

CAPS, Clinician-Administered Post-traumatic Stress Disorder Scale; GBB, Giessener Beschwerdebogen (Symptomatic Complaints); IES, Impact of Event Scale; IES-Av, intrusion subscale of the IES; IES-I, avoidance subscale of the IES; ITT, intention to treat; MMSE-K, Mini Mental State Examination Korean Version; NA, not applicable; NR, not reported; NS, not statistically significant; PP, per protocol; SAM, Self-Assessment Manikin; SCL-90-A, Symptom Checklist-90, anxiety subscale; SCL-90-D, Symptom checklist-90, depression subscale; SCL-90-S, Symptom Checklist-90 somatisation subscale; SCL-90-SI pb, Symptom Checklist-90 sleeping problems subscale; SS, statistically significant ($p < 0.05$).

a Unless otherwise specified.

b Sample size analysed (ITT or PP).

c In Lange *et al.*,[69] IES and SCL-90, were not reported at 6 weeks for the control group, as they were waiting-list controls and undergoing treatment by 6 weeks.

d In Sloan *et al.*,[70] SAM was not measured at follow-up, as it was measured just after each writing session within the intervention group to see immediate impact on arousal.

A description of all acronyms is listed in *Appendix 5*, *Table 106*.

outcomes and follow-ups (except on health-care use outcomes in Golkaramnay *et al.*[68]). It must be noted that three of the studies[66,67,70] were very small. None of the studies evaluating facilitated TW interventions could be meta-analysed owing to lack of consistency in measurement and heterogeneity in interventions and participants.

Unfacilitated emotional writing by International Classification of Diseases, *Tenth Edition code*

B24: human immunodeficiency virus

Overview

There were six studies[50,55,56,71–73] evaluating unfacilitated EW in patients with HIV. A summary of main characteristics is presented in *Table 8*. All participants were diagnosed with HIV and were receiving active treatment at the time of the study. Some participants in Ironson *et al.*[71] also had PTSD ($n = 85$ men, $n = 47$ women).

Four studies were conducted in the USA,[50,71–73] with Kraaij *et al.*[55] and Petrie *et al.*[56] conducted in the Netherlands and New Zealand, respectively. All studies[50,56,71–73] except Kraaij *et al.*[55] had two groups and evaluated one EW intervention compared with one control. Kraaij *et al.*[55] also compared EW with a cognitive–behavioural self-help programme but this is not considered further here. Mann[72] asked participants to write about a positive future with their HIV, in which they had to take only one tablet per day, and the remaining studies all explicitly involved standard EW writing. The studies by Abel *et al.*[50] and Kraaij *et al.*[55] used a disease-focus topic in the intervention arm, and the latter study was web based. The remaining studies[56,71–73] used self-selected worst trauma for participants to write about. The length of the interventions varied across studies. In the studies by Abel *et al.*,[50] Petrie *et al.*[56] and Ironson *et al.*,[71] EW was conducted over 3 or 4 consecutive days, whereas in the remaining studies[55,72,73] the writing exercises were distributed over 4 weeks (once or twice a week). Participants in the studies by Kraaij *et al.*,[55] Petrie *et al.*[56] and Wagner *et al.*[73] used computers or tablets to write, as opposed to the other studies in which EW was handwritten. Participants in the studies by Abel *et al.*,[50] Mann[72] and Wagner *et al.*[73] were financially compensated for participation in the study.

The outcomes evaluated across the HIV studies of unfacilitated EW are reported in *Table 9*.

TABLE 8 Characteristics of the unfacilitated EW studies in HIV

First author, year	Study design	Intervention group	Control group
Abel 2004[50]	RCT	Unfacilitated EW	Factual writing
Ironson 2013[71]	RCT	Unfacilitated EW	Factual writing
Kraaij 2010[55]	RCT	Computerised, structured, unfacilitated EW	Waiting list
Mann 2001[72]	RCT	Unfacilitated EW (positive writing)	Non-writing
Petrie 2004[56]	RCT	Unfacilitated EW	Time-management writing
Wagner 2010[73]	RCT	Unfacilitated EW	Factual and time-management writing

TABLE 9 Outcomes collected by the unfacilitated EW studies in HIV

First author, year	HIV-related physical symptoms	CD4+ count	VL	Psychosocial distress/ perceived stress	Depression	Affects (mood states)	Optimism	Coherence	Stigma	QoL	Adherence and side effects	Resource use
Abel 2004[50]	–	–	–	–	CES-D	–	–	–	Stigma Scale and Disclosure Scale	SF-36	–	–
Ironson 2013[71]	Symptom checklist	Flow cytometry	Quantitative reverse-transcriptase PCR	PTSDTOT[a]	HAM-D	–	–	–	–	–	–	–
Kraaij 2010[55]	–	–	–	–	HADS-D	–	–	–	–	–	–	–
Mann 2001[72]	–	–	–	–	–	–	LOT	–	–	–	Adherence and side effects due to HIV medication[b]	–
Petrie 2004[56]	Self-rated health status	Flow cytometry	Quantitative reverse-transcriptase PCR	PSS[a]	–	–	–	–	–	–	–	–
Wagner 2010[73]	–	–	–	PSS[a]	–	PANAS-X(a)	HIV-OS	SOC	–	MOS-HIV	–	–

CD4+ count, cluster of differentiation 4-positive lymphocyte cell count; CES-D, Centre for Epidemiological Studies Depression Scale; HADS-D, Hospital Anxiety and Depression Scale, depressoin subscale; HAM-D, Hamilton Depression Scale; HIV-OS, HIV-Specific Optimism Scale; LOT, Life Orientation Test; MOS-HIV, Medical Outcomes Study HIV Health Survey; PANAS-X(a), Positive and Negative Affect Schedule; PCR, polymerase chain reaction; PSS, Perceived Stress Scale; PTSDTOT, The Davidson PTSD scale; SF-36, Short Form questionnaire-36 items; SOC, Sense of Coherence Scale; VL, viral load.

a Instruments (PTSDTOT and PSS) measured very different aspects of stress.

b In Mann,[72] adherence to medication was reported; however, it was not collected, as it is not related to the TW and therefore not of interest. Similarly, side effects to the medication were also reported although not of direct interest in current review.

The shaded cells show the outcomes considered in the meta-analysis.

A description of all acronyms is listed in *Appendix 5*, *Table 106*.

Psychological outcomes (e.g. depression or mood) were the most commonly evaluated outcomes, together with physiological (e.g. HIV symptoms) and biological outcomes [e.g. viral load (VL) and cluster of differentiation antigen 4-positive lymphocyte cell count (CD4+ count)].

Quality assessment

A summary of the quality of the studies in HIV is shown in *Figures 6* and *7*. Two studies[56,73] reported methods of randomisation. Allocation concealment was reported in only one study,[56] and blinding was preserved in one other study.[50] The methods used were scarcely reported in almost all of the studies.

Numerical results

The numerical results reported in the HIV studies are summarised in *Table 10*. Follow-up assessments ranged from 2 weeks in Petrie *et al.*[56] to 52 weeks in Ironson *et al.*[71] Total sample sizes ranged from 11 participants in Abel *et al.*[50] to 212 participants in Ironson *et al.*[71] Petrie *et al.*[56] reported medians and SEs rather than means and SDs as in the other studies. Statistical significance of the follow-up results differences were not reported in the studies by Abel *et al.*,[50] Ironson *et al.*,[71] Mann,[72] Petrie *et al.*[56] or Wagner *et al.*[73] The group-by-time interaction analysis in the Ironson *et al.*[71] and Kraaij *et al.*[55] studies was non-significant for the following outcomes: biomarkers, such as VL at long term only and CD4+ count at short, medium and long term, as well as depression [Hamilton Depression Scale (HAM-D)] or social distress [The Davidson PTSD scale (PTSDTOT)]. However, in the Petrie *et al.*[56] study, the CD4+ count increased significantly in the EW group compared with control subjects when assessed at 26 weeks only.

In the Mann study,[72] the writing intervention was stated as a *promising technique* to increase medication adherence and decrease symptoms of distress in pessimistic individuals. However, these differences between the two groups at follow-up were not further reported. The studies by Petrie *et al.*[56] and Wagner *et al.*[73] did not report any association or interaction between groups in the outcomes evaluated [i.e. VL in Petrie *et al.*;[56] Positive and Negative Affect Schedule, positive subscale (PANAS-PA), Positive and Negative Affect Schedule, negative subscale (PANAS-NA), Perceived Stress Scale (PSS), HIV-Specific Optimism Scale (HIV-OS), Sense of Coherence Scale (SOC) and Short Form questionnaire-36 items (SF-36)

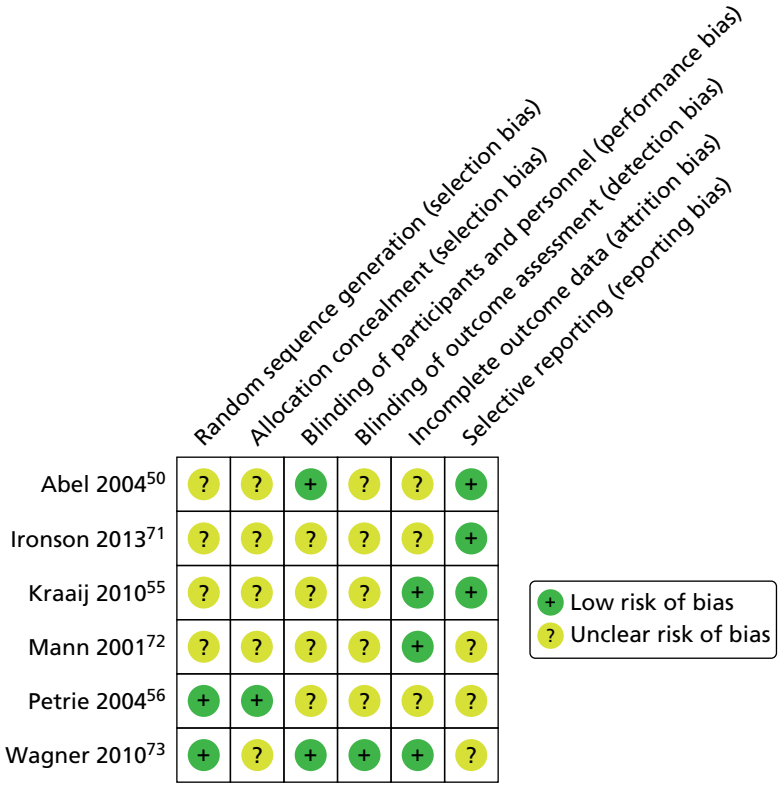

FIGURE 6 Risk-of-bias summary in the HIV studies.

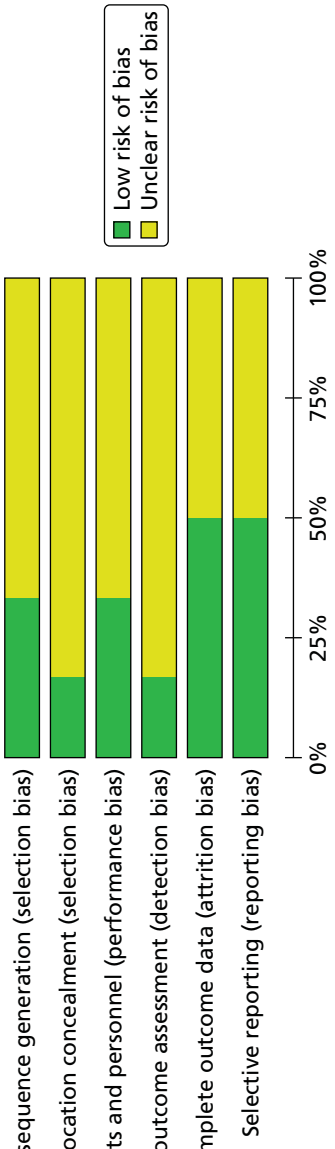

FIGURE 7 Risk-of-bias graph in the HIV studies.

TABLE 10 Numerical results in the unfacilitated EW studies in HIV

First author, year	Outcome measures	Follow-up (weeks)	Intervention group			Control group			Author's reported statistical significance (group-by-time interaction)
			n total[a]	Final mean score[b]	SD[b]	*n* total[a]	Final mean score[b]	SD[b]	
Abel 2004[50]	Stigma Scale	4.5	5	22.70	5.90	6	23.80	7.90	NR
	CES-D	4.5	5	22.00	6.10	6	20.20	9.70	NR
	SF-36 PCS	4.5	5	525.00	141.10	6	610.00	277.00	NR
	SF-36 MCS	4.5	5	343.00	50.00	6	356.00	128.40	NR
Ironson 2013[71]	CD4+ count	4	101	421.00	269.00	107	466.00	249.00	NS
	CD4+ count	26	95	419.00	254.00	92	464.00	223.00	NS
	CD4+ count	52	78	429.00	251.00	87	491.00	302.00	NS
	VL	4	102	38,100.00	100.17	105	24,166.00	79,005.00	NS
	VL	26	96	47,406.00	114,877.00	89	28,743.00	94,105.00	NS
	VL	52	81	56,577.00	142,846.00	87	24,056.00	68,682.00	NS
	HIV S-CL	4	106	0.24	0.43	104	0.25	0.44	NS
	HIV S-CL	26	> 93	0.19	0.40	94	0.27	0.45	NS
	HIV S-CL	52	81	0.22	0.42	88	0.26	0.44	NS
	PTSDTOT	4	104	20.63	23.72	108	23.84	21.93	NS
	PTSDTOT	26	94	17.66	20.13	96	19.83	21.73	NS
	PTSDTOT	52	82	18.08	20.41	91	17.89	22.42	NS
	HAM-D	4	103	8.41	6.26	104	8.99	7.27	NS
	HAM-D	26	95	8.13	6.46	94	8.30	6.60	NS
	HAM-D	52	82	7.54	6.24	89	7.09	5.56	NS

continued

TABLE 10 Numerical results in the unfacilitated EW studies in HIV (*continued*)

First author, year	Outcome measures	Follow-up (weeks)	Intervention group			Control group			Author's reported statistical significance (group-by-time interaction)
			n total[a]	Final mean score[b]	SD[b]	*n* total[a]	Final mean score[b]	SD[b]	
Kraaij 2010[55]	HADS-D	4	16	7.06	4.81	15	7.73	3.88	NS
Mann 2001[72]	LOT	4	20	28.13	0.90	20	27.23	1.10	NR
	Adherence	4	20	4.12	0.31	20	4.82	0.16	NR
	Side effects	4	20	37.7	5.71	20	35.85	4.76	NR
Petrie 2004[56]	VL	2	20	Median: 3.1	0.67	17	Median: 3.36	0.66	NR
	VL	13	20	Median: 3.01	0.63	17	Median: 3.08	1.40	NR
	VL	26	20	Median: 3.03	0.63	17	Median: 3.26	0.66	NS
	CD4+ count	2	20	Median: 495.69	158.0	17	Median: 513.79	74.57	NR
	CD4+ count	13	20	Median: 509.48	161.85	17	Median: 529.31	170.49	NR
	CD4+ count	26	20	Median: 571.55	154.14	17	Median: 533.62	301.79	SS
Wagner 2010[73]	PANAS-NA	4	19	2.81	0.91	18	2.62	0.95	NR
	PANAS-PA	4	19	2.92	1.05	18	3.36	0.60	NR
	PSS	4	19	3.10	0.60	18	2.90	0.60	NR
	HIV-OS	4	19	4.20	1.05	18	3.80	1.16	NR
	SOC	4	19	3.80	1.16	18	4.30	1.08	NR
	MOS-HIV	4	19	32.60	9.20	18	35.50	6.50	NR

CES-D, Centre for Epidemiological Studies Depression Scale; HADS-D, Hospital Anxiety and Depression Scale, depression subscale; HAM-D, Hamilton Depression Scale; HIV-OS, HIV-Specific Optimism Scale; HIV S-CL, HIV Symptom Check List; LOT, Life Orientation Test; MOS-HIV, Medical outcomes study HIV Health Survey; NR, not reported; NS, not statistically significant; PANAS-NA, Positive and Negative Affect Schedule, negative subscale; PANAS-PA, Positive and Negative Affect Schedule, positive subscale; PP, per protocol; PSS, Perceived Stress Scale; PTSDTOT, The Davidson PTSD Scale; SF-36 MCS, Short Form questionnaire-36 items mental composite score; SF-36 PCS, Short Form questionnaire-36 items physical composite score; SOC, Sense of Coherence Scale; SS, statistically significant ($p < 0.05$).

a Sample size analysed (ITT or PP).

b Unless otherwise specified.

The shaded rows show the data included in the meta-analysis.

A description of all acronyms is listed in *Appendix 5*; however, subscale abbreviations are defined here.

in Wagner *et al.*[73]]. In the Ironson *et al.* study,[71] among the women, only the EW was associated with a significant reduction in PTSD symptoms, depression and physical symptoms, and this finding was more pronounced in the group with elevated PTSD symptom scores at baseline. Men, however, reported greater decrease in depression among control subjects than in the EW group.

Meta-analysis

The outcome depression was meta-analysed (*Figure 8*).

Depression at short-term Three studies[50,55,71] used different instruments each [Centre for Epidemiological Studies Depression Scale (CES-D), HAM-D and Hospital Anxiety and Depression Scale, depression subscale (HADS-D)] to measure similar aspects of depression.

- *Clinical differences between studies* In Ironson *et al.*,[71] participants were diagnosed with both HIV falling into a CD4 range of 100–600. Additionally, some were also diagnosed with PTSD. In Abel *et al.*,[50] participants were taking antiretroviral therapy (ART) and reported their last VL < 80,000–100,000 copies/ml. All participants in all three studies were self-reportedly free of major psychiatric problems. There were no substantial clinical differences between the three studies[50,51,55] regarding HIV diagnosis.
- *Follow-up length* All three studies[50,55,71] assessed depression at a short term, that is, at 4 weeks or at 4.5 weeks.
- *Forest plot* A total of 249 participants were meta-analysed (124 in the EW group and 125 in the control group). The SMD was –0.08 [95% confidence interval (CI) –0.33 to 0.17] with a random-effects model and with no significant heterogeneity ($I^2 = 0\%$). The overall analysis suggests that there is no significant difference in depression for the EW group compared with the control group.

C50: breast cancer

Overview

There were eight studies[53,54,74–79] evaluating unfacilitated EW in patients with breast cancer, including one very large study (507 participants) by Jensen-Johansen *et al.*[76] A summary of main characteristics is presented in *Table 11*.

Most of the participants were women with breast cancer at stage 0–III, who were mainly receiving curative radiation therapy, but the patients in Mosher *et al.*[77] had stage IV breast cancer and presented with significant distress. The patients in Jensen-Johansen *et al.*[76] had recently completed treatment with surgery, radiotherapy or chemotherapy. Participants in Craft *et al.*,[74] Gellaitry *et al.*,[75] Hughes[54] and Walker *et al.*[79] included patients with stage I–III breast cancer. Participants were reported to have completed definitive treatment,[74] were receiving the last radiotherapy appointment[75] or were still receiving curative radiotherapy.[54,59] In the remaining studies, participants in Henry *et al.*[53] had stage 0–III breast cancer and had completed radiation, and in Park and Yi[78] they had stage II and III breast cancer and had undergone surgery, radiotherapy and hormone therapy. Participants in Henry[53] were urban and rural women with breast cancer who were still attending radiation oncology clinics, whereas patients in Park and Yi,[78] had been recruited from self-help groups.

Almost all studies were conducted in the USA except for Park and Yi,[78] which was conducted in Korea and published in the Korean language (which was translated into English), and Jensen-Johansen *et al.*,[76] which was conducted in Denmark and published in English.

One study had four groups (two experimental and two control groups) and one other study evaluated three groups (two experimental and one control). The remaining studies evaluated one intervention group each against one control (see *Table 11*).

Study or subgroup	Favours (EW) Mean	SD	Total	Control Mean	SD	Total	Weight	SMD IV, random, 95% CI
Abel 2004[50]	22	6.1	5	20.2	9.7	6	4.4%	0.20 (–0.99 to 1.39)
Ironson 2013[71]	8.41	6.26	103	8.99	7.27	104	83.2%	–0.09 (–0.36 to 0.19)
Kraaij 2010[55]	7.06	4.81	16	7.73	3.88	15	12.4%	–0.15 (–0.85 to 0.56)
Total (95% CI)			**124**			**125**	**100.0%**	**–0.08 (–0.33 to 0.17)**

Heterogeneity: $\tau^2 = 0.00$; $\chi^2 = 0.25$, df = 2 ($p = 0.88$); $I^2 = 0\%$

Test for overall effect: $z = 0.64$ ($p = 0.52$)

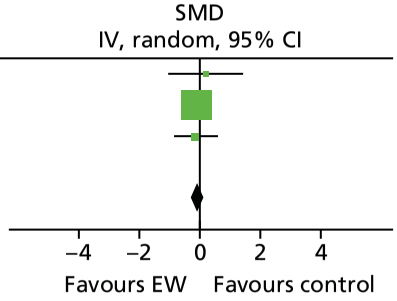

FIGURE 8 Forest plot of depression at short-term follow-up in HIV. df, degrees of freedom; IV, inverse variance.

TABLE 11 Characteristics of the unfacilitated EW studies in breast cancer

First author, year	Study design	Intervention group 1	Intervention group 2	Control group 1	Control group 2
Craft 2013[74]	RCT	Unfacilitated EW[a]	Unfacilitated EW[b]	Factual writing	Non-writing
Gellaitry 2010[75]	RCT	Unfacilitated EW plus positive writing	–	SMC	–
Henry 2010[53]	Case–control	Unfacilitated EW	–	SMC	–
Hughes 2007[54]	RCT	Unfacilitated EW	–	SMC	–
Jensen-Johansen 2013[76]	RCT	Unfacilitated EW	–	Time-management writing	–
Mosher 2012[77]	RCT	Unfacilitated EW	–	Factual writing	–
Park 2012[78]	Controlled cohort	Unfacilitated EW	–	No intervention	–
Walker 1999[79]	RCT	Unfacilitated EW	Unfacilitated EW	–	SMC[c]

SMC, standard medical care.
a Single-episode written emotional expression.
b Three-episode written emotional expression.
c The attentional control received SMC and on their final day of treatment; practitioner and participant met to chat about plans for trips or current events not related to cancer.

In six of the breast cancer studies, only unfacilitated EW was evaluated. Topics across all studies included disease-focused writing exercises. Participants were asked to write about their deepest thoughts and feelings about their cancer and treatment–related emotions during 20–30 minutes over 3/4 days at different intervals. Craft *et al.*[74] assessed two additional types of unfacilitated EW interventions in which topics changed: participants had to write about a self-selected trauma in one group and about facts of treatment and daily events related to breast cancer in the other group. One other study[79] evaluated a modified version of the unfacilitated EW intervention using the same topic but feelings and emotions had to be expressed in a positive way. On the other hand, Gellaitry *et al.*[75] used a different form of EW, combining in 4 days the standard unfacilitated EW (first 2 days) and a positive writing type of EW (the remaining 2 days). Patients were instructed to change the topic throughout the writing sessions starting with an emotional disclosure exercise and cognitive appraisal related to their condition and moving to the benefit finding of it, looking into the future where they wrote about their experience being shared with others. Four studies delivered the intervention on 1,[53] 3[54,79] or 4[74,75] consecutive days. Three other studies delivered three or four sessions at weekly intervals.[76–78] Henry *et al.*[53] used one single session. Four studies[53,54,70,74] used SMC as the control arm, two studies used a non-emotional factual writing,[69,72] one study[71] used a time-management writing as control, and in the remaining two studies the control group either did not write[69] or did not receive an intervention[73] at all. Patients were financially compensated in Mosher *et al.*[77] and Henry *et al.*[53]

The outcomes evaluated in the breast cancer studies are reported in *Table 12*. QoL was assessed in four studies;[54,74,75,77] two studies[74,75] used the same instrument [Functional Assessment of Cancer Therapy, Breast Cancer Version (FACT-B)], which contains 10 specific breast cancer items (in addition to the 27 general items) addressing physical and psychological concerns related to breast cancer. The study by Mosher *et al.*[77] used the meaning/peace subscale of FACIT [Functional Assessment of Chronic Illness Therapy meaning/peace subscale (FACI-Sp)], an instrument tailored to measure the spiritual well-being of patients. Six studies[53,54,75–77,79] evaluated affect (mood states). Two studies[77,78] assessed anxiety with the same instrument (HADS). Depression was evaluated in four studies[53,76–78] using three different instruments each [CES-D, Beck Depression Inventory-Short Form (BDI-SF) and HADS-D].

TABLE 12 Outcomes collected by the unfacilitated EW studies in breast cancer

First author, year	Physical health/ symptoms	Perception of disclosure	General affect (mood states)	Positive mood	Negative mood	Social support	Intrusions/ avoidance	Depression	Anxiety	Sleep disturbance/ fatigue	QoL	Adverse events	Resource use
Craft 2013[74]	–	–	–	–	–	–	–	–	–	–	FACT-B	–	–
Gellaitry 2010[75]	–	–	POMS	–	–	SOS	–	–	–	–	FACT-B	✓	–
Henry 2010[53]	Survey – 18 physical symptoms items	–	*POMS*	–	–	–	–	CES-D	–	–	–	–	–
Hughes 2007[54]	–	*DIS*	–	PANAS-PA	PANAS-NA	–	IES	–	–	–	SIP	–	–
Jensen-Johansen 2013[76]	IES	–	–	PPMS	POMS-NA[a]	–	–	BDI-SF	–	–	–	–	–
Mosher 2012[77]	–	–	DT	–	–	–	–	CES-D	HADS-A	PSQI, FACIT-F	FACIT-Sp (and demoralisation)	–	–
Park 2012[78]	PILL, MDASI	–	–	–	–	–	–	HADS-D	HADS-A	–	–	–	–
Walker 1999[79]	–	–	–	PANAS-PA	PANAS-n	–	IES	–	–	–	–	Side effect severity checklist[a]	–

BDI-SF, Beck Depression Inventory-Short Form; DIS, Perception of Disclosure Scale; DT, Distress Thermometer; FACIT-F, Functional Assessment of Chronic Illness Therapy, fatigue subscale; FACIT-Sp, Functional Assessment of Chronic Illness Therapy, meaning/peace subscale; FACT-B, Functional Assessment of Cancer Therapy, Breast Cancer Version; HADS-A, Hospital Anxiety and Depression Scale, anxiety subscale; IES, Impact of Event Scale; MDASI, MD Anderson Symptom Inventory; PANAS-n, Positive and Negative Affect Schedule, negative subscale; PILL, Pennebaker Inventory of Limbic Languidness; POMS, Profile of Mood States; POMS-NA, negative subscale of POMS; PPMS, Passive Positive Mood Scale; PSQI, Pittsburgh Sleep Quality Index; SIP, Sickness Impact Profile; SOS, Significant Others Scale.

a Side effects were related to cancer medication.

The shaded cells show the outcomes considered in the meta-analysis. Italic text shows outcomes for which no data were reported.

A description of all acronyms is listed in *Appendix 5*, *Table 106*.

Quality assessment

A summary of the quality of the studies in breast cancer is shown in *Figures 9* and *10*.

Almost all studies, except that of Park and Yi,[78] were reported as RCTs. However, in the Walker *et al.* study,[79] the method of randomisation was not provided. In the Craft *et al.* study,[74] authors reported that randomisation was performed using sequential numbering, which remained unclear as a method of randomisation. The Hughes study[54] was truly randomised, but allocation of the sequence generation was not concealed and there was no blinding. Among the remaining studies, almost all did not report on the allocation and blinding methods, except Jensen-Johansen *et al.*,[76] in which allocation was concealed, and blinding was conducted at both the performance and outcome assessment stages.

One study[74] was more likely to have introduced attrition bias. Two other studies[54,75] reported selectively on specific outcomes and the Henry *et al.* study[53] reported outcomes but with insufficient detail for the data to be included in the meta-analysis. No measure of variability could be derived from the graphs.

Numerical results

The numerical results reported in the breast cancer studies are summarised in *Table 13*.

The broadest range of outcomes measures were collected in Hughes[54] on several occasions between 1 and 52 weeks' follow-up. Almost all studies followed the patients for between 6 and 12 months, except those of Park and Yi[78] and Mosher *et al.*,[77] for which follow-up after the writing intervention was performed at 1 and 2 months, respectively. The total sample sizes ranged from 56 in Craft *et al.*[74] to 435 participants in Jensen-Johansen *et al.*[76]

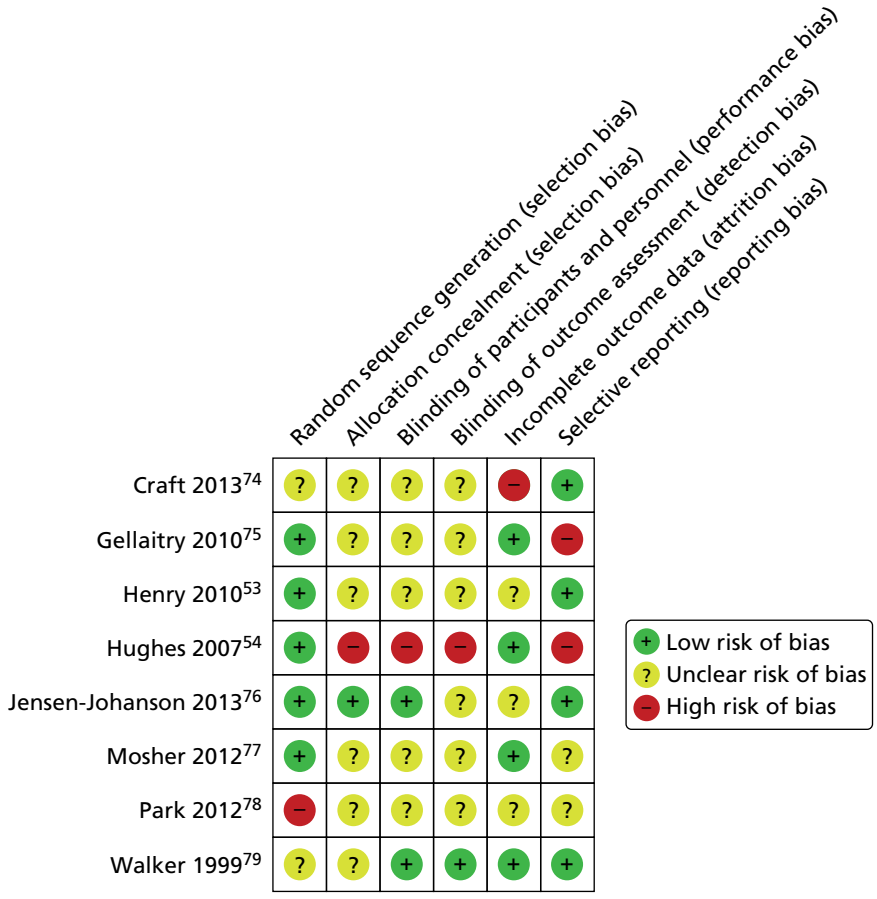

FIGURE 9 Risk-of-bias summary in the breast cancer studies.

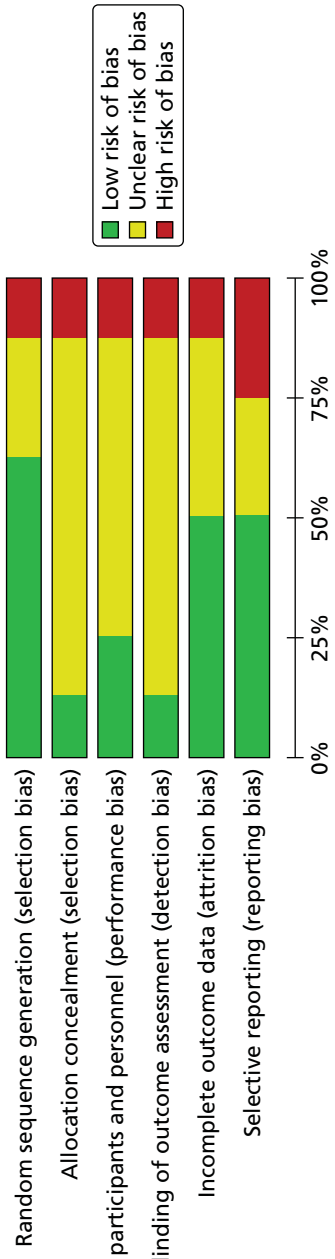

FIGURE 10 Risk-of-bias graph in the breast cancer studies.

TABLE 13 Numerical results in the unfacilitated EW studies in breast cancer

			Intervention group 1			Intervention group 2			Control group 1			Control group 2			Author's reported statistical significance (group-by-time interaction)
First author, year	Outcome measures	Follow-up (weeks)	*n* total[a]	Final mean score	SD[b]	*n* total[a]	Final mean score	SD[b]	*n* total[a]	Final mean score	SD[b]	*n* total[a]	Final mean score	SD[b]	
Craft 2013[74]	FACT-B	4	26	114.83	10.48	19	110.75	15.17	22	119.62	13.52	30	104.38	21.31	SS
		26	26	112.60	9.12	19	106.63	12.08	22	112.04	10.31	30	101.69	24.70	NS
Gellaitry 2010[75]	POMS	4	38	26.54	32.99	–	–	–	–	–	–	42	32.36	43.06	NR
		13	38	25.58	30.42	–	–	–	–	–	–	42	28.17	42.50	NR
		26	38	20.63	32.28	–	–	–	–	–	–	42	24.21	36.97	NS
	SOS[c]	4	38	11.40	1.56	–	–	–	–	–	–	42	11.34	1.78	NR
		13	38	11.28	1.55	–	–	–	–	–	–	42	11.07	2.24	NR
		26	38	11.36	1.49	–	–	–	–	–	–	42	11.01	2.45	SS[d]
	FACT-B	4	38	109.20	17.51	–	–	–	–	–	–	42	105.70	24.37	NR
		13	38	106.94	19.31	–	–	–	–	–	–	42	107.00	23.82	NR
		26	38	109.56	19.81	–	–	–	–	–	–	42	108.03	21.36	NS
	Adverse events	Just after writing	38	NR	NR	–	–	–	–	–	–	42	NR	NR	NR
Henry 2010[53]	Survey – 18 physical symptoms items	13	40	1.85	NR	–	–	–	–	–	–	40	2.15	NR	NS
		39	40	2.05	NR	–	–	–	–	–	–	40	2.09	NR	NS
	CES-D	13	40	1.31	NR	–	–	–	–	–	–	40	1.55	NR	NS
		39	40	1.40	NR	–	–	–	–	–	–	40	1.47	NR	NS
	POMS	13	40	NR	NR	–	–	–	–	–	–	40	NR	NR	SS
		39	40	NR	NR	–	–	–	–	–	–	40	NR	NR	NS

First author, year	Outcome measures	Follow-up (weeks)	Intervention group 1			Intervention group 2			Control group 1			Control group 2			Author's reported statistical significance (group-by-time interaction)
			n total[a]	Final mean score	SD[b]	*n* total[a]	Final mean score	SD[b]	*n* total[a]	Final mean score	SD[b]	*n* total[a]	Final mean score	SD[b]	
Hughes 2007[54]	IES-I	1	89	10.57	8.36	–	–	–	–	–	–	91	9.69	8.71	NA
		17	89	9.71	8.54	–	–	–	–	–	–	91	9.26	9.14	NA
		26	89	10.52	9.15	–	–	–	–	–	–	91	9.07	8.67	NA
		52	89	7.53	7.24	–	–	–	–	–	–	91	7.39	6.88	NA
	IES-Av	1	89	10.77	9.64	–	–	–	–	–	–	91	11.01	10.92	NA
		17	89	11.45	9.60	–	–	–	–	–	–	91	10.62	10.35	NA
		26	89	10.37	10.06	–	–	–	–	–	–	91	10.84	10.29	NA
		52	89	7.94	8.61	–	–	–	–	–	–	91	7.75	9.29	NA
	IES-home management	1	89	46.96	36.58	–	–	–	–	–	–	91	48.33	36.28	NA
		17	89	40.01	37.79	–	–	–	–	–	–	91	41.25	34.84	NA
		26	89	34.74	37.87	–	–	–	–	–	–	91	33.95	36.79	NA
		52	89	22.62	33.75	–	–	–	–	–	–	91	24.89	34.20	NA
	SIP-m	1	89	23.27	32.94	–	–	–	–	–	–	91	30.92	35.39	NA
		17	89	21.28	33.36	–	–	–	–	–	–	91	18.87	29.67	NA
		26	89	12.71	27.33	–	–	–	–	–	–	91	13.29	28.73	NA
		52	89	10.21	23.11	–	–	–	–	–	–	91	9.75	25.31	NA
	SIP-r&p-t	1	89	41.02	32.18	–	–	–	–	–	–	91	42.50	33.51	NA
		17	89	36.64	33.19	–	–	–	–	–	–	91	35.90	34.29	NA
		26	89	31.89	32.22	–	–	–	–	–	–	91	28.32	32.53	NA
		52	89	20.99	29.56	–	–	–	–	–	–	91	19.86	29.33	NA

continued

TABLE 13 Numerical results in the unfacilitated EW studies in breast cancer (*continued*)

First author, year	Outcome measures	Follow-up (weeks)	Intervention group 1			Intervention group 2			Control group 1			Control group 2			Author's reported statistical significance (group-by-time interaction)
			n total[a]	Final mean score	SD[b]	*n* total[a]	Final mean score	SD[b]	*n* total[a]	Final mean score	SD[b]	*n* total[a]	Final mean score	SD[b]	
	PANAS-PA	1	89	34.92	7.62	–	–	–	–	–	–	91	31.30	8.65	NA
		17	89	34.23	8.04	–	–	–	–	–	–	91	32.23	8.43	NA
		26	89	36.26	7.61	–	–	–	–	–	–	91	32.85	8.75	NA
		52	89	38.09	8.84	–	–	–	–	–	–	91	34.75	9.43	NA
	PANAS-NA	1	89	16.41	6.84	–	–	–	–	–	–	91	17.67	7.48	NA
	PANAS-NA	17	89	16.48	6.75	–	–	–	–	–	–	91	17.11	7.50	NA
		26	89	16.77	7.54	–	–	–	–	–	–	91	16.72	6.82	NA
		52	89	14.31	5.36	–	–	–	–	–	–	91	16.01	5.93	NA
	DIS	NR	NR	NR	NR	–	–	–	–	–	–	NR	NR	NR	NR
Jensen-Johansen 2013[76]	IES-I	13	199	7.50	7.40	–	–	–	–	–	–	222	8.00	7.60	NS
	IES-I	39	207	7.50	7.40	–	–	–	–	–	–	223	7.30	7.70	NS
	IES-Av	13	199	8.20	7.90	–	–	–	–	–	–	222	9.70	8.80	NS
	IES-Av	39	207	8.10	8.00	–	–	–	–	–	–	223	8.80	8.70	NS
	IES-T	13	199	15.60	13.60	–	–	–	–	–	–	222	17.70	14.80	NS
		39	207	15.60	13.70	–	–	–	–	–	–	223	16.10	14.50	NS
	BDI-SF	13	197	4.00	4.10	–	–	–	–	–	–	221	4.50	4.40	NS
		39	209	4.20	4.30	–	–	–	–	–	–	226	4.50	4.60	NS
	POMS-n	13	198	4.50	18.50	–	–	–	–	–	–	215	5.30	20.80	NS
		39	206	4.60	18.80	–	–	–	–	–	–	225	6.70	22.10	NS
	PPMS	13	198	19.40	7.00	–	–	–	–	–	–	215	19.80	7.00	NS
		39	206	19.60	6.80	–	–	–	–	–	–	225	19.50	6.90	NS

First author, year	Outcome measures	Follow-up (weeks)	Intervention group 1			Intervention group 2			Control group 1			Control group 2			Author's reported statistical significance (group-by-time interaction)
			n total[a]	Final mean score	SD[b]	*n* total[a]	Final mean score	SD[b]	*n* total[a]	Final mean score	SD[b]	*n* total[a]	Final mean score	SD[b]	
Mosher 2012[77]	PSQI	8	44	8.42	2.59	–	–	–	–	–	–	42	7.83	2.53	NS
	FACIT-F	8	44	30.38	7.76	–	–	–	–	–	–	42	32.58	7.78	NS
	HADS-A	8	44	7.15	3.18	–	–	–	–	–	–	42	7.87	3.18	NS
	CES-D	8	44	17.99	8.95	–	–	–	–	–	–	42	17.87	8.94	NS
	DT	8	44	4.53	2.39	–	–	–	–	–	–	42	4.37	2.4	NS
	FACIT-Sp	8	44	21.60	3.91	–	–	–	–	–	–	42	22.58	3.89	NS
	FACIT-d	8	44	21.07	10.94	–	–	–	–	–	–	42	19.50	10.89	NS
Park 2012[78]	PILL	Post-test	29	50.62	34.29	–	–	–	–	–	–	29	48.17	25.74	NR
		4	29	45.41	28.18	–	–	–	–	–	–	29	52.17	28.51	SS
	MDASI	Post-test	29	47.72	35.56	–	–	–	–	–	–	29	51.69	36.57	NR
		4	29	41.86	34.65	–	–	–	–	–	–	29	53.03	35.78	NS
	HADS-A	Post-test	29	6.17	4.21	–	–	–	–	–	–	29	5.79	3.63	NR
		4	29	5.62	4.37	–	–	–	–	–	–	29	5.90	3.80	NS
	HADS-D	Post-test	29	4.93	3.40	–	–	–	–	–	–	29	4.48	3.33	NR
		4	29	4.52	3.45	–	–	–	–	–	–	29	4.48	3.70	NS
	C-QoL	Post-test	29	54.21	8.72	–	–	–	–	–	–	29	55.48	12.41	NR
		4	29	57.07	10.31	–	–	–	–	–	–	29	55.76	12.94	SS

continued

TABLE 13 Numerical results in the unfacilitated EW studies in breast cancer (*continued*)

First author, year	Outcome measures	Follow-up (weeks)	Intervention group 1			Intervention group 2			Control group 1			Control group 2			Author's reported statistical significance (group-by-time interaction)
			n total[a]	Final mean score	SD[b]	*n* total[a]	Final mean score	SD[b]	*n* total[a]	Final mean score	SD[b]	*n* total[a]	Final mean score	SD[b]	
Walker 1999[79]	PANAS-NA	4–6	11	16.70	5.31	14	15.50	4.86	–	–	–	14	13.90	5.24	NS
		16	11	17.90	5.98	14	16.90	5.61	–	–	–	14	14.10	5.98	NS
		28	11	17.10	5.98	14	17.10	5.98	–	–	–	14	14.10	6.36	NS
	PANAS-PA	4–6	11	38.70	6.65	14	39.40	6.36	–	–	–	14	36.60	6.73	NS
		16	11	39.40	5.98	14	36.10	5.61	–	–	–	14	36.40	6.36	NS
		28	11	39.10	6.31	14	36.40	5.98	–	–	–	14	34.80	6.73	NS
	IES-Av	4–6	11	10.90	7.97	14	8.60	7.85	–	–	–	14	7.70	8.23	NS
		16	11	11.90	8.63	14	8.70	8.60	–	–	–	14	8.80	8.98	NS
		28	11	10.70	9.30	14	9.50	8.98	–	–	–	14	9.30	9.35	NS
	IES-I	4–6	11	8.10	6.31	14	8.40	5.98	–	–	–	14	7.30	6.36	NS
		16	11	10.30	6.64	14	7.30	6.36	–	–	–	14	7.60	7.11	NS
		28	11	10.50	7.64	14	8.50	7.11	–	–	–	14	6.00	7.48	NS

C-QoL, Cancer Quality of Life; DIS, Perception of Disclosure Scale; DT, Distress Thermometer; FACIT-d, Functional Assessment of Chronic Illness Therapy, demoralisation subscale; FACIT-F, Functional Assessment of Chronic Illness Therapy, fatigue subscale; FACIT-Sp, Functional Assessment of Chronic Illness Therapy, meaning/peace subscale; HADS-A, Hospital Anxiety and Depression Scale, anxiety subscale; IES, Impact of Event Scale; IES-Av, avoidance subscale of the IES; IES-I, intrusion subscale of the IES; IES-T, total score of the IES; MDASI, MD Anderson Symptom Inventory; NA, not applicable; NR, not reported; NS, not statistically significant ($p > 0.05$); PILL, Perrebaker Inventory of Limbic Langvidness; POMS, Profile of Mood States; POMS-n, negative subscale of POMS; PPMS, Passive Positive Mood Scale; PSQI, Pittsburgh Sleep Quality Index; SIP-m, Sickness Impact Profile mobility subscale; SIP-r&p-t, Sickness Impact Profile recreation and pastimes subscale; SOS, Significant Others Scale; SS, statistically significant ($p < 0.05$).

a Total sample size analysed.

b Unless otherwise specified.

c SOS refers to actual emotional support data.

d Positive correlation between discrepancy and measures of depression/dejection and anger/hostility ($r = 0.27$; $p < 0.05$), but significant negative correlation with the social and family well-being subscale of the FACT-B ($r = 0.26$; $p > 0.05$).

The shaded cells show the data included in the meta-analysis.

A description of all acronyms is listed in *Appendix 5*, *Table 106*.

Overall, there were significant improvements at short-term follow-up mainly (from 4 to 13 weeks) in favour of the EW groups compared with control subjects regarding QoL [Functional Assessment of Cancer Therapy, Breast Cancer Version (FACT-B) at 4 weeks only, Cancer Quality of Life (C-QoL)], physical symptoms [Pennebaker Inventory of Limbic Languidness (PILL)] particularly regarding nervousness, distress, and unhappiness and mood [Profile of Mood States (POMS) at 13 weeks]. No significant group-by-time interaction differences were reported in the following outcomes when evaluated at both shorter and longer follow-ups (up to 39 weeks): QoL, as measured by FACIT-sp at 8 weeks, FACT-B at 26 weeks in both Craft *et al.*[74] and Gellaitry *et al.*[75], mood (POMS at 13 and 39 weeks), immediate mood [PANAS-PA, PANAS-NA and Passive Positive Mood Scale (PPMS) at 11 and 39 weeks, respectively], depression (HADS-D, CES-D, BDI-SF at 4, 8, 13 and 39 weeks), sleep quality [Pittsburgh Sleep Quality Index (PSQI) at 8 weeks], fatigue [Functional Assessment of Chronic Illness Therapy, fatigue subscale (FACIT-F) at 8 weeks], anxiety [Hospital Anxiety and Depression Scale, anxiety subscale (HADS-A) at 4 and 8 weeks], physical symptoms including distress [Distress Thermometer (DT)] or measures of intrusions and avoidance [intrusion subscale of the Impact of Event Scale (IES; IES-I), avoidance subscale of the IES (IES-Av)]. The studies by Park and Yi[78] and Mosher *et al.*[77] evaluated outcomes at shorter follow-ups (4 and 8 weeks, respectively) than in the remaining studies. For instance, Mosher *et al.*[77] evaluated the impact of the EW intervention on QoL, depression and general well-being at 8 weeks only.

In Mosher *et al.*,[77] participants in the intervention group reported greater use of mental health services during the study period than did those in the control group (24/44 vs. 11/42, respectively), and differences between groups were statistically significant [odds ratio (OR) = 3.40, 95% CI 1.05 to 11.08]. In the largest study, by Jensen-Johansen *et al.*,[76] no significant differences were found in the group-by-time interaction analysis on any of the outcomes evaluated (depression, mood, and symptoms such as intrusions or avoidance).

In Gellaitry *et al.*,[75] adverse events were assessed but not reported by group; however, four women of the total sample indicated that writing was difficult, not helpful and of no benefit to them personally. They also reported feeling negatively on completion of writing, but these negative feelings were not prolonged. In addition, separate studies reported significant differences [statistically significant (SS)] for the following outcomes: FACT-B at 4 weeks, Significant Others Scale (SOS) at 26 weeks, and PILL and QoL at 4 weeks, as shown in *Table 13*.

Meta-analysis

The outcomes positive and negative mood (*Figures 11* and *12*) and depression (*Figure 13*) were meta-analysed. In addition, three studies[76–78] assessed general mood but the Henry *et al.* study[53] did not report any numerical data on the POMS outcome, so meta-analysis was not performed for this outcome.

Positive mood at short-term follow-up Three studies[54,76,79] assessed positive mood using different instruments (PANAS-PA and PPMS).

- *Clinical differences between studies* Jensen-Johansen *et al.*[76] included newly diagnosed patients with stage I or stage II breast cancer, who had been treated surgically within 3 weeks of their diagnosis (mastectomy or lumpectomy) and/or recently completed radiotherapy or chemotherapy. The patients in the other two studies were attending or completing radiation therapy.
- *Intervention differences* Walker *et al.*[79] had two intervention groups. In one arm unfacilitated EW1 was administered as a single episode whereas in the other unfacilitated EW2 was administered in three episodes. Unfacilitated EW2 (three episodes) was selected as the closest intervention to the standard type of EW intervention and was therefore included in the meta-analysis. This also applies to the meta-analysis of the negative mood outcome comparison.
- *Duration of follow-up length* All studies reported short-term outcome measures at 13, 17 and 16 weeks.
- *Forest plot* A total of 621 participants were meta-analysed (301 in the EW group and 320 in the control group). The SMD was 0.10 (95% CI –0.15 to 0.36) with a random-effects model and with non-significant but substantial heterogeneity ($I^2 = 47\%$). It suggests that there is no statistically significant difference in positive mood at short term for the EW group compared with the control group.

Study or subgroup	EW Mean	EW SD	EW Total	Control Mean	Control SD	Control Total	Weight	SMD IV, random, 95% CI
Hughes 2007[54]	34.23	8.04	89	32.23	8.43	91	37.8%	0.24 (–0.05 to 0.53)
Jensen-Johansen 2013[76]	19.4	7	198	19.8	7	215	52.0%	–0.06 (–0.25 to 0.14)
Walker 1999[79] (three-dose EW)	39.4	6.3	14	36.6	6.73	14	10.3%	0.42 (–0.33 to 1.17)
Total (95% CI)			**301**			**320**	**100.0%**	**0.10 (–0.15 to 0.36)**

Heterogeneity: $\tau^2 = 0.02$; $\chi^2 = 3.74$, df = 2 ($p = 0.15$); $I^2 = 47\%$

Test for overall effect: $z = 0.79$ ($p = 0.43$)

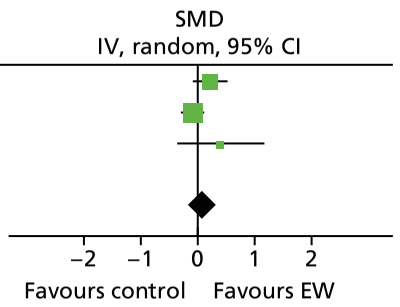

FIGURE 11 Forest plot of positive mood at short-term follow-up in patients with breast cancer. df, degrees of freedom; IV, inverse variance.

Study or subgroup	EW Mean	EW SD	EW Total	Control Mean	Control SD	Control Total	Weight	SMD IV, random, 95% CI
Hughes 2007[54]	16.48	6.75	89	17.11	7.5	91	29.0%	–0.09 (–0.38 to 0.20)
Jensen-Johansen 2013[76]	4.5	18.5	198	5.3	20.8	215	66.5%	–0.04 (–0.23 to 0.15)
Walker 1999[79] (three-dose EW)	15.5	4.8	14	13.9	5.23	14	4.5%	0.31 (–0.44 to 1.06)
Total (95% CI)			**301**			**320**	**100.0%**	**–0.04 (–0.20 to 0.12)**

Heterogeneity: $\tau^2 = 0.00$; $\chi^2 = 0.95$, df = 2 ($p = 0.62$); $I^2 = 0\%$

Test for overall effect: $z = 0.48$ ($p = 0.63$)

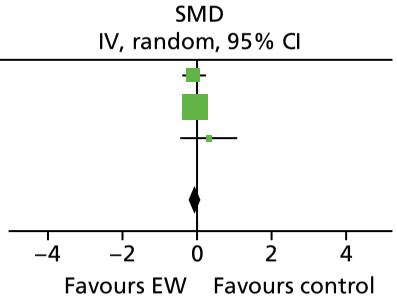

FIGURE 12 Forest plot of negative mood at short-term follow-up in patients with breast cancer. df, degrees of freedom; IV, inverse variance.

Study or subgroup	EW Mean	EW SD	EW Total	Control Mean	Control SD	Control Total	Weight	SMD IV, random, 95% CI
Henry 2010[53]	1.31	0	40	1.55	0	40		Not estimable
Jensen-Johansen 2013[76]	4	4.1	197	4.5	4.4	221	74.3%	–0.12 (–0.31 to 0.08)
Mosher 2012[77]	17.99	1.35	44	17.87	1.38	42	15.3%	0.09 (–0.34 to 0.51)
Park 2012[78]	4.52	3.45	29	4.48	3.7	29	10.4%	0.01 (–0.50 to 0.53)
Total (95% CI)			**310**			**332**	**100.0%**	**–0.07 (–0.24 to 0.09)**

Heterogeneity: $\tau^2 = 0.00$; $\chi^2 = 0.86$, df = 2 ($p = 0.65$); $I^2 = 0\%$

Test for overall effect: $z = 0.86$ ($p = 0.39$)

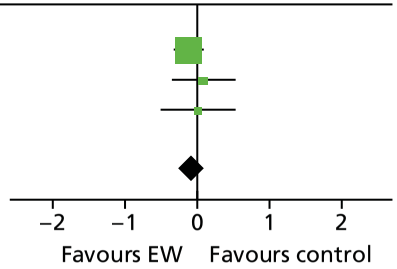

FIGURE 13 Forest plot of depression at short-term follow-up in patients with breast cancer. df, degrees of freedom; IV, inverse variance.

Negative mood at short-term follow-up The same three studies[54,76,79] assessed negative mood using different instruments (PANAS-NA and Profile of Mood States – negative affect).

- *Forest plot* A total of 621 participants were meta-analysed (301 in the EW group and 320 in the control group). The SMD was –0.04 (95% CI –0.20 to 0.12) with a random-effects model and with non-significant heterogeneity ($I^2 = 0\%$). This result suggests that there is no significant difference in negative mood at short term for the TW group compared with the control group.

Depression at short-term follow-up Four studies[53,76–78] assessed depression using different instruments (CES-D, BDI-SF and HADS-D).

- Clinical and intervention group differences described above apply also in this section.
- *Follow-up* All studies reported short-term outcome measures at 4, 8 and 13 weeks.
- *Study by Henry* et al.[53] The mean value for depression was derived from a graph but data regarding variability could not be collected. Therefore, the individual effect size for this study could not be estimated.
- *Forest plot* A total of 562 participants were meta-analysed (270 in the EW group and 292 in the control group). The SMD was –0.08 (95% CI –0.25 to 0.08) with a random-effects model and with non-significant, unimportant heterogeneity ($I^2 = 0\%$). This result suggests that there is no significant difference in depression at short term for the TW group compared with the control group.

C57, C61 and C62: gynaecological and genitourinary cancers

There were five studies[80–84] included in this section with different ICD-10 codes; however, all were of gynaecological or genitourinary cancers:

- C57: ovarian cancer – two studies[80,84]
- C61: prostate cancer – two studies[83,84]
- C62: testicular cancer – one study[82]
- C64: renal cell carcinoma – one study.[81]

Overview

All five studies[80–84] evaluated unfacilitated EW. A summary of their main characteristics is presented in *Table 14*. In all except one of the studies, participants had undergone between 4 and 5 years of treatment. In the Rosenberg *et al.*[83] study, patients all had adenocarcinoma of the prostate (staging not given) and were being followed up after definitive local treatment (prostatectomy or radiotherapy) within the last 4 years. In Zakowski *et al.*[84] all patients were diagnosed with prostate or gynaecological cancer (no further details supplied) and had completed treatment within the last 5 years. No further details were available for Arden-Close *et al.*[80] and Pauley *et al.*[82] In Milbury *et al.*[81] participants were patients with newly diagnosed

TABLE 14 Characteristics of the unfacilitated EW gynaecological/urinary cancer studies

First author, year	Study design	Intervention group 1	Intervention group 2	Control group 1
Arden-Close 2013[80]	RCT	Unfacilitated EW	–	Time-management writing[a]
Milbury 2014[81]	RCT	Unfacilitated EW	–	Neutral topics
Pauley 2011[82]	RCT	Unfacilitated EW	Positive writing	Factual writing
Rosenberg 2002[83]	RCT	Unfacilitated EW	–	Non-writing
Zakowski 2004[84]	RCT	Unfacilitated EW	–	Factual writing

a Control group participants were asked to write about other daily activities for the previous day, which has been categorised here as time-management writing.

renal cell carcinoma (RCC), with stage I–IV disease and with a Zubrod performance status of < 2 points (i.e. either fully active and unrestricted by their disease, or only restricted in performing physically strenuous activities).

Arden-Close *et al.*[80] was conducted in the UK, and the remaining studies were in the USA.

Four studies[80,81,83,84] assessed one intervention group against one control but Pauley *et al.*[82] had two different intervention groups. All studies[80–84] assessed the impact of the standard expressive writing intervention whereby participants were instructed to write about their experience with cancer and its treatment compared with a time-management or factual writing control group.

Additionally, Pauley *et al.*[82] also assessed the effect of a positive EW intervention, whereby participants were asked to write about any aspect of their cancer characterised as positive. In Rosenberg *et al.*[83] and Zakowski *et al.*,[84] all participants wrote for 20–30 minutes for 3 or 4 consecutive days. In Arden-Close *et al.*[80] and Pauley *et al.*,[82] participants had to write at 1-week intervals over a 3-week period, and in Milbury *et al.*[81] participants had to complete the four writing assignments within 10 days. Participants in Pauley *et al.*[82] were recruited online, received EW instructions and submitted their writing via the internet. In the studies by Pauley *et al.*[82] and Milbury *et al.*,[81] participants were financially compensated for their participation in the study. Participants in the other studies[82–84] did not receive financial compensation.

The outcomes evaluated in each of the studies on gynaecological/urinary cancer patients are reported in *Table 15*. Psychological symptoms, coping with cancer and QoL were the most frequently assessed outcomes. In the Milbury *et al.* study,[81] intrusions and avoidance, as well as specific cancer physical symptoms, were evaluated using two different instruments. Sleep disturbance was also evaluated in addition to general HRQoL.

TABLE 15 Outcomes collected by the unfacilitated EW studies in gynaecological/urinary cancer

First author, year	Immune function/disease markers	Pain	Sexual health/ performance	Distress	Psychological symptoms	Social constraints	Coping	Mental health	QoL	Resource use
Arden-Close 2013[80]	–	–	–	PSS	IES	–	–	–	FACT-General	–
Milbury 2014[81]	–	–	–	–	IES, PSQI, BFI	–	–	CES-D	MOS-SF-36, MDASI	–
Pauley 2011[82]	–	–	6-item measure	–	–	–	ARS-20	GHQ-12	QLQ-30	–
Rosenberg 2002[83]	PSA levels, peripheral blood T-cell proliferation, Serum cytokine levels of TNF-α, IL-4 and IL-10	BPI	–	–	SCL-90-R; Brief POMS, Rumination scale	–	Ways of Coping-Cancer Version	–	MOS-SF-36, FACT-P	NMCUES
Zakowski 2004[84]	–	–	–	BSI, GSI	IES	SCS	–	–	–	–

ARS-20, Assertiveness/Responsiveness scale; BFI, Brief Fatigue Inventory; BPI, Brief Pain Inventory; BSI, Brief Symptom Inventory; FACT-General, Functional Assessment of Cancer Therapy – General; FACT-P, Functional assessment of cancer therapy, physical wellbeing subscale; GHQ-12, General Health Questionnaire; GSI, Global Severity Index; IL-4, interleukin 4; IL-10, interleukin 10; MDASI, MD Anderson Symptom Inventory; MOS-SF-36, Medical Outcomes Short-Form Health Survey; NMCUES, National Medical Care Utilisation Expenditure Survey; PSA, prostate-specific antigen; QLQ-30, Quality of Life Questionnaire; SCS, Social constraints Scale; TNF-α, tumour necrosis factor alpha.
A description of all acronyms is listed in *Appendix 5*, *Table 106*.

Quality assessment

A summary of the quality of the studies in gynaecological and genitourinary cancers is shown in *Figures 14* and *15*.

In Arden-Close *et al.*,[80] Milbury *et al.*[81] and Pauley *et al.*,[82] the method of randomisation was adequately reported (Milbury *et al.*[81] used minimisation). Allocation concealment was not specified in Pauley *et al.*,[82] Milbury *et al.*[81] or Zakowski *et al.*,[84] as opposed to Arden-Close *et al.*[80] and Rosenberg *et al.*,[83] for which concealment of sequence generation was adequate. Blinding was not preserved at the performance level in Arden-Close *et al.*,[80] and was unclear in the rest of the studies. ITT analysis was performed in Arden-Close *et al.*,[80] Milbury *et al.*[81] and Zakowski *et al.*,[84] but not in the remaining studies. Almost all studies,[81–84] except that of Arden-Close *et al.*,[80] were likely to introduce selective reporting as data for the outcomes assessed were under-reported or the information was unclear. In Milbury *et al.*,[81] there was substantial attrition and non-compliance in both arms at 10-month follow-up (approximately 50% of baseline cohort).

Numerical results

The numerical results reported in the gynaecological and genitourinary cancers studies are summarised in *Table 16*.

Follow-up assessments ranged from 5 weeks in Pauley *et al.*,[82] to 34 weeks in Zakowski *et al.*[84] Total sample sizes ranged from 30 participants in Rosenberg *et al.*[83] up to 277 participants in Milbury *et al*.[81] In Milbury *et al.*[81] the total sample size varied throughout the study. There were 173 participants evaluated at 4 weeks, 168 participants evaluated at 17 weeks and 148 participants evaluated at 43 weeks.

Pauley *et al.*[82] and Rosenberg *et al.*[83] did show statistically significant differences between the two groups for the General Health Questionnaire (GHQ-12) and Brief Pain Inventory (BPI) outcomes, respectively. In Pauley *et al.*,[82] participants in the positive expression writing group scored higher in mental health than participants in the negative expression writing group or than those in the control group. However, no

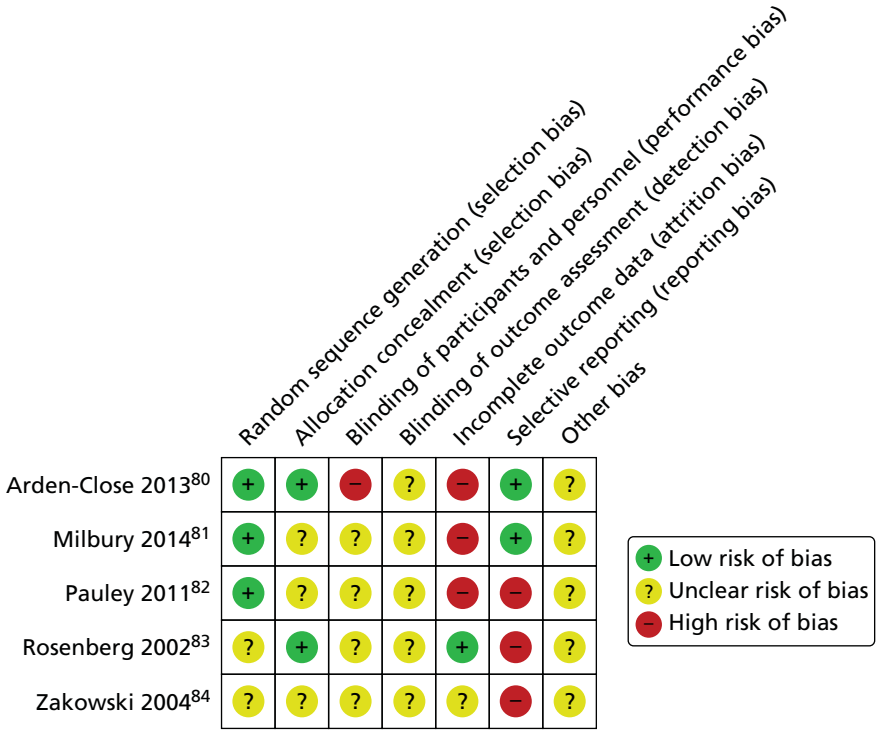

FIGURE 14 Risk-of-bias summary in the gynaecological and genitourinary cancers studies.

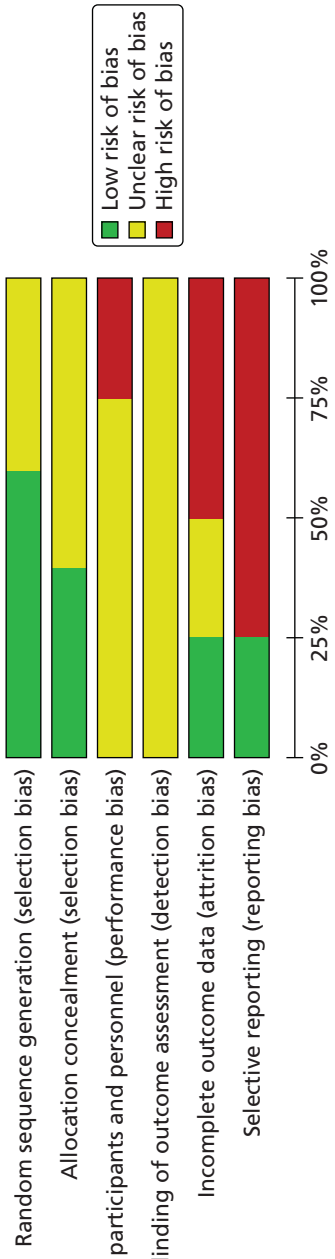

FIGURE 15 Risk-of-bias graph in the gynaecological and genitourinary cancers studies.

TABLE 16 Numerical results in the unfacilitated EW studies in gynaecological/urinary cancer

			Intervention group 1					Intervention group 2					Control group					Author's reported statistical significance (group-by-time interaction)
First author, year	Outcome measures	Follow-up (weeks)	*n* total[a]	Final mean score[b]	SD	Change score	SD	*n* total[a]	Final mean score[b]	SD	Change score	SD	*n* total[a]	Final mean score[b]	SD	Change score	SD	
Arden-Close 2013[80]	FACT-General	13	53	56.00	15.30	–	–	–	–	–	–	–	49	60.26	11.77	–	–	NS
		26	53	56.30	14.96	–	–	–	–	–	–	–	49	60.26	12.58	–	–	NS
	PSS	13	53	18.95	7.68	–	–	–	–	–	–	–	49	15.09	6.92	–	–	NS
		26	53	18.85	7.74	–	–	–	–	–	–	–	49	16.23	7.82	–	–	NS
	IES-R	13	53	10.68	8.00	–	–	–	–	–	–	–	49	9.06	6.55	–	–	NS
		26	53	11.40	7.59	–	–	–	–	–	–	–	49	9.36	6.90	–	–	NS
Milbury 2014[81]	MDASI	4	87	1.22	1.51	NR	NR	–	–	–	–	–	86	1.62	1.52	NR	NR	NR
		17	84	1.31	1.48	NR	NR	–	–	–	–	–	84	1.4	1.44	NR	NR	NR
		43	72	1.09	1.42	NR	NR	–	–	–	–	–	76	1.64	1.64	NR	NR	SS
	BFI	4	87	2.6	2.3	NR	NR	–	–	–	–	–	86	3	2.3	NR	NR	NR
		17	84	2.7	2.2	NR	NR	–	–	–	–	–	84	2.9	2.2	NR	NR	NR
		43	72	2.5	2.2	NR	NR	–	–	–	–	–	76	3.2	2.3	NR	NR	SS
	CES-D	4	87	8.8	8.6	NR	NR	–	–	–	–	–	86	10.2	6.7	NR	NR	NR
		17	84	9.9	10.1	NR	NR	–	–	–	–	–	84	9.5	7.1	NR	NR	NR
		43	72	9.5	9.6	NR	NR	–	–	–	–	–	76	10.5	7.4	NR	NR	NS
	PSQI	4	87	6.4	3.9	NR	NR	–	–	–	–	–	86	6	3.3	NR	NR	NR
		17	84	6.4	4	NR	NR	–	–	–	–	–	84	6.4	3.6	NR	NR	NR
		43	72	6.3	4.4	NR	NR	–	–	–	–	–	76	6.4	3.5	NR	NR	NS

First author, year	Outcome measures	Follow-up (weeks)	Intervention group 1					Intervention group 2					Control group					Author's reported statistical significance (group-by-time interaction)
			n total[a]	Final mean score[b]	SD	Change score	SD	*n* total[a]	Final mean score[b]	SD	Change score	SD	*n* total[a]	Final mean score[b]	SD	Change score	SD	
	SF-36 MCS	4	87	44.8	47.7	NR	NR	–	–	–	–	–	86	48.7	8.2	NR	NR	NR
	SF-36 MCS	17	84	48.9	9.3	NR	NR	–	–	–	–	–	84	48.4	7.3	NR	NR	NR
	SF-36 MCS	43	72	48.2	8.7	NR	NR	–	–	–	–	–	76	48.8	7	NR	NR	NS
	SF-36 PCS	4	87	43.2	12.04	NR	NR	–	–	–	–	–	86	42.2	11.4	NR	NR	NR
	SF-36 PCS	17	84	46.3	11.1	NR	NR	–	–	–	–	–	84	42.8	11.8	NR	NR	NR
	SF-36 PCS	43	72	46.2	11.1	NR	NR	–	–	–	–	–	76	42.3	12.6	NR	NR	SS
	IES	4	87	11.3	13.7	NR	NR	–	–	–	–	–	86	15.9	14	NR	NR	NR
	IES	17	84	12	12.9	NR	NR	–	–	–	–	–	84	13.4	14.4	NR	NR	NR
	IES	43	72	12.7	14.7	NR	NR	–	–	–	–	–	76	13.8	14.3	NR	NR	NS
Pauley 2011[82]	Sexual performance	5	28	NR	NR	NR	NR	28	NR	NR	NR	NR	28	NR	NR	NR	NR	NR
	Sexual health	5	28	5.68	1.48	NR	NR	28	6.05	1.48	NR	NR	28	5.66	1.69	NR	NR	NS[c]
	GHQ-12	5	28	5.04	0.90	0	2.43	28	5.40	0.79	0.34	0.47	28	4.70	0.85	0.29	2.06	SS[c]
	ARS-20	5	28	NR	NR	NR	NR	28	NR	NR	NR	NR	28	NR	NR	NR	NR	NR
	QLQ-30	5	28	2.86	1.11	NR	NR	28	2.38	1.01	NR	NR	28	2.52	1.11	NR	NR	NS[c]

continued

TABLE 16 Numerical results in the unfacilitated EW studies in gynaecological/urinary cancer (*continued*)

			Intervention group 1					Intervention group 2					Control group					Author's reported statistical significance (group-by-time interaction)
First author, year	Outcome measures	Follow-up (weeks)	*n* total[a]	Final mean score[b]	SD	Change score	SD	*n* total[a]	Final mean score[b]	SD	Change score	SD	*n* total[a]	Final mean score[b]	SD	Change score	SD	
Rosenberg 2002[83]	BPI	13	16	2.13	3.2	–	–	–	–	–	–	–	14	5.50	7.75	–	–	SS
		26	16	3.19	3.95	–	–	–	–	–	–	–	14	9.43	8.08	–	–	SS
	PSA spec – CD4+	13	16	1.60	0.89	–	–	–	–	–	–	–	14	2.90	3.80	–	–	NS
		26	16	1.80	1.50	–	–	–	–	–	–	–	14	1.80	1.00	–	–	NS
	PSA spec – CD8+	13	16	0.50	0.20	–	–	–	–	–	–	–	14	1.10	1.40	–	–	NS
		26	16	0.40	0.50	–	–	–	–	–	–	–	14	0.60	0.60	–	–	NS
	n of pain medication/ month	13	16	9.44	3.82	–	–	–	–	–	–	–	14	13.64	8.84	–	–	NS
		26	16	4.94	2.66	–	–	–	–	–	–	–	14	6.05	4.70	–	–	NS
	n of visits clinician	13	16	6.70	6.00	–	–	–	–	–	–	–	14	7.60	7.46	–	–	NS
		26	16	4.40	3.12	–	–	–	–	–	–	–	14	7.60	8.33	–	–	NS
Zakowski 2004[84]	BSI/GSI	26	62	0.35	0.40	–	–	–	–	–	–	–	42	0.34	0.40	–	–	NS
	IES-Av	26	62	7.23	8.27	–	–	–	–	–	–	–	42	6.55	8.57	–	–	NS
	IES-I	26	62	6.53	7.30	–	–	–	–	–	–	–	42	4.98	6.33	–	–	NS
	SCS	34	62	20.51	4.66	–	–	–	–	–	–	–	42	19.71	6.41	–	–	NS

–, not included; ARS-20, Assertiveness Responsiveness scale; BFI, Brief Fatigue Inventory; BPI, Brief Pain Inventory; BSI, Brief Symptom Inventory; FACT-General, Functional Assessment of Cancer Therapy questionnaire–General; GHQ-12, General Health Questionnaire; GSI, Global Severity Index; IES-R, Impact of Event Scale-Revised; MDASI, MD Anderson Symptom Inventory; NR, not reported; NS, not statistically significant; PP, per protocol; PSA, prostate specific antigen; PSA – spec-CD4+/CD8+, mean PSA-specific CD4+/CD8+ cells frequency measured to assess the association between PSA change and immune status; QLQ-30, Quality of Life Questionnaire; SCS, Social Constraints Scale; SF-36 MCS, Short Form questionnaire-36 items mental composite score; SF-36 PCS, Short Form questionnaire-36 items physical composite score; SS, statistically significant ($p < 0.05$).

a Sample size analysed (ITT or PP).

b In Pauley *et al.*,[82] data are reported as adjusted or estimated marginal means.

c The group-by-time interaction analysis refers to the EW group 1 and control group only.

A description of all acronyms is listed in *Appendix 5*, *Table 106*.

significant effects were reported regarding the QoL and sexual performance outcomes. In Milbury *et al.*,[81] there were significant group differences for the expressive writing group compared with the neutral writing group at the 10 months' follow-up assessment for the following outcomes measures: the MD Anderson Symptom Inventory (MDASI), the Brief Fatigue Inventory (BFI) and the Short Form questionnaire-36 items physical composite score (SF-36 PCS).

Regarding the other outcomes assessed across the remaining studies, either no significant group-by-time interaction was reported or differences between groups were not addressed as in Pauley *et al.*[82] or Rosenberg *et al.*[83]

Quality of life was assessed in four studies,[80–82,84] in which instruments were sufficiently similar to pool in a meta-analysis. However, in Rosenberg *et al.*,[83] numerical data regarding the Functional Assessment of Cancer Therapy (FACT) or the Medical Outcomes Short-Form Health Survey (MOS-SF-36) were not reported, and the results for the other studies[80–82,84] were at two different follow-up time periods and so no meta-analysis was performed for this outcome.

C80 and C96: other non-specified cancers

Overview

Three studies[66,85,86] evaluated EW in participants with various types of cancer. The study by Rickett *et al.*[66] is reported in the Facilitated TW section. Here, the studies by Cepeda *et al.*[85] and Rini *et al.*[86] are described. A summary of main characteristics is presented in *Table 17*.

Cepeda *et al.*[85] included participants with any type of cancer reporting average pain intensity levels of at least 5 on a 0–10 scale. Participants scored > 50% in the Karnofsky performance scale (ranging from having no evidence of their disease to requiring occasional assistance but able to care for most of their personal needs). The study was conducted in Colombia and published in English. The authors evaluated one intervention group against two control groups. However, only the group receiving standard medical care (SMC) was considered in the analysis, as the other group was an active control involving an educational intervention. The unfacilitated EW group (narrative group) had to write about a disease-focused topic during 20 minutes over 3 non-consecutive days (at 1-week intervals). Participants were not financially compensated.

Rini *et al.*[86] included participants who had had a stem cell transplant for any form of haematological cancer within the previous 9 months to 3 years and not in current relapse. The study was conducted in the USA. Participants were randomised to three intervention groups or one neutral writing control (factual writing about their experience). The three intervention groups were standard unfacilitated EW, peer helping and unfacilitated EW with peer helping. As the peer-helping component is not part of this systematic review, it is not discussed further. The unfacilitated EW group had to write about their deepest emotions and thoughts about the time before, during and after the transplant. Writing took place at the participants' homes: one 20-minute episode of writing per week for 4 weeks. A researcher telephoned the participant before and after each writing episode. Participants were financially compensated.

TABLE 17 Characteristics of the unfacilitated EW studies in other cancers

First author, year	Study design	Intervention group	Control group
Cepeda 2008[85]	RCT	Unfacilitated EW	SMC
Rini 2014[86]	RCT	Unfacilitated EW	Non-EW

The outcomes evaluated in the studies are reported in *Table 18*. For almost all of the outcomes in the Rini *et al.* study,[86] the results were split into subgroups of high and low survivorship problems rather than whole scores for the groups.

Quality assessment

A summary of the study quality is shown in *Figure 16*.

Both studies[85,86] had the method of randomisation described. In Cepeda *et al.*,[85] allocation concealment was performed using opaque envelopes, and in Rini *et al.*[86] it was by sequentially numbered computer files. The personnel (evaluators) were blinded in both studies though participants were not. However, it was likely that selective reporting was introduced for the QoL outcome in Cepeda *et al.*[85] Therefore, the quality item referring to selection bias was rated as low risk in this study. ITT analysis was used in both studies.[85,86]

Numerical results

The numerical results are reported in *Table 19*.

In Cepeda *et al.*,[85] follow-up assessments were performed at 2, 4, 6 and 8 weeks post writing, whereas in Rini *et al.*[86] they were at carried out at 13 weeks only. The total sample size in Cepeda *et al.*[85] was 157 participants, and in Rini *et al.*[86] it was 151 participants in the unfacilitated EW and control groups.

TABLE 18 Outcomes collected by the unfacilitated EW studies in other cancers

First author, year	Pain intensity	Well-being/QoL	Physical symptoms	Resource use
Cepeda 2008[85]	Verbal numerical rating scale	*7-point Likert scale*	–	–
Rini 2014[86]	–	*FACT, BSI/GSI*	Deaths, *Inventory of physical symptoms*	–

BSI, Brief Symptom Inventory; GSI, Global severity Index.
Italic text shows outcomes for which no data were reported.
A description of all acronyms is listed in *Appendix 5, Table 106*.

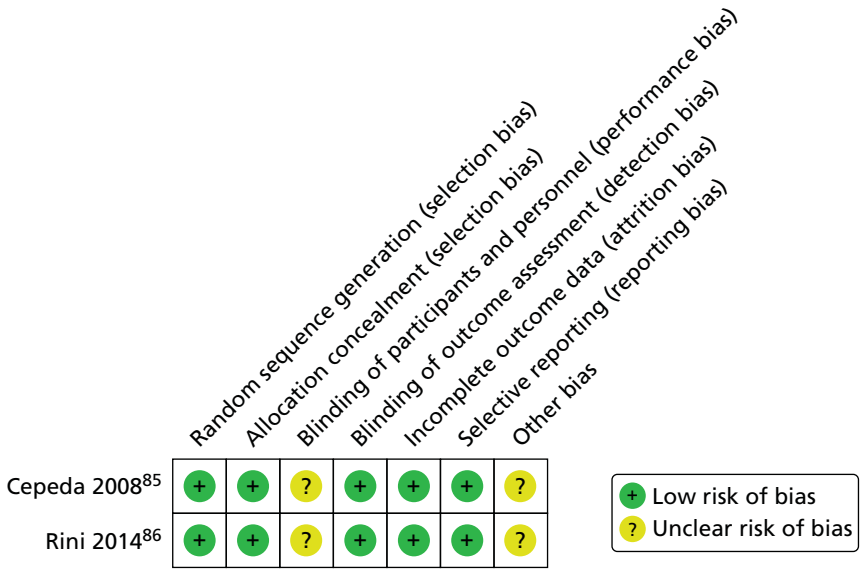

FIGURE 16 Risk-of-bias summary in the cancer studies.

TABLE 19 Numerical results in the unfacilitated EW studies in other cancers

First author, year	Outcome measures	Follow-up (weeks)	Intervention group					Control group					Author's reported statistical significance (group-by-time interaction)
			n total[a]	Final mean score	SD	Change score	SD	*n* total[a]	Final mean score	SD	Change score	SD	
Cepeda 2008[85]	Pain meter	2	79	5.40	NR	NR	NR	78	5.50	NR	NR	NR	NS
		4	79	5.00	NR	NR	NR	78	5.00	NR	NR	NR	NS
		6	79	4.50	NR	NR	NR	78	4.50	NR	NR	NR	NS
		8	79	4.60	NR	NR	NR	78	4.20	NR	NR	NR	NS
	Well-being	4	79	NR	NR	NR	NR	78	NR	NR	NR	NR	NR
		8	79	NR	NR	NR	NR	78	NR	NR	NR	NR	NR
Rini 2014[86]	Relapse	13	75	*n* = 1	–	–	–	76	*n* = 2	–	–	–	NR
	Deaths	13	75	*n* = 1	–	–	–	76	*n* = 2	–	–	–	NR

NR, not reported; NS, not statistically significant; PP, per protocol.
a Sample size analysed (ITT or PP).
A description of all acronyms is listed in *Appendix 5*, *Table 106*.

In Cepeda *et al.*,[85] no significant differences in pain intensity or QoL were reported between the groups throughout the study. The authors used a single question with a Likert scale to measure HRQoL, as they reported it was minimally burdensome, but no numerical data were reported for this outcome. However, authors reported that those disclosing a high degree of emotion had better well-being and pain intensity level outcomes.

In Rini *et al.*,[86] there was one relapse and one death in the unfacilitated EW group, and two relapses and two deaths in the control group.

D57: sickle cell disease

Overview

There was one non-randomised study evaluating unfacilitated EW in participants with sickle cell disease. The participants in McElligott[87] were adolescents, with an average age of 14.9 years (SD 2.3 years). The study[87] was conducted in the USA. The authors evaluated an EW intervention for which participants had to write about their deepest thoughts and feelings related to their illness. The control group had to write about details of the previous day (factual writing). The written exercise ran over 3 weeks, with one session per week. Participants were financially compensated. The outcomes evaluated in McElligott[87] are reported in *Table 20*.

Quality assessment

A summary of the quality of the study by McElligott[87] is shown in *Figure 17*. The study[87] was very likely to introduce various biases. All risk-of-bias items were unclear except for lack of blinding among outcome assessors and no evidence of selective reporting.

TABLE 20 Outcomes collected in the unfacilitated EW study in sickle cell disease

First author, year	Physical symptoms	Self-esteem	Depression	Behavioural problems	Anxiety	QoL	Resource use
McElligott 2006[87]	PSC, PSC-Y	ADSEI	CDI	ADSEI	RCMAS	Well-being	Number of patients hospitalised, number of visits to clinician

ADSEI, Adult version of the Coopersmith Self-Esteem Inventory; CDI, Children Depression Inventory; PSC, Paediatric Symptom Checklist; PSC-Y, Paediatric Symptom Checklist Youth Report; RCMAS, Revised Children's Manifest Anxiety Scale. A description of all acronyms is listed in *Appendix 5*, *Table 106*.

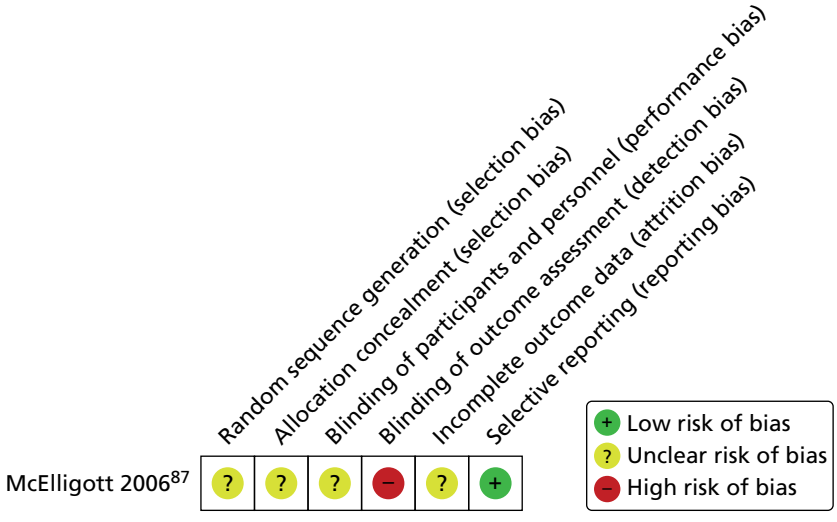

FIGURE 17 Risk-of-bias summary in the sickle cell disease study.

Numerical results

The numerical results are reported in *Table 21*. The follow-up assessment in McElligott[87] was performed at 2 weeks post writing. The total sample size was 36 participants.

Authors reported there were no significant differences between groups for any of the outcomes evaluated.

TABLE 21 Numerical results in the unfacilitated EW study in sickle cell disease

First author, year	Outcome measures	Follow-up (weeks)	Intervention group			Control group			Author's reported statistical significance (group-by-time interaction)
			n total[a]	Final mean score	SD	*n* total[a]	Final mean score	SD	
McElligott 2006[87]	ADSEI	2	19	74	36.8	17	100	0	NS
	SEI	2	19	84.6	9.4	17	64.4	19.8	NS
	RCMAS	2	19	8	5.9	17	9.5	5.7	NS
	CDI	2	19	5.9	5.6	17	7.2	6.1	NS
	PSC-Y	2	19	14.5	9.1	17	20	9.7	NS
	PSC	2	19	12.8	12.6	17	16.8	6.8	NS
	Well-being	2	19	NR	NR	17	NR	NR	NS
	Number of visits to clinician	2	19	0	0	17	0.38	0.65	NS
	Number of days hospitalised	2	19	0.17	0.71	17	0.12	1.1	NS

ADSEI, Adult version of the Coopersmith Self-Esteem Inventory; CDI, Children Depression Inventory; NR, not reported; NS, not statistically significant ($p > 0.05$); PP, per protocol; PSC, Paediatric Symptom Checklist; PSC-Y, Paediatric Symptom Checklist Youth Report; RCMAS, Revised Children's Manifest Anxiety Scale; SEI, Coopersmith Self-Esteem Inventory.
a Sample size analysed (ITT or PP).
A description of all acronyms is listed in *Appendix 5*, *Table 106*.

E11: diabetes mellitus

Overview

There was one RCT[88] evaluating unfacilitated EW in participants who had been diagnosed with type 2 diabetes mellitus. The main characteristics are summarised in *Table 22*. Participants were adults attending a general practitioner (GP) practice in the UK. Unfacilitated EW for 20 minutes on 3 days was compared with the same amount of writing about the previous day's activities (factual writing). Both groups wrote at home in private and then returned their writing to the researcher. They were not financially compensated.

The outcomes evaluated in Dennick *et al.*[88] are reported in *Table 22*.

TABLE 22 Outcomes collected in the unfacilitated EW study in diabetes mellitus

First author, year	Physical symptoms	Depression	Behavioural problems	QoL	Resource use
Dennick 2014[88]	PAID	CES-D	SDSCA	EQ-5D	–

EQ-5D, European Quality of Life-5 Dimensions; PAID, Problem Areas in Diabetes scale; SDSCA, Summary of Diabetes Self-Care Activities scale.
A description of all acronyms is listed in *Appendix 5*, *Table 106*.

Quality assessment

A summary of the study[88] quality is shown in *Figure 18*. Randomisation was using random numbers in sealed envelopes, stratified by recruitment approach and with random block sizes of four, six and eight per block. GPs were blinded to the group allocation. ITT was used. It was noticeable that of 1715 individuals who were given information about the study, only 41 consented to join the study[88] and 32 completed the follow-up.

Numerical results

The numerical results are reported in *Table 23*. Follow-up assessment was performed at 3 months. The total sample size where all completed all writing and the follow-up was 27 participants. The study found that EW resulted in worse depression at follow-up for the intervention group. There were no significant differences in the other outcomes measured.

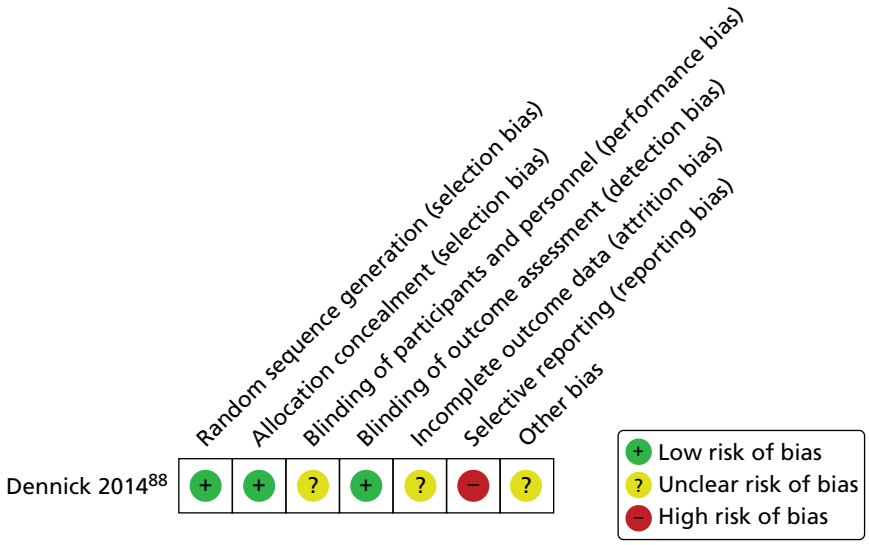

FIGURE 18 Risk-of-bias summary for the diabetes mellitus study.

E84: cystic fibrosis

Overview

There was one RCT[89] evaluating unfacilitated EW in participants that had been medically diagnosed with cystic fibrosis. Participants in Taylor *et al.*[89] were adolescents of at least 15 years of age. The study[89] was conducted in the USA. A written self-disclosure intervention compared with usual care was assessed. Participants had to write about their deepest thoughts and feelings about the most distressing experience of their entire life and were encouraged to connect the topic to their relationships with others. They had to write for 20 minutes, three times over a 5-day period. The control was SMC. Participants were not financially compensated. The outcomes evaluated in Taylor *et al.*[89] are reported in *Table 24*.

TABLE 23 Numerical results in the unfacilitated EW study in diabetes mellitus

First author, year	Outcome measures	Follow-up (weeks)	Intervention group			Control group			Author's reported statistical significance (group-by-time interaction)
			n total[a]	Final mean score	SD	*n* total[a]	Final mean score	SD	
Dennick 2014[88]	CES-D	13	23	9.9	5.3	18	5.1	5.1	0.006
	EQ-5D utility	13	23	0.92	0.1	18	0.87	0.1	0.907
	EQ-5D VAS	13	23	77.4	13.4	18	82.1	12.7	0.268
	PAID	13	23	35.3	6.7	18	34.4	6.8	0.658
	SDSCA (general diet)	13	23	5.8	1.2	18	5.8	1.1	0.826
	SDSCA (specific diet)	13	23	4.5	0.9	18	5.1	0.9	0.057
	SDSCA (exercise)	13	23	3.5	1.3	18	4.0	1.3	0.245
	SDSCA blood glucose testing)	13	23	2.5	1.9	18	2.5	2.0	0.922
	SDSCA (foot care)	13	23	3.2	1.2	18	3.0	1.1	0.755

EQ-5D, European Quality of Life-5 Dimensions; PAID, Problem areas in Diabetes scale; PP, per protocol; SDSCA, Summary of Diabetes Self-Care Activities scale; VAS, visual analogue scale.
a Sample size analysed (ITT and PP).
A description of all acronyms is listed in *Appendix 5*, *Table 106*.

TABLE 24 Outcomes collected by the unfacilitated EW study in cystic fibrosis

First author, year	Physical health status	Psychological health status	Patient's satisfaction	QoL	Resource use
Taylor 2003[89]	FEV_1, BMI	PHQ, Somatization Scale, SLESQ	VSQ[a]	SF-12	Outpatient use, inpatient use

BMI, body mass index; FEV_1, forced expiratory volume in 1 second; PHQ, Patient Health Questionnaire; SF-12; Short Form questionnaire-12 items; SLESQ, Stressful Life Events Screening Questionnaire; VSQ, Visit Specific Satisfaction Questionnaire.
a Participants in the unfacilitated EW intervention only rated for example, satisfaction with the length of the writing sessions, convenience of the packets, level of comfort while writing, technical skills of the research team, integration of the intervention into the clinic, value of the writing sessions on patient's mental, physical, and overall health.
A description of all acronyms is listed in *Appendix 5*, *Table 106*.

Quality assessment

A summary of the study quality is shown in *Figure 19*.

Taylor *et al.*[89] was reported as randomised. However, selection, performance and detection biases were possible as the information related to the method of randomisation, allocation concealment of the sequence generation or any statement regarding masking were unclear. The quality item selective reporting was rated as low risk [although data for the Visit Specific Satisfaction Questionnaire (VSQ) were not reported this was intended as a measure of the acceptability of the intervention]. ITT analysis was used.

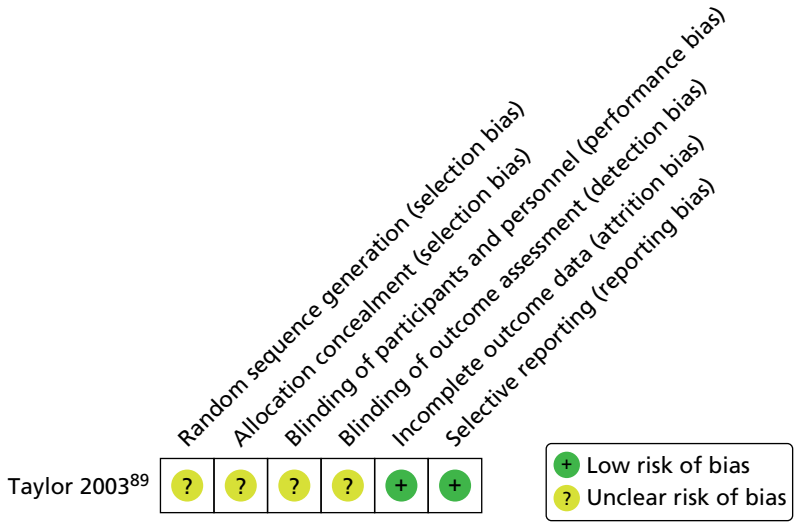

FIGURE 19 Risk-of-bias summary in the cystic fibrosis study.

Numerical results

The numerical results are reported in *Table 25*. Follow-up assessment was performed at 13 weeks post writing. The total sample size was 39 participants. The authors reported that participants in the written self-disclosure group had a significantly reduced number of inpatient days over a 3-month period after the intervention compared with before the intervention, which was not the case in the control group. However, the overall number of participants was small and the intervention group had a higher mean number of inpatient days than the control group at baseline. The physical or psychological health status remained unchanged over the study period and no changes were reported regarding QoL.

F03: dementia

In the systematic review, one study[67] evaluated participants diagnosed with dementia. However, it assessed a facilitated type of TW intervention and the study[67] has been summarised in the facilitated TW section.

F14 and F19: substance use disorder

Overview

There were three studies[90–92] (Meshberg-Cohen[91] was a doctoral thesis) evaluating unfacilitated EW on patients with drug dependence (cocaine dependence, ICD-10 code – F14) or substance use disorder (SUD). A summary of their main characteristics is presented in *Table 26*.

Two studies[90,91] were conducted in the USA and one study[92] in the Netherlands. All three studies[90–92] recruited individuals from residential drug treatment programmes. In a small, non-randomised, feasibility study by Grasing *et al.*,[90] participants (all military veterans and only one female) met DSM-IV (*Diagnostic and Statistical Manual of Mental Disorders*-Fourth Edition) criteria for cocaine dependence at the time of admission or fulfilled criteria for a SUD following the structured clinical interview for DSM-IV-TR (*Diagnostic and Statistical Manual of Mental Disorders*-Fourth Edition, Text Revision): Alcohol and Substance Use Disorders Module [Structured Clinical Interview for DSM Disorders (SCID)]. Meshberg-Cohen[91] recruited women who fulfilled the DSM-IV criteria for a SUD with the SCID; 80% had cocaine as their primary drug of dependence and 57% were dependent on more than one drug. Van Dam *et al.*[92] recruited men and women who were addicted to a variety of substances including alcohol, cocaine and cannabis.

All three studies[90–92] assessed an EW intervention for which participants had to write about a self-selected trauma. In Grasing *et al.*,[90] participants had to complete the exercise on 17 non-consecutive days, a longer period than in Meshberg-Cohen,[91] when participants completed the task in 4 consecutive days. In Van Dam *et al.*[92] they wrote for 10 sessions, for unspecified amount of time that was < 45 minutes.

TABLE 25 Numerical results in the unfacilitated EW study in cystic fibrosis

First author, year	Outcome measures	Follow-up (weeks)	Intervention group			Control group			Author's reported statistical significance (group-by-time interaction)
			n total[a]	Final mean score[b]	SD	*n* total[a]	Final mean score	SD	
Taylor 2003[89]	FEV_1	13	18	48.50	21.2	21	50.40	20.1	NS
	BMI	13	18	19.30	3	21	19.00	2.1	NS
	Somatisation scale	13	18	3.90	3.4	21	7.00	3.8	NS
	SLESQ	13	18	14.80	6.9	21	14.30	3.1	NS
	SF-12 MCS	13	18	53.70	7.5	21	49.50	9.1	NS
	SF-12 PCS	13	18	43.80	10.3	21	43.30	10	NS
	VSQ-modified	13	18	All good to very good, but one fair	NR	21	NR	NR	NR
	PHQ – depression	13	18	12.40	4.1	21	13.90	4.2	NS
	PHQ – anxiety	13	18	15.30	1.4	21	16.10	3.1	NS
	Outpatients use	13	18	1.20	1	21	2.00	2.4	NS
	Inpatients use	13	18	5.60	7	21	8.40	9.6	SS

BMI, body mass index; FEV_1, forced expiratory volume in 1 second; NR, not reported; NS, not statistically significant; PHQ, Patient Health Questionnaire; PP, per protocol analysis; SF-12 MCS, Short form questionnaire-12 items mental composite score; SF-12 PCS, Short form questionnaire-12 items physical composite score; SLESQ, Stressful Life Events Screening Questionnaire; SS, statistically significant; VSQ-modified, Visit Specific Satisfaction Questionnaire modified.
a Sample size analysed (ITT or PP).
b Unless otherwise reported.
A description of all acronyms is listed in *Appendix 5*, *Table 106*.

TABLE 26 Characteristics of the unfacilitated EW studies in SUD

First author, year	Study design	Intervention group	Control group
Grasing 2010[90]	RCT	Unfacilitated EW	Time-management writing
Meshberg-Cohen 2010[91]	RCT	Unfacilitated EW	Factual writing
Van Dam 2013[92]	RCT	Unfacilitated EW	Treatment as usual

The control group tasks emphasised objective, neutral and factual topics with no emotional component in Grasing *et al.*[90] and Meshberg-Cohen.[91] For Van Dam *et al.*,[92] the control was treatment as usual. Participants were financially compensated in Grasing[90] and Meshberg-Cohen,[92] but not in Van Dam *et al*.[93]

The outcomes assessed in the studies on SUD are reported in *Table 27*. Drug craving, distress and general mood were the outcomes most frequently assessed in the studies.[90–92]

Quality assessment

A summary of the quality of the studies on SUD is shown in *Figures 20* and *21*. The study by Meshberg-Cohen[91] was truly randomised; however, there was no information related to the concealment of the sequence generation or the masking. Therefore, this study[91] was likely to introduce selection and performance biases. In addition, data were not reported or were under-reported, introducing high risk of reporting bias. The study by Grasing *et al.*[90] was evaluated in the same way for all of the quality items, except that the method of randomisation was not provided. In the Van Dam *et al.* study,[92] the method of randomisation was by assignments in closed envelopes. These were opened at the start so that there was no allocation concealment. Blinding was not mentioned. The studies by Meshberg-Cohen[91] and Van Dam *et al.*[92] used an ITT analysis, whereas in the Grasing *et al.* study[90] this information was unclear.

TABLE 27 Outcomes collected by the unfacilitated EW studies in SUD

First author, year	Objective markers	Drug craving	Symptom severity	Distress	Mood	Depression	Resource use
Grasing 2010[90]	BP, heart rate	BSCS	–	PSS, BSI	POMS	–	Self-report use of cocaine
Meshberg-Cohen 2010[91]	–	BSCS	PDS, PILL	BSI/GSI	PANAS-X	CES-D	–
Van Dam 2013[92]	–	TLFB abstinence	PDS	–	–	–	–

BP, blood pressure; BSCS, Brief Substance Craving Scale; BSI, Brief Symptom Inventory; GSI, Global Severity Index; PANAS-X, Positive and Negative Affect Schedule–Expanded Form; PDS, Posttraumatic Stress Diagnostic Scale; TLFB, Timeline Followback Method.

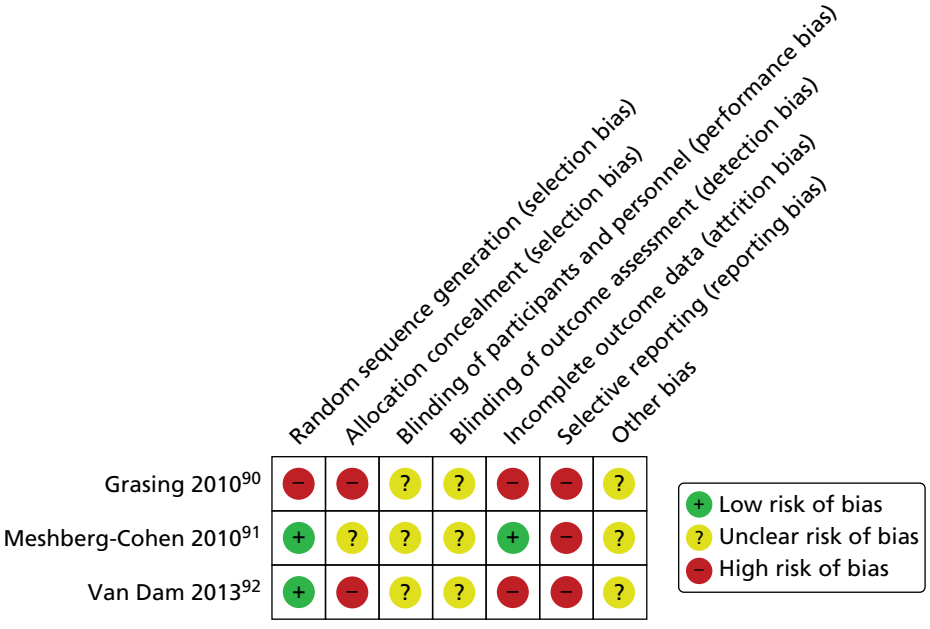

FIGURE 20 Risk-of-bias summary in the SUD studies.

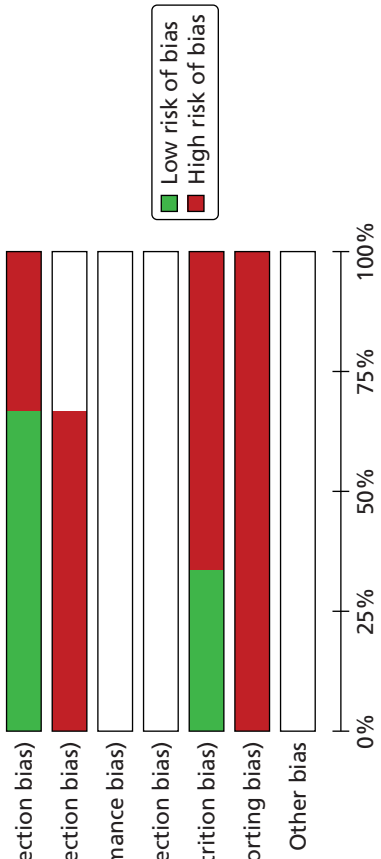

FIGURE 21 Risk-of-bias graph in the SUD studies.

Numerical results

The numerical results reported in the studies on SUD are shown in *Table 28*. The follow-up assessment ranged from 4 weeks in Meshberg-Cohen[91] to 13 weeks in Grasing *et al.*[90] The total sample size was 42 participants in Grasing *et al.*[90] and 141 participants in Meshberg-Cohen.[91] In Grasing *et al.*,[90] expressive writing participants reported a higher final average number of visits to the clinician than in the control group; however, it was not reported whether or not this difference was significant. Authors mentioned cocaine use differences based on self-reports but there were a very small number of participants assessed and a considerable attrition. There were no usable data reported for the remaining outcomes assessed in this study (results are shown in graphs only and the numbers of participants providing results are unclear).

In Meshberg-Cohen,[91] the EW group showed significantly greater reductions than control subjects only in post-traumatic symptom severity and anxiety scores at 2 weeks' follow-up, but not at 1 month, when there was no difference in any measure between the two groups. No adjustments for multiple testing were made. At 1 month, there were significant improvements for both groups over the course of residential treatment, suggesting that there was little scope to detect any additional benefit from the intervention. In addition, the EW participants showed increased negative affect immediately after each writing session, but there were no differences in pre-writing negative affect scores between groups the following day.

Van Dam *et al.*[92] was a very small study, with a large number of rather unclear and complicated statistical tests reported. It is likely that no significant differences were seen at follow-up for the two outcome measures.

F40, F59 and F99: psychiatric disorders

Overview

There were five studies[93–97] evaluating unfacilitated EW with patients with mental and/or psychiatric disorders. A summary of main characteristics is presented in *Table 29*. (Golkaramnay *et al.*[68] also assessed TW in patients with mental disorders but used facilitated EW so is reported in the Facilitated TW section.)

All studies[93–97] were described as RCTs. Study participants were very heterogeneous. The patients in Bernard *et al.*[93] had a first episode of psychosis conforming to broad ICD-10 categories (F20, F22, F23, F25) but, for ethical reasons, patients were not suicidal or acutely psychotic; rather they were in the recovery phase of their illness. The participants in Graf *et al.*[95] were recruited from a university-based outpatient psychiatric clinic and student counselling centre, and all participants were also undergoing psychotherapy. In Richards *et al.*[97] and Canna[94] (a doctoral thesis), participants had an axis I anxiety or mood disorder primary diagnosis or were diagnosed with at least one mental disorder as classified by the [*Diagnostic and Statistical Manual of Mental Disorders*-Third Edition, Revised (DSM-III-R)]. In Krpan *et al.*,[96] all participants had major depressive disorder. In Richards *et al.*,[97] all participants were male psychiatric maximum security prison inmates (47% sex offenders).

TABLE 28 Numerical results in the unfacilitated EW studies in SUD

First author, year	Outcome measures	Follow-up (weeks)	Intervention group			Control group			Author's reported statistical significance (group-by-time interaction)
			n total[a]	Final mean score[b]	SD	*n* total[a]	Final mean score[b]	SD	
Grasing 2010[90]	Numebr of visits, clinician	12	23	10.27	5.49	19	9.68	2.55	NR
	BP	2, 4, 8 and 12	NR	NR	NR	NR	NR	NR	NR
	Heart rate	2, 4, 8 and 12	NR	NR	NR	NR	NR	NR	NR
	BSI-18	2, 4, 8 and 12	NR	NR	NR	NR	NR	NR	NR
	POMS	2, 4, 8 and 12	NR	NR	NR	NR	NR	NR	NR
	Craving – frequency	2, 4, 8 and 12	NR	NR	NR	NR	NR	NR	NR
	Craving – intensity	2, 4, 8 and 12	NR	NR	NR	NR	NR	NR	NR
	Self-report use of cocaine	2	10	Number of patients: 0	–	12	Number of patients: 3	–	SS
		4	9	Number of patients: 0	–	10	Number of patients: 1	–	NS
		8	9	Number of patients: 0	–	9	Number of patients: 1	–	NS
		12	9	Number of patients: 0	–	7	Number of patients: 1	–	NS
Meshberg-Cohen 2010[91]	PILL	2	77	110.90	35.70	64	109.70	27.20	NS
		4	77	103.70	39.10	64	108.20	35.70	NS
	PDS	2	77	17.50	12.40	64	18.90	11.80	SS
		4	77	16.50	12.90	64	13.90	12.00	NS
	CES-D	2	77	21.20	10.10	64	20.30	12.10	NS
		4	77	18.30	11.60	64	15.40	10.20	NS
	BSI/GSI	2	77	1.00	0.70	64	1.00	0.80	NR
		4	77	0.90	0.60	64	0.70	0.80	NR

continued

TABLE 28 Numerical results in the unfacilitated EW studies in SUD (*continued*)

First author, year	Outcome measures	Follow-up (weeks)	Intervention group			Control group			Author's reported statistical significance (group-by-time interaction)
			n total[a]	Final mean score[b]	SD	*n* total[a]	Final mean score[b]	SD	
	BSI – anxiety	2	77	0.90	0.90	64	0.90	0.80	SS
		4	77	0.90	1.00	64	0.60	0.60	NS
	PANAS-X	2	74	15.20	5.10	58	13.80	4.80	NR
		4	70	15.30	7.00	58	13.10	4.60	NR
Van Dam 2013[92]	PDS	13	19	23.5	14.8	15	21.7	9.4	NR
	TLFB	13	19	61.0	30.8	15	58.6	38.4	NR

BP, blood pressure; BSI, Brief Symptom Inventory; BSI-18, Brief Symptom Inventory 18; GSI, Global Severity Index; NR, not reported; NS, not statistically significant ($p > 0.05$); PANAS-X, Positive and Negative Affect Schedule–Expanded Form; PDS, Posttraumatic Stress Diagnostic Scale; PP, per protocol; SS, statistically significant ($p < 0.05$); TLFB, Timeline Followback Method.

a Sample size analysed (ITT or PP).

b Unless otherwise reported.

A description of all acronyms is listed in *Appendix 5*, *Table 106*.

TABLE 29 Characteristics of the unfacilitated EW studies in mental and psychiatric disorders

First author, year	Study design	Intervention group 1	Intervention group 2	Control group 1	Control group 2
Bernard 2006[93]	RCT	Unfacilitated EW	–	Factual and time-management writing	–
Canna 2006[94]	RCT	Unfacilitated EW	–	Time-management writing	–
Graf 2008[95]	RCT	Unfacilitated EW	–	Time-management writing	SMC
Krpan 2013[96]	RCT	Unfacilitated EW	–	Time-management writing	–
Richards 2000[97]	RCT	Unfacilitated EW plus CBT[a]	CBT[b]	Factual writing plus CBT[c]	Waiting list

a In this intervention arm, CBT was identical to comparator and only EW was evaluated.
b The intervention group 2 (CBT) was not relevant for the analysis.
c In this control arm, CBT was identical to comparator and only factual writing was evaluated.

Bernard *et al.*[93] had two groups: one standard EW intervention and one non-EW control in which participants had to write about facts of the day, describe the room they were in and their plans for the next week. Canna[94] examined four groups: CBT with TW, CBT alone, CBT with inexpressive writing (activities of the day) and a waiting list control group. The CBT with TW compared with CBT with inexpressive writing was used in this systematic review, as both arms had CBT: its effect in each would be cancelled out when the two groups were compared. In Richards *et al.*,[97] one intervention group and two control groups were evaluated: trivial writing and no writing. For the systematic review, EW was compared with trivial writing. The remaining study[95] assessed one intervention group compared with one control group. Intervention topics were disease-focused EW or participants were asked to write about their worst trauma. Participants in Krpan *et al.*[96] and Richards *et al.*[97] were financially compensated, whereas participants in the remaining studies were not. In Graf *et al.*,[95] the EW intervention lasted 14 non-consecutive days, whereas in the other four studies[93,94,96,97] the intervention was delivered on 3 consecutive days. Follow-up assessments ranged from just after the writing exercise in Graf *et al.*,[95] up to 24 weeks after in Canna.[94]

The results of the outcomes evaluated across the studies are given in *Table 30*.

TABLE 30 Outcomes collected by the unfacilitated EW studies in mental and psychiatric disorders

First author, year	Physical symptoms	PTSD symptoms	Positive affect	Negative affect	Depression	Anxiety	Distress	Panic	QoL	Social support	Recovery	Resource use
Bernard 2006[93]	–	IES	PANAS-PA	PANAS-NA	HADS-D	HADS-A	–	–	–	–	RSQ	–
Canna 2006[94]	PILL	–	PANAS-PA	PANAS-NA	BDI-II	BAI, STAI	BSI, GSI	PSWQ	QoL, life satisfaction	MSPSS	–	Number of treatment sessions
Graf 2008[95]	OQ-45.2	–	–	–	DASS-D	DASS-A	DASS-S	–	–	–	–	–
Krpan 2013[96]	–	–	–	–	BDI, PHQ-9	–	–	–	–	–	–	–
Richards 2000[97]	PILL	–	Self-report Q Sympt-p	–	–	CSAQ	–	–	–	–	–	–

BAI, Beck Anxiety Inventory; BDI, Beck Depression Inventory; BDI-II, revised Beck Depression Inventory; BSI, Brief Symptom Inventory; CSAQ, Cognitive–Somatic Anxiety Questionnaire; DASS-A, Depression Anxiety Stress Scales, anxiety subscale; DASS-D, Depression Anxiety Stress Scales, depression subscale; DASS-S, Depression Anxiety Stress Scales, stress subscale; GSI, Global Severity Index; MSPSS, Multidimensional Scale of Perceived Social Support; PHQ-9, Patient Health Questionnaire, 9-item subscale; PSWQ, Penn State Worry Questionnaire; RSQ, Recovery Style Questionnaire; Self-report Q Sympt-p, Positive aspects of the Symptom and Emotion Self-report survey; STAI, State/Trait Anxiety Scale.
A description of all acronyms is listed in *Appendix 5*, *Table 106*.

Quality assessment

A summary of the quality of the psychiatric disorders studies[93–97] is shown in *Figures 22* and *23*. All studies[93–97] were reported as randomised but Canna,[94] Krpan *et al.*[96] and Richards *et al.*[97] did not provide information regarding the method of randomisation used. All studies[93–97] were very likely to introduce performance and detection biases. All studies except Graf *et al.*[95] adequately addressed items related to the selection of participants. Krpan *et al.*[96] and Richards *et al.*[97] were the most likely to introduce biases that could affect outcomes, as randomisation and information related to masking, as well as assessment of outcomes, was under-reported. Participation rates were reported in Bernard *et al.*[93] and Graf *et al.*[95] but unclear information regarding withdrawals was provided in the other three studies.[94,96,97] Only Graf *et al.*[95] clearly used an ITT analysis.

Numerical results

The numerical results reported in the studies evaluating mental disorders are summarised in *Table 31*. Total sample sizes ranged from 22 participants in Bernard *et al.*[93] to 65 participants in Richards *et al.*[97] Bernard *et al.*[93] reported significant differences between group-by-time interaction in the total IES score in favour of the intervention group (a reduction in PTSD – symptoms associated with the diagnosis of psychosis); no other differences between groups were seen. Canna[94] and Graf *et al.*[95] reported significant improvements post treatment in a variety of measures of psychological distress in favour of the experimental condition. In the Canna study[94] (a doctoral thesis), improvement was reported in a variety of measured of psychological distress, such as the Beck Anxiety Inventory (BAI); the revised Beck Depression Inventory (BDI-II), Brief Symptom Inventory (BSI)/Global Severity Index (GSI) and the Penn State Worry Questionnaire (PSWQ) at the final follow-up assessment (24 weeks), but the author stated that these improvements could not be attributed specifically to the writing intervention. Graf *et al.*[95] reported significant reductions in anxiety, depression and stress symptoms, as well as greater overall progress in psychotherapy, in the experimental group compared with the writing control group immediately after the third writing session (longer follow-up was not reported). However, in Richards *et al.*,[97] the written emotional disclosure participants reported significantly more physical symptoms and less anxiety at 6 weeks after the intervention than those in the control arm, with no other differences between groups.

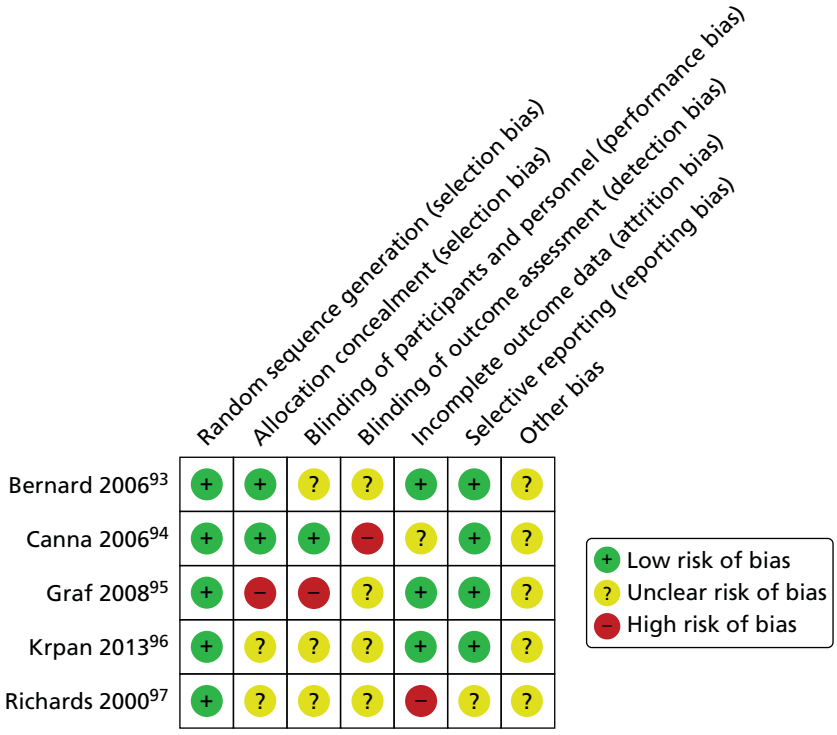

FIGURE 22 Risk-of-bias summary in the mental and psychiatric disorders studies.

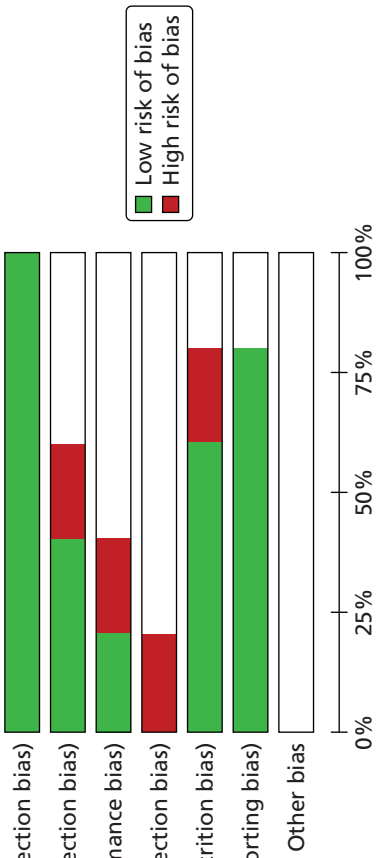

FIGURE 23 Risk-of-bias graph in the mental and psychiatric disorders studies.

TABLE 31 Numerical results in the unfacilitated EW studies in mental and psychiatric disorders

			Intervention group					Control group					
First author, year	Outcome measures	Follow-up (weeks)	*n* total[a]	Final mean score	SD	Change score	SD	*n* total[a]	Final mean score	SD	Change score	SD	Author's reported statistical significance (group-by-time interaction)
Bernard 2006[93]	PANAS-PA	Day 3	12	–	–	–0.6	3.81	10	–	–	–20.022	3.31	NS
	PANAS-NA	Day 3	12	–	–	0.8	1.69	10	–	–	–0.56	1.81	NS
	IES-T	5	12	32.17	21.80	–	–	10	39.10	25.23	–	–	SS
	IES-Av	5	12	10.67	7.25	–	–	10	14.60	8.89	–	–	NS
	IES-I	5	12	12.83	9.41	–	–	10	14.10	11.40	–	–	NS
	IES-Ar	5	12	8.67	6.69	–	–	10	10.40	7.92	–	–	NS
	RSQ	5	12	1.92	1.16	–	–	10	2.20	1.23	–	–	NS
	HADS-A	5	12	8.75	5.83	–	–	10	8.11	5.44	–	–	NS
	HADS-D	5	12	5.92	4.54	–	–	10	7.11	4.65	–	–	NS
	IS-8	5	12	14.23	20.60	–	–	10	12.08	2.93	–	–	NS
Canna 2006[94]	BAI	8	22	17.6	9.88	–	–	18	23.2	14.59	–	–	NR
	–	16	18	10.2	6.62	–	–	13	17.9	15.36	–	–	NR
	–	24	12	8.6	6.83	–	–	12	13.3	10.93	–	–	SS
	BDI-II	8	22	16.8	8.28	–	–	13	17.8	9.65	–	–	NR
	–	16	18	9.9	7.85	–	–	18	15.1	9.78	–	–	NR
	–	24	12	12.4	10.54	–	–	12	10.4	6.90	–	–	SS
	BSI/GSI	16	18	40.9	9.95	–	–	13	47.9	12.55	–	–	NR
	–	24	12	39.8	15.12	–	–	12	40.8	10.48	–	–	SS

continued

TABLE 31 Numerical results in the unfacilitated EW studies in mental and psychiatric disorders (*continued*)

First author, year	Outcome measures	Follow-up (weeks)	Intervention group					Control group					Author's reported statistical significance (group-by-time interaction)
			n total[a]	Final mean score	SD	Change score	SD	*n* total[a]	Final mean score	SD	Change score	SD	
	STAI-S	8	22	49.7	12.70	–	–	18	50.6	14.52	–	–	NR
	–	16	18	42.4	11.40	–	–	13	46.9	12.20	–	–	NR
	–	24	12	43.8	19.33	–	–	12	39.6	12.36	–	–	NR
	STAI-T	16	18	49.3	9.49	–	–	13	51.3	13.38	–	–	NR
	–	24	12	46.3	12.94	–	–	12	46.1	10.77	–	–	NR
	BSI	16	18	40.9	9.95	–	–	13	47.9	12.55	–	–	NR
	–	24	12	39.8	15.12	–	–	12	40.8	10.48	–	–	NR
	PSWQ	16	18	54.6	15.15	–	–	13	59.5	14.50	–	–	NR
	–	24	12	56.7	13.25	–	–	12	55.7	14.41	–	–	SS
	PILL	16	18	18.8	9.97	–	–	13	22.4	11.01	–	–	NR
	–	24	12	15.8	11.74	–	–	12	18.3	11.79	–	–	NR
	QoLI	16	18	42.3	8.99	–	–	13	36.9	14.00	–	–	NR
	–	24	12	43.7	16.73	–	–	12	40.6	9.31	–	–	NR
	MSPSS	16	18	65.1	10.28	–	–	13	53.9	14.83	–	–	NR
	–	24	12	65.5	14.07	–	–	12	55.8	13.07	–	–	NR
	PANAS-PA	Day 3	22	21.4	6.87	–	–	18	15.9	5.21	–	–	NR
	–	Day 4	22	21	6.55	–	–	18	17.7	5.64	–	–	NR
	PANAS-NA	Day 3	22	20.7	6.94	–	–	18	17.9	9.70	–	–	NR
	–	Day 4	22	20.2	8.35	–	–	18	16.6	8.82	–	–	NR
	n of treatment sessions		12	6.25	1.14	–	–	12	7.17	1.34	–	–	NR

First author, year	Outcome measures	Follow-up (weeks)	Intervention group					Control group					Author's reported statistical significance (group-by-time interaction)
			n total[a]	Final mean score	SD	Change score	SD	*n* total[a]	Final mean score	SD	Change score	SD	
Graf 2008[95]	DASS-D	Just after final writing	22	11.32	10.25	–	–	22	17.45	12.18	–	–	SS
	DASS-A	Just after final writing	22	8.23	8.62	–	–	22	10.91	9.66	–	–	NS
	DASS-S	Just after final writing	22	12.32	8.45	–	–	22	18.64	10.74	–	–	SS
	OQ-45.2	Just after final writing	22	52.91	20.45	–	–	22	78.09	24.55	–	–	SS
Krpan 2013[96]	BDI	4	20	20.0	10.5	–	–	20	26.0	8.5	–	–	0.36
	PHQ-9	4	20	9.0	6.5	–	–	20	14.0	6.5	–	–	0.31
Richards 2000[97]	PILL	6	36	17.29	7.85	–	–	29	11.92	7.96	–	–	SS
	CSAQ-t	6	36	22.62	11.35	–	–	29	21.45	11.51	–	–	NS
	CSAQ-cog	6	36	11.93	6.94	–	–	29	10.98	7.04	–	–	NS
	CSAQ-som	6	36	9.99	5.38	–	–	29	8.84	5.46	–	–	NS
	Self-report Q Sympt-p	Just after writing	26	1.76	0.89	–	–	23	2.36	1.07	–	–	NS
	Self-report Q Sympt-n	Just after writing	26	2.73	0.65	–	–	23	1.93	0.75	–	–	NS

BAI, Beck Anxiety Inventory; BDI, Beck Depression Inventory; BDI-II, revised Beck Depression Inventory; BSI, Brief Symptom Inventory; CSAQ-cog, Cognitive–Somatic Anxiety Questionnaire, cognitive subscale; CSAQ-som, Cognitive–Somatic Anxiety Questionnaire, Somatic subscale; CSAQ-t, total form of the Cognitive–Somatic Anxiety Questionnaire; GSI, Global Severity Index; IES-Ar, IES arousal; IES-T, total score of the IES; IS-8, 8-item Insight Scale; MSPSS, Multidimensional Scale of Perceived Social Support; NR, not reported; NS, not statistically significant ($p > 0.05$); PP, per protocol; PHQ-9, Patient Health Questionnaire, 9-item subscale; PSWQ, Penn State Worry Questionnaire; QoLI, Quality of life Inventory; RSQ, Recovery Style Questionnaire; Self-report Q Sympt-n, negative aspects of the Symptom and Emotion Self-report survey; Self-report Q Sympt-p, Positive aspects of the Symptom and Emotion Self-report survey; SS, statistically significant ($p < 0.05$); STAI-S, State/Trait Anxiety Scale, state subscale; STAI-T, State/Trait Anxiety Scale, trait subscale.

a Sample size analysed (ITT or PP).

A description of all acronyms is listed in *Appendix 5*, *Table 106*.

Three studies[93,94,97] evaluated positive affect and four studies[93–96] assessed depression and three could be meta-analysed. With respect to the positive affect outcomes, Canna[94] and Richards *et al.*[97] reported absolute scores but Bernard *et al.*[93] used change scores, and different instruments were used, so the meta-analysis could not be performed. Four studies[93–95,97] reported information on physical symptoms and anxiety. The PILL and IES were not meta-analysed because the SGC considered that they were measuring different things. In total, three[93,94,97] of the five studies[93–97] assessed anxiety at short term and this outcome was meta-analysed.

Meta-analysis

The outcomes of anxiety and depression were meta-analysed separately (*Figures 24* and *25*).

Four studies[93–95,97] assessed anxiety: three of them at short term[93,94,97] and the remaining one[95] at immediate term. Canna[94] also assessed anxiety at a medium term (16 weeks), but the 8-week assessment was chosen for consistency and proximity with the other two study follow-up times (5 and 6 weeks in the studies by Bernard *et al.*[93] and Richards *et al.*,[97] respectively). Bernard *et al.*[93] used the anxiety subscale of the Hospital Anxiety and Depression Scale (HADS-A) and Richards *et al.*[97] used the total score of the Cognitive–Somatic Anxiety Questionnaire (CSAQ). Canna[94] used two instruments to assess anxiety: the BAI and the STAI – both are self-reported questionnaires. The BAI measures the severity of anxiety and provides a total score and the STAI, which has two subscales, measures state and trait anxiety. Thus, the BAI was chosen for inclusion in the meta-analysis.

- *Forest plot* A total of 127 participants were meta-analysed (70 in the EW group and 57 in the control group) (see *Figure 24*). The SMD was –0.07 (95% CI –0.42 to 0.29) with a random-effects model, and with unimportant, non-significant heterogeneity, $I^2 = 2\%$. This result suggests that there is no significant difference in anxiety at short term for the EW group compared with the control group.

There was considerable clinical heterogeneity as follows:

- *Clinical differences between studies* Participants in Bernard *et al.*[93] were first episode psychosis patients, those in Canna[94] were diagnosed with Axis I anxiety or mood disorder, and those in Richards *et al.*[97] had at least one diagnosis of mental disorder and were different from the other study participants as they were psychiatric maximum-security prison inmates. They were reported to have had a higher use of health-care services than non-incarcerated men.
- *Intervention differences* Bernard *et al.*[93] and Canna[94] instructed their participants to write about a disease- and treatment-related topic, whereas the prison inmates in Richards *et al.*[97] had to write about their deepest thoughts and feelings, regarding an experience that had not been previously shared with others at all, or in very little detail. In addition, Richards *et al.*[97] evaluated two control groups, whereas one control group was evaluated in the other two studies.[93,94] The prison inmates were financially compensated, whereas participants in the other two studies were not.

Four studies measured depression:[93,94,96,97] one study[97] immediately after writing and three studies[93,94,96] at short-term follow-up, which could be meta-analysed. Bernard *et al.*[93] measured the HADS-D at 5 weeks, and Canna[94] measured the BDI-II at 8, 16 and 24 weeks so the 8-week value was used, and Krpan *et al.*[96] measured the Beck Depression Inventory (BDI) at 4 weeks. Krpan *et al.*[96] also measured depression with the Patient Health Questionnaire 9-item subscale (PHQ-9) but the BDI was used for the meta-analysis because it was similar to the BDI used by Canna.[94]

- *Forest plot* In the meta-analysis a total of 97 participants were included (54 in the EW groups and 43 in the control groups). The SMD was –0.35 (95% CI –0.76 to 0.06), suggesting that there is no significant difference in depression at short term for the EW group compared with the control group.

Study or subgroup	EW Mean	EW SD	EW Total	Control Mean	Control SD	Control Total	Weight	SMD IV, random, 95% CI
Bernard 2006[93]	8.75	5.83	12	8.11	5.44	10	17.7%	0.11 (–0.73 to 0.95)
Canna 2006[94]	17.6	9.88	22	23.2	14.59	18	31.1%	–0.45 (–1.08 to 0.18)
Richards 2000[97]	22.62	11.35	36	21.45	11.51	29	51.2%	0.10 (–0.39 to 0.59)
Total (95% CI)			**70**			**57**	**100.0%**	**–0.07 (–0.42 to 0.29)**

Heterogeneity: $\tau^2 = 0.00$; $\chi^2 = 2.03$, df = 2 ($p = 0.36$); $I^2 = 2\%$

Test for overall effect: $z = 0.38$ ($p = 0.70$)

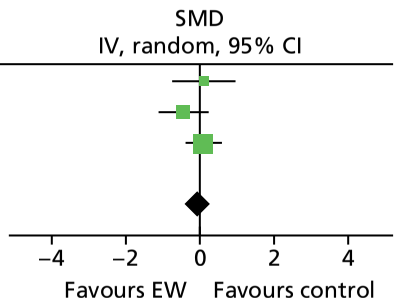

FIGURE 24 Forest plot of anxiety at short-term follow-up in the psychiatric/mental disorders studies. df, degrees of freedom; IV, inverse variance.

Study or subgroup	EW Mean	EW SD	EW Total	Control Mean	Control SD	Control Total	Weight	SMD IV, random, 95% CI
Bernard 2006[93]	5.92	4.54	12	7.11	4.65	10	23.4%	–0.25 (–1.09 to 0.59)
Canna 2006[94]	16.8	8.28	22	17.8	9.65	13	35.4%	–0.11 (–0.80 to 0.58)
Krpan 2013[96]	20	10.5	20	26	8.5	20	41.2%	–0.62 (–1.25 to 0.02)
Total (95% CI)			**54**			**43**	**100.0%**	**–0.35 (–0.76 to 0.06)**

Heterogeneity: $\tau^2 = 0.00$; $\chi^2 = 1.19$, df = 2 ($p = 0.55$); $I^2 = 0\%$

Test for overall effect: $z = 1.69$ ($p = 0.09$)

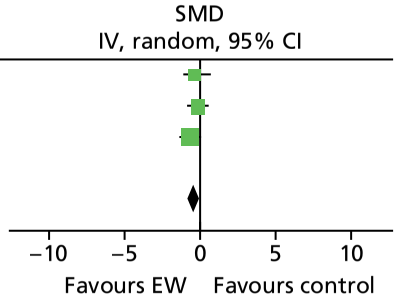

FIGURE 25 Forest plot of depression at short-term follow-up in the psychiatric/mental disorder studies. df, degrees of freedom; IV, inverse variance.

F43: post-traumatic stress disorder

Overview

There were two small studies evaluating unfacilitated EW on PTSD.[98,121] A summary of their main characteristics is presented in *Table 32*. Two other studies[97,98] also evaluated patients with PTSD; however, they used facilitated TW and are reported in the facilitated TW section.

One study[121] was conducted in the USA and the other one[98] in Israel. In Gidron *et al.*,[98] 10 out of the 14 participants had PTSD following a motor vehicle accident (MVA), and the 25 participants in Smyth and Arigo[121] were recruited from a veterans hospital and a community rape and trauma centre. In both studies,[98,121] patients had been diagnosed with PTSD as defined by the DSM-IV.

The outcomes evaluated in each of the studies on PTSD patients are reported in *Table 33*.

The main outcomes assessed were related to the physical symptoms and to psychological factors, mostly depression.

TABLE 32 Characteristics of the unfacilitated EW studies in PTSD

First author, year	Study design	Intervention group	Control group
Gidron 1996[98]	RCT	Unfacilitated EW	Factual writing
Smyth 2008[121]	RCT	Unfacilitated EW	Time-management writing

TABLE 33 Outcomes collected by the unfacilitated EW studies in PTSD

First author, year	Physical health/symptoms	PTSD symptoms	Positive mood	Negative mood	Depression	Biomarker of clinical course of disease	Various other	Adherence	Resource use
Gidron 1996[98]	PILL	IES	PANAS-PA	PANAS-NA	BDI-II	–	–	–	Number of visits to clinician
Smyth 2008[121]	–	*PSS-I (PTSD symptoms)*	*POMS-v*	–	*POMS-d*	*Cortisol reactivity*	*PTGI (positive changes)*	✓	–

POMS-d, Profile of Mood States depression subscale; POMS-v, Profile of Mood States vigour subscale; PSS-I, Post-Traumatic Stress Disorder Symptom Scale Interview; PTGI, Post-Traumatic Growth Inventory.
The shaded cells show the outcomes considered in the meta-analysis. Italic text shows outcomes for which no data were reported.
A description of all acronyms is listed in *Appendix 5*, *Table 106*.

Quality assessment

A summary of the quality of the studies on PTSD is shown in *Figure 26*. Both studies were randomised but the method of randomisation was not indicated in either study.

Gidron *et al.*[98] was likely to introduce both detection and attrition biases. The study by Smyth and Arigo[121] was more likely to introduce attrition and selection biases. The remaining items in these two studies[98,121] were unclear or not reported. Overall, the quality of the methods used in each of the studies was under-reported. Only participants in Gidron *et al.*[98] were analysed by ITT analysis.

Numerical results

The numerical results reported in the PTSD studies are summarised in *Table 34*. The follow-up periods were 5 weeks in Gidron *et al.*[98] and 13 weeks in Smyth and Arigo.[121] The final sample size was 14 participants in Gidron *et al.*[96] and 21 participants in Smyth and Arigo.[121]

Overall, a significant effect of group-by-time interaction in mood outcomes was reported in both studies.[98,121] In Smyth and Arigo,[121] there was a significant improvement in mood in the TW group compared with control subjects, as opposed to Gidron *et al.*,[98] in which participants in the experimental group increased significantly the negative affect compared with control subjects.

F50: bulimia nervosa

Overview

There was one RCT[99] on bulimia nervosa (BN), binge-eating disorder (BED) and other eating disorders evaluating unfacilitated EW. Participants in Robinson and Serfaly[99] were UK university students and staff, recruited via e-mail, and diagnosed with the Questionnaire for Eating Disorders Diagnosis (QEDD) using DSM-IV.[123] Two interventions were assessed. One intervention was e-mail bulimia therapy (eBT), which did not involve TW, and is not considered further here. In the other active intervention, unsupported self-directed writing (SDW) participants were sent an e-mail and were asked to write about their self-selected difficulties at least twice a week and send it back to the authors. The duration of the intervention was not specified. Participants in the control group were placed in a waiting list for 3 months, after which they were offered eBT or SDW by random allocation. The outcomes evaluated in the studies on BN are reported in *Table 35*.

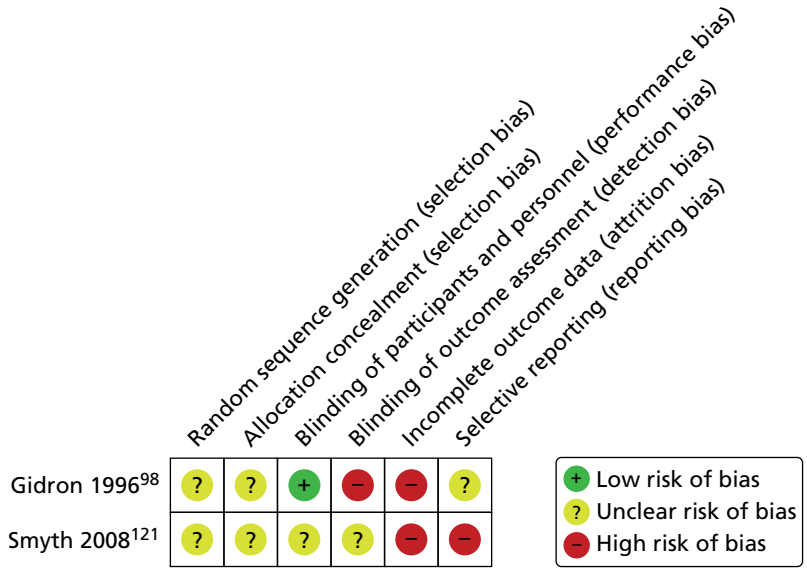

FIGURE 26 Risk-of-bias summary in the PTSD studies.

TABLE 34 Numerical results in the unfacilitated EW studies in PTSD

First author, year	Outcome measures	Follow-up (weeks)	Intervention group					Control group					Author's reported statistical significance (group-by-time interaction)
			n total[a]	Final mean score[b]	SD	Change score	SD	*n* total[a]	Final mean score[b]	SD	Change score	SD	
Gidron 1996[98]	PILL	5	8	138.50	34.70	–	–	6	116.00	28.90	–	–	SS
	IES-T	5	8	40.90	16.10	–	–	6	27.30	21.60	–	–	SS
	IES-I	5	8	23.20	9.20	–	–	6	13.20	10.80	–	–	NR
	IES-Av	5	8	17.60	10.10	–	–	6	14.20	12.50	–	–	SS
	PANAS-PA	5	8	31.40	8.60	–	–	6	24.70	8.80	–	–	NR
	PANAS-NA	5	8	32.70	8.40	–	–	6	32.00	9.40	–	–	SS
	BDI-II	5	8	39.10	9.10	–	–	6	45.20	13.00	–	–	NR
	Number of visits, clinician	5	8	3.10	2.00	–	–	6	0.70	1.60	–	–	SS
Smyth 2008[121]	Cortisol	13	13	12.7	NR	NR	NR	8	16.3	NR	NR	NR	SS
	POMS-t	13	13	NR	NR	Mean change: –4.87	NR	8	NR	NR	Mean change: NR	NR	SS
	POMS-d	13	13	NR	NR	Mean change: –3.3	NR	8	NR	NR	Mean change: –0.5	NR	NS
	POMS-a	13	13	NR	NR	Mean change: –5.51	NR	8	NR	NR	Mean change: 0.5	NR	SS
	POMS-v	13	13	NR	NR	Mean change: –0.5	NR	8	NR	NR	Mean change: 3.6	NR	NS
	POMS-f	13	13	NR	NR	Mean change: –1.7	NR	8	NR	NR	Mean change: 1.3	NR	NS

continued

TABLE 34 Numerical results in the unfacilitated EW studies in PTSD (*continued*)

			Intervention group					Control group					Author's reported statistical significance (group-by-time interaction)
First author, year	Outcome measures	Follow-up (weeks)	*n* total[a]	Final mean score[b]	SD	Change score	SD	*n* total[a]	Final mean score[b]	SD	Change score	SD	
	POMS-c	13	13	NR	NR	Mean change: –2.1	NR	8	NR	NR	Mean change: –3	NR	NS
	PTGI	13	13	NR	NR	NR	NR	8	NR	NR			SS
	PSS-I-v	13	13	NR	NR	1.13	NR	8	NR	NR	–0.8	NR	SS
	PSS-I-a	13	13	NR	NR	0.36	NR	8	NR	NR	0.2	NR	SS
	Adherence (rate)	13	15	Number of patients: 14	–	–	–	10	Number of patients: 10	–	–	–	NR

IES-T, total score of the IES; NR, not reported; NS, not statistically significant ($p > 0.05$); POMS-a, Profile of Mood States anger subscale; POMS-c, Profile of Mood States confusion subscale; POMS-d, Profile of Mood States depression subscale; POMS-f, Profile of Mood States fatigue subscale; POMS-t, Profile of Mood States tension subscale; POMS-v, Profile of Mood States vigour subscale; PP, per protocol; PSS-I-a, Post-Traumatic Stress Disorder Symptom Scale Interview, arousal dimension; PSS-I-v, Post-Traumatic Stress Disorder Symptom Scale Interview, valence dimension; PTGI, Post-Traumatic Growth Inventory; SS, statistically significant ($p < 0.05$).

a Sample size analysed (ITT or PP).

b Unless otherwise specified.

A description of all acronyms is listed in *Appendix 5*, *Table 106*.

TABLE 35 Outcomes collected by the unfacilitated EW study in BN

First author, year	Diagnosis of eating disorder	Desired weight	Bulimia test	Depression	Resource use
Robinson 2008[99]	QEDD	BMI[a]	BITE	BDI	–

BITE, Bulimia Investigatory Test Edinburgh; BMI, body mass index.
a BMI was collected as the participant-desired weight and was a secondary outcome.
A description of all acronyms is listed in *Appendix 5*, *Table 106*.

Quality assessment

A summary of the study quality is shown in *Figure 27*. Robinson *et al.*[99] was truly randomised; however, the sequence generation was not concealed. Masking of participants was performed but information related to masking of outcome assessment was unclear. The study[99] was likely to introduce high risk of selection bias and unclear risk of detection bias and high risk of attrition bias. Authors reported that they used an ITT analysis.

Numerical results

The numerical results reported in Robinson *et al.*[99] are summarised in *Table 36*. The follow-up assessments were performed at 13 weeks post writing. The total sample size in the study arms relevant to this review was 51 participants.

Authors reported that overall severity scores were reduced within the intervention group but differences were not significant. However, the number of participants fulfilling DSM-IV eating disorder criteria tended to be lower (but was not significantly different) in the EW group than in the control group.

G12: amyotrophic lateral sclerosis/motor neurone disease

Overview

There was one RCT[100] evaluating unfacilitated EW on patients who had been diagnosed with amyotrophic lateral sclerosis (ALS) (also known as motor neurone disease). Participants in the Averill *et al.* study[100] were diagnosed with definite or probable ALS using El Escorial World Federation of Neurology criteria at least 6 months prior to study entry[124] (World Federation of Neurology Research Group on Neuromuscular Diseases, 1994). The study[100] was conducted in the USA. One intervention group was compared with one control group. Intervention group participants had to disclose, by handwriting (or orally), about a disease-focused topic during 20 minutes over 3 non-consecutive days. The control group did no writing

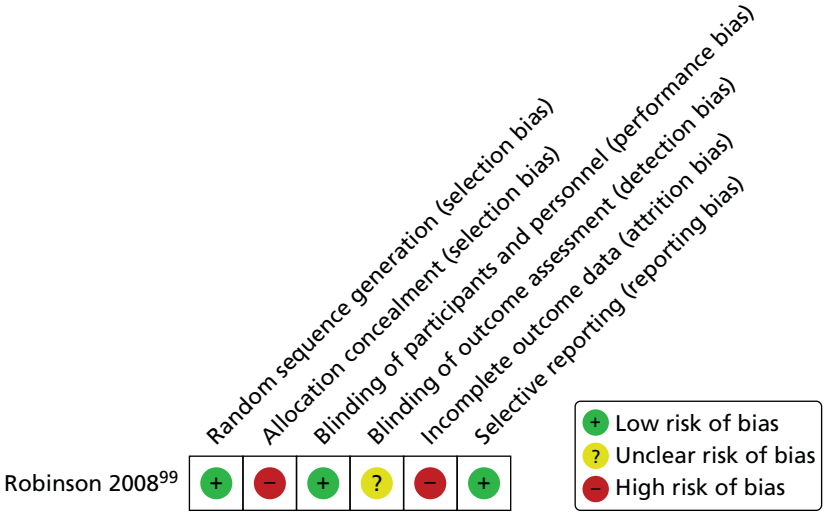

FIGURE 27 Risk-of-bias summary in the BN study.

TABLE 36 Numerical results in the unfacilitated EW study in BN

First author, year	Outcome measures	Follow-up (weeks)	Intervention group			Control group			Author's reported statistical significance (group-by-time interaction)
			n total[a]	Final mean score[b]	95% CI[b]	*n* total[a]	Final mean score[b]	95% CI[b]	
Robinson 2008[99]	QEDD	13	34	Number of participants without EDD = 5; number of participants with EDD = 29	–	27	Number of participants without EDD = 0; number of participants with EDD = 27	–	SS
	BDI-II	13	34	18.30	14.1 to 22.6	27	23.3	19.8 to 28.6	NS
	BITE-sev	13	34	6.91	5.33 to 8.5	27	9.37	8.0 to 10.74	NS
	BITE-symp	13	34	21.70	19.3 to 24.1	27	24.19	22.9 to 25.5	NS
	BMI	13	34	NR	NR	27	NR	NR	NR

BITE-sev, The Bulimia Investigatory Test Edinburgh, severity subscale; BITE-symp, The Bulimia Investigatory Test Edinburgh, symptom subscale; BMI, body mass index; EDD, eating disorder diagnosis; NR, not reported; NS, not statistically significant; PP, per protocol; SS, statistically significant ($p < 0.05$).

a Sample size analysed (ITT or PP).

b Unless otherwise specified.

A description of all acronyms is listed in *Appendix 5*, *Table 106*.

and had to complete study outcome measures only. Participants were not financially compensated. The outcomes evaluated in Averill *et al.*[100] are reported in *Table 37*. Psychological outcomes were the most extensively assessed, together with QoL.

Quality assessment

A summary of the quality of the study in ALS is shown in *Figure 28*.

Averill *et al.*[100] was truly randomised but information relating to the allocation concealment of the sequence generation was unclear. There was no information reported regarding the masking of participants and/or personnel. Therefore, there was a possibility of selection and performance biases. Numerical outcome data were supplied for only the QoL measure; none of the remaining outcomes was reported. The authors did not perform ITT analysis.

Numerical results

The numerical results reported in Averill *et al.*[100] are summarised in *Table 38*.

Follow-up assessments were performed at 13 and 26 weeks. The total sample size was 48 participants at both time points. At 13 weeks, there was a small but significant improvement in well-being measures in the intervention group compared with baseline, and a significant reduction in well-being (QoL) in the control group; both these differences had disappeared at 26 weeks. The authors pointed out that ALS is a progressive condition and it may be that the physical and emotional challenges faced by those with the condition at 6 months might be very different from those faced by them at baseline and it could be that booster sessions of EW are required in conditions such as this. Ambivalence Emotional Expression (or Ambivalence over Emotional Expression; AEE) appeared to moderate psychological well-being. Authors reported that those participants who were more ambivalent about expressing emotion appeared to benefit particularly from emotional disclosure at 13 weeks.

TABLE 37 Outcomes collected by the unfacilitated EW study in ALS

First author, year	Affect	Coping	Depression	Various others	QoL	Resource use
Averill 2013[100]	*ABS*	*Likert scale*	*GDS*	*AEE, SCS*	McGill QOL	–

ABS, Affects Balance Scale; AEE, Ambivalence Emotional Expression; GDS, Geriatric Depression Scale; McGill QOL, McGill Quality Of Life; SCS, Social Constraints Scale.
Italic text shows outcomes for which no data were reported.
A description of all acronyms is listed in *Appendix 5*, *Table 106*.

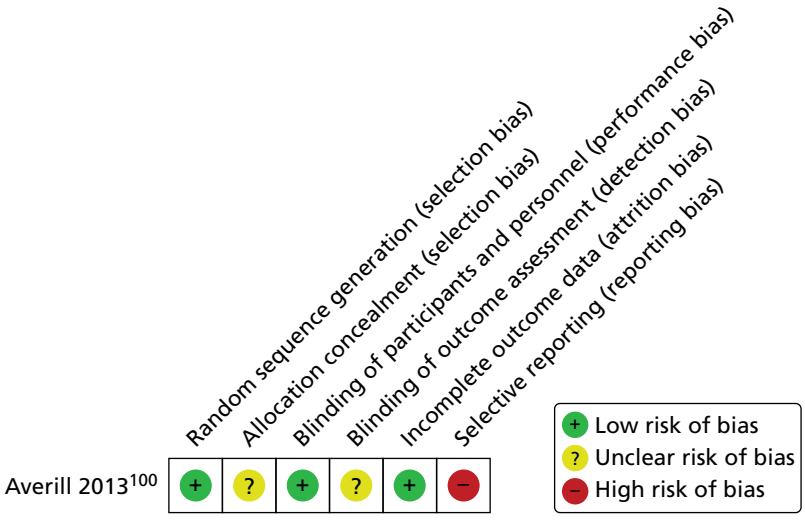

FIGURE 28 Risk-of-bias summary in the ALS study.

TABLE 38 Numerical results in the unfacilitated EW study in ALS

First author, year	Outcome measures	Follow-up (weeks)	Intervention group			Control group			Author's reported statistical significance (group-by-time interaction)
			n total[a]	Mean of standardised scores	SD unit	*n* total[a]	Mean of standardised scores	SD unit	
Averill 2013[100]	QoL	13	24	0.066	NR	24	–0.164	NR	NR
		26	24	–0.031	NR	24	0.009	NR	NS

NR, not reported; NS, not statistically significant ($p > 0.05$); PP, per protocol.
a Sample size analysed (ITT or PP).

G43 and G44: migraine and tension headache

Overview

There was one RCT[101] evaluating unfacilitated EW on patients diagnosed with migraine or tension headache, using the International Headache Society criteria. D'Souza *et al.*[101] was conducted in the USA on psychology students, who reported either tension or migraine headaches on screening. The majority (86.5%) of participants were female. Unfacilitated EW was compared with time-management writing; intervention participants were asked to write about their most significant trauma, upheaval or stressful experience for 20 minutes on four occasions over 2 weeks. A third arm (not reported further here) examined the effect of relaxation training. Control subjects had a time-management writing task. Participants received financial compensation for participating in the study. The outcomes evaluated in D'Souza *et al.*[101] are reported in *Table 39*. Physical symptoms were the main outcomes assessed.

Quality assessment

A summary of the study quality is shown in *Figure 29*. D'Souza *et al.*[101] was truly randomised. Allocation concealment was performed, and blinding was preserved at the performance level. Withdrawals were adequately reported and outcomes were fully reported. This study[101] was not likely to introduce any bias other than detection bias. ITT analyses were performed. However, numbers involved in the study[101] were very small and no sample size calculation was reported.

Numerical results

The numerical results are summarised in *Table 40*. Follow-up assessment was performed at 12 weeks post writing for all outcomes but for the Positive and Negative Affect Schedule (PANAS), which was evaluated just after writing as a manipulation check to verify that the conditions operated as expected. The total

TABLE 39 Outcomes collected by the unfacilitated EW study in migraine and tension headache

First author, year	Physical symptoms	Positive mood	Negative mood	Behavioural disability from headache	Resource use
D'Souza 2008[101]	Headache frequency, disability and severity, SCL-90-R	PANAS-PA	PANAS-NA	MIDAS	–

MIDAS, Migraine Disability Assessment Scale; SCL-90-R, Symptom Checklist-90-Revised.
A description of all acronyms is listed in *Appendix 5*, *Table 106*.

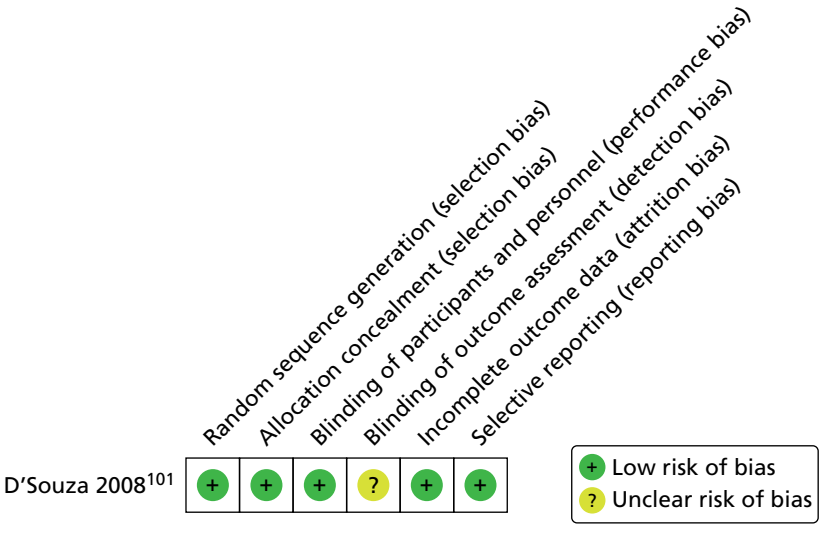

FIGURE 29 Risk-of-bias summary in the migraine and tension headache study.

TABLE 40 Numerical results in the unfacilitated EW study in migraine and tension headache

First author, year	LTC	Outcome measures	Follow-up (weeks)	Intervention group					Control group					Author's reported statistical significance (group-by-time interaction)
				n total[a]	Final mean score	SD	Change score	SD	*n* total[a]	Final mean score	SD	Change score	SD	
D'Souza 2008[101]	Migraine headache	PANAS-PA	Just after writing	29	24.72	9.07	–1.35	8.12	27	26.15	7.39	–1.65	5.54	NR
		PANAS-NA	Just after writing (SS)	29	17.23	6.06	–3.7	3.86	27	17.46	4.48	–3.58	5.41	NR
		Headache frequency: *n* of days	12	31	9.00	5.81	–	–	31	8.97	6.14	–	–	NS
		Headache severity: pain	12	31	5.23	2.28	–	–	31	5.55	1.69	–	–	NS
		MIDAS	12	31	9.87	8.79	–	–	31	10.13	11.49	–	–	NS
		SCL-90-R	12	31	11.26	7.61	–	–	31	10.61	5.37	–	–	NS
	Tension headache	Headache frequency: *n* of days	12	17	12.24	7.90	–	–	17	11.24	9.01	–	–	NS
		Headache severity: Pain	12	17	5.00	1.62	–	–	17	4.71	1.80	–	–	NS
		MIDAS	12	17	8.35	8.89	–	–	17	7.29	7.82	–	–	NS
		SCL-90-R	12	17	8.71	5.03	–	–	17	11.06	4.76	–	–	NS

MIDAS, Migraine Disability Assessment Scale; NR, not reported; NS, not statistically significant ($p > 0.05$); PP, per protocol; SCL-90-R, Symptom Checklist-90-Revised; SS, statistically significant.
a Sample size analysed (ITT or PP).
A description of all acronyms is listed in *Appendix 5*, *Table 106*.

sample size was 62 participants. The results were reported separately for the two types of headache. If 12-week outcome data were missing then 4-week data were used. The intervention group had increased negative mood immediately after administration compared with control subjects but whether or not differences between groups were statistically significant was not reported.

No difference in any outcome was seen between intervention and control subjects for either type of headache at 4 or 12 weeks (only 12-week data were provided in full).

I51: cardiovascular disease

Overview

There were three studies[102–104] evaluating unfacilitated EW on patients with CVD. A summary of their main characteristics is presented in *Table 41*. Participants in Willmott *et al.*[104] were patients with a first myocardial infarction (MI) receiving treatment at one of two acute hospital clinics. Participants in Hevey *et al.*[103] were patients with a confirmed MI, who had received treatment at a large teaching hospital. Bartasiuniene *et al.*[102] included rehabilitation hospital patients with CVD. Bartasiuniene *et al.*[102] was conducted in Lithuania, Hevey *et al.*[103] was conducted in Ireland and Willmott *et al.*[104] was conducted in the UK.

All studies[102–104] assessed an expressive writing intervention in which the topic was disease focused. Additionally, participants in Willmott *et al.*[104] had to express both positive and negative disease-related feelings, whereas in the remaining studies only negative thoughts were to be expressed. Factual writing was the control intervention in all three studies. Bartasiuniene *et al.*[102] also included a second, non-writing control group, in which participants received what the authors described as usual care. However, this latter control group was not included in current analyses, as the usual care consisted of aromatherapy and other activities that were considered active, in that participants would have been getting more attention than those receiving only usual care. Hevey *et al.*[103] and Willmott *et al.*[104] both implemented writing for 20 minutes over 3 consecutive days, whereas intervention group participants in Bartasiuniene *et al.*[102] wrote for 30 minutes on 4 consecutive days.

The outcomes evaluated in the studies[102–104] are reported in *Table 42*. Negative affect and QoL were the most frequent outcomes measured.

TABLE 41 Characteristics of the unfacilitated EW studies in CVD

First author, year	Study design	Intervention group	Control group
Bartasiuniene 2011[102]	RCT	Unfacilitated EW	Factual writing
Hevey 2012[103]	RCT	Unfacilitated EW	Factual writing
Willmott 2011[104]	RCT	Unfacilitated EW	Factual writing

TABLE 42 Outcomes collected by the unfacilitated EW studies in CVD

First author, year	Physical symptoms	Positive mood	Negative mood	Anxiety	Depression	Coping	QoL	Resource use
Bartasiuniene 2011[102]	–	PANAS-X (b)–PA	PANAS-X(b)–NA	–	–	–	–	–
Hevey 2012[103]	–	–	Type D negative affectivity	HADS–A	HADS–A	Brief COPE	Mac New HRQOL	–
Willmott 2011[104]	SBP, DBP, cardiac symptoms	–	–	–	–	–	SF-36	Number of visits to clinician, number of prescribed pain medications per month

Brief COPE, Brief Coping Inventory; DBP, diastolic blood pressure; Mac New HRQOL, Mac New Health Related Quality Of Life scale; PANAS-X(b)–NA, negative subscale of the PANAS-X(b); PANAS-X(b)–PA, positive subscale of the PANAS-X(b); SBP, systolic blood pressure.
A description of all acronyms is listed in *Appendix 5*, *Table 106*.

Quality assessment

A summary of the quality of the CVD studies[102–104] is shown in *Figures 30* and *31*.

All three studies[102–104] were randomised. However, Bartasiuniene *et al.*[102] and Hevey *et al.*[103] did not report the method of randomisation used or whether or not the sequence of the random generation was concealed. Willmott *et al.*,[104] however, reported adequately on all quality items except for the outcome assessment, which was unclear. In the remaining studies,[102,103] selection, performance and detection biases were possible. Additionally, in Hevey *et al.*,[103] numerical data were reported for only QoL, and these data were derived from graphs so no measure of variability could be computed. Similarly, Bartasiuniene *et al.*[102] under-reported outcomes; it was also unclear whether or not the authors performed an ITT analysis, as they reported that only 48 out of 60 participants completed the study, and they did not report further on the 12 dropouts. The remaining studies[103,104] reported on only those who continued to participate in the study.

Numerical results

The numerical results of the CVD studies are reported in *Table 43*. Follow-up assessments were performed from just after writing up to 21 weeks later. Total study sizes ranged from 30 participants in the Bartasiuniene *et al.* study[102] to 128 participants in the Willmot *et al.* study.[104]

Differences between groups by time interaction were reported as statistically significant for the following outcomes measures: PANAS-PA/PANAS-NA; QoL; number of prescribed medication/month; diastolic blood pressure (DBP) and Short Form questionnaire-36 items mental composite score (SF-36 MCS). No other significant effect of group-by-time interaction was reported across the studies in CVD. Additionally, Willmott *et al.*[104] stated that the intervention group had significantly fewer symptoms than those in the control group ($p < 0.001$). Likewise, DBP in the control group was reported as significantly higher than in the experimental group at the 5-month follow-up ($p < 0.008$).

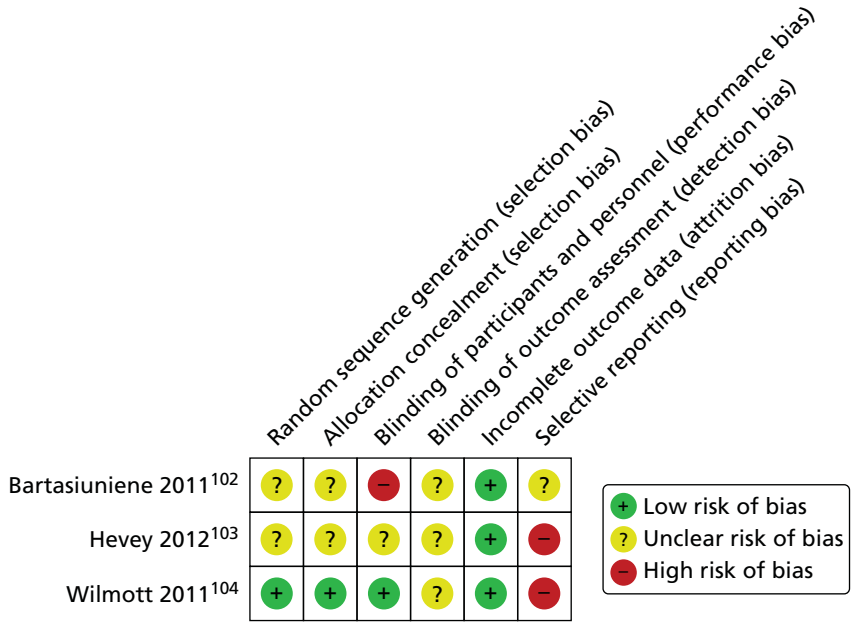

FIGURE 30 Risk-of-bias summary in the CVD studies.

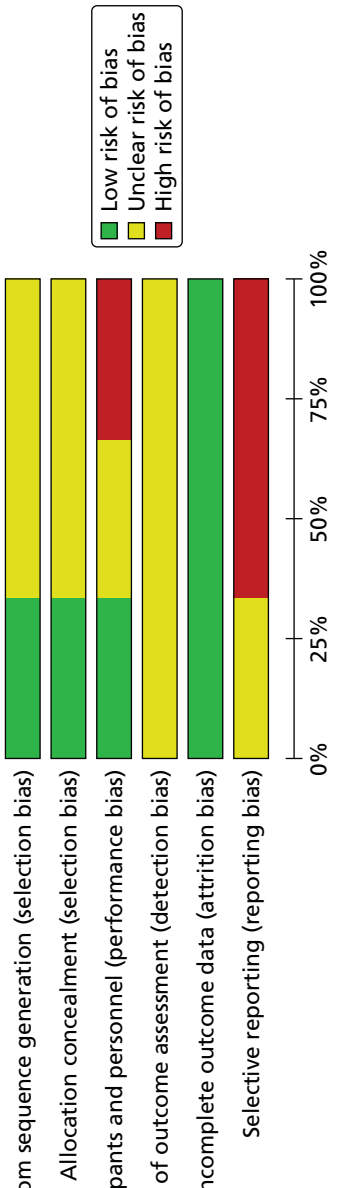

FIGURE 31 Risk-of-bias graph in the CVD studies.

TABLE 43 Numerical results in the unfacilitated EW studies in CVD

First author, year	Outcome measures	Follow-up (weeks)	Intervention group			Control group			Author's reported statistical significance (group-by-time interaction)
			n total[a]	Final mean score	SD	*n* total[a]	Final mean score	SD	
Bartasiuniene 2011[102]	PANAS-PA	Day 4	15	28.53	NR	15	28.06	NR	SS[b]
	PANAS-NA	Day 4	15	15.93	NR	15	18.73	NR	SS[b]
Hevey 2012[103]	QoL	Just after writing	43	4.97	NR	46	4.84	NR	NR
		13	43	5.65	NR	46	5.08	NR	SS
	HADS-D	Just after writing	43	NR	NR	46	NR	NR	NS
		13	43	NR	NR	46	NR	NR	NS
	HADS-A	Just after writing	43	NR	NR	46	NR	NR	NS
		13	43	NR	NR	46	NR	NR	NS
	Type D negative affectivity	Just after writing	43	NR	NR	46	NR	NR	NS
		13	43	NR	NR	46	NR	NR	NS
	Type D social inhibition	Just after writing	43	NR	NR	46	NR	NR	NS
		13	43	NR	NR	46	NR	NR	NS
	Brief COPE-ad	Just after writing	43	NR	NR	46	NR	NR	NS
		13	43	NR	NR	46	NR	NR	NS
	Brief COPE-m	Just after writing	43	NR	NR	46	NR	NR	NS
		13	43	NR	NR	46	NR	NR	NS

continued

TABLE 43 Numerical results in the unfacilitated EW studies in CVD (*continued*)

First author, year	Outcome measures	Follow-up (weeks)	Intervention group			Control group			Author's reported statistical significance (group-by-time interaction)
			n total[a]	Final mean score	SD	*n* total[a]	Final mean score	SD	
Willmott 2011[104]	*n* of visits clinician	21	68	8.60	3.70	60	10.30	5.00	NS
	n of prescribed pain medication/month	4	68	5.00	1.60	60	5.00	1.60	NR
		8	68	4.90	1.70	60	5.20	1.70	NR
		21	68	4.80	1.70	60	5.30	1.70	SS
	n of cardiac symptoms	4	68	0.62	0.70	60	0.96	0.90	NR
		8	68	0.73	1.00	60	1.10	0.90	NR
		21	68	0.63	0.80	60	1.10	0.90	NS
	DBP	4	68	73.70	9.00	60	73.10	8.80	NR
		8	68	71.80	8.40	60	74.20	8.80	NR
		21	68	71.00	9.00	60	75.00	9.80	SS
	SBP	4	68	126.50	16.20	60	126.50	17.00	NR
		8	68	125.20	17.30	60	129.90	16.40	NR
		21	68	127.60	17.00	60	133.90	18.30	NS
	SF-36 PCS	4	68	44.00	14.80	60	40.50	15.80	NR
		8	68	65.50	21.60	60	60.30	22.00	NR
		21	68	68.10	22.50	60	63.60	16.30	NS
	SF-36 MCS	4	68	48.30	16.20	60	47.80	16.00	NR
		8	68	66.80	21.60	60	64.80	21.60	NR
		21	68	71.40	20.20	60	62.90	22.40	SS[b]

Brief COPE-ad, Brief Coping Inventory, adaptive; Brief COPE-m, Brief Coping Inventory, maladaptive; DBP, diastolic blood pressure; NR, not reported; NS, not statistically significant ($p > 0.05$); PP, per protocol; SBP, systolic blood pressure; SF-36 MCS, Short Form questionnaire-36 items mental composite score; SF-36 PCS, Short Form questionnaire-36 items physical composite score; SS, statistically significant ($p < 0.05$).

a Sample size analysed (ITT or PP).

b Significant statistical association between expressive writing and neutral groups only in Bartasiuniene *et al.*[102]

A description of all acronyms is listed in *Appendix 5*, *Table 106*.

J44 and J84: chronic obstructive pulmonary disease and idiopathic pulmonary fibrosis

Overview

There was one RCT[105] evaluating unfacilitated EW on patients medically diagnosed with chronic obstructive pulmonary disease (COPD) or idiopathic pulmonary fibrosis (IPF), who were recruited while participating in an 8-week pulmonary rehabilitation programme. Sharifabad *et al.*[105] was conducted in the USA. A written emotional disclosure intervention was evaluated, for which participants had to write about their most traumatic or upsetting life experiences for 20 minutes once a week for 3 consecutive weeks, whereas control participants had to write in detail about an assigned neutral topic (a specific event or an object) without referring to their emotions. The outcomes evaluated by Sharifabad *et al.*[105] are reported in *Table 44*. They include physical function, symptom and QoL.

Quality assessment

A summary of the quality of the COPD/ IPF studies is shown in *Figure 32*. Sharifabad *et al.*[105] was described as randomised but authors did not report the method of randomisation. They stated, 'The pulmonary rehabilitation program had two morning sessions and one evening session. For one cycle of patients, those in the morning sessions were enrolled in the WDT group [i.e. intervention] and patients in the evening group were enrolled in the control group. Then, for the following cycle of patients the enrolment switched . . .' Thus, it is not clear whether or not this study[105] was truly randomised. The quality items assessed showed that this study[105] was likely to introduce selection, performance, detection and attrition biases.

TABLE 44 Outcomes collected by unfacilitated EW study in COPD/IPF

First author, year	Physical function	Physical symptoms	QoL	Resource use
Sharifabad 2010[105]	6MWD, FEV_1, FVC	MMRC dyspnoea scale	CRQ, SGRQ	–

6MWD, 6 Minutes' Walk Distance; CRQ, Chronic Respiratory Disease Questionnaire; FEV_1, forced expiratory volume in 1 second; FVC, forced vital capacity; MMRC, Modified Medical Research Council dyspnoea scale; SGRQ, St George's Respiratory Questionnaire.
A description of all acronyms is listed in *Appendix 5, Table 106*.

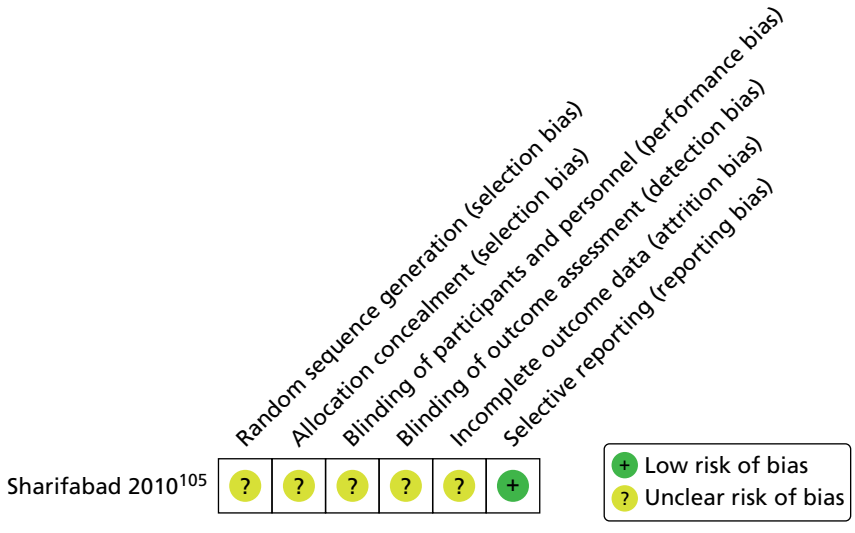

FIGURE 32 Risk-of-bias summary in the COPD/IPF study.

Numerical results

The numerical results of this study are reported in *Table 45*. Follow-up assessments were performed at 8 and 26 weeks. The total sample size was 66 participants (no power calculation was provided). At 6 months, and adjusting for baseline differences, authors reported significant improvement between groups favouring the control group in the emotion domain of the Chronic Respiratory Disease Questionnaire, emotion subscale (CRQ-e). The remaining outcomes had non-significant differences in scores between groups.

TABLE 45 Numerical results in the unfacilitated EW study in COPD/IPF

First author, year	Outcome measures	Follow-up (weeks)	Intervention group			Control group			Author's reported statistical significance (group-by-time interaction)
			n total[a]	Final mean score	SD	*n* total[a]	Final mean score	SD	
Sharifabad 2010[105]	Modified MRC dyspnoea	8	29	1.61	1.14	37	1.79	1.00	NS
	Modified MRC dyspnoea	26	29	1.94	0.98	37	1.83	0.95	NS
	SGRQ	8	29	39.46	16.80	37	42.21	14.76	NS
	SGRQ	26	29	40.06	17.06	37	42.78	16.15	NS
	CRQ-d	8	29	4.39	1.37	37	4.17	1.45	NS
	CRQ-d	26	29	3.98	1.86	37	4.22	1.60	NS
	CRQ-m	8	29	5.42	1.03	37	5.39	1.18	NS
	CRQ-m	26	29	5.46	1.21	37	5.44	1.33	NS
	CRQ-f	8	29	4.67	1.16	37	4.54	1.03	NS
	CRQ-f	26	29	4.78	1.20	37	4.50	1.06	NS
	CRQ-e	8	29	5.20	1.06	37	5.26	0.99	SS
	CRQ-e	26	29	5.00	1.17	37	5.11	1.22	SS
	6MWD	8	29	314.60	99.70	37	314.20	122.50	NS
	6MWD	26	29	263.70	110.40	37	278.40	118.90	NS
	FEV_1	8	29	0.97	0.48	37	1.09	0.65	NS
	FEV_1	26	29	1.00	0.51	37	1.10	0.61	NS
	FVC	8	29	1.72	0.68	37	1.93	0.80	NS
	FVC	26	29	1.70	0.72	37	2.01	0.69	NS

6MWD, 6 Minute's Walk Distance; CRQ, Chronic Respiratory Disease Questionnaire; CRQ-d, Chronic Respiratory Disease Questionnaire, dyspnoea subscale; CRQ-e, Chronic Respiratory Disease Questionnaire, emotion subscale; CRQ-f, Chronic Respiratory Disease Questionnaire, fatigue subscale; CRQ-m, Chronic Respiratory Disease Questionnaire, mastery subscale; FEV_1, forced expiratory volume in 1 second; FVC, forced vital capacity; MRC, Medical Research Council; NS, not statistically significant; PP, per protocol; SGRQ, St George's Respiratory Questionnaire; SS, statistically significant ($p < 0.05$).
a Sample size analysed (ITT or PP).
A description of all acronyms is listed in *Appendix 5*, *Table 106*.

J45: asthma

Overview

There were four studies[58,106–108] evaluating unfacilitated EW on patients with asthma (*Table 46*). A summary of main characteristics is presented in *Table 46*. Participants were diagnosed through a clinical history of asthma and confirmed by a physician. In all studies,[58,106–108] patients were reported to be on regular inhaled medication to treat persistent symptoms. Three studies[106–108] were conducted in the USA and Theadom *et al.*[58] was conducted in the UK.

Three studies[58,107,108] evaluated one intervention group compared with one control group but Harris *et al.*[106] assessed two intervention arms: in one group, participants had to write about stressful traumatic experiences, whereas in the other active group participants had to write about positive experiences such as events that stimulated feelings of happiness or joy. In the remaining studies[58,107,108] the topic of the intervention arm was focused on a self-selected trauma/emotional issue or worst experience. Therefore, because of similarity to the other active interventions, only the intervention group which wrote about negative experiences in Harris *et al.*,[106] was used for meta-analysis. All control groups were focused on descriptions of neutral topics/events of previous day or on the management of time. Three studies[58,107,108] delivered the intervention over 3 consecutive days except for Harris *et al.*,[106] which delivered the intervention once per week for 3 weeks. Patients in Smyth *et al.*,[107] Warner *et al.*[108] and Harris *et al.*[106] were financially compensated.

The outcomes assessed within the studies[58,106–108] on asthma are reported in *Table 47*. Lung function was evaluated through spirometry in three studies.[106–108] The remaining outcomes were mostly evaluated once across studies.

TABLE 46 Characteristics in the unfacilitated EW studies in asthma

First author, year	Study design	Intervention group 1	Intervention group 2	Control group 1
Harris 2005[106]	RCT	Unfacilitated EW	Positive writing	Factual writing
Smyth 1999[107]	RCT	Unfacilitated EW	–	Time-management writing
Theadom 2010[58]	RCT	Unfacilitated EW	–	Factual writing
Warner 2006[108]	RCT	Unfacilitated EW	–	Time-management writing

TABLE 47 Outcomes collected by the unfacilitated EW studies in asthma

First author, year	Asthma symptoms	Lung function	General mood	Positive mood	Negative mood	Behaviour	Adherence	Resource use
Harris 2005[106]	–	FEV_1% pred, FVC	–	–	–	–	✓	–
Smyth 1999[107]	–	FEV_1% pred	–	–	–	–	–	–
Theadom 2010[58]	Asthma symptoms	–	–	–	–	–	–	–
Warner 2006[108]	ASS	FEV_1% pred	*Five moods*[a]	PANAS-PA[b]	PANAS-NA[b]	FDI, CBCL	✓	–

ASS, Asthma Sum Scale; CBCL, Child Behavior Checklist; FDI, Functional Disability Inventory; FEV_1% pred, percentage of predicted forced expiratory volume in 1 second; FVC, forced vital capacity.
a The instrument used was not explicitly reported (author was contacted for data related to this outcome).
b PANAS-PA/NA, positive and negative subscales of the PANAS-X(C), as defined.
The shaded cells show the outcomes considered in the meta-analysis. Italic text shows outcomes for which no data were reported.
A description of all acronyms is listed in *Appendix 5*, *Table 106*.

Quality assessment

A summary of the quality of the studies in asthma is shown in *Figures 33* and *34*. All studies[58,106–108] were randomised; however, in Theadom *et al.*[58] the method of randomisation was not reported. Two studies[106,107] reported having protected the allocation sequence before and until assignment. The other two studies[58,108] were unclear on this item. Additionally, information related to masking was not reported in any of the studies or the information given was scarce, making more likely to introduce certain risk of bias and to affect outcomes. Warner *et al.*[108] was contacted in order to get numerical data related to the outcome collected 'five moods', which were not reported in the published article. The information was supplied, and therefore the selective reporting item was rated as low risk of bias. All studies performed ITT analysis, but Harris *et al.*[106] did not reflect this clearly.

Numerical results

The numerical results reported in the asthma studies[58,106–108] are summarised in *Table 48*. Follow-up assessments ranged from 2 weeks in Smyth *et al.*[107] to 28 weeks in Warner *et al.*[108] Total sample sizes ranged from 77 patients in Harris *et al.*[106] to 28 patients in Theadom *et al.*[58] The most frequent outcome evaluated was lung function through spirometry. The follow-up assessments for forced expiratory volume in 1 second (FEV_1)/forced vital capacity (FCV) were performed immediately after the writing and at short term. Warner *et al.*[108] reported a statistically significant group-by-time interaction between the two groups for the positive affect subscale of the Positive and Negative Affect Schedule for Children (PANAS-PA) and on the Child Behavior Checklist (CBCL), in favour of the EW group. However, no differences between groups were found for lung function, the negative affect subscale of the Positive and Negative Affect Schedule for Children (PANAS-NA) or mood changes. In Warner *et al.*,[108] participants rated their mood and physical symptoms immediately before and after each day's writing and change scores (after writing – before writing) were computed for all ratings, but were not reported. There were significant group main effects for two variables: the disclosure group participants rated themselves as significantly less calm and angrier after writing than did control group participants. A marginal group effect was also found for the physical symptom ratings, with the disclosure group reporting slightly higher levels of physical symptoms after writing compared with control subjects, who reported a slight decrease in physical symptoms following the writing. Finally, there was one significant early effect. Participants in both groups reported a greater increase in sadness after writing on the third day relative to the first and second days.

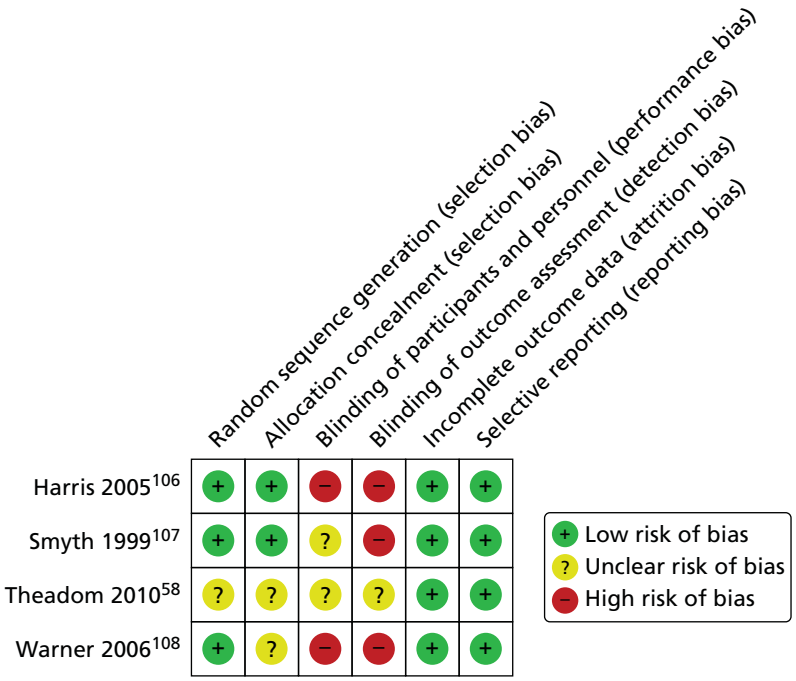

FIGURE 33 Risk-of-bias summary in the asthma studies.

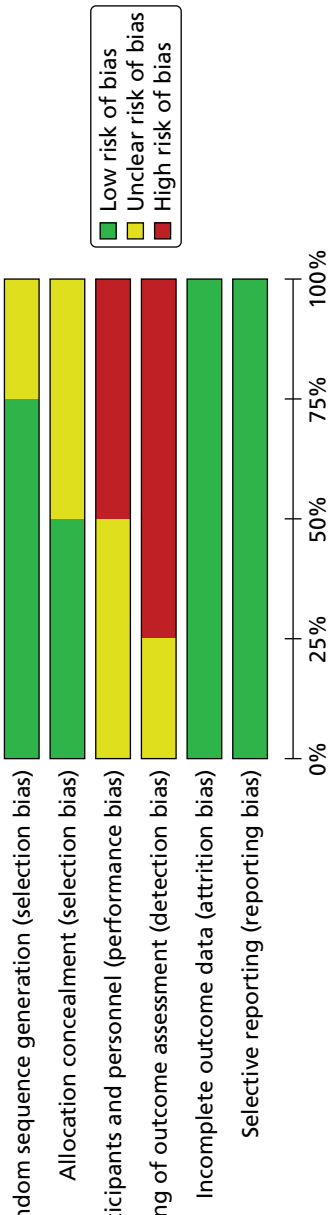

FIGURE 34 Risk-of-bias graph in the asthma studies.

TABLE 48 Numerical results in the unfacilitated EW studies in asthma

			Intervention group 1					Intervention group 2					Control group					Author's reported statistical significance (group-by-time interaction)
First author, year	Outcome measures	Follow-up (weeks)	*n* total[a]	Final mean score[b]	SD[b]	Change score	SD[b]	*n* total[a]	Final mean score[b]	SD[b]	Change score	SD[b]	*n* total[a]	Final mean score[b]	SD[b]	Change score	SD[b]	
Harris 2005[106]	FEV_1% pred	8	41	76.2	18.9	4.2	8.2	37	75.5	17.2	1.3	7.3	36	77.1	17.1	3	4.4	NS[c]
	FVC	8	41	80.2	20	3.1	10.1	37	79.2	14.5	3.6	9.0	36	78.5	15	2.4	4.6	NS[c]
	Adherence	8	NR	NR	NR	–	–	–	–	–	–	–	NR	NR	NR	–	–	NS
Smyth 1999[107]	FEV_1% pred	2	39	74.1	3.3	–	–	–	–	–	–	–	19	58.8	3.9	–	–	NS
	FEV_1% pred	8	39	74.7	3.4	–	–	–	–	–	–	–	19	65.8	3.2	–	–	NS
	FEV_1% pred	16	39	76.3	3.2	–	–	–	–	–	–	–	19	65.3	3.2	–	–	NS
Theadom 2010[58]	Asthma symptoms	1	13	NR	NR	–	–	–	–	–	–	–	15	NR	NR	–	–	NS
Warner 2006[108]	ASS	8	28	10.25	4.77	–	–	–	–	–	–	–	22	11.05	6.66	–	–	NR
	FEV_1% pred	8	15	95.67	13.73	–	–	–	–	–	–	–	17	94.76	10.56	–	–	NS
	FDI	8	28	5.36	6.09	–	–	–	–	–	–	–	22	7.27	5.71	–	–	NS
	PANAS-NA	8	28	1.59	0.44	–	–	–	–	–	–	–	22	1.66	0.62	–	–	NS
	PANAS-PA	8	28	3.35	0.75	–	–	–	–	–	–	–	22	3	0.57	–	–	SS
	CBCL-youth	8	28	49.07	10.17	–	–	–	–	–	–	–	22	50.86	11.4	–	–	SS
	Adherence[d] (rate)	8	28	Number of patients: 27	–	–	–	–	–	–	–	–	22	Number of patients: 22	–	–	–	NR
	Mood – calm	Day 1	28	–	–	–1	2.22	–	–	–	–	–	22	–	–	–	–	NS
		Day 2	28	–	–	–0.52	1.81	–	–	–	–	–	22	–	–	0	1.7	NS
		Day 3	28	–	–	–0.44	1.83	–	–	–	–	–	22	–	–	–0.19	1.81	NS

continued

TABLE 48 Numerical results in the unfacilitated EW studies in asthma (*continued*)

			Intervention group 1					Intervention group 2					Control group					Author's reported statistical significance (group-by-time interaction)
First author, year	Outcome measures	Follow-up (weeks)	*n* total[a]	Final mean score[b]	SD[b]	Change score	SD[b]	*n* total[a]	Final mean score[b]	SD[b]	Change score	SD[b]	*n* total[a]	Final mean score[b]	SD[b]	Change score	SD[b]	
	Mood – enthusiastic	Day 1	28	–	–	–0.7	1.32	–	–	–	–	–	22	–	–	–0.43	2.04	NS
		Day 2	28	–	–	–0.2	1.8	–	–	–	–	–	22	–	–	–0.48	1.83	NS
		Day 3	28	–	–	–0.36	1.38	–	–	–	–	–	22	–	–	–0.29	1.45	NS
	Mood – sad	Day 1	28	–	–	0.08	1.56	–	–	–	–	–	22	–	–	–0.57	1.33	NS
		Day 2	28	–	–	–0.08	0.97	–	–	–	–	–	22	–	–	–0.43	1.12	NS
		Day 3	28	–	–	0.29	1.04	–	–	–	–	–	22	–	–	–0.48	1.78	NS
	Mood – afraid	Day 1	28	–	–	–0.08	1.26	–	–	–	–	–	22	–	–	–0.29	1.42	NS
		Day 2	28	–	–	–0.24	1.09	–	–	–	–	–	22	–	–	–0.38	1.28	NS
		Day 3	28	–	–	0.16	1.11	–	–	–	–	–	22	–	–	–0.05	1.2	NS
	Mood – angry	Day 1	28	–	–	–0.16	1.84	–	–	–	–	–	22	–	–	–0.81	1.66	NS
		Day 2	28	–	–	0.4	1	–	–	–	–	–	22	–	–	–0.38	0.67	NS
		Day 3	28	–	–	0.16	1.37	–	–	–	–	–	22	–	–	–0.67	1.28	NS
	ASS	Day 1	28	–	–	0.1	0.44	–	–	–	–	–	22	–	–	–0.18	0.4	NS
		Day 2	28	–	–	0.04	0.39	–	–	–	–	–	22	–	–	–0.06	0.36	NS
		Day 3	28	–	–	–0.02	0.39	–	–	–	–	–	22	–	–	–0.1	0.37	NS

–, not included; ASS, Asthma Sum Scale; FDI, Functional Disability Inventory; FEV_1% pred, percentage of predicted forced expiratory volume in 1 second; NR, not reported; NS, not statistically significant; PP, per protocol; SS, statistically significant ($p < 0.05$).

a Sample size analysed (ITT or PP).

b Unless otherwise specified.

c The group-by-time interaction analysis refers to the EW group 1 and control group only.

d Adherence was reported as a check on experimental validity and therefore the fact that no data were reported was not considered as a source of bias.

The shaded cells show the data included in the meta-analysis. A 12% rise from baseline to follow-up was used a criterion for clinically significant improvement.

A description of all acronyms is listed in *Appendix 5*, *Table 106*.

The remaining studies did not report on any association between the groups across time for the outcomes assessed.

Meta-analysis

The percentage of predicted forced expiratory volume in 1 second (FEV_1% pred) was the outcome meta-analysed (*Figure 35*). Three studies[106–108] assessed lung function by means of spirometry.

- *Clinical differences between studies* Participants in Warner *et al.*[108] were adolescents aged 12–17 years, whereas the other two studies[106,107] included adults. In addition, all participants in Warner *et al.*[108] reported never having smoked, as opposed to the participants in the other studies,[106,107] which had a proportion of non-smokers, ex-smokers and current smokers.
- *Follow-up length* All studies included in the meta-analysis evaluated the impact of TW at 8 and 13 weeks (short-term follow-up). In addition, Smyth *et al.*[107] assessed FEV_1% pred at 2 weeks (immediate follow-up).
- *Forest plot* A total of 167 participants were meta-analysed (95 in the EW group and 72 in the control group). The SMD was 0.24 (95% CI –0.07 to 0.56) with a random-effects model and with no heterogeneity ($I^2 = 0\%$). This result suggests that there is no statistically significant difference in mean percentage of FEV_1 at short term for the TW groups compared with the control groups.

K58: irritable bowel syndrome

Overview

There were two studies evaluating unfacilitated EW. A summary of main characteristics is presented in *Table 49*. Halpert *et al.*[52] evaluated young participants who were diagnosed with IBS using the Rome III Criteria for IBS. This study[52] was conducted entirely online with participants recruited via adverts at IBS-related websites and the intervention writing submitted online. Wallander *et al.*[109] evaluated young participants who were diagnosed with gastrointestinal (GI) recurrent abdominal pain (RAP) meeting the Apley's criteria for functional RAP. Both studies[52,109] were conducted in the USA.

Halpert *et al.*[52] was conducted entirely online and only young participants were recruited. The separation of writing group compared with non-writing group was formed post hoc after completing the four writing exercises. Thus, participants completing all four writing assignments became the writing group (intervention group) and those who initially intended to write but did not write became the non-writing group (control group). For the purposes of the systematic review, this comparator group was considered as a suitable comparator, even though it seems that the researchers were not planning to have a comparator group and assumed that some participants did not write happened at random. The Wallander *et al.* study[109] used a written standard disclosure intervention, whereby each young participant was taken to a private room in the clinic to perform the first session and then was sent home to complete the remaining two assignments. The control group received usual care.

The outcomes evaluated in the studies[52,109] on IBS/GI RAP are reported in *Table 50*. QoL was evaluated in both studies.[52,109] The remaining outcomes were assessed once in each study.

Quality assessment

A summary of the quality of the studies in IBS/GI RAP is shown in *Figure 36*. Halpert *et al.*[52] was described as an exploratory study, and was not randomised. It is likely to be at very high risk of selection bias because the intervention group included only those who completed the entire 4-day writing exercise (and those who did not were excluded as dropouts). On the other hand, the comparison group comprised participants recruited to the intervention but who did not even start it (the non-writers group). Wallander *et al.*,[109] which was a randomised trial, was at high risk of bias across some domains such as selection, detection and attrition biases. Neither study involved ITT analysis.

Study or subgroup	EW Mean	EW SD	EW Total	Control Mean	Control SD	Control Total	Weight	SMD IV, random, 95% CI
Harris 2005[106]	4.2	8.2	41	3	4.4	36	48.3%	0.18 (–0.27 to 0.63)
Smyth 1999[107]	74.7	21.23	39	65.8	13.95	19	31.5%	0.46 (–0.10 to 1.01)
Warner 2006[108]	95.67	13.73	15	94.76	10.56	17	20.1%	0.07 (–0.62 to 0.77)
Total (95% CI)			**95**			**72**	**100.0%**	**0.24 (–0.07 to 0.56)**

Heterogeneity: $\tau^2 = 0.00$; $\chi^2 = 0.89$, df = 2 ($p = 0.64$); $I^2 = 0\%$

Test for overall effect: $z = 1.54$ ($p = 0.12$)

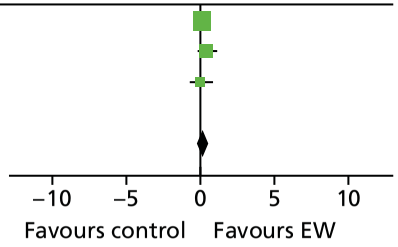

FIGURE 35 Forest plot of FEV_1% at short term in asthma patients. df, degrees of freedom; IV, inverse variance.

TABLE 49 Characteristics of the unfacilitated EW studies in IBS/GI RAP

First author, year	Study design	Intervention group	Control group
Halpert 2010[52]	Non-RCT	Unfacilitated EW (via internet)	Non-writing
Wallander 2011[109]	RCT	Unfacilitated EW	SMC

TABLE 50 Outcomes collected by the unfacilitated EW studies in IBS/GI RAP

First author, year	Pain frequency	Pain severity	Somatisation severity	Cognition concerning their IBS	Catastrophising/ coping	QoL	Resource use
Halpert 2010[52]	–	IBSSS	–	CG-FBD	CT3	IBS-QoL	–
Wallander 2011[109]	The abdominal pain frequency rating	–	CSI	–	–	PedsQL	Number of visits to clinician

CG-FBD, Functional Bowel Disease-related Cognition; CSI, Children's Somatisation Inventory; CT3, catastrophising (maladaptive coping); IBS-QoL, Irritable Bowel Syndrome Quality of Life; IBSSS, Irritable Bowel Syndrome Severity Scale; PedsQL, Paediatric Quality of Life.
A description of all acronyms is listed in *Appendix 5, Table 106*.

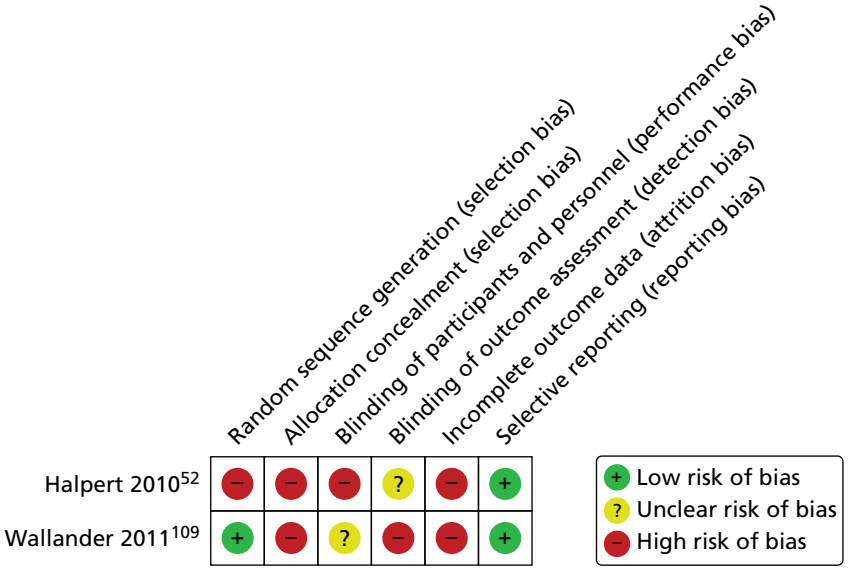

FIGURE 36 Risk-of-bias summary in the IBS/GI RAP studies.

Numerical results

The numerical results reported in the IBS/GI RAP studies[52,109] are summarised in *Table 51*. Follow-up assessments were 4 weeks in Halpert *et al.*[52] and 26 weeks in Wallander *et al.*[109] Total sample sizes were 103 and 56 participants in Halpert *et al.*[52] and Wallander *et al.*,[109] respectively.

In Halpert *et al.*,[52] there were statistically significant differences at 4 weeks for the following outcomes: the functional bowel disease-related cognition [Functional Bowel Disease-related Cognition questionnaire 31 (CG-FBD Q31)] and IBS severity [Irritable Bowel Syndrome Severity Scale (IBSSS)], where improvements were made in favour of the writing. Likewise, at 13 weeks differences between groups were significant for the following outcomes: the functional bowel disease-related cognition [Functional Bowel Disease-related Cognition (CG-FBD) and CG-FBD Q31]; IBS severity (IBSSS); and psychosocial QoL, where improvements were made in favour of the writing group. In addition, between-group differences were reported at 26 weeks as well for the abdominal pain frequency rating and number of visits to the clinician in favour of the writing group.

Physical symptoms and resource use were reported to be significantly reduced at short time points assessments in both studies. Wallander *et al.*[109] reported a significant reduction in pain and frequency of clinician visits in the intervention group at 26 weeks also, but no improvement in QoL at this time point. However, QoL was reported as not showing any between group difference when measured at 4 and 13 weeks in Halpert *et al.*[52] and at 26 weeks in Wallander *et al.*[109]

L40: psoriasis

Overview

There were three studies[110–112] evaluating unfacilitated EW in patients with psoriasis. A summary of their main characteristics is presented in *Table 52*. Paradisi *et al.*[110] and Tabolli *et al.*[111] were conducted in Italy, and Vedhara *et al.*[112] was conducted in New Zealand. In Vedhara *et al.*[112] and Tabolli *et al.*[111] a minority of patients were diagnosed with psoriatic arthritis (22% and 19%, respectively). In the latter study,[111] psoriatic arthritis was significantly more prevalent in the control group than in the EW group. In Vedhara *et al.*,[112] patients had plaque-type psoriasis involving > 10% of the body area. In Paradisi *et al.*,[110] all participants were undergoing phototherapy for their psoriasis.

The main intervention assessed across studies[110–112] was disease-focused writing, including worst experience/trauma/stressful life events. All interventions were delivered on 3–4 consecutive days for 20 minutes each day and by handwriting. Patients were not financially compensated over the study period. One study[110] also assessed one other active intervention based on an emotional positive writing technique focused on the best possible future self and achieving life-goals: 'Think about your life in the future. Imagine that every-thing has gone as well as it possibly could, and the desires related to the psoriasis have been realised'.

The outcomes assessed within the studies[110–112] on psoriasis are reported in *Table 53*. The most frequent outcome evaluated was disease severity from both the clinicians' [Psoriasis Area and Severity Index (PASI)] and patients' [Self-Administered Psoriasis Area and Severity Index (SAPASI)] perspectives. QoL was also measured in all three studies[110–112] by either general or disease-specific instruments [SF-36, Dermatology Life Quality Index (DLQI) and Skindex-29].

TABLE 51 Numerical results in the unfacilitated EW studies in IBS/GI RAP

First author, year	Outcome measures	Follow-up (weeks)	Intervention group					Control group					Author's reported statistical significance (group-by-time interaction)
			n total[a]	Final mean score	SD	Change score	SD	*n* total[a]	Final mean score	SD	Change score	SD	
Halpert 2010[52]	CT3	4	82	–	–	–2.15	0.62	21	–	–	0.28	1.23	NS
		13	82	–	–	–3.68	0.86	21	–	–	–2.38	1.4	NS
	IBS-QoL	4	82	–	–	1.85	1.68	21	–	–	–0.83	3.41	NS
		13	82	–	–	5.69	2.38	21	–	–	–0.27	3.94	NS
	CG-FBD	4	82	–	–	–0.19	0.08	21	–	–	0.13	0.15	NS
		13	82	–	–	–0.43	0.11	21	–	–	0.15	0.17	SS
	CG-FBD Q16	4	82	–	–	–0.23	0.12	21	–	–	0.52	0.25	SS
		13	82	–	–	–0.27	0.17	21	–	–	0.35	0.27	NS
	CG-FBD Q31	4	82	–	–	–0.11	0.15	21	–	–	0.16	0.59	NS
		13	82	–	–	–0.46	0.2	21	–	–	0.46	0.33	SS
	IBSSS	4	82	–	–	–13.4	4.88	21	–	–	24.03	9.63	SS
		13	82	–	–	–28.02	7.1	21	–	–	25.74	10.91	SS

continued

TABLE 51 Numerical results in the unfacilitated EW studies in IBS/GI RAP (*continued*)

First author, year	Outcome measures	Follow-up (weeks)	Intervention group					Control group					Author's reported statistical significance (group-by-time interaction)
			n total[a]	Final mean score	SD	Change score	SD	*n* total[a]	Final mean score	SD	Change score	SD	
Wallander 2011[109]	Abdominal Pain Frequency Rating	13	32	1.54	1.40	–	–	24	1.96	1.51	–	–	NS
		26	32	1.35	1.39	–	–	24	2.32	1.72	–	–	SS
	CSI	13	32	16.85	10.83	–	–	24	17.64	10.07	–	–	NS
		26	32	14.14	9.06	–	–	24	15.42	8.59	–	–	NS
	Physical QoL	13	32	23.96	4.38	–	–	24	23.75	5.83	–	–	NS
		26	32	26.32	4.69	–	–	24	23.81	6.11	–	–	NS
	Psychosocial QoL	13	32	36.12	10.69	–	–	24	40.39	8.59	–	–	SS
		26	32	43.29	9.20	–	–	24	41.38	8.87	–	–	NS
	n of visits clinician	26	32	1.00	2.36	–	–	24	2.36	2.21	–	–	SS

–, not included; CG-FBD, Functional Bowel Disease-related Cognition; CG-FBD Q16, Functional Bowel Disease-related Cognition questionnaire 16; CG-FBD Q31, Functional Bowel Disease-related Cognition questionnaire 31; CSI, Children's Somatisation Inventory; CT3, catastrophising (maladaptive coping); IBS-QoL, Irritable Bowel Syndrome Quality of Life; NR, not reported; NS, not statistically significant ($p > 0.05$); PP, per protocol; SS, statistically significant ($p < 0.05$).

a Sample size analysed (ITT or PP).

A description of all acronyms is listed in *Appendix 5*, *Table 106*.

TABLE 52 Characteristics of the unfacilitated EW studies in psoriasis

First author, year	Study design	Intervention group 1	Intervention group 2	Control group 1
Paradisi 2010[110]	RCT	Unfacilitated EW	Positive writing	Non-EW
Tabolli 2012[111]	RCT	Unfacilitated EW	–	Non-writing
Vedhara 2007[112]	RCT	Unfacilitated EW	–	Factual writing

TABLE 53 Outcomes collected by the unfacilitated EW studies in psoriasis

First author, year	Psoriasis severity	Physical global health	Mood	Psychological distress	Depression and anxiety	QoL	Resource use
Paradisi 2010[110]	*PASI*, SAPASI	–	–	GHQ-12	–	Skindex-29 Symptoms, Emotions and Functioning subscales	–
Tabolli 2012[111]	PASI, SAPASI	PGA, PtGA, BMI	–	GHQ-12	–	SF-36, Skindex-29 Symptoms, Emotions and Functioning subscales	–
Vedhara 2007[112]	PASI	–	POMS	–	HADS-A, HADS-D	DLQI	–

BMI, body mass index; DLQI, Dermatology Life Quality Index; PASI, Psoriasis Area and Severity Index; PGA, physician global assessment; PtGA, patient global assessment; SAPASI, Self-Administered Psoriasis Area and Severity Index.
Italic text shows outcomes for which no data were reported.
A description of all acronyms is listed in *Appendix 5, Table 106*.

Quality assessment

All three studies[110–112] were randomised, but allocation concealment was unclear in Vedhara *et al.*[112] Paradisi *et al.*[110] did not blind study personnel; the remaining studies[111,112] were unclear about masking. All three studies[110–112] were likely to introduce both performance and detection bias mainly (*Figures 37* and *38*). Paradisi *et al.*[110] under-reported data for PASI and data regarding SAPASI had to be derived from a graph, with no measure of variability reported. Vedhara *et al.*[112] performed ITT analysis, whereas per-protocol analyses were used in the other two studies.[110,111]

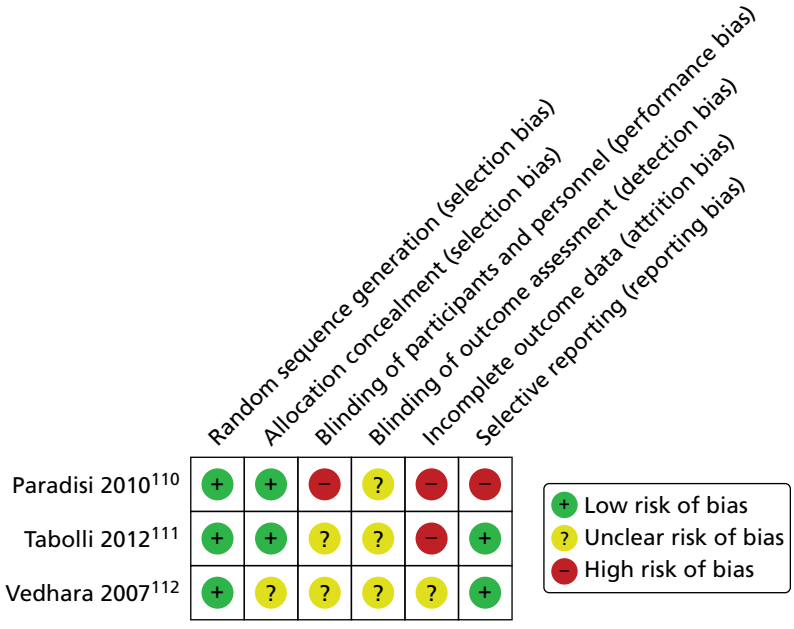

FIGURE 37 Risk-of-bias summary in the psoriasis studies.

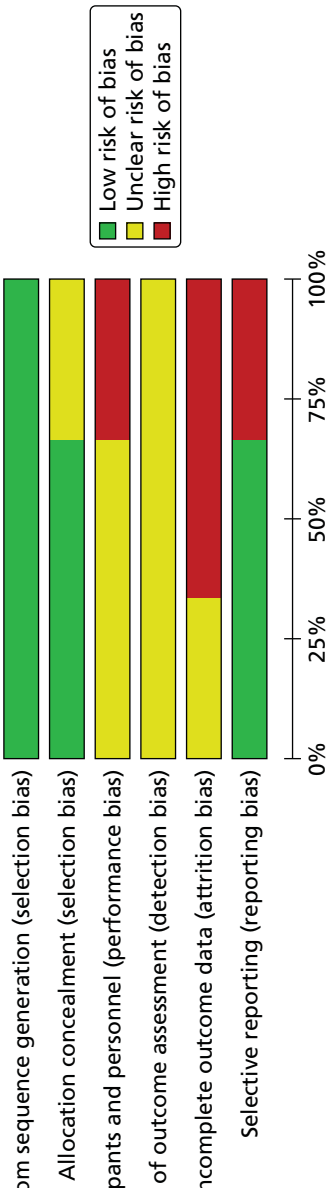

FIGURE 38 Risk-of-bias graph in the psoriasis studies.

Numerical results

The numerical results reported in the studies on psoriasis are summarised in *Table 54*. Follow-up assessments were performed from 2 weeks in Vedhara *et al.*[112] up to 52 weeks in Tabolli *et al.*[111] Total samples were 78 participants randomised in Paradisi *et al.*[110] (taking into account both intervention groups), 67 participants in Tabolli *et al.*[111] and 59 participants in Vedhara *et al.*[112]

Few statistical differences between groups were reported in the three studies,[110–112] although typically both control and intervention groups improved over time. Significant effects in favour of the written emotional disclosure groups compared with control subjects were reported on the following outcomes: PASI scores at 8 weeks, SAPASI scores at 17 weeks and SF-36 PCS. No effect between groups by time interaction was reported for the remaining outcome measures.

All three studies[110–112] assessed psoriasis severity at short term (at 4 and 8 weeks) using PASI and SAPASI questionnaires. However, in Paradisi *et al.*,[110] data on the PASI (the clinician-rated version as opposite to the SAPASI, the participant self-rated index) were not reported and therefore a meta-analysis could not be performed.

M06 and M45: inflammatory arthropathies

Overview

There were six studies[107,113–117] evaluating unfacilitated EW in inflammatory arthropathy patients. A summary of main characteristics is presented in *Table 55*. Hamilton-West and Quine[114] assessed patients with ankylosing spondylitis (AS). The remaining studies involved patients diagnosed with RA. Four studies[107,113,115,116] were conducted in the USA but Wetherell *et al.*[117] and Hamilton-West and Quine[114] were conducted in the UK. All of the included studies[107,113–117] examined the effect of unfacilitated EW about a stressful or traumatic event/s in an emotional way for 20 minutes on 3 or 4 consecutive days. Broderick *et al.*[113] included a second intervention group to assess the impact of EW about the *meaning* of the trauma. Lumley *et al.*[116] had four groups: two coping skills training (one EW intervention and one control) and two with arthritis education (one EW intervention and one control). These were combined in the publication to provide scores for the unfacilitated EW and control groups.

TABLE 54 Numerical results in the unfacilitated EW studies in psoriasis

First author, year	Outcome measures	Follow-up (weeks)	Intervention group 1					Intervention group 2					Control group					Author's reported statistical significance (group-by-time interaction)
			n total[a]	Final mean score[b]	SD[b]	Change score	SD[b]	*n* total[a]	Final mean score[b]	SD[b]	Change score	SD	*n* total[a]	Final mean score[b]	SD[b]	Change score	SD	
Paradisi 2010[110]	PASI	8	24	NR	NR	–	–	22	NR	NR	–	–	26	NR	NR	–	–	SS[c]
		17	15	NR	NR	–	–	12	NR	NR	–	–	13	NR	NR	–	–	NR
	SAPASI	8	24	Median: 4	NR	–	–	22	Median: 2	NR	–	–	26	Median: 2	NR	–	–	NS[c]
		17	15	Median: 4.8	NR	–	–	12	Median: 5.8	NR	–	–	13	Median: 6	NR	–	–	SS[c]
	GHQ-12	8	24	Median: 8	Range 5–16	–	–	22	Median: 8	Range: 2–19	–	–	26	Median: 11	Range 3–24	–	–	NR
		17	15	Median: 9	Range 0–17	–	–	12	Median: 8	Range: 4–28	–	–	13	Median: 12	Range: 3–27	–	–	NR
	Skindex-29 Symptoms	8	24	Median: 14	Range 0–50	–	–	22	Median: 21	Range 0–46	–	–	26	Median: 21	Range: 0–60	–	–	NR
		17	15	Median: 25	Range 0–46	–	–	12	Median: 20	Range 0–64	–	–	13	Median: 25	Range 4–68	–	–	NR
	Skindex-29 Functioning	8	24	Median: 12	Range 0–44	–	–	22	Median: 3	Range 0–71	–	–	26	Median: 19	Range 2–42	–	–	NR
		17	15	Median: 23	Range 0–58	–	–	22	Median: 6	Range 0–75	–	–	26	Median: 19	Range 2–67	–	–	NR
	Skindex-29 Emotions	8	24	Median: 25	Range 0–42	–	–	22	Median: 16	Range 0–80	–	–	26	Median: 30	Range 5–80	–	–	NR
		17	15	Median: 35	Range 0–57	–	–	22	Median: 21	Range 0–82	–	–	26	Median: 30	Range 7–67	–	–	NR
Tabolli 2012[111]	PASI	4	32	9.50	6.40	–	–	–	–	–	–	–	35	11	8.7	–	–	NS
		26	32	5.80	7.90	–	–	–	–	–	–	–	35	8.6	9.5	–	–	NS
		52	32	5.70	7.90	–	–	–	–	–	–	–	35	4.3	4.5	–	–	NS
	SAPASI	4	32	10.30	7.50	–	–	–	–	–	–	–	35	12.3	9.5	–	–	NS
		26	32	5.40	9.10	–	–	–	–	–	–	–	35	10.1	11.7	–	–	NS
		52	32	7.30	9.00	–	–	–	–	–	–	–	35	6	7.5	–	–	NS

First author, year	Outcome measures	Follow-up (weeks)	Intervention group 1					Intervention group 2					Control group					Author's reported statistical significance (group-by-time interaction)
			n total[a]	Final mean score[b]	SD[b]	Change score	SD[b]	*n* total[a]	Final mean score[b]	SD[b]	Change score	SD	*n* total[a]	Final mean score[b]	SD[b]	Change score	SD	
	Skindex-29 Symptoms	4	32	37.80	20.50	–	–	–	–	–	–	–	35	38.2	19.7	–	–	NS
		26	32	24.40	22.30	–	–	–	–	–	–	–	35	32.7	23.9	–	–	NS
		52	32	26.90	22.50	–	–	–	–	–	–	–	35	24.3	21.1	–	–	NS
	Skindex-29 Emotions	4	32	34.80	22.70	–	–	–	–	–	–	–	35	37.2	19.5	–	–	NS
		26	32	27.70	21.10	–	–	–	–	–	–	–	35	33.6	22.4	–	–	NS
		52	32	27.70	19.90	–	–	–	–	–	–	–	35	28.5	21.9	–	–	NS
	Skindex-29 Functioning	4	32	28.80	23.10	–	–	–	–	–	–	–	35	27.7	21.3	–	–	NS
		26	32	22.50	20.50	–	–	–	–	–	–	–	35	23.7	23.1	–	–	NS
		52	32	21.40	20.80	–	–	–	–	–	–	–	35	21.3	22	–	–	NS
	GHQ-12	4	32	11.30	5.60	–	–	–	–	–	–	–	35	12.4	6.6	–	–	NS
		26	32	9.80	5.00	–	–	–	–	–	–	–	35	10.6	5.8	–	–	NS
		52	32	10.60	4.50	–	–	–	–	–	–	–	35	10.7	5.6	–	–	NS
	SF-36 PCS	4	32	50.00	6.30	–	–	–	–	–	–	–	35	48	11.4	–	–	NS
		26	32	52.40	5.60	–	–	–	–	–	–	–	35	49.4	7.8	–	–	NS
		52	32	52.20	6.90	–	–	–	–	–	–	–	35	47.5.	6.1	–	–	SS
	SF-36 MCS	4	32	39.60	12.10	–	–	–	–	–	–	–	35	42.1	7.7	–	–	NS
		26	32	42.50	10.40	–	–	–	–	–	–	–	35	41.5	8.8	–	–	NS
		52	32	42.70	9.10	–	–	–	–	–	–	–	35	42.5	7.3	–	–	NS
	BMI	4	32	26.60	5.90	–	–	–	–	–	–	–	35	26.5	6.3	–	–	NS
		26	32	27.50	7.80	–	–	–	–	–	–	–	35	26.6	6.3	–	–	NS
		52	32	27.00	5.70	–	–	–	–	–	–	–	35	26.8	6.5	–	–	NS
	PGA	4	32	1.84	0.90	–	–	–	–	–	–	–	35	1.8	0.9	–	–	NS
		26	32	0.84	1.10	–	–	–	–	–	–	–	35	1.3	1.1	–	–	NS
		52	32	1.03	1.40	–	–	–	–	–	–	–	35	0.8	1	–	–	NS

continued

TABLE 54 Numerical results in the unfacilitated EW studies in psoriasis (*continued*)

First author, year	Outcome measures	Follow-up (weeks)	Intervention group 1					Intervention group 2					Control group					Author's reported statistical significance (group-by-time interaction)
			n total[a]	Final mean score[b]	SD[b]	Change score	SD[b]	*n* total[a]	Final mean score[b]	SD[b]	Change score	SD	*n* total[a]	Final mean score[b]	SD[b]	Change score	SD	
	PtGA	4	32	1.65	0.90	–	–	–	–	–	–	–	35	1.9	0.8	–	–	NS
		26	32	0.94	1.20	–	–	–	–	–	–	–	35	1.4	1.2	–	–	NS
		52	32	1.03	1.10	–	–	–	–	–	–	–	35	1	1	–	–	NS
Vedhara 2007[112]	PASI	2	31	6.74	4.47	–	–	–	–	–	–	–	28	6.47	4.74	–	–	NS
		8	31	6.09	3.40	–	–	–	–	–	–	–	28	5.69	2.77	–	–	NS
		12	31	5.57	2.99	–	–	–	–	–	–	–	28	5.61	3.54	–	–	NS
	DLQI	2	31	6.53	6.08	–	–	–	–	–	–	–	28	6.31	4.99	–	–	NS
		8	31	5.18	5.26	–	–	–	–	–	–	–	28	4.36	3.4	–	–	NS
		12	31	5.39	4.59	–	–	–	–	–	–	–	28	4.82	3.82	–	–	NS
	POMS	2	31	47.49	31.07	–	–	–	–	–	–	–	28	51.88	34.4	–	–	NS
		8	31	39.69	29.44	–	–	–	–	–	–	–	28	37.91	18.3	–	–	NS
		12	31	38.20	26.83	–	–	–	–	–	–	–	28	40.27	21.05	–	–	NS
	HADS-A	2	31	6.51	3.93	–	–	–	–	–	–	–	28	7.52	3.87	–	–	NS
		8	31	5.83	3.06	–	–	–	–	–	–	–	28	6.36	3.34	–	–	NS
		12	31	5.81	3.14	–	–	–	–	–	–	–	28	6.54	3.66	–	–	NS
	HADS-D	2	31	6.43	8.62	–	–	–	–	–	–	–	28	5.93	9.5	–	–	NS
		8	31	4.01	4.11	–	–	–	–	–	–	–	28	4.01	3.21	–	–	NS
		12	31	4.38	4.44	–	–	–	–	–	–	–	28	3.68	3.36	–	–	NS

–, not included; BMI, body mass index; NR, not reported; NS, not statistically significant ($p > 0.05$); PGA, physician global assessment; PP, per protocol; PtGA, patient global assessment; SS, statistically significant ($p < 0.05$).
a Sample size analysed (ITT or PP).
b Unless otherwise specified.
c The group-by-time interaction analysis refers to the EW group 1 and control group only.
A description of all acronyms is listed in *Appendix 5*, *Table 106*.

TABLE 55 Characteristics of the unfacilitated EW studies in inflammatory arthropathies

First author, year	Study design	Intervention group 1	Intervention group 2	Control groups
Broderick 2004[113]	RCT	Unfacilitated EW	EW with meaning writing	Time-management writing
Hamilton-West 2007[114]	RCT	Unfacilitated EW	–	Time-management writing
Lumley 2011[115]	RCT	Unfacilitated EW	Positive writing	Time-management writing
Lumley 2014[116]	RCT	Unfacilitated EW with coping skills training	Unfacilitated EW with arthritis education	1. Time-management writing with coping skills training 2. Time-management writing with arthritis education
Smyth 1999[107]	RCT	Unfacilitated EW	–	Time-management writing
Wetherell 2005[117]	RCT	Unfacilitated EW	–	Time-management writing

In all studies except Lumley *et al.*,[116] the control group carried out time-management writing, writing in an unemotional way about their plans or activities on specific days (e.g. the next day, next week). Lumley *et al.*[115] used a second control arm, in which participants were asked to write about positive emotional events in their lives in an emotional way. Results for these two control groups were combined together in the paper but are presented separately here. This positive writing intervention is analysed separately in a later section of this systematic review. The effect of having an active intervention as a control is likely to have reduced the ability of this study to demonstrate an effect of EW, so we have presented results for the two different control interventions separately and have omitted the results for the combined control. It should be noted that Lumley *et al.*[115] was powered to compare the intervention against the two control interventions combined. (Neither Brodericks *et al.*'s[113] nor Lumleys *et al.*'s[115] alternative writing interventions are included in meta-analyses here.) Lumley *et al.*[115] also examined a spoken emotional disclosure intervention, which was compared with spoken control groups; however, these results are not discussed further here, as it appeared that the speaking intervention was not specifically designed for those who were unable write.

In Wetherell *et al.*,[117] participants were contacted at home by telephone at a prearranged time and told of the topic on which they would be writing on for the next 20 minutes. However, it is important to note that the facilitator (the term used in the paper to define the researcher delivering the intervention) was available only by telephone should the need arise.

The outcomes assessed within the studies on inflammatory arthropathies are reported in *Table 56*.

TABLE 56 Outcomes collected by the unfacilitated EW studies in inflammatory arthropathies

First author, year	Disease activity/severity	Biomarker of inflammation	Affective/sensory pain	Pain behaviour	Physical symptoms	Mood or affect	Depression	QoL/well-being	Resource use
Broderick 2004[113]	DAS	–	–	–	–	–	–	SF-36v2 Health Survey	–
Hamilton-West 2007[114]	*BASDAI*	–	–	–	*BASFI*	–	*HADS-D*	*BAS-G*	–
Lumley 2011[115]	Swollen joint count, walking speed, grip strength, physician's global rating of disease activity (100-mm VAS)	ESR	McGill Pain Q-SF	OPB	AIMS2: physical dysfunction subscale	PANAS-X	–	–	–
						AIMS2: affective disturbance subscales	–	–	–
Lumley 2014[116]	Walking speed, physician's global rating of disease activity (100-mm VAS)	CRP	McGill Pain Q	–	AIMS2	–	–	–	–
Smyth 1999[107]	DAS	–	–	–	–	–	–	–	–
Wetherell 2005[117]	Swollen and tender joint count, patients rating of disease activity (100-mm VAS), DAS	ESR, CRP	–	–	–	POMS-SF	–	–	–

AIMS2, Arthritis Impact Measurement Scale-2; BAS-G, Bath Ankylosing Spondylitis Disease Global Score; BASDAI, Bath Ankylosing Spondylitis Disease Activity Index; BASFI, Bath Ankylosing Spondylitis Disease Functional Index; CRP, C-reactive protein; DAS, Disease Activity Score; ESR, erythrocyte sedimentation rate; McGill Pain Q, McGill Pain Questionnaire; McGill Pain Q-SF, McGill Pain Questionnaire-Short Form; OPB, observed pain behaviour; POMS-SF, Profile of Mood States Short Form; SF-36v2, Short Form questionnaire-36 items, version 2; VAS, visual analogue scale.
The shaded cells show the outcomes considered in the meta-analysis. Italic text shows outcomes for which no data were reported.
A description of all acronyms is listed in *Appendix 5*, *Table 106*.

Quality assessment

A summary of the quality of the studies in inflammatory arthropathy is shown in *Figures 39* and *40*. All studies were described as randomised but Broderick *et al.*[113] did not provide the method of randomisation. Blinding of participants and personnel was performed only in Broderick *et al.*[113] and Smyth *et al.*[107] Almost all studies (except Lumley *et al.*[115]) introduced reporting bias in several ways: either by omission of the outcomes, by providing subscales of a full measurement scale without providing the total score, or by under-reporting the data, that is not giving enough detail for the data to be included in the meta-analysis. For instance, in Hamilton-West and Quine,[114] results regarding disease activity [Bath Ankylosing Spondylitis Disease Functional Index (BASFI)] were not adequately reported. Mean values were derived from a graph without no information regarding variability and no other data were provided among the outcomes a priori evaluated.

Numerical results

The numerical results reported in the studies on inflammatory arthropathies are summarised in *Table 57*. The shorter follow-up assessments was performed just after writing in Lumley *et al.*[115] when assessing immediate mood. Otherwise, the follow-up length varied from 1 week in Wetherell *et al.*[117] to 26 weeks in Broderick *et al.*[113] and Lumley *et al.*[115] The total sample sizes ranged from 34 participants in Wetherell *et al.*[117] to 218 participants in Broderick *et al.*[113]

Differences between groups by time interaction were reported for the following outcomes – BASFI, PANAS, Disease Activity Score (DAS) and the Profile of Mood States Short Form (POMS-SF) – in Hamilton-West and Quine,[114] Lumley *et al.*,[115] Smyth *et al.*[107] and Wetherell *et al.*,[117] respectively (see *Table 57*). In Hamilton-West and Quine[114] the functional status (measured using BASFI) was reported as statistically greater at 3-month follow-up in the EW group than with the control subjects. However, the clinical improvement was not apparent in the previous measurement at 4 weeks. On the other hand, Lumley *et al.*[115] assessed also the functional status [measured using the Arthritis Impact Measurement Scale-2 (AIMS2) pain subscale (AIMS2-ps)] at the same time points as Hamilton-West and Quine.[114] No significant differences were reported between intervention and any control group (positive writing, time-management writing or combined – results not shown in this review) within this study at any of the time points.

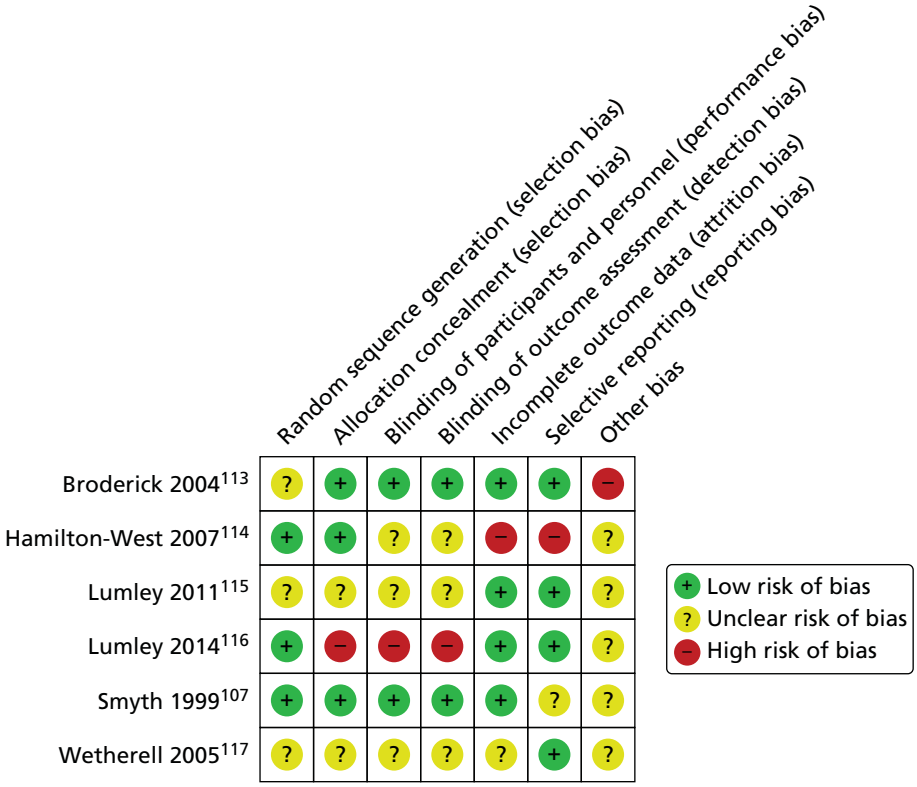

FIGURE 39 Risk-of-bias summary in the inflammatory arthropathy studies.

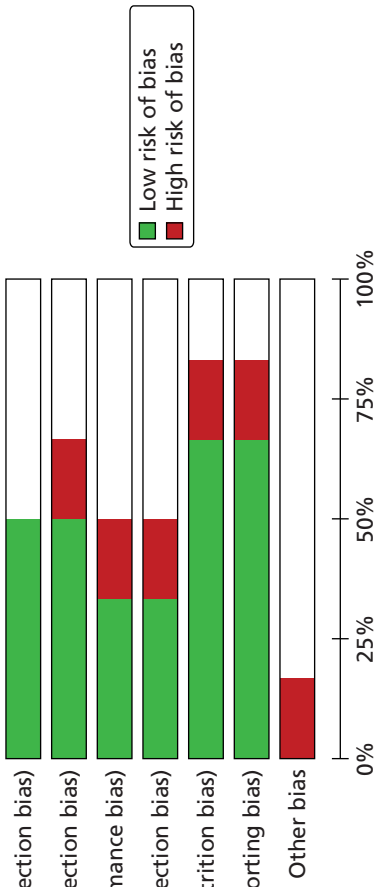

FIGURE 40 Risk-of-bias graph in the inflammatory arthropathy studies.

TABLE 57 Numerical results reported in the unfacilitated EW studies in inflammatory arthropathies

First author, year	Outcome measures	Follow-up (weeks)	Intervention group 1					Intervention group 2					Control group					Author's reported statistical significance (group-by-time interaction)
			n total[a]	Final mean score	SD	Change score	SD	*n* total[a]	Final mean score	SD	Change score	SD	*n* total[a]	Final mean score	SD	Change score	SD	
Broderick 2004[113]	DAS[b]	26	78	–	–	–0.31	NR	80	–	–	–0.55		60	–	–	–0.49		NS[c]
	SF-36 vs. SF-36 PCS	26	76	–	–	0.27	NR	76	–	–	–0.51	NR	58	–	–	0.14		NS[c]
Hamilton-West 2007[114]	BASDAI	4	39	NR	NR	–	–	–	–	–	–	–	19	NR	NR	–	–	NS
		13	30	NR	NR	–	–	–	–	–	–	–	15	NR	NR	–	–	NS
	HADS	4	39	NR	NR	–	–	–	–	–	–	–	19	NR	NR	–	–	NS
		13	30	NR	NR	–	–	–	–	–	–	–	15	NR	NR	–	–	NS
	BASFI	4	39	4.76	NR	–	–	–	–	–	–	–	19	5.33	NR	–	–	NR
		13	30	4.78	NR	–	–	–	–	–	–	–	15	5.62	NR	–	–	SS
	BAS-G	4	39	NR	NR	–	–	–	–	–	–	–	19	NR	NR	–	–	NS
		13	30	NR	NR	–	–	–	–	–	–	–	15	NR	NR	–	–	NS
Lumley 2011[115]	PANAS-a	Just after writing	43	–	–	0.4	0.99	24	–	–	–0.36	1	21	–	–	–0.02	0.84	SS[c]
	PANAS-f	Just after writing	43	–	–	0.08	1.05	24	–	–	–0.18	0.53	21	–	–	0.06	0.38	NS[c]
	PANAS-s	Just after writing	43	–	–	0.47	1.12	24	–	–	–0.14	0.6	21	–	–	0	0.61	SS[c]
	PANAS-g	Just after writing	43	–	–	0.14	1	24	–	–	–0.45	0.76	21	–	–	–0.11	0.69	SS[c]
	PANAS-pn	Just after writing	43	–	–	5.08	0.9	24	–	–	4.94	1.3	21	–	–	3.4	2.14	SS[c]
	PANAS-r	Just after writing	43	–	–	4.88	0.88	24	–	–	4.7	1.25	21	–	–	3	2	SS[c]
	PANAS-m	Just after writing	43	–	–	4.79	1.05	24	–	–	4.98	0.94	21	–	–	2.75	1.9	SS[c]

continued

TABLE 57 Numerical results reported in the unfacilitated EW studies in inflammatory arthropathies (*continued*)

First author, year	Outcome measures	Follow-up (weeks)	Intervention group 1					Intervention group 2					Control group					Author's reported statistical significance (group-by-time interaction)
			n total[a]	Final mean score	SD	Change score	SD	*n* total[a]	Final mean score	SD	Change score	SD	*n* total[a]	Final mean score	SD	Change score	SD	
	PANAS-i	Just after writing	43	–	–	3.02	1.57	24	–	–	1.91	1.68	21	–	–	1.93	1.61	NR
	MPQ-s	4	43	0.56	0.57	–	–	24	0.9	0.85	–	–	21	0.88	0.61	–	–	NS[c]
		13	43	0.71	0.59	–	–	24	0.8	0.74	–	–	21	0.56	0.5	–	–	NS[c]
		26	43	0.59	0.52	–	–	24	0.99	0.84	–	–	21	0.68	0.65	–	–	NS[c]
	MPQ-a	4	43	0.40	0.59	–	–	24	0.53	0.68	–	–	21	0.57	0.58	–	–	NS[c]
		13	43	0.31	0.43	–	–	24	0.52	0.76	–	–	21	0.3	0.28	–	–	NS[c]
		26	43	0.24	0.35	–	–	24	0.6	0.75	–	–	21	0.43	0.56	–	–	SS[c]
	AIMS-ps	4	43	2.12	0.65	–	–	24	2.05	0.69	–	–	21	2.07	0.85	–	–	NS[c]
		13	43	2.03	0.65	–	–	24	2.2	0.89	–	–	21	2.07	0.65	–	–	NS[c]
		26	43	1.94	0.61	–	–	24	2.25	0.77	–	–	21	2.19	0.87	–	–	NS[c]
	AIMS-as	4	43	2.36	0.81	–	–	24	2.27	0.7	–	–	21	2.12	0.65	–	–	NS[c]
		13	43	2.43	0.88	–	–	24	2.44	0.72	–	–	21	2.13	0.65	–	–	NS[c]
		26	43	2.39	0.86	–	–	24	2.44	0.73	–	–	21	2.26	0.59	–	–	NS[c]
	OPB	4	43	13.17	8.86	–	–	24	11.52	8.12	–	–	21	12.43	8.62	–	–	NS[c]
		13	43	10.55	7.28	–	–	24	10.6	7.28	–	–	21	13.21	6.03	–	–	NS[c]
		26	43	14.83	10.11	–	–	24	15.5	8.09	–	–	21	13.61	6.95	–	–	NS
	Grip strength	4	43	226.93	120.78	–	–	24	243.06	111.8	–	–	21	223.13	134.5	–	–	NS
		13	43	245.56	117.66	–	–	24	223.68	123.8	–	–	21	226.45	138.7	–	–	NS
		26	43	232.04	117.54	–	–	24	235.83	109.6	–	–	21	211.05	118.1	–	–	NS
	Walking speed	4	43	15.24	6.78	–	–	24	15.1	6.46	–	–	21	15.23	4.08	–	–	NS
		13	43	14.98	6.08	–	–	24	16.27	8.77	–	–	21	15.56	4.13	–	–	NS
		26	43	13.70	3.44	–	–	24	15.26	3.6	–	–	21	17.43	5.89	–	–	SS

First author, year	Outcome measures	Follow-up (weeks)	Intervention group 1					Intervention group 2					Control group					Author's reported statistical significance (group-by-time interaction)
			n total[a]	Final mean score	SD	Change score	SD	*n* total[a]	Final mean score	SD	Change score	SD	*n* total[a]	Final mean score	SD	Change score	SD	
	Swollen joint count	4	43	3.00	4.08	–	–	24	2.47	2.95	–	–	21	5.58	5.98	–	–	NS
		13	43	2.89	3.95	–	–	24	2.28	3.97	–	–	21	5	5.22	–	–	NS
		26	43	3.61	4.22	–	–	24	4.39	3.97	–	–	21	3.47	3.81	–	–	NS
	Physician VAS	4	43	24.60	21.60	–	–	24	18.67	15.02	–	–	21	29.39	23.86	–	–	NS
		13	43	19.44	14.91	–	–	24	19.56	18.92	–	–	21	24.76	18.25	–	–	NS
		26	43	23.69	21.58	–	–	24	30.65	18.21	–	–	21	20.56	16.25	–	–	NS
	ESR	4	43	49.03	22.79	–	–	24	41.23	31.26	–	–	21	34.44	28.46	–	–	NS
		13	43	40.00	21.72	–	–	24	38.14	30.61	–	–	21	26.29	24.03	–	–	NS
		26	43	46.37	18.19	–	–	24	40.09	29.73	–	–	21	23.47	15.33	–	–	NS
Lumley 2014[116]	Disease activity	4	136	–0.06	0.77	–	–	–	–	–	–	–	128	0.06	1.00	–	–	SS
		16	136	0.02	0.85	–	–	–	–	–	–	–	128	–0.03	0.95	–	–	NS
		52	136	0.00	0.82	–	–	–	–	–	–	–	128	–0.00	0.92	–	–	NS
	AIMS2 pain subscale	4	136	2.83	1.04	–	–	–	–	–	–	–	128	2.64	0.99	–	–	NS
		16	136	2.84	0.97	–	–	–	–	–	–	–	128	2.58	0.92	–	–	SS
		52	136	2.93	1.04	–	–	–	–	–	–	–	128	2.66	0.99	–	–	SS
	MPQ-a	4	136	0.39	0.46	–	–	–	–	–	–	–	128	0.41	0.48	–	–	NS
		16	136	0.37	0.47	–	–	–	–	–	–	–	128	0.40	0.47	–	–	NS
		52	136	0.44	0.53	–	–	–	–	–	–	–	128	0.40	0.46	–	–	NS
	MPQ-s	4	136	1.29	0.82	–	–	–	–	–	–	–	128	1.28	0.81	–	–	NS
		16	136	1.30	0.86	–	–	–	–	–	–	–	128	1.29	0.75	–	–	NS
		52	136	1.34	0.83	–	–	–	–	–	–	–	128	1.28	0.77	–	–	NS

continued

TABLE 57 Numerical results reported in the unfacilitated EW studies in inflammatory arthropathies (*continued*)

First author, year	Outcome measures	Follow-up (weeks)	Intervention group 1					Intervention group 2					Control group					Author's reported statistical significance (group-by-time interaction)
			n total[a]	Final mean score	SD	Change score	SD	*n* total[a]	Final mean score	SD	Change score	SD	*n* total[a]	Final mean score	SD	Change score	SD	
	AIMS physical disability	4	136	1.75	0.56	–	–	–	–	–	–	–	128	1.86	0.69	–	–	SS
		16	136	1.79	0.57	–	–	–	–	–	–	–	128	1.82	0.71	–	–	NS
		52	136	1.79	0.57	–	–	–	–	–	–	–	128	1.81	0.68	–	–	NS
	AIMS psychological symptoms	4	136	2.05	0.64	–	–	–	–	–	–	–	128	2.14	0.75	–	–	NS
		16	136	2.07	0.69	–	–	–	–	–	–	–	128	2.07	0.70	–	–	NS
		52	136	2.03	0.66	–	–	–	–	–	–	–	128	2.10	0.70	–	–	NS
	Walking speed	4	136	11.91	3.63	–	–	–	–	–	–	–	128	12.44	4.43	–	–	NS
		16	136	11.87	3.24	–	–	–	–	–	–	–	128	12.31	4.00	–	–	NS
		52	136	12.03	3.37	–	–	–	–	–	–	–	128	12.43	4.16	–	–	NS
	CRP	4	136	5.14	9.91	–	–	–	–	–	–	–	128	5.93	12.8	–	–	NS
		16	136	5.17	11.1	–	–	–	–	–	–	–	128	6.21	14.1	–	–	NS
		52	136	5.90	12.3	–	–	–	–	–	–	–	128	5.58	10.9	–	–	NS
Smyth 1999[107]	DAS	2	30	1.90	SE = 0.16	–	–	–	–	–	–	–	16	1.76	SE = 0.23	–	–	NS
		8	31	1.81	SE = 0.09	–	–	–	–	–	–	–	17	1.65	SE = 0.2	–	–	NS
		16	31	1.19	SE = 0.09	–	–	–	–	–	–	–	17	1.71	SE = 0.17	–	–	SS
Wetherell 2005[117]	DAS	1	19	3.90	1.60	–	–	–	–	–	–	–	15	3.8	1.3	–	–	NS
		6	19	3.80	1.20	–	–	–	–	–	–	–	15	4.2	1.4	–	–	NS
		10	19	4.00	1.30	–	–	–	–	–	–	–	15	4.9	1	–	–	SS
	Tender joints	1	19	4.90	4.00	–	–	–	–	–	–	–	15	7	5.5	–	–	NS
		6	19	4.40	3.50	–	–	–	–	–	–	–	15	6.4	4.1	–	–	NS
		10	19	4.60	4.40	–	–	–	–	–	–	–	15	7.4	3.8	–	–	NS

First author, year	Outcome measures	Follow-up (weeks)	Intervention group 1					Intervention group 2					Control group					Author's reported statistical significance (group-by-time interaction)
			n total[a]	Final mean score	SD	Change score	SD	*n* total[a]	Final mean score	SD	Change score	SD	*n* total[a]	Final mean score	SD	Change score	SD	
	Swollen joint count	1	19	4.80	4.60	–	–	–	–	–	–	–	15	3.9	3	–	–	NS
		6	19	3.70	2.90	–	–	–	–	–	–	–	15	3.2	2.3	–	–	NS
		10	19	3.70	3.50	–	–	–	–	–	–	–	15	4.7	4.6	–	–	NS
	Patient VAS	1	19	30.00	22.30	–	–	–	–	–	–	–	15	28.8	23.9	–	–	NS
		6	19	31.20	25.20	–	–	–	–	–	–	–	15	35.5	20.3	–	–	NS
		10	19	25.00	23.50	–	–	–	–	–	–	–	15	45	24.1	–	–	NS
	CRP	1	19	25.60	16.20	–	–	–	–	–	–	–	15	14.8	8.1	–	–	NS
		6	19	20.30	13.70	–	–	–	–	–	–	–	15	25.8	30.8	–	–	NS
		10	19	21.90	16.30	–	–	–	–	–	–	–	15	20.8	15.3	–	–	NS
	ESR	1	19	29.40	23.30	–	–	–	–	–	–	–	15	19.5	15.4	–	–	NS
		6	19	21.20	16.30	–	–	–	–	–	–	–	15	25.6	27.6	–	–	NS
		10	19	28.90	19.20	–	–	–	–	–	–	–	15	32.6	20.6	–	–	NS
	POMS-SF	1	19	42.40	28.00	–	–	–	–	–	–	–	15	38.6	14.3	–	–	NS
		6	19	41.60	21.30	–	–	–	–	–	–	–	15	38.2	17.7	–	–	NS
		10	19	33.90	26.10	–	–	–	–	–	–	–	15	43.5	19.9	–	–	SS

–, not included; AIMS, Arthritis Impact Scale; AIMS-as, affective dysfunction subscale of the Arthritis Impact Measurement Scale-2; AIMS-ps, physical dysfunction subscale of the Arthritis Impact Measurement Scale-2; BAS-G, Bath Ankylosing Spondylitis Disease Global Score; BASDAI, Bath Ankylosing Spondylitis Disease Activity Index; CRP, C-reactive protein; ESR, erythrocyte sedimentation rate; MPQ-a, McGill Pain Questionnaire, affective; MPQ-s, McGill Pain Questionnaire, sensory; NR, not reported; NS, not statistically significant ($p > 0.05$); OPB, observed pain behaviour; PANAS-a, Positive and Negative Affect Schedule, anger subscale; PANAS-f, Positive and Negative Affect Schedule, fear subscale; PANAS-g, Positive and Negative Affect Schedule, guilt subscale; PANAS-i, Positive and Negative Affect Schedule, inhibited subscale; PANAS-m, Positive and Negative Affect Schedule, meaningful subscale; PANAS-pn, Positive and Negative Affect Schedule, personal nature subscale; PANAS-r, Positive and Negative Affect Schedule, revealing subscale; PANAS-s, Positive and Negative Affect Schedule, sadness subscale; PP, per protocol; SS, statistically significant ($p < 0.05$); VAS, visual analogue scale.

a Sample size analysed (ITT or PP).

b In Broderick *et al.*[113] the DAS scores could not be pooled given exclusively change scores were reported.

c The group-by-time interaction analysis refers to the EW group 1 and control group only.

The shaded cells show the data included in the meta-analysis: the lighter shading shows the data pooled in the immediate-term comparison and the darker shading shows those pooled in the short-term comparison.

A description of all acronyms is listed in *Appendix 5*, *Table 106*.

Regarding mood outcomes in Lumley *et al.*,[115] in the writing sample, compared with combined control subjects, disclosure led to significantly larger increases in the anger, sadness and guilt subscales of PANAS, but not fear, during the sessions. The authors stated that these differences were probably due to differences between the disclosure and positive control groups, but not the neutral control group. However, Wetherell *et al.*[117] reported that measures of total mood disturbance (POMS-SF) did increase in the disclosure group at 1 month compared with control subjects.

Disease activity measures were reported in all studies. This outcome is meta-analysed in the corresponding heading.

Meta-analysis

Outcomes related to the disease activity and inflammation were meta-analysed (*Figures 41–43*).

Disease activity immediately after writing Six studies[107,113–117] used different scales to measure similar aspects of the disease activity and severity. All of the studies, except Hamilton-West and Quine,[114] reported complete numerical data regarding disease activity, but in Lumley *et al.*[116] some of the scores are minus numbers, which means they cannot be meta-analysed, as they may be change scores.

- *Clinical differences between studies* All of the patients included in these studies had been diagnosed with RA and were free of other major illnesses. In Smyth *et al.*,[107] the sample consisted of volunteers recruited from local communities, whereas in the remaining studies[113–117] patients were recruited from rheumatological clinics.
- *Follow-up length* Disease activity was measured immediately after the writing and at short term.

The effect of the TW intervention on disease activity/severity was evaluated in Smyth *et al.*,[107] Hamilton-West and Quine,[114] Wetherell *et al.*[117] and Lumley *et al.*[115] almost immediately after the writing exercise at 1, 2, 4 and 4 weeks.

- *Forest plot* A total of 202 participants were meta-analysed (131 in the EW group and 71 in the control group). The SMD was –0.02 (95% CI –0.37 to 0.32) with a random-effects model and with non-significant heterogeneity ($I^2 = 0\%$). This result suggests that there is no statistically significant difference in disease activity when measured immediately after the writing exercise for the TW group compared with the control group (*Figure 43*).

The same studies evaluated the short-term effect of the TW intervention at 8, 10 and 13 weeks.

- *Forest plot* A total of 191 participants were meta-analysed (123 in the EW group and 68 in the control group). The SMD was –0.61 (95% CI –0.96 to –0.26) with a random-effects model and with non-significant heterogeneity ($I^2 = 1\%$). The result suggests that there are significant differences in disease activity in favour of the TW group at short-term follow-up (*Figure 44*).

Inflammation The effect of inflammation [erythrocyte sedimentation rate (ESR) or C-reactive protein (CRP)] was evaluated in Lumley *et al.*[115,116] and Wetherell *et al.*[117] at short-term follow-up (4, 4 and 6 weeks, respectively).

- *Clinical differences between studies* All patients included in these studies had been diagnosed with RA and were free of other major illnesses. In Lumley *et al.*[116] the sample consisted of volunteers recruited from local communities as well as from a rheumatology clinic, whereas in the remaining studies patients were recruited only from rheumatological clinics.
- *Forest plot* A total of 362 participants were meta-analysed (198 intervention, 164 control). The SMD was –0.10 (95% CI –0.34 to 0.53) with a random-effects model and with significant heterogeneity ($I^2 = 62\%$). The result suggests that there are no significant differences in disease activity in favour of the TW group at short-term follow-up. Wetherell *et al.*[117] measured ESR and CRP and both made no significant difference to the meta-analysis result (*Figure 45*).

Study or subgroup	EW Mean	EW SD	EW Total	Control Mean	Control SD	Control Total	Weight	SMD IV, random, 95% CI
Hamilton-West 2007[114]	4.76	0	39	5.33	0	19		Not estimable
Lumley 2011[115]	24.6	21.6	43	29.39	23.86	21	42.8%	−0.21 (−0.73 to 0.31)
Smyth 1999[107]	1.9	0.87	30	1.76	0.92	16	31.7%	0.16 (−0.45 to 0.76)
Wetherell 2005[117] (DAS)	3.9	1.6	19	3.8	1.3	15	25.5%	0.07 (−0.61 to 0.74)
Total (95% CI)			**131**			**71**	**100.0%**	**−0.02 (−0.37 to 0.32)**

Heterogeneity: $\tau^2 = 0.00$; $\chi^2 = 0.90$, df = 2 ($p = 0.64$); $I^2 = 0\%$

Test for overall effect: $z = 0.14$ ($p = 0.89$)

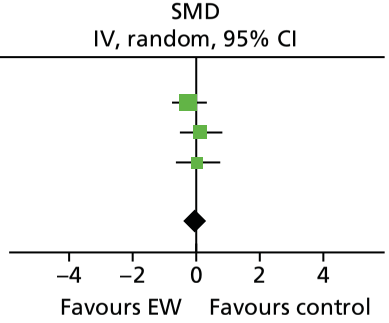

FIGURE 41 Forest plot of disease activity/severity at immediate follow-up in patients with inflammatory arthropathy. df, degrees of freedom; IV, inverse variance.

Study or subgroup	EW Mean	EW SD	EW Total	Control Mean	Control SD	Control Total	Weight	SMD IV, random, 95% CI
Hamilton-West 2007[114]	4.78	0	30	5.62	0	15		Not estimable
Lumley 2011[115]	19.44	14.91	43	24.76	18.25	21	43.8%	−0.33 (−0.85 to 0.20)
Smyth 1999[107]	1.19	0.5	31	1.71	0.7	17	31.6%	−0.89 (−1.51 to −0.27)
Wetherell 2005[117] (DAS)	4	1.3	19	4.9	1	15	24.6%	−0.75 (−1.45 to −0.04)
Total (95% CI)			**123**			**68**	**100.0%**	**−0.61 (−0.96 to −0.26)**

Heterogeneity: $\tau^2 = 0.00$; $\chi^2 = 2.02$, df = 2 ($p = 0.36$); $I^2 = 1\%$

Test for overall effect: $z = 3.40$ ($p = 0.0007$)

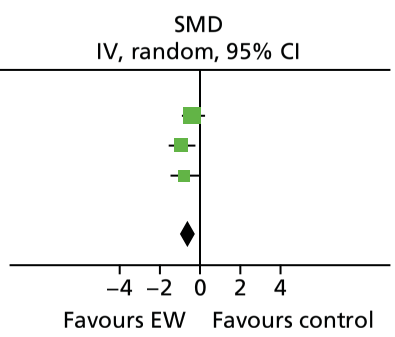

FIGURE 42 Forest plot of disease activity/severity at short-term follow-up in patients with inflammatory arthropathy. df, degrees of freedom; IV, inverse variance.

Study or subgroup	EW Mean	EW SD	EW Total	Control Mean	Control SD	Control Total	Weight	SMD IV, random, 95% CI
Lumley 2011[115]	49.03	22.79	43	34.44	28.46	21	30.0%	0.58 (0.05 to 1.11)
Lumley 2014[116]	5.14	9.91	136	5.95	12.8	128	46.6%	−0.07 (−0.31 to 0.17)
Wetherell 2005[117]	21.2	16.3	19	25.6	27.6	15	23.4%	−0.20 (−0.87 to 0.48)
Total (95% CI)			**198**			**164**	**100.0%**	**0.10 (−0.34 to 0.53)**

Heterogeneity: $\tau^2 = 0.09$; $\chi^2 = 5.22$, df = 2 ($p = 0.07$); $I^2 = 62\%$

Test for overall effect: $z = 0.43$ ($p = 0.67$)

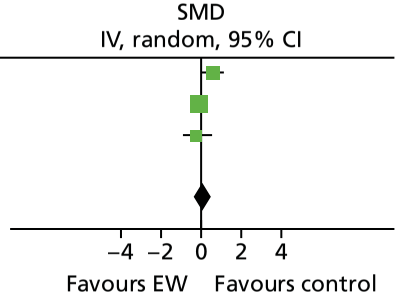

FIGURE 43 Forest plot of inflammation at immediate follow-up in patients with inflammatory arthropathy. df, degrees of freedom; \IV, inverse variance.

M79 and RSI: fibromyalgia and chronic pain and facial pain

Overview

There were two studies evaluating unfacilitated EW in fibromyalgia (FM)[118,119] and two studies in chronic pain.[51,57] A summary of the main characteristics is presented in *Table 58*. All studies[51,57,118,119] were conducted in the USA. Stark[57] included facial pain patients (ICD-10 code: R51). Broderick *et al.*[118] and Gillis *et al.*[119] used a standard written emotional expression intervention. Stark[57] combined a trauma writing exercise with a Change Theory-based positive writing technique. Graham *et al.*[51] was unique in the current systematic review in using a written anger expression exercise through a letter-writing format. This technique was based on Rusting and Nolen-Hoeksema's type of EW[125] and consisted of completing a pre-writing short exercise, where intervention group patients had to focus their attention on existing anger related to their pain experience. In this brief questionnaire, participants were asked to consider if they currently or recently felt anger towards a health-care provider, themselves, or someone or something else and, if so, to remember and/or focus on it. Participants were given a writing tablet and instructions to write a letter to the person at whom, or thing at which, they were most angry. They were instructed to focus on their anger rather than other emotions. Gillis *et al.*[119] and Stark[57] delivered the intervention in three and four 20-minute consecutive sessions, respectively, whereas in Broderick *et al.*[118] and Graham *et al.*[51] the interventions were delivered at 1-week (three sessions) and 2.5-week (two sessions) intervals. All patients were financially compensated except for those in Gillis *et al.*[119]

The outcomes assessed within the different studies are reported in *Table 59*. Pain severity, depression and resource use were the outcomes that were most frequently evaluated.

TABLE 58 Characteristics of the unfacilitated EW studies in FM/chronic pain

First author, year	Study design	Intervention group	Control group 1	Control group 2
Broderick 2005[118]	RCT	Unfacilitated EW	Time-management writing	SMC[a]
Gillis 2006[119]	RCT	Unfacilitated EW	Time-management writing	–
Graham 2008[51]	RCT	Questionnaire plus unfacilitated EW	Factual goal writing	–
Stark 2010[57]	RCT	Unfacilitated EW (mixed writing)	Non-writing	–

a The SMC group results were combined and reported with those of the time-management writing group.

TABLE 59 Outcomes collected by the unfacilitated EW studies in FM/chronic pain

First author, year	Physical global health	Pain severity/intensity	Anxiety	Depression	Affect	Social support	QoL	Various, other	Resource use
Broderick 2005[118]	FIQ, CLINHAQ	*McGill Pain Q-SF (MPQ-i)*	STAI-S	BDI-II	–	–	MOS SF-36, QOL	–	–
Gillis 2006[119]	FIQ, AIMS2 (dysfunction)	AIMS2-ps	–	–	PANAS-NA	AIMS2	Sleep quality (4-item questionnaire)	FSS (fatigue)	Number of visits to clinician
Graham 2008[51]	–	MPI	–	CES-D	–	–	–	Expressed anger, SOPA	Number of years attending clinic
Stark 2010[57]	–	DDS, MPI	–	BDI-SF	POMS	–	–	SLESQ (distress), Pain Catastrophising Scale	Number of pain medications per month, number of psychotropic medications per month

AIMS2-ps, Arthritis Impact Measurement Scale 2, pain subscale; CLINHAQ, Clinical Health Assessment Questionnaire; DDS, Descriptor Differential Scale; FIQ, Fibromyalgia Impact Questionnaire; FSS, Fatigue Severity Scale; MOS, Medical Outcomes Study; MPI, Multidimensional Pain Inventory; MPQ-i, McGill Pain Questionnaire, impact; SLESQ, Stressful Life Events Scale Questionnaire; SOPA, Survey Of Pain Attitudes; STAI-S, State/Trait Anxiety Scale, state subscale.
The shaded cells show the outcomes considered in the meta-analysis. Italic text shows outcomes for which no data were reported.
A description of all acronyms is listed in *Appendix 5*, *Table 106*.

Quality assessment

A summary of the quality of the studies is shown in *Figures 44* and *45*. All studies[51,57,118,119] were truly randomised and three studies[51,118,119] out of four reported concealment of the allocation of the sequence generation. In one study,[51] the outcome assessment was masked. In one other study,[119] the blinding was preserved at the performance level. The remaining studies[51,57,118] were likely to introduce both performance and detection bias, and one study[51] was unclear regarding the reporting of pain severity, with data derived from a graph.

Numerical results

The numerical results reported in the FM/chronic pain studies are summarised in *Table 60*. Follow-up assessments ranged between 4 weeks in Gillis *et al.*[119] and Graham *et al.*[51] up to 17 weeks in Broderick *et al.*[118] Total sample sizes ranged from 42 patients in Stark[57] to 102 patients in Graham *et al.*[51] Studies reported a statistical significant association of group-by-time interaction for the following outcomes: depression, control over pain in Graham *et al.*,[51] global impact, physical disability, poor sleep, health-care use in Gillis *et al.*,[119] and pain severity, fatigue and well-being in Broderick *et al.*[118]

Meta-analysis

It was decided not to combine data related to depression, as numerical outcomes could not be pooled together: studies were reporting change scores, median and SE and means and SD using different instruments each and at different follow-up times. The outcomes related to pain severity were meta-analysed (*Figures 46* and *47*).

Pain severity Four studies[51,57,118,119] used different scales [McGill Pain Questionnaire, impact (MPQ-i), AIMS2-ps and Multidimensional Pain Inventory (MPI)] to measure pain intensity. All of the studies except Broderick *et al.*[118] (reporting change scores only)[51,57,119] reported data that could be pooled.

- *Clinical differences between studies* In Gillis *et al.*,[119] patients had been diagnosed with FM for a mean of 5.9 years (range 1–20 years) before entering the study. In the other two studies, patients were diagnosed with chronic pain. For instance, in Graham *et al.*,[51] patients had chronic pain from diverse sources such as arthritis (22.4%), injury (57.2%), complex regional pain syndrome (9.7%), and other (27.5%), such as myofascial pain, pancreatitis and migraine; locations included back (65.5%), shoulder/arms (41.8%), neck (14.5), hips/pelvis (11.5%), hands/feet (12.7%), head (9.2%) and all over (6.9%). In Stark,[57] patient's condition was mainly related to muscle pain.
- *Follow-up length* All three studies[51,57,119] assessed pain intensity at short term, that is between 4 and 5 weeks up to 13 weeks. Although these measurements were in the same short-term follow-up category defined in *Table 2*, it was decided that two meta-analyses should be performed, one for outcomes at 4 or 5 weeks and one for outcomes between 9 and 13 weeks.

Short term, at 4/5 weeks:

- *Forest plot* A total of 216 participants were meta-analysed (110 in the EW group and 106 in the control group). The SMD was –0.04 (95% CI –0.23 to 0.30) with a random-effects model and with no significant heterogeneity ($I^2 = 0\%$). This result suggests that there is no statistically significant difference in pain severity when measured at 4/5 weeks after the writing exercise for the TW group compared with the control group (*Figure 48*).

Short term, at 9, 10 and 13 weeks:

- *Forest plot* A total of 216 participants were meta-analysed (110 in the EW group and 106 in the control group). The SMD was 0.18 (95% CI –0.09 to 0.44) with a random-effects model and with no significant heterogeneity ($I^2 = 0\%$). This result suggests that there is no statistically significant difference in pain severity when measured at 9/10 weeks to 13 weeks after the writing exercise for the EW group compared with the control group (*Figure 49*).

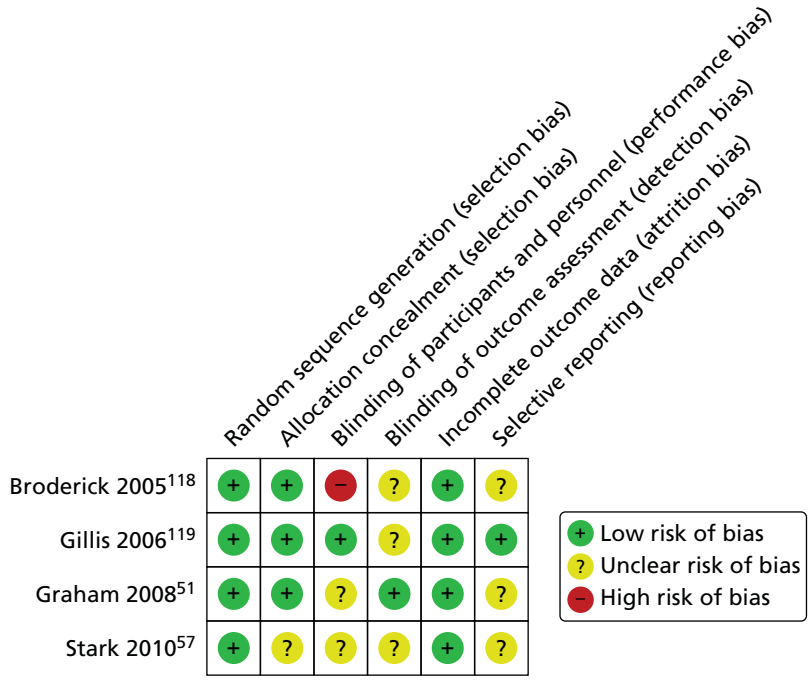

FIGURE 44 Risk-of-bias summary in the FM/chronic pain studies.

FIGURE 45 Risk-of-bias graph in the FM/chronic pain studies.

TABLE 60 Numerical results in the unfacilitated EW studies in FM/chronic pain

First author, year	Outcome measures	Follow-up (weeks)	Intervention group 1					Control group 1					Author's reported statistical significance (group-by-time interaction)
			n total[a]	Final mean score[b]	SD[b]	Change score	SD[b]	*n* total[a]	Final mean score[b]	SD[b]	Change score	SD[b]	
Broderick 2005[118]	FIQ-physical function	17	28	–	–	–0.7	0.3	55	–	–	–0.3	0.2	NS
	CLINHAQ f-VAS	17	28	–	–	–1.2	0.4	55	–	–	–0.7	0.3	NS
	MOS-SF-36	17	28	–	–	1.4	3.6	55	–	–	–2.1	2.6	NS
	MPQ-s	17	28	–	–	–3.4	1	55	–	–	–0.4	0.7	SS
	MPQ-a	17	28	–	–	–0.6	0.5	55	–	–	–0.2	0.4	NS
	MPQ-VAS	17	28	–	–	–1	0.4	55	–	–	0.1	0.3	SS
	MPQ-i	17	28	–	–	–0.6	0.2	55	–	–	0.1	0.2	SS
	BDI-II	17	28	–	–	–5.8	1.7	55	–	–	–1.1	1.2	SS
	STAI-S	17	28	–	–	3.7	2.4	55	–	–	7	1.7	NS
	QoL	17	28	–	–	0.6	2.1	55	–	–	7	1.5	SS
Gillis 2006[119]	AIMS2	4	38	2.04	0.70	–	–	34	1.91	0.57	–	–	NS
		13	38	20.30	0.72	–	–	34	1.90	0.59	–	–	NS
	AIMS2-ps	4	38	3.32	0.98	–	–	34	3.20	0.88	–	–	NS
		13	38	3.51	0.91	–	–	34	3.34	0.87	–	–	NS
	FSS	4	38	5.49	1.33	–	–	34	5.70	1.09	–	–	NS
		13	38	5.66	1.24	–	–	34	5.84	1.11	–	–	NS
	PANAS-NA	On day 3	38	–	–	0.74	1.51	34	–	–	–0.16	0.59	NS
		On day 4	38	–	–	0.43	1.14	34	–	–	–0.17	0.75	NS

continued

TABLE 60 Numerical results in the unfacilitated EW studies in FM/chronic pain (*continued*)

First author, year	Outcome measures	Follow-up (weeks)	Intervention group 1					Control group 1					Author's reported statistical significance (group-by-time interaction)
			n total[a]	Final mean score[b]	SD[b]	Change score	SD[b]	*n* total[a]	Final mean score[b]	SD[b]	Change score	SD[b]	
	PANAS-NA	4	38	2.12	0.78	–	–	34	1.94	0.70	–	–	NS
		13	38	1.91	0.71	–	–	34	2.14	0.78	–	–	NS
	AIMS-social support	4	37	2.84	1.16	–	–	32	2.72	1.14	–	–	NR
		13	36	2.52	1.05	–	–	32	2.84	1.24	–	–	NR
	Sleep quality scale-4	4	38	4.28	1.05	–	–	34	4.19	0.83	–	–	SS
		13	38	4.23	1.06	–	–	34	4.22	0.90	–	–	SS
	FIQ	4	38	56.60	20.42	–	–	34	53.31	17.79	–	–	NS
		13	38	52.70	20.35	–	–	34	53.79	18.13	–	–	SS
	n of visits clinician	4	38	1.66	1.51	–	–	34	2.16	2.23	–	–	NS
		13	38	1.13	1.07	–	–	34	1.80	2.21	–	–	SS
Graham 2008[51]	CES-D	4	51	25	SE = 1.84	–	–	51	25.31	SE = 1.08	–	–	–
		9	51	20.44	SE = 1.34	–	–	51	24.12	SE = 2.05	–	–	SS
	Expressed anger	4	51	21.33	9.37	–	–	51	19.02	7.42	–	–	–
		9	51	20.00	6.89	–	–	51	19.70	7.03	–	–	NS
	MPI	4	51	4.67	SE = 0.24	–	–	51	4.58	SE = 0.27	–	–	–
		9	51	4.03	SE = 0.21	–	–	51	4.49	SE = 0.28	–	–	NR
	SOPA	4	51	25.8	SE = 1.61	–	–	51	25.28	SE = 1.05	–	–	–
		9	51	26.89	SE = 1.37	–	–	51	23.9	SE = 1.17	–	–	SS
	n of years attending clinic	NR	NR	2.90	2.40	–	–	NR	3.70	3.10	–	–	NR

First author, year	Outcome measures	Follow-up (weeks)	Intervention group 1					Control group 1					Author's reported statistical significance (group-by-time interaction)
			n total[a]	Final mean score[b]	SD[b]	Change score	SD[b]	*n* total[a]	Final mean score[b]	SD[b]	Change score	SD[b]	
Stark 2010[57]	MPI	5	21	38.33	15.39	–	–	21	40.76	15.93	–	–	NR
		10	21	41.52	15.26	–	–	21	40.76	13.87	–	–	NR
	DDS	5	21	14.13	NR	1.58	NR	21	13.56	NR	0.19	NR	NR
		10	21	12.55	NR	2.66	NR	21	13.75	NR	1.34	NR	NR
	Pain Catastrophising Scale	5	21	20.38	10.75	2.33	NR	21	24.48	13.20	4.095	NR	NR
		10	21	17.10	10.56	5.56	NR	21	20.38	12.40	4.46	NR	NR
	BDI-SF	5	21	5.10	2.72	–	–	21	4.67	4.07	–	–	NR
		10	21	4.00	3.08	–	–	21	5.19	4.25	–	–	NR
	POMS	5	21	11.29	3.68	–1.48	NR	21	12.00	4.09	–0.9	NR	NR
		10	21	12.67	3.18	–1.38	NR	21	12.48	3.84	–0.48	NR	NR
	n of pain medication/ month	5	21	148.50	114.27	–	–	21	188.30	123.52	–	–	NR
		10	21	144.50	110.44	–	–	21	169.90	128.99	–	–	NR
	n of psychotropic medication/ month	5	21	56.70	62.97	–	–	21	61.10	65.46	–	–	NR
		10	21	44.90	47.48	–	–	21	60.20	60.36	–	–	NR

–, not included; AIMS, Arthritis Impact Measurement Scale; AIMS-2, Arthritis Impact Measurement Scale-2; AIMS2-ps, Arthritis Impact Measurement Scale-2, pain subscale; CLINHAQ f-VAS, Clinical Health Assessment Questionnaire, fatigue item; DDS, Descriptor Differential Scale; FIQ, Fibromyalgia Impact Questionnaire; FSS, Fatigue Severity Scale; MPI, Multidimensional Pain Inventory; MPQ-a, McGill Pain Questionnaire, affective; MPQ-i, McGill Pain Questionnaire, impact; MPQ-s, McGill Pain Questionnaire, sensory; MPQ-VAS, McGill Pain Questionnaire visual analogue scale; NR, not reported; NS, not statistically significant; PP, per protocol; SOPA, Survey Of Pain Attitudes; SS, statistically significant ($p < 0.05$); STAI-S, State/Trait Anxiety Scale, state subscale.

a Sample size analysed (ITT or PP).

b Unless otherwise specified.

The shaded cells show the data included in the meta-analysis.

A description of all acronyms is listed in *Appendix 5*, *Table 106*.

Study or subgroup	EW Mean	EW SD	EW Total	Control Mean	Control SD	Control Total	Weight	SMD IV, random, 95% CI
Gillis 2006[119]	3.32	0.98	38	3.2	0.88	34	33.2%	0.13 (–0.34 to 0.59)
Graham 2008[51]	–4.67	1.71	51	–4.58	1.92	51	47.3%	–0.05 (–0.44 to 0.34)
Stark 2010[57]	–38.33	15.39	21	–40.76	15.93	21	19.4%	0.15 (–0.45 to 0.76)
Total (95% CI)			**110**			**106**	**100.0%**	**0.05 (–0.22 to 0.32)**

Heterogeneity: $\tau^2 = 0.00$; $\chi^2 = 0.47$, df = 2 ($p = 0.79$); $I^2 = 0\%$

Test for overall effect: $z = 0.36$ ($p = 0.72$)

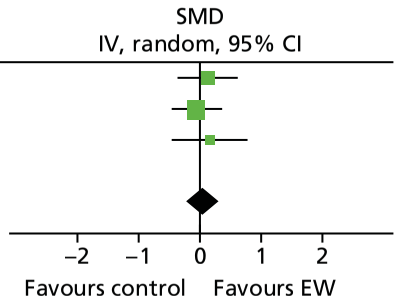

FIGURE 46 Forest plot of pain severity at 4/5 weeks' follow-up in FM/chronic pain studies. df, degrees of freedom; IV, inverse variance.

Study or subgroup	EW Mean	EW SD	EW Total	Control Mean	Control SD	Control Total	Weight	SMD IV, random, 95% CI
Gillis 2006[119]	3.51	0.91	38	3.34	0.87	34	33.3%	0.19 (–0.28 to 0.65)
Graham 2008[51]	–4.04	1.5	51	–4.49	1.9	51	47.1%	0.26 (–0.13 to 0.65)
Stark 2010[57]	–41.52	15.26	21	–40.76	13.87	21	19.6%	–0.05 (–0.66 to 0.55)
Total (95% CI)			**110**			**106**	**100.0%**	**0.18 (–0.09 to 0.44)**

Heterogeneity: $\tau^2 = 0.00$; $\chi^2 = 0.73$, df = 2 ($p = 0.70$); $I^2 = 0\%$

Test for overall effect: $z = 1.29$ ($p = 0.20$)

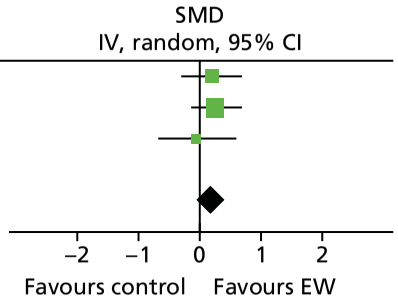

FIGURE 47 Forest plot of pain severity at short-term (9–13 weeks) follow-up in FM/chronic pain studies. df, degrees of freedom; IV, inverse variance.

Positive therapeutic writing

Overview

Previously, *Chapter 3* summarised the effect of the standard forms of unfacilitated EW and used those in meta-analyses where possible. In addition to these forms of writing, which were usually disease/treatment, or trauma-focused, seven of the included studies[53,57,72,82,106,110,115] used a form of positive writing.

As mentioned in *Chapter 1*, positive writing is a form of expressive/emotional writing and is a more usual form of writing used among facilitated types of TW, although it can be used as part of an unfacilitated EW as evaluated here.

These seven studies[53,57,72,82,106,110,115] have been already described in corresponding ICD-10 sections; however, *Table 61* outlines the interventions evaluated. Four[82,106,110,115] of the seven studies used positive writing as a second intervention group in addition to the unfacilitated EW. Two studies[53,72] used positive writing only and the doctoral thesis by Stark[57] used a combined form of expressive writing mixing both a form of emotional disclosure and positive writing. In this study, participants in the positive writing group had to write about a self-selected worst experience from a positive perspective. This intervention is unusual and was compared against a non-writing control group.

As shown in *Table 62*, the outcomes evaluated in all seven studies were very varied, although two studies[110,117] evaluated mental health using the GHQ-12 and were among patients with psoriasis[110] and testicular cancer.[77] In the remaining studies, three studies[53,57,115] evaluated affect and mood states; two studies[82,110] assessed QoL; two studies[110,115] assessed disease severity; and three studies[53,106,115] evaluated biomarkers.

Numerical results

The numerical results on positive writing and controls are reported in *Table 63*. All studies on positive writing were of small sample sizes, with follow-ups conducted up to 26 weeks. All studies evaluated different LTC populations.

Harris *et al.*[106] did not show significant differences between positive writing and control groups on lung function (similar results to the EW group compared with control subjects).

In Henry *et al.*,[53] there was a significant improvement in POMS scores for the writing group compared with the matched control subjects at 13 weeks but not at 39 weeks. No other outcomes measured showed significant differences.

TABLE 61 Characteristics of the studies of unfacilitated positive writing

First author, year	LTC	Intervention group 1	Intervention group 2	Control group
Harris 2005[106]	Asthma	Unfacilitated EW	Positive writing	Factual writing
Henry 2010[53]	Breast cancer	Positive writing	–	Usual care
Lumley 2011[115]	RA	Unfacilitated EW	Positive writing	Time-management writing
Pauley 2011[82]	Testicular cancer	Unfacilitated EW	Positive writing	Factual writing
Paradisi 2010[110]	Psoriasis	Unfacilitated EW	Positive writing	Non-EW
Mann 2001[72]	HIV	Positive writing	–	Non-writing
Stark 2010[57]	FM and facial pain	Unfacilitated EW (mixed writing including positive writing)	–	Non-writing

TABLE 62 Outcomes collected by the studies of unfacilitated positive writing

First author, year	Physiological/ biomarkers outcomes	Disease severity	Pain severity	Sexual health	Coping	Depression	Affect	Mental health	Various others	QoL	Adherence and side effects	Resource use
Harris 2005[106]	FEV_1% pred, FVC	–	–	–	–	–	–	–	–	–	✓	–
Henry 2010[53]	Survey–18 physical symptoms	–	–	–	–	CES-D	POMS	–	–	–	–	–
Lumley 2011[115]	ESR	Swollen joint count, walking speed, grip strength, physicians global rating of disease activity (100-mm VAS)	–	–	–	–	PANAS-X AIMS2: affective disturbance subscales	–	AIMS2: physical dysfunction subscale, McGill Pain Q-SF	–	–	–
Mann 2001[72]	–	–	–	–	–	–	–	–	LOT (optimism)	–	Adherence and side effects due to HIV-medication	–
Pauley 2011[82]	–	–	–	6-item measure	*ARS-20*	–	–	GHQ-12	–	QLQ-30	–	–
Paradisi 2010[110]	–	PASI, SAPASI	–	–	–	–	–	GHQ-12	–	Skindex-29 Symptoms, Emotions and Functioning subscales	–	–
Stark 2010[57]	–	–	DDS, MPI	–	–	BDI-SF	POMS	–	–	SLESQ (distress), Pain Catastrophising Scale	–	Number of pain medications per month, number of psychotropic medications per month

ARS-20, Assertiveness/Responsiveness scale; DDS, Descriptor Differential Scale; LOT, Life Orientation Test; QLQ-30, Quality of Life Questionnaire; SLESQ, Stressful Life Events Screening Questionnaire; VAS, visual analogue scale.
Italic text shows outcomes for which no data were reported.
A description of all acronyms is listed in *Appendix 5*, *Table 106*.

TABLE 63 Numerical results in the studies of unfacilitated positive writing

First author, year	Outcome measures	Follow-up (weeks)	Intervention group					Control group					Author's reported statistical significance (group-by-time interaction)
			n total[a]	Final mean score[b]	SD[b]	Change score	SD[b]	*n* total[a]	Final mean score[b]	SD[b]	Change score	SD[b]	
Harris 2005[106]	FEV_1% pred	8	37	75.5	17.2	1.3	7.3	36	77.1	17.1	3	4.4	NS
	FVC	8	37	79.2	14.5	3.6	9.0	36	78.5	15	2.4	4.6	NS
	Adherence[c]		NR	NR	NR	–	–	–	–	–	–	–	NR
Henry 2010[53]	Survey–18 physical symptoms items	13	40	1.85	NR	–	–	40	2.15	NR	–	–	NS
	Survey–18 physical symptoms items	39	40	2.05	NR	–	–	40	2.09	NR	–	–	NS
	CES-D	13	40	1.31	NR	–	–	40	1.55	NR	–	–	NS
	CES-D	39	40	1.40	NR	–	–	40	1.47	NR	–	–	NS
	POMS	13	40	NR	NR	–	–	40	NR	NR	–	–	SS
	POMS	39	40	NR	NR	–	–	40	NR	NR	–	–	NS
Lumley 2011[115]	PANAS-a	Just after writing	24	–	–	–0.36	1	21	–	–	–0.02	0.84	NR
	PANAS-f	Just after writing	24	–	–	–0.18	0.53	21	–	–	0.06	0.38	NR
	PANAS-s	Just after writing	24	–	–	–0.14	0.6	21	–	–	0	0.61	NR
	PANAS-g	Just after writing	24	–	–	–0.45	0.76	21	–	–	–0.11	0.69	NR
	PANAS-pn	Just after writing	24	–	–	4.94	1.3	21	–	–	3.4	2.14	NR
	PANAS-r	Just after writing	24	–	–	4.7	1.25	21	–	–	3	2	NR
	PANAS-m	Just after writing	24	–	–	4.98	0.94	21	–	–	2.75	1.9	NR

continued

TABLE 63 Numerical results in the studies of unfacilitated positive writing (*continued*)

First author, year	Outcome measures	Follow-up (weeks)	Intervention group					Control group					Author's reported statistical significance (group-by-time interaction)
			n total[a]	Final mean score[b]	SD[b]	Change score	SD[b]	*n* total[a]	Final mean score[b]	SD[b]	Change score	SD[b]	
	PANAS-i	Just after writing	24	–	–	1.91	1.68	21	–	–	1.93	1.61	NR
	MPQ-s	4	24	0.9	0.85	–	–	21	0.88	0.61	–	–	NR
		13	24	0.8	0.74	–	–	21	0.56	0.5	–	–	NR
		26	24	0.99	0.84	–	–	21	0.68	0.65	–	–	NR
	MPQ-a	4	24	0.53	0.68	–	–	21	0.57	0.58	–	–	NR
		13	24	0.52	0.76	–	–	21	0.3	0.28	–	–	NR
		26	24	0.6	0.75	–	–	21	0.43	0.56	–	–	NR
	AIMS-ps	4	24	2.05	0.69	–	–	21	2.07	0.85	–	–	NR
		13	24	2.2	0.89	–	–	21	2.07	0.65	–	–	NR
		26	24	2.25	0.77	–	–	21	2.19	0.87	–	–	NR
	AIMS-as	4	24	2.27	0.7	–	–	21	2.12	0.65	–	–	NR
		13	24	2.44	0.72	–	–	21	2.13	0.65	–	–	NR
		26	24	2.44	0.73	–	–	21	2.26	0.59	–	–	NR
	OPB	4	24	11.52	8.12	–	–	21	12.43	8.62	–	–	NR
		13	24	10.6	7.28	–	–	21	13.21	6.03	–	–	NR
		26	24	15.5	8.09	–	–	21	13.61	6.95	–	–	NR
	Grip strength	4	24	243.06	111.8	–	–	21	223.13	134.5	–	–	NR
		13	24	223.68	123.8	–	–	21	226.45	138.7	–	–	NR
		26	24	235.83	109.6	–	–	21	211.05	118.1	–	–	NR
	Walking speed	4	24	15.1	6.46	–	–	21	15.23	4.08	–	–	NR
		13	24	16.27	8.77	–	–	21	15.56	4.13	–	–	NR
		26	24	15.26	3.6	–	–	21	17.43	5.89	–	–	NR

First author, year	Outcome measures	Follow-up (weeks)	Intervention group					Control group					Author's reported statistical significance (group-by-time interaction)
			n total[a]	Final mean score[b]	SD[b]	Change score	SD[b]	*n* total[a]	Final mean score[b]	SD[b]	Change score	SD[b]	
	Swollen joint count	4	24	2.47	2.95	–	–	21	5.58	5.98	–	–	NR
		13	24	2.28	3.97	–	–	21	5	5.22	–	–	NR
		26	24	4.39	3.97	–	–	21	3.47	3.81	–	–	NR
	Physician VAS	4	24	18.67	15.02	–	–	21	29.39	23.86	–	–	NR
		13	24	19.56	18.92	–	–	21	24.76	18.25	–	–	NR
		26	24	30.65	18.21	–	–	21	20.56	16.25	–	–	NR
	ESR	4	24	41.23	31.26	–	–	21	34.44	28.46	–	–	NR
		13	24	38.14	30.61	–	–	21	26.29	24.03	–	–	NR
		26	24	40.09	29.73	–	–	21	23.47	15.33	–	–	NR
Mann 2001[72]	LOT	4	20	28.13	0.9	–	–	20	27.23	1.1	NR	–	NR
	Adherence (mean)	4	20	4.12	0.31	–	–	20	4.82	0.16	NR	–	NR
	Side effects	4	20	37.7	5.71	–	–	20	35.85	4.76	NR	–	NR
Pauley 2011[82]	Sexual performance	5	28	NR	NR	NR	NR	28	NR	NR	NR	NR	NR
	Sexual health	5	28	6.05	0.28	NR	NR	28	5.66	0.32	NR	NR	NS
	GHQ-12	5	28	5.4	0.15	0.34	0.47	28	4.7	0.16	0.29	0.39	SS
	ARS-20	5	28	NR	NR	NR	NR	28	NR	NR	NR	NR	NR
	QLQ-30	5	28	2.38	0.19	NR	NR	28	2.52	0.21	NR	NR	NS

continued

TABLE 63 Numerical results in the studies of unfacilitated positive writing (*continued*)

			Intervention group					Control group					Author's reported statistical significance (group-by-time interaction)
First author, year	Outcome measures	Follow-up (weeks)	*n* total[a]	Final mean score[b]	SD[b]	Change score	SD[b]	*n* total[a]	Final mean score[b]	SD[b]	Change score	SD[b]	
Paradisi 2010[110]	PASI	8	22	NR	NR	–	–	26	NR	NR	–	–	SS
		17	12	NR	NR	–	–	13	NR	NR	–	–	NR
	SAPASI	8	22	Median: 2	NR	–	–	26	Median: 2	NR	–	–	NS
		17	12	Median: 5.8	NR	–	–	13	Median: 6	NR	–	–	SS
	GHQ-12	8	22	Median: 8	Range: 2–19	–	–	26	Median: 11	Range 3–24	–	–	NR
		17	12	Median: 8	Range: 4–28	–	–	13	Median: 12	Range: 3–27	–	–	NR
	Skindex-29 Symptoms	8	22	Median: 21	Range 0–46	–	–	26	Median: 21	Range: 0–60	–	–	NR
		17	12	Median: 20	Range 0–64	–	–	13	Median: 25	Range 4–68	–	–	SS
	Skindex-29 Functioning	8	22	Median: 3	Range 0–71	–	–	26	Median: 19	Range 2–42	–	–	NR
		17	22	Median: 6	Range 0–75	–	–	26	Median: 19	Range 2–67	–	–	NR
	Skindex-29 Emotions	8	22	Median: 16	Range 0–80	–	–	26	Median: 30	Range 5–80	–	–	NR
		17	22	Median: 21	Range 0–82	–	–	26	Median: 30	Range 7–67	–	–	NR

First author, year	Outcome measures	Follow-up (weeks)	Intervention group					Control group					Author's reported statistical significance (group-by-time interaction)
			n total[a]	Final mean score[b]	SD[b]	Change score	SD[b]	*n* total[a]	Final mean score[b]	SD[b]	Change score	SD[b]	
Stark 2010[57]	MPI	5	21	38.33	15.39	–	–	21	40.76	15.93	–	–	NA
		10	21	41.52	15.26	–	–	21	40.76	13.87	–	–	NA
	DDS	5	21	14.13	NR	1.58	NR	21	13.56	NR	0.19	NR	NA
		10	21	12.55	NR	2.66	NR	21	13.75	NR	1.34	NR	NA
	Pain Catastrophising Scale	5	21	20.38	10.75	2.33	NR	21	24.48	13.2	4.095	NR	NA
		10	21	17.1	10.56	5.56	NR	21	20.38	12.4	4.46	NR	NA
	BDI-SF	5	21	5.1	2.72	–	–	21	4.67	4.07	–	–	NA
		10	21	4	3.08	–	–	21	5.19	4.25	–	–	NA
	POMS	5	21	11.29	3.68	–1.48	NR	21	12	4.09	–0.9	NR	NA
		10	21	12.67	3.18	–1.38	NR	21	12.48	3.84	–0.48	NR	NA
	n of pain medication/month	5	21	148.5	114.27	–	–	21	188.3	123.52	–	–	NA
		10	21	144.5	110.44	–	–	21	169.9	128.99	–	–	NA
	n of psychotropic medication/month	5	21	56.7	62.97	–	–	21	61.1	65.46	–	–	NA
		10	21	44.9	47.48	–	–	21	60.2	60.36	–	–	NA

–, not included; AIMS-as, affective dysfunction subscale of the Arthritis Impact Measurement Scale-2; AIMS-ps, physical dysfunction subscale of the Arthritis Impact Measurement Scale-2; ARS-20, Assertiveness/Responsiveness scale; DDS, Descriptor Differential Scale; LOT, Life Orientation Test; MPQ-a, McGill Pain Questionnaire, affective; MPQ-s, McGill Pain Questionnaire, sensory; NA, not applicable; NR, not reported; OPB, observed pain behaviour; PANAS-a, Positive and Negative Affect Schedule, anger subscale; PANAS-f, Positive and Negative Affect Schedule, fear subscale; PANAS-g, Positive and Negative Affect Schedule, guilt subscale; PANAS-i, Positive and Negative Affect Schedule, inhibited subscale; PANAS-m, Positive and Negative Affect Schedule, meaningful subscale; PANAS-pn, Positive and Negative Affect Schedule, personal nature subscale; PANAS-r, Positive and Negative Affect Schedule, revealing subscale; PANAS-s, Positive and Negative Affect Schedule, sadness subscale; PP, per protocol; QLQ-30, Quality of Life Questionnaire; SS, statistically significant ($p < 0.05$); VAS, visual analogue scale.

a Sample size analysed (ITT or PP).

b Unless otherwise specified.

c Data regarding the positive writing group.

A description of all acronyms is listed in *Appendix 5*, *Table 106*.

In Pauley *et al.*,[82] as in the EW group, significant differences were found in mental health in favour of the positive writing group compared with control subjects.

In Paradisi *et al.*,[110] intragroup analyses show increases in SAPASI scores between the end of intervention and the final assessment in the positive writing group and control subjects, whereas no differences were found in the EW group participants. In addition, significant differences in Skindex-29 values between positive writing and the control group were reported (similarly to the EW group compared with control subjects) at final follow-up. Participants allocated to the EW group had a longer period of remission after phototherapy; this was not seen in the positive writing group participants.

Mann[72] measured optimism and pessimism but differences between groups in the time-by-group interaction analysis were not reported.

Given the heterogeneity in conditions, outcomes measured and results, no meta-analysis could be performed for this subgroup of participants for whom positive writing was evaluated.

Outcomes measured across long-term conditions

As described in previous chapters, authors of included studies have used a wide range of instruments and outcome measures to illustrate how TW interventions may have affected the different LTCs assessed. The purpose of this section is to describe whether among the included studies with any LTC, TW improved people's depression, anxiety and disease-based outcomes (*Table 64*).

Therapeutic writing effect on disease-based outcomes

From all of the included studies on LTCs, only 25 measured disease-specific outcomes (see *Table 64*). Of these – the TW intervention – only two had a significant effect on outcomes: the DBP of patients following first MI in Willmott *et al.*[104] and PASI in Paradisi *et al.*[110] The effects were in favour of participants receiving unfacilitated EW compared with control subjects. None of the other outcomes showed statistical differences between groups, apart from when subsets of questionnaire measures were reported separately, such as in Broderick *et al.*[118]

Therapeutic writing effect on depression

Overview of studies

Overall, 26 studies[50,51,53,55–57,76–78,81,87–96,99,100,103,106,107,112,114,115,118] out of 64 included studies[9,51–58,66–119] evaluated depression. These 26 studies evaluated participants with different chronic conditions: three studies[50,55,56] evaluated HIV patients; four studies[53,76–78] evaluated patients with breast cancer; one study[81] evaluated renal cell carcinoma patients; one study[87] evaluated sickle cell disease; one study[88] evaluated type 2 diabetes mellitus; one study[92] evaluated patients with SUD; three studies[94–96] evaluated patients with psychiatric disorders; three studies[93,98,107] evaluated PTSD patients; one study[99] evaluated BN; one study[100] evaluated amyotrophic lateral sclerosis; one study[103] in patients with a first myocardial arrest; one study[112] evaluated patients with psoriasis; two studies[114,115] evaluated patients with inflammatory arthropathy; and three other studies[51,57,118] evaluated patients with FM and chronic pain. Fourteen different conditions were included in the overall analysis of depression. Almost all of the studies evaluated an EW intervention whereby instructions to write about the most upsetting event related to their life or disease were given. But, in one study,[57] participants were instructed to change the topic throughout the writing intervention to write in the same emotional way about the positive life/disease-related events. Instruments used varied across studies and included following: HAM-D, CES-D, HADS-D, BDI (including both the revised and short form versions), CDI, Depression Anxiety Stress Scales, depression subscale (DASS-D), POMS-d and Geriatric Depression Scale (GDS).

TABLE 64 Physiological, disease-related and biomarker outcomes collected across LTCs

Disease area (total number of studies)	Number of studies reporting physiological and biomarker outcomes (listed)	Total number of patients (maximum number)	Whether EW showed statistically significant improvement, no difference or worsening	Comments
HIV (6)	3[a] (VL, CD4+ count)	Abel[50] (208)	Abel[50] – NS	
		Ironson[71] (207)	Ironson[71] – NS	
		Petrie[56] (37)	Petrie[56] – NS at 2 and 13 weeks, improvement at 26 weeks	
Breast cancer (8)	0	NA	NA	
Gynaecological and genitourinary cancers (6)	1 (PSA levels, peripheral blood T-cell proliferation, serum cytokine levels of TNF-α, IL-4 and IL-10)	Rosenberg[83] (30)	Rosenberg[83] – NS	
Cancer from various sources (2)	0	NA	NA	
Sickle cell disease (1)	0	NA	NA	
Type 2 diabetes mellitus (1)	0	NA	NA	
Cystic fibrosis (1)	1 (FEV_1, BMI)	Taylor[89] (34)	Taylor[89] – NS	
Dementia (1)	0	NA	NA	
SUD (2)	1 (BP, heart rate)	Grasing[90] (42)	Grasing[90] – NS	
Psychiatric disorders (6)	0	NA	NA	
PTSD (4)	0	NA	NA	
BN (1)	1 (BMI)	Robinson[99] (61)	Robinson[99] – NR	BMI was used as baseline moderator
ALS (1)	0	NA	NA	
Migraine and tension headache (1)	1 (headache frequency and headache severity)	D'Souza[120] – migraine headache sample (62)	D'Souza[120] – migraine headache – NS	
		D'Souza[120] – tension headache sample (34)	D'Souza[120] – tension headache – NS	
CVD (3)	1 (BP, cardiac symptoms)	Willmott[104] (128)	Willmott[104] – cardiac symptoms – NS	
			Willmott[104] – DBP – SS	
			Willmott[104] – SBP – NS	
COPD (1)	1 (6MWD, FEV_1, FVC)	Sharifabad[105] (66)	Sharifabad[105] – 6MWD – NR	
			Sharifabad[105] – FEV_1 – NS	
			Sharifabad[105] – FVC – NS	

continued

TABLE 64 Physiological, disease-related and biomarker outcomes collected across LTCs (*continued*)

Disease area (total number of studies)	Number of studies reporting physiological and biomarker outcomes (listed)	Total number of patients (maximum number)	Whether EW showed statistically significant improvement, no difference or worsening	Comments
Asthma (4)	4 (FEV_1% predicted, FVC)	Harris[106] (77)[b]	Harris[106] – NS	
		Smyth[107] (58)	Smyth[107] – NS	
		Theadom[58] (114)	Theadom[58] – NR	
		Warner[108] (32)	Warner[108] – NS	
IBS (2)	0	NA	NA	
Psoriasis (3)	3 (psoriasis severity)	Paradisi[110] (50)	Paradisi[110] – SS/NR	Paradisi[100] – SS first follow-up only
		Tabolii[111] (67)	Tabolli[111] – NS	
		Vedhara[112] (59)	Vedhara[112] – NS	
Rheumatoid arthropathies (6)	4 (swollen joint count, walking speed, grip strength, ESR)	Lumley[115] (64)[a]	Lumley[115] – NS	
		Lumley[116] (264)	Lumley[116] – NS	
		Smyth[107] (49)	Smyth[107] – NS	
		Wetherell[117] (34)	Wetherell[117] – NS	
FM and chronic pain (4)	4 (chronic pain)	Broderick[118] (83)	Broderick[118] – NS/SS	Broderick[118] – SS for some subsets of questionnaire only
		Gillis[119] (72)	Gillis[119] – NS	
		Graham[51] (102)	Graham[51] – NR	
		Stark[57] (42)	Stark[57] – NR	

6MWD, 6 Minutes' Walk Distance; BMI, body mass index; BP, blood pressure; IL-4, interleukin 4; IL-10, interleukin 10; NA, not applicable; NS, not statistically significant; NR, not reported; PSA, prostate-specific antigen; SBP, systolic blood pressure; SS, statistically significant; TNF-α, tumour necrosis factor alpha.
a Total sample size counting the intervention group 1 and the control group.
Shaded cell shows statistically significant results.

Numerical results

The numerical results reported in the included studies evaluating depression are summarised in *Table 65*.

Meta-analysis

Depression was assessed at immediate-, short-, medium- and long-term follow-up across studies (*Figures 48–51*).

- *Immediate follow-up* A total of 440 participants were meta-analysed (229 in the EW group and 211 in the control group). The SMD was –0.01 (95% CI –0.20 to 0.18) with no significant heterogeneity ($I^2 = 0\%$). This result suggests that there is no statistically significant difference in depressive symptoms up to 4 weeks after writing exercise in the TW group compared with the control group.
- *Short-term follow-up* A total of 1563 participants were meta-analysed (791 in the EW group and 772 in the control group). The SMD was –0.06 (95% CI –0.29 to 0.17) with substantial, significant heterogeneity ($I^2 = 74\%$). This result suggests that there is no statistically significant difference in depressive symptoms between 4 and 17 weeks after the writing exercise in the TW group compared with the control group.
- *Medium-term follow-up* A total of 393 participants were meta-analysed (197 in the EW group and 196 in the control group). The SMD was –0.06 (95% CI –0.31 to 0.18) with a significant heterogeneity ($I^2 = 28\%$). This result suggests that there is no statistically significant difference in depressive symptoms between 17 and 34 weeks after the writing exercise in the TW group compared with the control group.
- *Long-term follow-up* A total of 778 participants were meta-analysed (375 in the EW group and 403 in the control group). The SMD was –0.04 (95% CI –0.18 to 0.10) with no significant heterogeneity ($I^2 = 0\%$). This result suggests that there is no statistically significant difference in depressive symptoms 34 weeks after the writing exercise in the TW group compared with the control group.

The overall analysis of the effect of TW on depression showed no significant differences between the TW group and the control subjects at any of the time points.

TABLE 65 Depression outcomes collected across LTCs

LTC	First author, year	Immediately after writing						Depression short term						Depression medium term						Depression long term					
		TW			Control			TW			Control			TW			Control			TW			Control		
		n	Mean	SD	*n*	Mean	SD	*n*	Mean	SD[a]	*n*	Mean	SD[a]	*n*	Mean	SD	*n*	Mean	SD	*n*	Mean	SD	*n*	Mean	SD
HIV	Ironson 2013[71]	–	–	–	–	–	–	103	8.41	6.26	104	8.99	7.27	95	8.13	6.46	94	8.3	6.6	82	7.54	6.24	89	7.09	5.56
	Kraiij 2010[55]	–	–	–	–	–	–	16	7.06	4.81	15	7.73	3.88	–	–	–	–	–	–	–	–	–	–	–	–
	Abel 2004[50]	–	–	–	–	–	–	5	22	6.1	6	20.2	9.7	–	–	–	–	–	–	–	–	–	–	–	–
Breast cancer	Henry 2010[53]	–	–	–	–	–	–	40	1.31	NR	40	1.55	NR	–	–	–	–	–	–	40	1.4	NR	40	1.47	NR
	Jensen-Johansen 2013[76]	–	–	–	–	–	–	197	4	4.1	221	4.5	4.4	–	–	–	–	–	–	209	4.2	4.3	226	4.5	4.6
	Mosher 2012[77]	–	–	–	–	–	–	44	17.9	8.9	42	17.87	8.9	–	–	–	–	–	–	–	–	–	–	–	–
	Park 2012[78]	29	4.93	3.4	29	4.48	3.33	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
RCC	Milbury 2014[81]	–	–	–	–	–	–	87	8.8	8.6	86	10.2	6.7	84	9.9	10.1	84	9.5	7.1	72	9.5	9.6	76	10.5	7.4
Sickle cell disease	McElligott 2006[87]	19	5.9	5.6	17	7.2	6.1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Diabetes mellitus	Dennick 2014[88]	–	–	–	–	–	–	23	9.9	5.3	18	5.1	5.1	–	–	–	–	–	–	–	–	–	–	–	–
SUD	Meshberg-Cohen 2010[91]	77	21.2	10.1	64	20.3	12.1	77	18.3	11.6	64	15.4	10.2	–	–	–	–	–	–	–	–	–	–	–	–
Psychiatric disorders	Canna 2006[94]	–	–	–	–	–	–	22	16.8	8.28	13	17.8	9.65	18	9.9	7.85	18	15.1	9.78	12	12.4	10.54	12	10.4	6.9
	Graf 2008[95]	22	11.32	10.25	22	17.45	12.18	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Krpan 2013[96]	–	–	–	–	–	–	20	20.0	10.5	20	26.0	8.5	–	–	–	–	–	–	–	–	–	–	–	–

LTC	First author, year	Immediately after writing						Depression short term						Depression medium term						Depression long term					
		TW			Control			TW			Control			TW			Control			TW			Control		
		n	Mean	SD	*n*	Mean	SD	*n*	Mean	SD[a]	*n*	Mean	SD[a]	*n*	Mean	SD	*n*	Mean	SD	*n*	Mean	SD	*n*	Mean	SD
PTSD	Bernard 2006[93]	–	–	–	–	–	–	12	5.92	4.54	10	7.11	4.65	–	–	–	–	–	–	–	–	–	–	–	–
	Gidron 1996[98]	–	–	–	–	–	–	8	39.1	9.1	6	45.2	13	–	–	–	–	–	–	–	–	–	–	–	–
	Smyth 2008[121]	–	–	–	–	–	–	POMS mean change reported only						–	–	–	–	–	–	–	–	–	–	–	–
BN	Robinson 2008[99]	–	–	–	–	–	–	34	18.3	95% CI 14.1 to 22.6	27	9.37	95% CI 8.0 to 10.74	–	–	–	–	–	–	–	–	–	–	–	–
ALS	Averill 2013[100]	–	–	–	–	–	–	Numerical data not reported						–	–	–	–	–	–	–	–	–	–	–	–
MI	Hevey 2012[103]	Numerical data not reported						Numerical data not reported						–	–	–	–	–	–	–	–	–	–	–	–
Psoriasis	Vedhara 2007[112]	31	6.43	8.62	28	5.93	9.5	31	4.38	4.44	28	3.68	3.36	–	–	–	–	–	–	–	–	–	–	–	–
Inflammatory arthritis	Hamilton-West 2007[114]	–	–	–	–	–	–	Numerical data not reported						–	–	–	–	–	–	–	–	–	–	–	–
FM	Broderick 2005[118]	–	–	–	–	–	–	BDI-II mean change reported only						–	–	–	–	–	–	–	–	–	–	–	–
	[b]Graham 2008[51]	51	25	(24.23 to 26.07)	51	25.31	(24.45 to 25.53)	51	20.44	(19.68 to 21.20)	51	24.12	(23.04 to 25.09)	–	–	–	–	–	–	–	–	–	–	–	–
	Stark 2010[57]	–	–	–	–	–	–	21	4	3.08	21	5.19	4.25	–	–	–	–	–	–	–	–	–	–	–	–

n, sample size in each group; NR, not reported.
a Unless otherwise specified.
b Graham *et al.*[51] reported median and SE intervals.

Study or subgroup	EW Mean	EW SD	EW Total	Control Mean	Control SD	Control Total	Weight	SMD IV, random, 95% CI
Graf 2008[95]	11.32	10.25	22	17.45	12.18	22	9.7%	−0.53 (−1.14 to 0.07)
Graham 2008[51]	25.1	3.27	51	25	1.92	51	23.4%	0.04 (−0.35 to 0.43)
McElligott 2006[87]	5.9	5.6	19	7.2	6.1	17	8.2%	−0.22 (−0.87 to 0.44)
Meshberg-Cohen 2010[91]	21.2	10.1	77	20.3	12.1	64	32.0%	0.08 (−0.25 to 0.41)
Park 2012[78]	4.93	3.4	29	4.48	3.33	29	13.3%	0.13 (−0.38 to 0.65)
Vedhara 2007[112]	6.43	8.62	31	5.93	9.5	28	13.5%	0.05 (−0.46 to 0.57)
Total (95% CI)			**229**			**211**	**100.0%**	**−0.01 (−0.20 to 0.18)**

Heterogeneity: $\tau^2 = 0.00$; $\chi^2 = 4.00$, df = 5 ($p = 0.55$); $I^2 = 0\%$

Test for overall effect: $z = 0.11$ ($p = 0.91$)

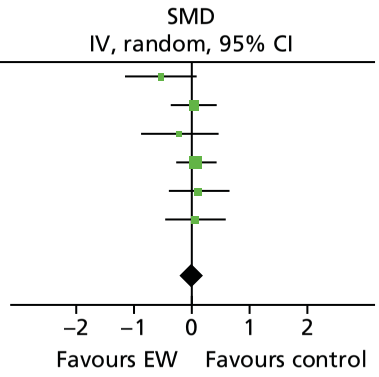

FIGURE 48 Forest plot of depression at immediate follow-up across included studies. df, degrees of freedom; IV, inverse variance.

Study or subgroup	EW Mean	EW SD	EW Total	Control Mean	Control SD	Control Total	Weight	SMD IV, random, 95% CI
Abel 2004[50]	22	6.1	5	20.2	9.7	6	2.7%	0.20 (−0.99 to 1.39)
Bernard 2006[93]	5.92	4.54	12	7.11	4.65	10	4.2%	−0.25 (−1.09 to 0.59)
Canna 2006[94]	16.8	8.28	22	17.8	9.65	13	5.2%	−0.11 (−0.80 to 0.58)
Dennick 2014[88]	9.9	5.3	23	5.1	5.1	18	5.5%	0.90 (0.25 to 1.55)
Gidron 1996[98]	39.1	9.1	8	45.2	13	6	3.1%	−0.52 (−1.61 to 0.56)
Graham 2008[51]	20.44	2.7	51	24.04	3.57	51	7.5%	−1.13 (−1.55 to −0.71)
Henry 2010[53]	1.31	0	40	1.55	0	40		Not estimable
Ironson 2013[71]	8.41	6.26	103	8.99	7.27	104	8.7%	−0.09 (−0.36 to 0.19)
Jensen-Johansen 2013[76]	4	4.1	197	4.5	4.4	221	9.3%	−0.12 (−0.31 to 0.08)
Kraaij 2010[55]	7.06	4.81	16	7.73	3.88	15	5.1%	−0.15 (−0.85 to 0.56)
Krpan 2013[96]	20	10.5	20	26	8.5	20	5.6%	−0.62 (−1.25 to 0.02)
Meshberg-Cohen 2010[91]	18.3	11.6	77	15.4	10.2	64	8.2%	0.26 (−0.07 to 0.60)
Milbury 2014[81]	8.8	8.6	87	10.2	6.7	86	8.5%	−0.18 (−0.48 to 0.12)
Mosher 2012[77]	17.9	8.9	44	17.8	8.9	42	7.4%	0.01 (−0.41 to 0.43)
Robinson 2008[99]	18.3	12.32	34	9.37	3.46	27	6.5%	0.93 (0.40 to 1.46)
Stark 2010[57]	4	3.08	21	5.19	4.25	21	5.8%	−0.31 (−0.92 to 0.29)
Vedhara 2007[112]	4.38	4.44	31	3.68	3.36	28	6.6%	0.17 (−0.34 to 0.69)
Total (95% CI)			**791**			**772**	**100.0%**	**−0.06 (−0.29 to 0.17)**

Heterogeneity: $\tau^2 = 0.13$; $\chi^2 = 56.70$, df = 15 ($p < 0.00001$); $I^2 = 74\%$

Test for overall effect: $z = 0.53$ ($p = 0.59$)

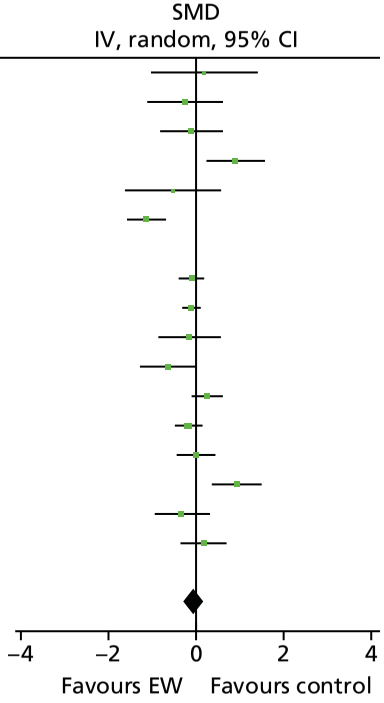

FIGURE 49 Forest plot of pain severity at short-term follow-up across included studies. df, degrees of freedom; IV, inverse variance.

Study or subgroup	EW Mean	EW SD	EW Total	Control Mean	Control SD	Control Total	Weight	SMD IV, random, 95% CI
Canna 2006[94]	9.9	7.85	18	15.1	9.78	18	12.2%	−0.57 (−1.24 to 0.09)
Ironson 2013[71]	8.13	6.46	95	8.3	6.6	94	45.5%	−0.03 (−0.31 to 0.26)
Milbury 2014[81]	9.9	10.1	84	9.5	7.1	84	42.3%	0.05 (−0.26 to 0.35)
Total (95% CI)			**197**			**196**	**100.0%**	**−0.06 (−0.31 to 0.18)**

Heterogeneity: $\tau^2 = 0.01$; $\chi^2 = 2.76$, df = 2 ($p = 0.25$); $I^2 = 28\%$

Test for overall effect: $z = 0.50$ ($p = 0.62$)

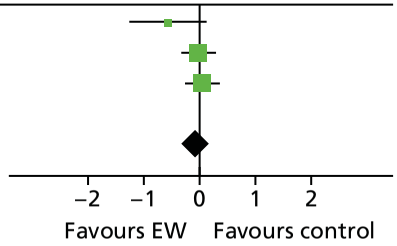

FIGURE 50 Forest plot of depression at medium-term follow-up across included studies. df, degrees of freedom; IV, inverse variance.

Study or subgroup	EW Mean	EW SD	EW Total	Control Mean	Control SD	Control Total	Weight	SMD IV, random, 95% CI
Canna 2006[94]	12.4	10.54	12	10.4	6.9	12	3.1%	0.22 (−0.59 to 1.02)
Henry 2010[52]	1.4	0	40	1.47	0	40		Not estimable
Ironson 2013[71]	7.54	6.24	82	7.09	5.56	89	22.0%	0.08 (−0.22 to 0.38)
Jensen-Johansen 2013[76]	4.2	4.3	209	4.5	4.6	226	55.9%	−0.07 (−0.26 to 0.12)
Milbury 2014[81]	9.5	9.6	72	10.5	7.4	76	19.0%	−0.12 (−0.44 to 0.21)
Total (95% CI)			**415**			**443**	**100.0%**	**−0.04 (−0.18 to 0.10)**

Heterogeneity: $\tau^2 = 0.00$; $\chi^2 = 1.26$, df = 3 ($p = 0.74$); $I^2 = 0\%$

Test for overall effect: $z = 0.51$ ($p = 0.61$)

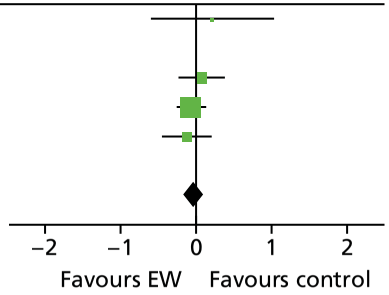

FIGURE 51 Forest plot of depression at long-term follow-up across included studies. df, degrees of freedom; IV, inverse variance.

Therapeutic writing effect on anxiety

Overview of studies

Overall, 9[77,78,87,93–95,97,112,118] studies out of 59 evaluated anxiety across the included LTCs. These 9 studies evaluated participants with different chronic conditions: two studies[77,78] evaluated patients with breast cancer; one study[87] evaluated patients diagnosed with sickle cell disease; four[93–95,97] evaluated participants with mental and psychiatric disorders; one study[112] evaluated patients with psoriasis; and the remaining study[118] assessed patients with fibromyalgia. Five different conditions were accounted in the overall analysis of anxiety. All studies evaluated an unfacilitated EW intervention. In one study,[97] participants were instructed to write about the deepest thoughts and feelings, regarding an experience that had not been previously shared with others at all or in very little detail. Instruments used varied across studies and included the following: HADS-A, Revised Children's Manifest Anxiety Scale (RCMAS), BAI, Depression Anxiety Stress Scales, anxiety subscale (DASS-A) and CSAQ.

Numerical results

The numerical results reported in the included studies evaluating anxiety are summarised in *Table 66*.

Meta-analysis

Anxiety was assessed with different instruments at immediate, short and medium term only (*Figures 52* and *53*). Only one study[94] assessed anxiety in the medium term, so no meta-analysis was required.

- *Immediate follow-up* Four studies[78,87,95,112] assessed anxiety at immediate follow-up, just after the writing exercise.
  - A total of 197 participants were meta-analysed (101 in the EW group and 96 in the control group). The SMD was –0.16 (95% CI –0.44 to 0.12) and with no significant heterogeneity, $I^2 = 0\%$. This result suggests that there is no statistically significant difference in anxiety at immediate follow-up in the EW group compared with the control group.
- *Short-term follow-up* Six studies[77,78,93,94,97,112] assessed anxiety at short-term follow-up. Broderick *et al.*,[113] however, was not included in the meta-analysis, as only change scores were reported. Canna[94] reported anxiety at 8 and 16 weeks. Likewise, Vedhara *et al.*[112] reported anxiety at 8 and 12 weeks. For consistency among the studies included in the meta-analysis, the 8-week assessments were chosen.
  - A total of 330 participants were meta-analysed (174 in the EW group and 156 in the control group). The SMD was –0.15 (95% CI –0.37 to 0.07) with no significant heterogeneity ($I^2 = 0\%$). This result suggests that there is no statistically significant difference in anxiety at short-term follow-up for the EW group compared with the control group.

TABLE 66 Anxiety outcomes collected across LTCs

LTC	First author, year	Immediately after writing						Short term						Medium term					
		TW			Control			TW			Control			TW			Control		
		n	Mean	SD	*n*	Mean	SD	*n*	Mean	SD[a]	*n*	Mean	SD[a]	*n*	Mean	SD	*n*	Mean	SD
Breast cancer	Mosher 2012[77]	–	–	–	–	–	–	44	7.15	SE = 0.48	42	7.87	SE = 0.49	–	–	–	–	–	–
	Park 2012[78]	29	6.17	4.21	29	5.79	3.63	29	5.62	4.37	29	5.9	3.8	–	–	–	–	–	–
Sickle cell disease	McElligott 2006[87]	19	8	5.9	17	9.5	5.7	–	–	–	–	–	–	–	–	–	–	–	–
Mental and psychiatric disorders	Bernard 2006[93]	–	–	–	–	–	–	12	8.75	5.83	10	8.11	5.44	–	–	–	–	–	–
	[b]Canna 2006[94]	–	–	–	–	–	–	22	17.6	9.88	18	23.2	4.59	12	8.6	6.83	12	13.3	10.93
	[c]Canna 2006[94]	–	–	–	–	–	–	18	10.2	6.62	13	17.9	15.36	–	–	–	–	–	–
	Graf 2008[95]	22	8.23	8.62	22	10.91	9.66	–	–	–	–	–	–	–	–	–	–	–	–
	Richards 2000[97]	–	–	–	–	–	–	36	22.62	11.35	29	21.45	11.51	–	–	–	–	–	–
Psoriasis	[d]Vedhara 2007[112]	31	6.51	3.93	28	7.52	3.87	31	5.83	3.06	28	6.36	3.34	–	–	–	–	–	–
	[e]Vedhara 2007[112]	–	–	–	–	–	–	31	5.81	3.14	28	6.54	3.66	–	–	–	–	–	–
FM	Broderick 2005[118]	–	–	–	–	–	–	28	Change score: 3.7	2.4	55	Change score: 7	1.7	–	–	–	–	–	–

n, Sample size in each group.
a Unless otherwise specified.
b Canna[94] measured anxiety at 8 weeks (short term).
c Canna[94] measured anxiety at 16 weeks (short term).
d Vedhara *et al.*[112] assessed anxiety at 8 weeks (short term).
e Vedhara *et al.*[112] assessed anxiety at 12 weeks (short term).
Shaded cells show data included in the meta-analysis where there were two sets of results from the same study.

Study or subgroup	TW Mean	TW SD	TW Total	Control Mean	Control SD	Control Total	Weight	SMD IV, random, 95% CI
Graf 2008[95]	8.23	8.62	22	10.91	9.66	22	22.3%	−0.29 (−0.88 to 0.31)
McElligott 2006[87]	8	5.9	19	9.5	5.7	17	18.2%	−0.25 (−0.91 to 0.40)
Park 2012[78]	6.17	4.21	29	5.79	3.63	29	29.7%	0.10 (−0.42 to 0.61)
Vedhara 2007[112]	6.51	3.93	31	7.52	3.87	28	29.9%	−0.26 (−0.77 to 0.26)
Total (95% CI)			**101**			**96**	**100.0%**	**−0.16 (−0.44 to 0.12)**

Heterogeneity: $\tau^2 = 0.00$; $\chi^2 = 1.33$, df = 3 ($p = 0.72$); $I^2 = 0\%$

Test for overall effect: $z = 1.10$ ($p = 0.27$)

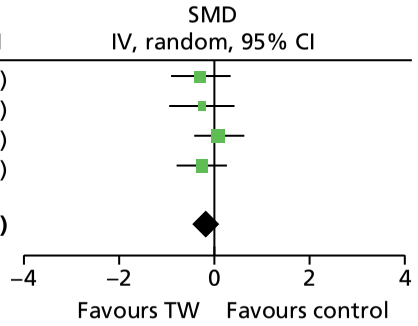

FIGURE 52 Forest plot of anxiety at immediate follow-up across included studies. df, degrees of freedom; IV, inverse variance.

Study or subgroup	TW Mean	TW SD	TW Total	Control Mean	Control SD	Control Total	Weight	SMD IV, random, 95% CI
Bernard 2006[93]	8.75	5.83	12	8.11	5.44	10	6.7%	0.11 (−0.73 to 0.95)
Canna 2006[94]	17.6	9.88	22	23.2	4.59	18	11.4%	−0.69 (−1.33 to −0.05)
Mosher 2012[77]	7.15	3.18	44	7.87	3.17	42	26.3%	−0.22 (−0.65 to 0.20)
Park 2012[78]	5.62	4.37	29	5.9	3.8	29	17.8%	−0.07 (−0.58 to 0.45)
Richards 2000[97]	22.62	11.35	36	21.45	11.51	29	19.7%	0.10 (−0.39 to 0.59)
Vedhara 2007[112]	5.83	3.06	31	6.36	3.34	28	18.0%	−0.16 (−0.68 to 0.35)
Total (95% CI)			**174**			**156**	**100.0%**	**−0.15 (−0.37 to 0.07)**

Heterogeneity: $\tau^2 = 0.00$; $\chi^2 = 4.30$, df = 5 ($p = 0.51$); $I^2 = 0\%$

Test for overall effect: $z = 1.37$ ($p = 0.17$)

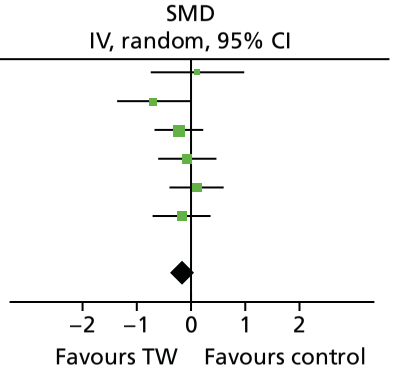

FIGURE 53 Forest plot of anxiety at short-term follow-up across included studies. df, degrees of freedom; IV, inverse variance.

Chapter 4 Economic considerations

Introduction

In a health-care system such as the NHS it is important to consider not just the benefits and potential harms of interventions for the recipients, but also the impact that interventions may have on the use of limited health-care resources. In the previous chapter the available evidence on the effects of TW on health outcomes for people with a variety of LTCs is summarised. Here the evidence on the economic impacts of TW in these populations from a NHS perspective is reviewed. NHS provision of TW interventions would incur direct costs; the cost for staff training and time to deliver the intervention, or of payments to external experts; administrative costs; and costs for the use of a room and, possibly, some materials. There may also be some indirect costs or savings for the NHS if TW encouraged patients to increase or decrease their use of other health services. For example, patients might feel better able to manage their condition and consult their GP or hospital specialist less often or, conversely, TW might lead patients to recognise a need to make more use of available health services. The net effect on NHS expenditure might therefore be positive or negative.

In addition to financial costs and savings, a full economic evaluation would account for the intrinsic value of any impacts on patients' health and well-being. For example, health gains or losses attributable to the intervention could be quantified in terms of quality-adjusted life-years (QALYs), where one QALY is defined as 1 year lived in perfect health for one person. The cost-effectiveness of the intervention could then be summarised as the additional cost per QALY gained, in relation to some appropriate comparator. For such a calculation, the magnitude and persistence of any effects of TW on HRQoL would need to be estimated. This calculation of QALYs from the studies in this review is problematic because although some of the studies reviewed in the preceding chapter reported on general HRQoL (23 out of 64 studies), only one study[88] used a measure suitable for QALY estimation, such as the EQ-5D, and none used the Short Form questionnaire-6 Dimensions (SF-6D).

From the early stages of the project, the need for flexibility in the approach to the consideration of the economic evidence was apparent. Given the limitations of the evidence base, it was concluded that it was not possible to directly estimate QALY impacts of TW across the range of populations with LTCs. Consideration was given to the possibility of using a decision-analytic model to estimate the effects of the intervention on intermediate indicators of disease progression, and then to link to the effects of disease progression on health-care costs and outcomes. However, the lack of convincing or consistent evidence of such effects led us to conclude that such modelling exercises would not be appropriate or feasible. Instead, a more pragmatic approach was taken, making the most of the evidence available.

The economics section is in three parts:

1. a systematic review of TW studies reporting on economic outcomes (resource use, costs and/or cost-effectiveness)
2. an estimation of the cost of providing a range of TW interventions in a NHS context
3. case studies presenting balance sheets of available economic and clinical evidence for three conditions: PTSD, RA and breast cancer.

Systematic review of therapeutic writing studies with resource-use outcomes

Methods

A review across LTCs of the available literature on comparative studies of TW for patients with LTCs reporting economic outcomes was conducted. This resource-use systematic review was nested within the overall systematic review described in the previous chapter and the realist synthesis presented in the following chapter. The full search strategy is given in *Appendix 3*.

The inclusion criteria used for the economic systematic review are shown in *Table 67*.

Titles and abstracts were checked by two reviewers to find relevant studies, data extraction was undertaken by one reviewer and checked by a second. If there were disagreements, a third senior systematic reviewer or health economist was consulted to make a decision. All of the studies in the economic review were also included in the effectiveness review, and critically appraised as part of that review (see *Appendices 4* and *5*). Quality assessment using a critical appraisal checklist for economic evaluations was planned if any economic evaluations were identified.

Where three or more studies presented outcomes in the same category (e.g. health centre visits, medications used), meta-analysis was conducted using the same methods as for the effectiveness systematic review.

TABLE 67 Inclusion criteria for resource-use systematic review

Inclusion criteria	Details
Patients	Any patients with at least one LTC
Intervention	Any form of TW
Comparator	Any inactive comparator
Outcomes	Resource use, costs or cost-effectiveness
Study design	Any fully published comparative study (PhD dissertations were not used)

Results of economic review (resource use)

No full economic evaluations (cost-effectiveness, cost–benefit or cost–utility studies) were identified. One study[89] estimated that the cost of a writing intervention was US$130 per patient, based on a psychologist's fee and some administration time. This study[89] found a reduction in inpatient use for the EW intervention compared with SMC and estimated that this represented a cost saving of US$25,878 per patient per year. Another study[113] estimated that the cost of delivering videotaped instructions for an EW intervention was approximately US$5 per patient. The basis for this estimate was unclear but it seems to be reasonable.

Twelve studies[57,68,75,77,83,89,90,97,98,104,109,119] that reported on some element of health-care resource use were identified. One study reported on the cost of the TW intervention[89] and none on monetary estimates of costs or savings relating to differences in health-care use between the study groups. Consequently, no additional economic quality assessment was conducted.

Study details

Details of the studies[57,68,75,77,83,89,90,97,98,104,109,119] are outlined in *Table 68*. The publication dates ranged from 1996 to 2012: six studies[57,75,77,90,104,109] were published after 2009. The majority of the studies[57,77,83,89,90,97,109,119] were from the USA. Two studies[75,104] were conducted in the UK. All patients were recruited via flyers distributed at disease-specific clinics or approached by health-care professionals during their treatment cycle. The disease areas varied, but can be broadly grouped into three categories: cancer ($n = 3$),[75,77,83] chronic pain or FM ($n = 3$),[57,109,119] or PTSD, mental health disorders or drug dependency ($n = 4$).[68,90,97,98] The remaining studies related to MI[104] and cystic fibrosis.[89] One study[68] was a case–control study and tested a facilitated form of TW – an internet discussion. The other studies[57,75,77,83,89,90,97,98,104,109,119] were RCTs and tested unfacilitated EW.[1] The control interventions varied: seven studies[68,75,83,89,97,98,109] included a normal care or non-writing control arm. Six studies[57,77,89,90,104,119] used a non-emotional form of writing.

Numerical results of resource-use studies

Numerical results are shown in *Table 69*. The quality and detail of studies reporting on health-care resource use varied widely across studies. The types of use recorded were broadly similar: almost all reported on contacts with health-care services, consultations with clinicians or inpatient stays ($n = 11$). Four papers[57,68,83,104] also reported on use of medication. Willmott *et al.*[104] also reported the number of weeks' absence from work as an outcome, which is an important indicator for the personal and broader economic impact of an intervention.

TABLE 68 Details of studies reporting resource use

First author, year	Country	Patient LTC	*n* total	Intervention	Comparator	Resource-use outcomes
Gellaitry 2010[75]	UK	Breast cancer	80	Unfacilitated EW	Normal care	Use of health-care facilities (6 months following completion of treatment)
Gidron 1996[98]	Israel	PTSD	14	Unfacilitated EW	Normal care	Number of health-care visits at 5 weeks
Gillis 2006[119]	USA	FM	155	Unfacilitated EW	Time-management writing	Number of visits to health-care specialist at 1 and 3 months
Golkaramnay 2007[68]	Germany	Mental disorders	228	Internet chat (facilitated)	Normal care	Proportion accessing psychotherapeutic care during 12-month follow-up
						Proportion receiving medication
Grasing 2010[90]	USA	Drug dependency	42	Unfacilitated EW	Time-management writing	Outpatient follow-up visits 12 weeks after discharge
Mosher 2012[77]	USA	Breast cancer	87	Unfacilitated EW	Factual writing	Proportion using mental health services at 8 weeks' follow-up
Richards 2000[97]	USA	Mental disorders	98	Unfacilitated EW	Trivial writing	Infirmary visits at 6 weeks
					Normal care	
Rosenberg 2002[83]	USA	Prostate cancer	30	Unfacilitated EW	Non-writing	Number of health-care contacts at 3 months
						Medication use
Stark 2010[57]	USA	FM	43	Unfacilitated EW	Time-management writing	Medication use at 5 and 10 weeks
Taylor 2003[89]	USA	Cystic fibrosis	39	Unfacilitated EW	Normal care	Number of days in hospital
						Outpatient clinic visits over 3 months' follow-up
Wallander 2011[109]	USA	RAP	63	Unfacilitated EW	Normal care	Number of health-care contacts during 6 months' follow-up
Willmott 2011[104]	UK	MI	156	Unfacilitated EW	Inexpressive writing	GP and hospital visits during 5 months' follow-up
						Medication use
						Attendance at cardiac rehabilitation sessions
						Return to work

TABLE 69 Resource use results

First author, year	Resource use reported	Intervention: mean (SD) or percentages	Control: mean (SD) or percentages	Comments
Gellaitry 2010[75]	Number of medical visits in the 6 months following baseline	NR	NR	Authors report a significant time effect, i.e. health-care use decreasing in the 6 months following completion of treatment [$F(3,213) = 5.43$; $p < 0.01$]. Authors report no difference between groups in terms of resource usage. No numerical data are provided
Gidron 1996[98]	Number of health-care visits	3.1 (2) ($n = 8$)	0.7 (1.6) ($n = 6$)	Authors report a significant increase in health-care visits among patients in the intervention group (from 1.6 to 3.1) compared with a significant decrease among patients in the control group (from 1.3 to 0.7)
Gillis 2006[119]	Number of health-care visits in the 3 months after baseline	1.13 (1.07) ($n = 38$)	1.80 (2.21) ($n = 34$)	Authors report a significant decrease in health service use for the intervention group at 3 months ($p = 0.05$) but not at 1 month ($p = 0.16$)
Golkaramnay 2007[68]	Proportion accessing psychotherapeutic care	53.6% (52/97)	62.8% (59/94)	Original sample was 114 in each group. NS
	Proportion receiving medication	55.9% (57/97)	60.4% (57/94)	NS
Grasing 2010[90]	Number of outpatient mental health clinic visits	7 (15.3) ($n = 23$)	2.36 (2.8) ($n = 19$)	Although resource use was higher among patients in the intervention group in all three categories, none of these differences were statistically significant. SEs were given in paper, converted here to SDs
	Number of clinical support visits	9.68 (12.2)	10.27 (23.9)	
	Number of study follow-up visits	2.05 (1.9)	1.57 (1.7)	
Mosher 2012[77]	Proportion of patients accessing mental health services	NR	NR	Intervention and control group numbers given combined only – 27/86
Richards 2000[97]	Infirmary visits	NR	NR	Mean (SD) infirmary visit results given split by sex offender status only. No complete group results available
Rosenberg 2002[83]	Number of health-care contacts 6 months after baseline	4.4 (3.12) ($n = 16$)	7.6 (8.33) ($n = 14$)	Authors report a trend towards lower health-care utilisation and reduced use of medications based on these findings; however, the paper does not report on statistical significance
	Number of medicines being used 6 months after baseline	4.94 (2.66)	6.05 (4.7)	
Stark 2010[57]	Number of pain medications taken per month	144.5 (110.44) ($n = 21$)	169.9 (128.99) ($n = 21$)	
	Number of psychotropic medications taken per month	44.9 (47.48)	60.20 (60.36)	
Taylor 2013[89]	Number of days in hospital	5.6 (NR) ($n = 18$)	8.4 (NR) ($n = 21$)	Significant group-by-time interaction for inpatient hospital days; no significant interaction found for outpatient clinic visits

continued

TABLE 69 Resource use results (*continued*)

First author, year	Resource use reported	Intervention: mean (SD) or percentages	Control: mean (SD) or percentages	Comments
Wallander 2011[109]	Number of health-care contacts	1.0 (2.36) ($n = 32$)	2.36 (2.21) ($n = 24$)	Authors report that 43% of intervention group had no contact with clinical services compared with 11% of the control group
Willmott 2011[104]	Number of GP and hospital visits	8.6 (3.7) ($n = 79$)	10.3 (5.0) ($n = 77$)	Patients in the intervention group reported to make significantly fewer visits to GPs or hospital clinics than those in the control group. Although the number of prescribed medicines was lower in the intervention group, the difference was not significant; however, authors identified a significant interaction between group and time, suggesting that the number of medications decreased over time for the intervention group and increased over time for the control group. For the other two outcomes reported, the control group was associated with lower levels of resource usage. It was not reported if the difference in the number of attendances at cardiac rehabilitation sessions was significant. The difference in the number of weeks' absence from work was not significant
	Median number of GP and hospital visits in the 5 months following completion of treatment (range)	8 (2–22)	10 (3–25)	
	Mean number of prescribed medications 5 months following completion of treatment (SD)	4.8 (1.7)	5.3 (1.7)	
	Mean number of cardiac rehabilitation sessions attended (SD); $p = 0.01$	7.99 (5.26)	5.68 (5.85)	
	Mean number of weeks absent from work (SD)	12.2 (7.4)	10.3 (6.9)	

NR, not reported; NS, not statistically significant.

Contact with health-care services

Of the 11 studies[57,68,75,77,83,89,90,98,104,109,119] reporting on some form of contact with health-care professionals in a health-care setting, seven studies[83,89,90,98,104,109,119] provided means and/or SDs that could be combined in a forest plot (*Figure 54*). Golkaramnay *et al.*[68] and Mosher *et al.*[77] reported proportions of patients accessing services. The meta-analysis results showed no significant differences (SMD –0.19, 95% CI –0.57 to 0.18). Willmott *et al.*[104] reported on two outcomes relating to health-care contact: median number of GP and hospital visits, which was higher in the control arm, and the mean number of cardiac rehabilitation sessions attended, which was higher in the intervention group. Overall, the results suggest that TW has little impact on health centre visits.

Use of medication

Three studies[57,83,104] reported means and SDs for the impact of TW on use of medication, and Golkaramnay *et al.*[68] reported the proportion of participants receiving medication. Stark[57] reported on the number of units of pain and psychotropic medication per patient per month, finding lower levels of use in the intervention group 10 weeks after baseline. Willmott *et al.*[104] and Rosenberg *et al.*[83] took a different approach, looking at the number of medications participants report using at similar time spans post baseline (5 and 6 months, respectively). In both cases, participants in the intervention group were identified as using fewer medications, although in Willmott *et al.*[104] this difference was not significant, and Rosenberg *et al.*[83] did not report on significance. Willmott *et al.*[104] also noted a potential time effect – medication use decreased in the intervention group but increased in the control group. The meta-analysis results (*Figure 55*) suggested that fewer medications were taken after TW (SMD –0.28, 95% CI –0.54 to –0.02).

Study or subgroup	EW Mean	EW SD	EW Total	Control Mean	Control SD	Control Total	Weight	SMD IV, random, 95% CI
Gidron 1996[98]	3.1	2	8	0.7	1.6	6	7.4%	1.22 (0.03 to 2.40)
Gillis 2006[119]	1.13	1.07	38	1.8	2.21	34	20.1%	−0.39 (−0.86 to 0.08)
Grasing 2010[90]	7	15.3	23	2.36	2.8	19	16.3%	0.40 (−0.22 to 1.01)
Rosenberg 2002[83]	4.4	3.12	16	7.6	8.33	14	13.8%	−0.51 (−1.24 to 0.22)
Taylor 2003[89]	5.6	0	18	8.4	0	21		Not estimable
Wallander 2011[109]	1	2.36	32	2.36	2.21	24	18.1%	−0.58 (−1.12 to −0.04)
Willmott 2011[104]	8.6	3.7	79	10.3	5	77	24.3%	−0.39 (−0.70 to −0.07)
Total (95% CI)			**214**			**195**	**100.0%**	**−0.19 (−0.57 to 0.18)**

Heterogeneity: $\tau^2 = 0.12$; $\chi^2 = 13.01$, df = 5 ($p = 0.02$); $I^2 = 62\%$

Test for overall effect: $z = 1.02$ ($p = 0.31$)

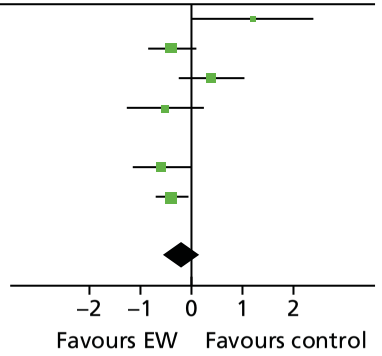

FIGURE 54 Forest plot of health-care resource use. df, degrees of freedom; IV, inverse variance.

Study or subgroup	EW Mean	EW SD	EW Total	Control Mean	Control SD	Control Total	Weight	SMD IV, random, 95% CI
Rosenberg 2002[83]	4.94	2.66	16	6.05	4.7	14	13.1%	−0.29 (−1.01 to 0.43)
Stark 2010[57]	144.5	110.44	21	169.9	128.99	21	18.5%	−0.21 (−0.81 to 0.40)
Willmott 2011[104]	4.8	1.7	79	5.3	1.7	77	68.4%	−0.29 (−0.61 to 0.02)
Total (95% CI)			**116**			**112**	**100.0%**	**−0.28 (−0.54 to −0.02)**

Heterogeneity: $\tau^2 = 0.00$; $\chi^2 = 0.06$, df = 2 ($p = 0.97$); $I^2 = 0\%$

Test for overall effect: $z = 2.08$ ($p = 0.04$)

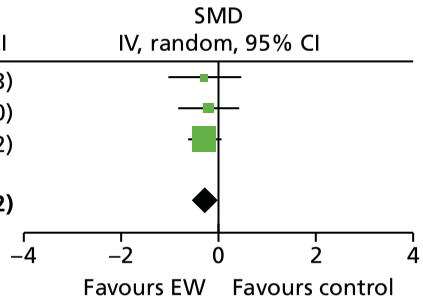

FIGURE 55 Forest plot of medication use. df, degrees of freedom; IV, inverse variance.

Many of the costs associated with the use of medication are indirect, and not examined in these studies, for example consultations with prescribers, and treatment for side effects. Although these add to the uncertainty around impact of decreased medication use, it also raises the possibility that there are potentially unacknowledged benefits associated with TW, which have not been explicitly accounted for here.

As with health-care contacts, this evidence base is not strong enough to draw conclusions about the likely impact of TW interventions on patient use of medication.

Costs of therapeutic writing interventions

None of the identified studies presented estimates of the cost of TW or EW in the UK. Therefore, estimates for a range of interventions in a NHS context were made, after discussion with practitioner experts.

The primary driver of costs is likely to be the staff costs associated with employing (or contracting) TW practitioners. TW practitioners come from a wide range of professional backgrounds, and many are self-employed, rather than NHS employees. However, for illustrative purposes, the costs for NHS occupational therapists published by the Personal Social Services Research Unit (PSSRU)[126] were adapted (*Table 70*).

Costs were estimated for NHS staff at Agenda for Change pay bands 5, 6, 7 and 8a to reflect a range of levels of qualifications and experience. The estimated total cost per hour ranged from £36 to £63 (at 2012–13 prices). For comparison, the PSSRU report[126] estimated a cost of £36 per hour for a hospital-based occupational therapist; £48 per hour for a counsellor in primary care; and £59 for a clinical psychologist.

All of the above costs were inclusive of staff training, as well as salary on-costs (employer's national insurance plus 14% of salary for employer's contribution to superannuation); management and administration overheads, and capital overheads (annuitised over 60 years at a discount rate of 3.5%). The capital cost included an allocation for patient care and non-patient care facilities within a NHS hospital, and can therefore be assumed to include the cost of a room for delivery of the individual or group TW sessions. There may be some other costs for materials, such as printed instructions, videos, pens and paper, but these are difficult to estimate.

TABLE 70 Unit cost of practitioner time (adapted from PSSRU 2013[126])

	Salary grade[a]			
Cost item (£)	5	6	7	8a
Salary	23,441	30,712	38,146	45,593
On-costs	5483	7184	8923	10,664
Qualifications	5531	5531	5531	5531
Overheads: staff	5585	7318	9089	10,863
Overheads: non-staff	12,139	15,905	19,755	23,611
Overheads: capital[b]	4776	4776	4776	4776
Total cost	56,956	71,425	86,219	101,039
Cost per hour[c]	36	45	54	63

a Agenda for Change band for professions allied to medicine.
b Estimate for hospital occupational therapist (PSSRU 2013[126]).
c Assumes 42.7 weeks per year and 37.5 hours per week (PSSRU 2013[126]).

The time required for a TW practitioner to prepare for a session was not quantified. The PSSRU report[126] estimated the percentage of working time spent on face-to-face client contact: 77% for primary care counsellors and 45% for clinical psychologists (no estimates were available for occupational therapists). This implies that, for every hour of client contact, approximately 15–30 minutes will be spent on other activities. For cost estimates, it was assumed that it takes 10 minutes for a TW practitioner to prepare for a session with clients; this is not assumed to vary according to the length of the session or the number of participants in the session.

The majority of studies included in the systematic review used self-administered unfacilitated form of writing. This typically involves a brief initial consultation with the patient, either in person or over the telephone. Following this initial discussion, the patient is left to continue with the intervention on their own, writing unsupervised, often in their own home, for the prescribed time and on the prescribed topic. There is minimal subsequent interaction with practitioners – in some cases, the TW is not returned to, or read by, practitioners. Although this set of methods is used in the majority of studies – possibly due to its relative ease of implementation – this form of writing is not representative of current clinical practice in the UK. Practitioner experts advised that facilitated writing is much more common in a NHS setting: writing sessions run by trained experts. These sessions may be individual or group, and patients may attend multiple sessions.

The estimated costs for a range of TW interventions, with varying group sizes, numbers of sessions and contact times per session, are outlined in *Table 71*.

The upper and lower limits of these ranges are based on interventions described in the included studies in *Chapter 3*. Session length for facilitated TW ranged from 45 minutes in Lange *et al.*[69] to 120 minutes in Rickett *et al.*[66] and Sloan *et al.*[70] The length of the intervention varied from four sessions in Sloan *et al.*[70] to 16 sessions in Hong and Choi.[67] The number of participants in the interventions ranged from two to eight, based on advice from a TW practitioner that sessions range from one to seven participants, with four being the optimal number. It was assumed that the introductory session for unfacilitated writing would last for 10–30 minutes. Even the more resource-intensive, facilitated versions of TW seem to be low cost in relation to other health-care interventions. However, the range of estimated costs is wide: from £17 to about £2200 per patient. The estimated cost per patient for unfacilitated EW here is less than the US$130 estimated in Taylor *et al.*[89] In that study[89] the cost was largely based on the psychologist's fee of US$130 per hour, which is more than the £59 per hour for a UK clinical psychologist quoted above.

Without adequate evidence on the effects of TW on patients' health and well-being, or its effect on other health-care expenditure, it is difficult to draw conclusions about whether or not TW is a cost-effective use of NHS resources.

TABLE 71 Illustrative costs for a range of TW interventions

Type of TW	Number of sessions	Preparation time per session (minutes)	Contact time per session (minutes)	Mean cost per participant (£), by grade of practitioner[a]			
				5	6	7	8a
				£36	£45	£54	£63
Unfacilitated	1	10	10	12	15	18	21
	1	10	30	24	30	36	42
Facilitated: *eight patients per session*	4	10	45	17	21	25	29
	4	10	60	21	26	32	37
	4	10	120	39	49	59	68
	10	10	45	41	52	62	72
	10	10	60	53	66	79	92
	10	10	120	98	122	146	171
	16	10	45	66	83	99	116
	16	10	60	84	105	126	147
	16	10	120	156	195	234	273
Facilitated: *four patients per session*	4	10	45	33	41	50	58
	4	10	60	42	53	63	74
	4	10	120	78	98	117	137
	10	10	45	83	103	124	144
	10	10	60	105	131	158	184
	10	10	120	195	244	293	341
	16	10	45	132	165	198	231
	16	10	60	168	210	252	294
	16	10	120	312	390	468	546
Facilitated: *one to one*	4	10	45	132	165	198	231
	4	10	60	168	210	252	294
	4	10	120	312	390	468	546
	10	10	45	330	413	495	578
	10	10	60	420	525	630	735
	10	10	120	780	975	1170	1365
	16	10	45	528	660	792	924
	16	10	60	672	840	1008	1176
	16	10	120	1248	1560	1872	2184

a Agenda for Change band for professions allied to medicine.

Exploratory cost–consequence analyses

Methods

Studies included in the effectiveness review spanned a wide range of disease areas and populations, making it difficult to identify where TW may have value. Three disease areas were examined in more detail, bringing together effectiveness evidence alongside estimates of economic impacts (cost–consequence analyses). The areas chosen for further analysis were PTSD, inflammatory arthritis and breast cancer. These topics were chosen by the SGC before the results of the meta-analyses were known, with the aim of reflecting a range of different conditions for which TW has been used. There was also a pragmatic element to this choice – these topics contained a greater number of studies, including some of the higher-quality ones. It was felt that they were likely to provide a stronger evidence base than some other areas. It is important to note that these case studies are unlikely to be representative of the whole evidence base for TW.

For each case study, a summary of effectiveness evidence was prepared, and presented alongside estimates of costs and use of health-care resources. Where possible, costs were estimated using information about the intensity of practitioner input in the related clinical studies.

Case study 1: post-traumatic stress disorder

In total, four studies[69,70,98,121] reported on the use of TW in the treatment of people with PTSD. Gidron *et al.*[98] and Smyth and Arigo[121] tested unfacilitated TW to treat PTSD. Details of these studies are presented in *Chapter 3* (pp. 78–83). Lange *et al.*[69] and Sloan *et al.*[70] evaluated a facilitated TW intervention in a PTSD population (see *Chapter 3, F43: post-traumatic stress disorder*).

Summary of study design and quality

Two studies[69,70] evaluated individual forms of facilitated TW compared with waiting list controls (see *Table 5*). Both recruited from the community: Lange *et al.*[69] recruited online and screened for post-traumatic stress and grief; those in the Sloan *et al.*[70] study were recruited through local advertisement and had a primary diagnosis of PTSD related to a MVA. Study quality was mixed (see *Figure 4*). The Lange *et al.* study[69] was at risk of bias because of non-reporting of randomisation, concealment of allocation or blinding of outcome assessment. Sloan *et al.*[70] was a randomised trial, but did not report on blinding of participants or outcome collection.

The unfacilitated studies compared EW with factual or time-management writing as control in patients with diagnosed PTSD (see *Table 32*). Smyth and Arigo[121] was conducted in the USA, and Gidron *et al.*[98] in Israel. Both studies had methodological and reporting flaws that left them susceptible to bias (see *Figure 26*).

Estimated costs of intervention

The two studies[69,70] of facilitated writing gave quite detailed information about the treatment protocol and therapist input, which was used for costing. Lange *et al.*[70] evaluated a 5-week internet programme (Interapy), consisting of 10 45-minute writing sessions. Feedback on submitted writing was sent to each patient by a therapist on seven occasions. The feedback consisted of about 450 words. The time taken by the therapists to prepare this feedback was not reported but is unlikely to have been much less than 1 hour. The mean basic salary for qualified clinical psychologists is £46,280, similar to Agenda for Change band 8a.[126] However, the therapists employed in this study were graduate and postgraduate students in clinical psychology (mean age 29 years), not yet fully qualified, but who had attended advanced courses in behavioural cognitive psychotherapy and received special training in using writing assignments in PTSD. For costing purposes we assumed a band 6 salary (£30,712), or £45 per hour including indirect costs and overheads (see *Table 70*). The estimated cost per participant is therefore in the region of £315 (7 × £45).

Sloan *et al.*[70] evaluated a written exposure therapy (WET) intervention consisting of five weekly sessions (one lasting 60 minutes and four lasting 40 minutes). Participants had individual contact with a clinician for approximately 25 minutes during the first session, and for 10 minutes in each of the remaining sessions. In addition, it was assumed that therapists would need some time to prepare for sessions: 10 minutes for the first session and 5 minutes for each remaining sessions. Total therapist time per participant is therefore approximately 95 minutes. Therapists were clinicians with masters or doctoral level qualifications and prior experience of treating PTSD with exposure-based therapies. Therefore, it was assumed that a band 8a salary, with a mean cost per hour of £63, was reasonable. The estimated cost participant is in the region of £100 (95/60 × £63).

It is more difficult to estimate the cost of the unfacilitated writing interventions. Participants were asked to write on three or four occasions, for 15–30 minutes per session. However, after an initial briefing, patients wrote on their own, either at home or in a health-care environment. Neither study of unfacilitated TW in PTSD reported who instructed participants on the writing tasks, or how long this took. A cost of between £12 and £42 for unfacilitated writing interventions was assumed (see *Table 71*).

Summary of costs and consequences

Table 72 presents an overall summary of evidence relating to the clinical effectiveness and cost of TW for people with PTSD. It can be seen that evidence for facilitated TW is sparse but promising: the included studies reported significant benefits for the intervention group compared with control, for a range of outcomes of importance to patients: PTSD symptoms, measures of emotion, anxiety, depression, sleep and somatisation. The estimated cost of delivering these interventions in a NHS context is relatively modest: in the region of £100–300. However, evidence about the impact of facilitated TW on patients' overall QoL and well-being, and on their use of other health-care services is lacking.

Evidence relating to unfacilitated forms of TW is sparse and inconsistent. Of the two included studies,[98,107] one reported some positive effects on mood and a biomarker for stress (Smyth *et al.*[107]). However, the other study[98] reported negative effects on PTSD symptoms and somatisation and an increase in non-routine health visits.

Case study 2: inflammatory arthropathy

Six studies[107,113–117] reported on the use of TW in the treatment of people with inflammatory arthropathy and five studies[107,113–115,117] were used for this analysis (i.e. except Lumley *et al.*'s[116] which was found in the update searches). Details of the studies were presented *Chapter 3*.

Summary of study design and quality

All five studies[107,113–115,117] evaluated an unfacilitated EW intervention compared with neutral writing (time-management control). In addition, Broderick *et al.*[113] included a second intervention group, who were asked to write about the meaning of the trauma, and Lumley *et al.*'s[115] included a second control group, who were asked to write about a positive emotional event. All studies recruited patients with diagnosed RA, except Hamilton-West and Quine[114] which recruited participants with a diagnosis of AS. Follow-up ranged from 13 to 43 weeks, and outcomes included measures of disease activity, pain, function, mood depression and QoL. None of the studies reported on health-care use or costs. Wetherell *et al.*[117] and Hamilton-West and Quine[114] were conducted in the UK, and the other four studies[107,113,115,116] were conducted in the USA. The quality of the studies was mixed (see *Figure 39*). Three were classified as true RCTs,[107,114,115] but all had design or reporting flaws that left them susceptible to bias.

Estimated costs of intervention

As in PTSD, it is difficult to assess the cost of the interventions because papers did not generally report on the grade or qualifications of the staff who gave patients instructions on the writing task, or specify how long this took. The location of the writing intervention varied: in Smyth *et al.*[107] participants wrote in a private room in a laboratory; Broderick *et al.*,[113] Wetherell *et al.*[117] and Lumley *et al.*[115] adapted the intervention for participants to write in their home; Hamilton-West and Quine[114] did not report the location of the intervention.

TABLE 72 Summary of evidence on TW costs and consequences of unfacilitated EW in PTSD

	Facilitated EW		Unfacilitated EW	
Cost/consequences	Lange 2003[69]	Sloan 2012[70]	Gidron 1996[98]	Smyth 2008[107]
Physical health				
Somatisation	↑ SCL-90-S		↓ PILL	
Sleep/fatigue	↑ SCL-90-SI			~ POMS-f
Biomarkers				↑ Cortisol
Psychological health				
PTSD symptoms		↑ CAPS		
Intrusion/avoidance	? IES		~ IES	~ PSS-I
Emotion		? SAM		
Positive mood			? PANAS-p	~ POMS-v
Negative mood			↓ PANAS-n	↑ POMS-t, POMS-a
Anxiety	↑ SCL-90-A			
Depression	↑ SCL-90-D		? BDI	~ POMS-d
QoL				
Well-being				↑ PTGI
NHS resource use				
Cost of intervention (£)	315	100	12–42	12–42
Health-care use			↑ Visits	

↑, Statistically significant positive treatment effect; ↓, statistically significant negative treatment effect; ~, no significant treatment effect; ↑~ or ↓~, multiple tests for subscales and/or time points with some significant results (positive or negative); ?, statistical significance test not reported; PANAS-n, Positive and Negative Affect Schedule, negative subscale; PANAS-p, Positive and Negative Affect Schedule, positive subscale; POMS-A, Profile of Mood States anger subscale; POMS-f, Profile of Mood States fatigue subscale; POMS-t, Profile of Mood States tension subscale; PSS-I, Post-Traumatic Stress Disorder Symptom Scale Interview; PTGI, Post-Traumatic Growth Inventory; SAM, Self-Assessment Manikin; SCL-90-A, Symptom Checklist-90, anxiety subscale; SCL-90-D, Symptom Checklist-90, depression subscale; SCL-90-S, Symptom Checklist-90, somatisation subscale; SCL-90-SI, Symptom Checklist-90, sleeping problems subscale. Shaded cells show the pattern of evidence.

Broderick *et al.*[113] produced a videotape to introduce the rationale for the writing task and to provide detailed instructions for patients. They noted that this method was chosen as there is evidence that patients respond well to video-based introductions, and because it was likely to be a cost-effective approach that could be reproduced across large numbers of patients with minimum input from professionals. However, Broderick *et al.*[113] noted that some physician time would still be required to introduce the idea of the intervention to participants, and to encourage them to participate. In addition, a cost would be incurred for each patient given a video: including the cost of materials and reproduction; and a proportion of the cost for the development and production of the video. The latter is very difficult to estimate, as it is unknown how many patients would use the video.

In Wetherell *et al.*[117] participants were contacted by telephone before and after each writing session. Assuming 10 minutes' preparation, 10 minutes for the introductory conversation and 5 minutes per telephone call before and after each of four writing sessions, the total estimated practitioner time to deliver the intervention is approximately 60 minutes, incurring a cost in the region of £36–63 per patient, depending on the grade of the practitioner.

Summary of costs and consequences

Summary results for inflammatory arthropathy are presented in *Table 73*. In this case, the results look rather more promising for unfacilitated EW. The meta-analysis of measures of disease activity in the four RA studies[107,114,115,117] found a significant benefit in the intervention group at short-term follow-up (8–10 weeks). Three of these studies[114,115,117] also reported significant positive effects for some outcomes at some time points: measures of mood in Wetherell *et al.*[117] pain in Lumley *et al.*[115] and function in Hamilton-West and Quine.[114] However, no significant effects were found across a number of other outcomes – including QoL – and Lumley *et al.*[115] reported some negative effects on mood immediately after writing.

Case study 3: breast cancer

Eight studies[53,54,74–79] reported on the use of unfacilitated EW in participants with breast cancer; see *Chapter 3* for details.

Summary of study design and quality

The studies evaluated unfacilitated EW against a usual care comparator[53,54,74,75,78] or against an un-EW control[74,76,77,79] (note that Craft *et al.*[74] had two control groups). The participants were at various stages of disease and treatment: Jensen-Johansen *et al.*,[76] Gellaitry *et al.*[75] and Craft *et al.*[74] recruited women with early-stage breast cancer who had recently completed treatment; Mosher *et al.*[77] recruited women with metastatic breast cancer who were in significant distress. The studies were all conducted in the USA, with the exception of one Korean study[78] and one Danish study.[76] There were three randomised studies,[54,74,79] but all studies were subject to design or reporting bias (see *Figure 9*).

TABLE 73 Summary of evidence on TW costs and consequences of unfacilitated EW in inflammatory arthropathies

Costs/consequences	First author, year					Meta-analysis SMD (95% CI)
	Smyth 1999[107]	Broderick 2004[113]	Wetherell 2005[117]	Hamilton-West 2007[114]	Lumley 2011[115]	
Physical health						
Disease activity	↑~ DAS	~ DAS	↑~ DAS	~ BASDAI	~ VAS	–0.49 (–0.83 to –0.14)
Biomarkers			~ ESR, CRP		~ ESR	
Psychological health						
Mood			↑~POMS-SF		↓~ PANAS-X	
Depression				~ HADS-D	~ AIMS-as	
Pain					↑~ MPQ	
Functioning				↑ BASFI	~ AIMS	
QoL		~ SF-36 PCS		~ BAS-G		
NHS resource use						
Cost of intervention (£)	12–42	Video	36–63	12–42	12–42	
Health-care use	Data absent					

↑, Statistically significant positive treatment effect; ↓, statistically significant negative treatment effect; ~, no significant treatment effect; ?, statistical significance test not reported; ↑ or ↓, multiple tests for subscales and/or time points with some significant results (positive or negative); AIMS, Arthritis Impact Measurement Scale; AIMS-as, affective dysfunction subscale of the Arthritis Impact Measurement Scale-2; BAS-G, Bath Ankylosing Spondylitis Disease Global Score; BASDAI, Bath Ankylosing Spondylitis Disease Activity Index; MPQ, McGill Pain Questionnaire; PANAS-X, Positive and Negative Affect Schedule–Expanded Form; VAS, visual analogue scale.
Shaded cells show the pattern of evidence.

Estimated costs of intervention

Henry *et al.*[53] sent written instructions to participants by post, asking them to write for 20 minutes, on one occasion at home. The cost of this intervention would be minimal, say £5 for materials. Three studies[74,75,79] reported a single face-to-face or telephone contact with participants, either before the first writing session[74,79] or after the final session.[75] A cost of £12 for these three interventions[74,75,79] was assumed. Two studies[76,77] reported a rather more resource-intensive approach, with telephone calls to the participants before and after each writing session. Jensen-Johansen *et al.*[76] first contacted women participating in another study by mail. The intervention consisted of three 20-minute writing sessions at home over a 3-week period. Participants were telephoned by a research assistant, trained by a clinical psychologist, before and after each writing session. Assuming 10 minutes' preparation, 10 minutes for the initial telephone call and 5 minutes for each subsequent call, the total contact time would be 45 minutes: costing £27 (at £36 per hour). Mosher *et al.*[77] included women with advanced disease and high levels of distress. Women were screened and recruited by telephone, and then sent written instructions, paper and envelopes to return their writing. The intervention consisted of four writing sessions over 4/7 weeks, each lasting from 20 to 40 minutes. The women were telephoned by a psychology research fellow before each writing session, after 20 minutes, and, sometimes, again after an additional 20 minutes. The contact time was therefore greater than in other unfacilitated writing interventions. Assuming that the initial telephone call lasted for 20 minutes, and that each subsequent call lasted for an average of 5–10 minutes, the total contact time would have been approximately 60–90 minutes. At £36 per hour, the total cost per patient would be around £36–100.

Summary of costs and consequences

Summary results for breast cancer are presented in *Table 74*. The evidence base for unfacilitated EW in breast cancer is rather larger than in the other case studies presented above, with eight comparative studies,[53,54,74–79] but the results are not encouraging. Although some studies did report some significant effects, meta-analyses of measures of positive mood, negative mood and depression at short-term follow-up failed to find a significant treatment effect.

TABLE 74 Summary of evidence on TW costs and consequences of unfacilitated EW in breast cancer

	First author, year								
Costs/consequences	**Walker 1999[79]**	**Hughes 2007[54]**	**Gellaitry 2010[75]**	**Henry 2010[53]**	**Mosher 2012[77]**	**Park 2012[78]**	**Jensen-Johansen 2013[76]**	**Craft 2013[74]**	**Meta-analysis SMD (95% CI)**
Physical health									
Physical symptoms				~ 18 items		↑~ PILL, MDASI			
Side effects	~ SEC								
Sleep/fatigue					~ PSQI ~ FACIT-F				
Psychological health									
Intrusions/avoidance	~ IES	? IES					~ IES		
General mood			~ POMS	↑~ POMS	~ DT				
Positive mood	~ PANAS-p	~ PANAS-p					~ PPMS		0.34 (–0.16 to 0.84)
Negative mood	~ PANAS-n	~ PANAS-n					~ POMS-n		0.33 (–0.25 to 0.90)
Depression				~ CES-D	~ CES-D	~ HADS-D	~ BDI-SF		–0.07 (–0.24 to 0.09)
Anxiety					~ HADS-A	~ HADS-A			
Social support			↑ SOS						
QoL		? SIP	~ FACT-B		~ FACIT-Sp	↑ C-QoL		↑~ FACT-B	
NHS resource use									
Cost of intervention, (£)	12	?	12	5	36–100	?	27	12	
Health-care use			~ Health-care visits		↑ Mental health services				

↑, Statistically significant positive treatment effect; ↓, statistically significant negative treatment effect; ~, no significant treatment effect; ?, statistical significance test not reported; ↑ or ↓, multiple tests for subscales and/or time points with some significant results (positive or negative); FACIT-SP, Functional Assessment of Chronic Illness Therapy, meaning/peace subscale; PANAS-n, Positive and Negative Affect Schedule, negative subscale; PANAS-p, Positive and Negative Affect Schedule, positive subscale; SEC, side effect severity checklist; SIP, Sickness Impact Profile.
Shaded cells show the pattern of evidence.

Chapter 5 Realist synthesis

Aims

The focus of the realist synthesis was to make sense of the outcomes observed in the studies included in the effectiveness review, in effect addressing the objective: How is heterogeneity in results of empirical studies accounted for in terms of patient and/or contextual factors, and what are the mechanisms and moderators responsible for the success, failure or partial success of interventions (i.e. what works for whom in what circumstances and why)?

Methods

The realist synthesis drew initially on the studies included in the original searches for the systematic review (i.e. searches ending March 2013), as its intended purpose was to try to explain the outcome patterns found within this review. The inclusion criteria for the realist synthesis were thus initially identical to that of the systematic review. Additional searching was planned if it was deemed necessary as the programme theory developed.

The central task of the realist synthesis was to develop and refine a realist programme theory of TW. In order to do this, a series of steps – needed to achieve the final desired outcome from a TW intervention in the form of a programme theory – was set out. For each step, a realist logic of analysis was applied, so as to explain how the (intermediate) outcome for each step was achieved in realist terms [i.e. what interaction between context and mechanism(s) led to that outcome]. The initial programme theory was iteratively developed and refined in two ways:

1. *Consulting with our practitioner experts* Two meetings were held, at which the project team met with external experts to discuss and develop the programme theory. In the first meeting – attended by members of the project team and all the practitioner experts – the discussion was open-ended and exploratory. The main goal of this meeting was to get an initial rough idea of what the various mechanisms might be. Practitioner experts were asked how they thought TW worked and why. This first meeting took place in March 2013 (month 3) of the 18-month project. Later on in the project (month 14), we held a second meeting with the practitioner experts. On this occasion, a series of questions was circulated prior to the meeting (see *Appendix 2*) to prime those attending on what the focus of the meeting would be. Those unable to attend the meeting were invited to submit written responses. During the latter meeting the comments provided by the experts were discussed and attempts were made to organise the comments into an initial programme theory. Both meetings were facilitated by GW, with GW and OPN taking contemporaneous notes. The contents of the notes were used as data for programme theory development. By analysing (see point 2 on p.118) and discussing the contents of these notes from the second meeting, we produced a draft programme theory. This was circulated to the practitioner experts and project team, and, from their feedback, it was revised (e.g. to include more details on the steps and mechanisms within specific TW methods). A further draft was circulated in a steering group meeting and, from feedback received, refinements made (e.g. the addition of potential harm as an intermediate outcome from TW). The draft programme theory was revised in response to all feedback received.

2. *Interrogating the studies included in the effectiveness review* A total of 59 studies were included in the systematic review (original searches). All of these studies were potentially eligible for the realist synthesis. Realist reviewers read all the papers included in the effectiveness review and data from the included studies were used if they were relevant to the realist analysis – that is, could inform some aspect of the programme theory (see *Box 1*). An assessment of rigour (how trustworthy were the data being used) was also made.[127] To illustrate how rigour was operationalised, if data had been generated using an instrument then the trustworthiness of the data was considered to be greater if the instrument had been previously tested, shown to be reliable and valid and had not been altered (or if alterations had been made subsequent testing had been undertaken).

Theorising is an interpretive process, requiring immersion in the data and abductive reasoning (considering what mechanisms might have been in play). The contents of all the included studies (except theses – as the decision was made not to obtain these in full-text for the systematic review) were read and re-read by GW, looking for data that informed the development and/or refinement of the programme theory. Relevant sections of texts relating to contexts, mechanisms and/or their relationships to outcomes were extracted into an Excel spreadsheet (see *Appendix 4*). The analytic and synthesis processes consisted of a series of questions that the reviewer asked of the contents of included documents. These questions were all asked sequentially of each section of text that was thought to be possibly relevant. Some section of text turned out not to be relevant after these questions were asked. The questions asked were as follows:

1. Relevance:

    i. Are the contents of a section of text within an included document referring to data that might be relevant to programme theory development?

2. Interpretation of meaning:

    i. If it is relevant, do the contents of a section of text provide data that may be interpreted as being context, mechanism or outcome?

3. Judgements about context, mechanism, outcome and configurations (CMOCs):

    i. What is the CMOC (partial or complete) for the data?
    ii. Are these data to inform CMOCs contained within this document or other included documents?
    iii. If so, which other documents?
    iv. How does this CMOC relate to CMOCs than have already been developed?

4. Judgements about programme theory:

    i. How does this (full or partial) CMOC relate to the programme theory?
    ii. Within this same document are there data that inform how the CMOC relates to the programme theory?
    iii. If not, are these data in other documents? Which ones?
    iv. In light of this CMOC, and any supporting data, does the programme theory need to be changed?

5. Rigour:

    i. Are the data sufficiently trustworthy and rigorous to warrant making changes to the CMOC?
    ii. Are the data sufficiently trustworthy and rigorous to warrant making changes to the programme theory?

The process of configuring the data into a programme theory took place through the use of a Microsoft Word version 2010 (Microsoft Corporation, Redmund, WA, USA) document with text boxes and use of arrows. As analysis and synthesis progressed, text boxes were created that contained a context, mechanism or outcome. These were dragged around the Word document to construct (where possible) complete context, mechanism, outcome configurations. The locations and relationships between the text boxes were driven by the interpretations and judgements of the reviewer of the answers obtained to the questions listed above. Where necessary, some text boxes were removed and others added as driven by the data. The text boxes were also combined when it was judged to be indicated by the data. Lines with arrows were added to show the relationships between and within context, mechanism and outcome configurations.

As the programme theory was refined, included studies were re-read and rescrutinised to check if relevant data had been missed out that might inform the revised programme theory (*Box 2*). Where necessary (as directed by the programme theory), and within the resource constraints of the study, we reanalysed our initial searches looking for additional studies that might contain relevant data. Realist programme theory development and refinement occurred mainly between February and April 2014.

BOX 2 Illustrative examples of how the data to build and refine programme theory were used

Example 1

A suggestion was made during a steering group meeting that one of the possible outcomes for those participating in TW was harm (e.g. increase in negative emotions immediately following writing) and that this had been reported in the literature. This had not initially been included in the current version of the programme theory. The included studies were re-read with the specific goal of looking for examples of some form of harm (early or delayed). Six such examples were found.[69,70,73,74,119,121] Therefore, it was considered reasonable to refine the programme theory to include harm as a possible outcome.

Example 2

During the second programme theory development meeting, the practitioner experts told that in their TW groups they put up very few barriers to attendance (i.e. participants could come and go as they pleased and did not necessarily have to undertake any TW). This context was not accounted for in the current version of the programme theory. As a response, an additional step to the programme theory was added, and sought data to support, refute or refine this change. Supporting data were found in only two documents,[128,129] both of which were descriptions by practitioners of their experiences of running TW groups. The nature of these sources raised questions about the trustworthiness of these data and hence cast doubt on the change made. However, while on its own, the sources were of questionable trustworthiness, there was existing substantive theory that supported the rationale behind allowing potential participants to just attend a group. This was the concept of trialability from *Diffusion of Innovations* theory.[130] This theory suggested that when something is new and has not been used by a person before, the persons perceptions and feelings about it is influenced by being able to try and see it. Thus it was inferred that, for those unfamiliar with TW, its uptake might be influenced by individuals being allowed to try and see for themselves. The existence of substantive theory added coherence to the change we made. This change is only partially supported, however, by data from published documents and hence is less secure than other sections of the programme theory. It would benefit from refinement from additional data.

Results

Overview

The characteristics of the studies included in the effectiveness review and the document flow diagram have already been outlined (see *Chapter 3* and *Figure 1*, respectively). Most used (some with minor modifications) the unfacilitated EW model. In this, there appeared to be a deliberate attempt to minimise the degree of support provided to participants. In other words, TW was something that participants were expected to undertake on their own with minimal input from anyone else. Five of the included studies used a different approach – facilitated TW.

The TW intervention that was used in all but the five facilitated writing studies differed significantly from the approach used by our practitioner expert. Within both the NHS and UK voluntary sector, when TW was being used, it was rarely, if ever, used as a stand-alone intervention (i.e. in the form of unfacilitated EW). Rather, different types of TW was used as one of the activities within a group setting, and facilitated by a practitioner with expertise in both TW and running groups. Such approaches were thus more akin to the activities and processes as described (e.g. in Rickett *et al.*[66]) than the stand-alone, minimal-support approaches found with unfacilitated EW used in the majority of the studies included in the systematic review.

In subsequent analyses, two different programme theories were developed to reflect this: first, to explain how TW might work if introduced in a stand-alone context with minimal support (unfacilitated EW), and, second, what was almost certainly an elaboration of the first programme theory to explain how it might work when it was introduced with facilitation in a group setting (facilitated TW).

Discussions with the practitioner experts contributed to refinement of the programme theories. The initial meeting (held before a definitive list of studies to include in the systematic review was established) indicated that there was a great deal of uncertainty as to how TW was meant to work to achieved desired outcomes. By the second expert meeting, it had become clear that there was a difference between current NHS and UK voluntary sector use of TW. By this second meeting the studies that would be included in the systematic review had been arrived at and thus a body of literature to use for programme theory refinement was available.

Not all of the included studies were used in programme theory refinement. Six studies were PhD or MSc theses[54,57,87,91,94,131] that did not appear to have led to publications in the peer-reviewed academic literature. One study was in Korean[78] and a full translation was performed. Because the practitioner experts had highlighted the widespread use of facilitated TW, studies that had not met the inclusion criteria for the systematic review and thus had been excluded, were screened again (by GW and OPN) and 11 relevant documents that specifically explored facilitated TW were identified.[128,129,132–140] The reference lists within each included study was also searched to look for information on whether or not there were any additional studies (of any type) of the same intervention. One such study[141] was retrieved.

What happens, how and why in unfacilitated emotional writing?

Analysis and interpretation of the data indicated that there are a number of processes that need to occur for TW to be effective, and that a TW intervention takes place within a wider context. In the following section, descriptions, explanations and evidence for the programme theory illustrated in *Figure 56* are provided. The intermediate outcomes that may result from engaging in TW, as perceived by the participants, range from harm through to no benefit, and possible benefit to definite benefit, as illustrated, as intermediate outcomes 1–4, in *Figure 56*. The benefit perceived by a participant in a TW intervention can be broad, and, in particular, may go beyond the predefined outcomes that are measured in an included study. Furthermore, perceived benefits are sometimes delayed and appear to vary from person to person. It is of interest to note that none of the included studies had attempted to ask participants why the decided to take part in the study in the first place or what they hoped to gain from taking part. Supporting data below illustrate that (1) participants reported a range of different benefits from

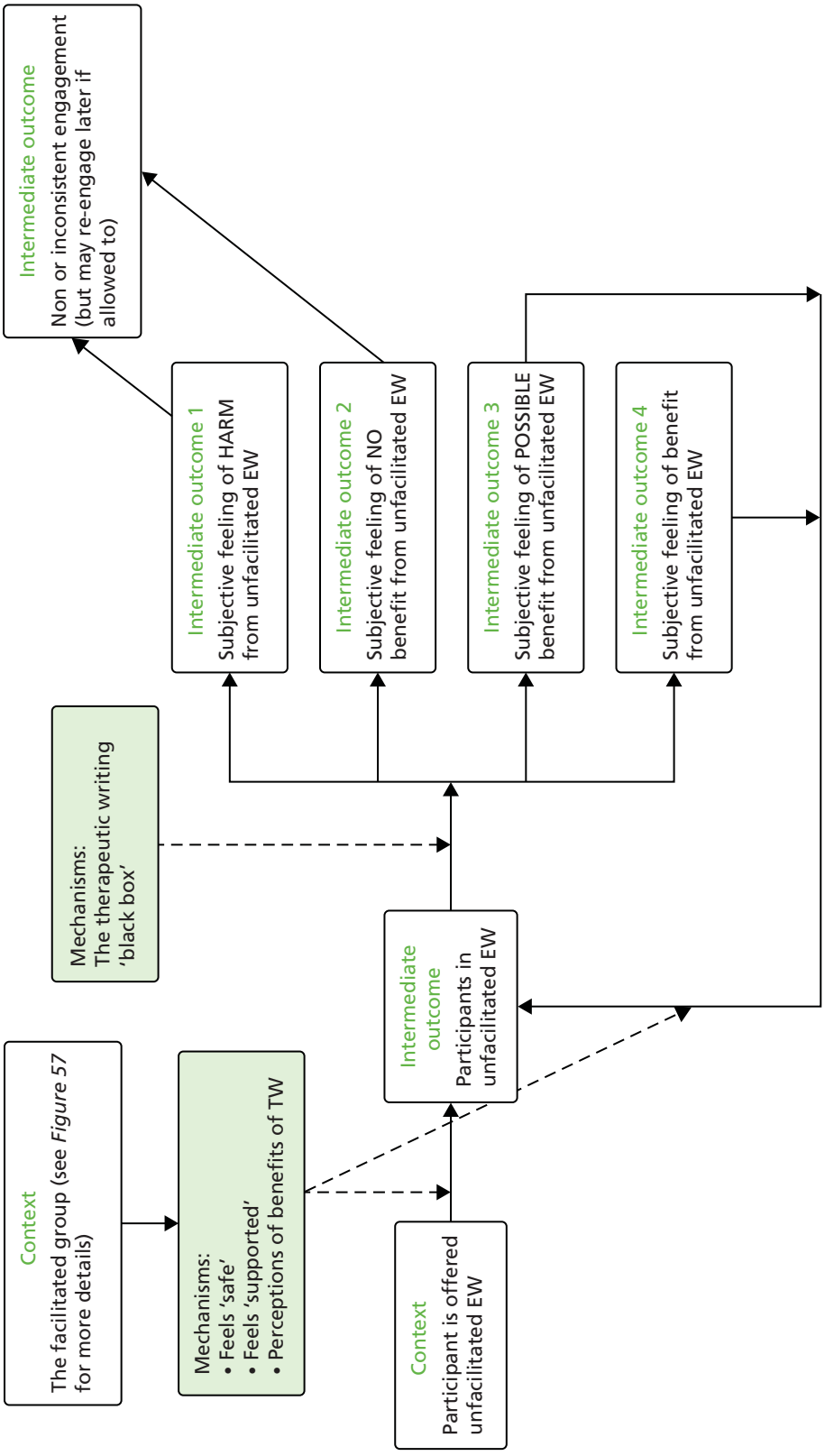

FIGURE 56 Putative generic subprogramme theory for unfacilitated EW. Shading indicates mechanisms and dashed lines indicate where mechanisms have their influences.

unfacilitated EW; (2) the benefits were not necessarily what the participants might have predicted they would have received; and (3) these benefits were not necessarily those measured in the studies by the researchers.

> *. . . this writing helped me get over, you know, my anger . . .*[50]

To questioning about whether or not the study was helpful, several responses included:

> *Yes, [it] has made me see how well I am doing; Yes, [it] reduced some stress; and Yes, I got to write about what I was feeling so I got it out and feel better afterwards not right after, but after.*[142]

> *Six months after the EW [Expressive Writing] intervention, we conducted interviews with 24 (57%) women about their experience of writing. Several women talked about the value of being able to express feelings that they had not acknowledged to themselves or to others; women also talked about the benefits of being able to process their experience of having breast cancer. Engaging in the EW process impacted on some women's relationships in that the writing made them more aware of how much support they had had. We found that some women who had initially reported finding the writing difficult were able to reflect that there were benefits to writing which had not been immediately apparent. Several women expressed a sense of relief on the last day of writing indicating that something had been dealt with.*
>
> *Copyright © 2009 John Wiley & Sons, Ltd. Reproduced with permission from Gellaitry G, Peters K, Bloomfield D, Horne R. Narrowing the gap: the effects of an expressive writing intervention on perceptions of actual and ideal emotional support in women who have completed treatment for early stage breast cancer.* Psychooncology *2010;**19**:77–84.*[75]

> *Participants appreciated the opportunity to work together on something that they found challenging. They saw the poetry writing group as not simply a support mechanism, but a serious challenge to their intellects and creativity.*[66]

For the majority of the participants, disclosing their emotions resulted in perceived psychological benefits. Some participants recognised that writing was a therapeutic process that helped to reduce the burden of stressful events.

> *It was good for me to air these feelings, as they have been bottled up for a long time, I feel better now I have written about them [P17, Intervention]. Although I ended up with lots of what may have seemed negative stuff on the paper it has actually left me feeling quite strong, empowered, understanding, focused, lighter, however.*
>
> *P15, Intervention. Copyright © 2009 John Wiley & Sons, Ltd. Reproduced with permission from Theadom A, Smith H, Horne R, Bowskill R, Apfelbacher CJ, Frew AJ. Participant experiences of a written emotional disclosure intervention in asthma.* Stress Health *2010;**26**:45–50.*[58]

> *I found all the exercises to be very relaxing and helpful in clearing my mind of the day's events.*
>
> *P24, Control*[58]

> *Difficult to say whether this [therapeutic writing] is helping my emotional or mental state – and what it is doing to my asthma – if anything.*
>
> *P15, Intervention*[58]

> *Some women reported that the writing provided them with a forum for expressing emotions they felt might be burdensome for family members or other confidants . . . Others indicated that writing helped them to identify priorities or focus concerns more specifically . . . Several women commented on the writing task itself, indicating that it was helpful or expressing surprised at the issues that came to mind as they wrote.*
>
> *Reproduced with permission from Walker BL, Nail LM, Croyle RT. Does emotional expression make a difference in reactions to breast cancer?* Oncol Nurs Forum *1999;**26**:1025–32.*[79]

Some studies revealed perceptions of harm (such as immediate negative feelings) or possible harm from TW.[69,70,73,74,119,121] Analysis indicates that when a person subjectively experienced harm or felt that they had not benefited from unfacilitated EW, they were likely to take no further part or engage inconsistently.

> *Contrary to the hypothesized outcome . . . the group who wrote about a self-selected trauma did not have a statistically significant benefit from the writing experience. This was true even though the majority of them did write about their breast cancer. This was also the group with the highest dropout rate. Having to make a choice about what to write about seemed to increase affective distress and alter the benefit that focusing on ones self might offer, even if choosing to write about the personal experience of breast cancer.*
>
> *Copyright © 2012 Blackwell Publishing Ltd. Reproduced with permission from Craft MA, Davis GC, Paulson RM. Expressive writing in early breast cancer survivors.* J Adv Nurs *2013;**69**:305–15.*[74]

> *. . . 13 persons (29.5%) dropped out because they experienced the writing about their stressful events to be too much of a burden.*[69]

> *One participant indicated that the reason she dropped out of WET [Written Exposure Therapy] (after 3 sessions) was because the treatment was making her think too much about her car accident, which she found unpleasant. The other participant reported that he dropped out of WET (after 2 sessions) because he was feeling better.*[70]

> *One experimental participant self-selected out of the study after the first writing session for iatrogenic reasons, indicating an unwillingness to continue writing due to distress.*[121]

When participants believed that they were gaining some benefit from using unfacilitated EW, they appeared to want to continue to engage with it. Within *Figure 56*, this has been illustrated by including a feedback loop to the intermediate outcome of participants in unfacilitated EW.

> *Some group 1 members had elected to keep on meeting regularly after their program had ended.*[66]

One participant started the course 2 years after being diagnosed with endometrial cancer:

> *One of the reasons I wanted to do this writing, I feel like I need to draw more strength from within . . . The oncologists are wonderful at what they do . . . it's about killing the cancer cells and that's really great, but there is also a place for having those other contacts for healing the illness.*
>
> *Rickett C, Greive C, Gordon J. Something to hang my life on: the health benefits of writing poetry for people with serious illnesses.* Australas Psychiatry *vol. 19. pp. 265–8, Copyright © 2016 by The Royal Australian and New Zealand College of Psychiatrists. Reprinted by Permission of SAGE Publications, Ltd.*[66]

After the course, she said:

> *[It was] really enriching, because I've missed working and . . . it was really nice going to do something and exercising your brain . . . Poetry has given me an outlet to try to untangle some of the confusion within.*[66]

Finally, taking part in a writing intervention may have motivated some participants to start writing on their own. For example, one control participant said:

> *It kick-started me into entering some more things into my journal again, just got some feelings. But you didn't really ask for thoughts and feelings in the writing exercises. But it had that side benefit but I didn't write similar passages in my journal as I did for you.*[143]

> *Participants in both groups commented that they particularly appreciated having dedicated time to themselves. Completing the writing exercise necessitated them creating protected time and generated valuable time for reflection. It was a good time to reflect on how I feel about various issues [P25, Intervention]. Having 20 minutes a day to myself was quite a miracle and something I hope to continue in the future.*
>
> *P20, Control. Copyright © 2009 John Wiley & Sons, Ltd. Reproduced with permission from Theadom A, Smith H, Horne R, Bowskill R, Apfelbacher CJ, Frew AJ. Participant experiences of a written emotional disclosure intervention in asthma.* Stress Health *2010;**26**:45–50.*[58]

There appears to be an element here of emergence. The perception of benefit is an intermediate outcome from participating in unfacilitated EW, but appears to also act as a context to one of the mechanisms identified that appears to cause continuing use of unfacilitated EW.

In *Figure 56*, the inferred mechanisms are illustrated by shaded boxes. As alluded to above, and unsurprisingly, continuing use of unfacilitated EW occurs when participants perceive benefit from its use. Repeated beneficial experiences reinforce continuing use. However, perceiving benefit in TW is not the only mechanism that appears to be in operation. In order for participants to remain engaged, they also have to feel that it is safe to write and that they are supported. These mechanisms of feeling safe, supported and perceptions of benefits from TW seem to be important not only in encouraging participants to continue with TW, but also in starting to use it in the first place. Different contextual influences trigger the feeling safe and supported mechanisms and they are discussed in more detail in the next section (see *What happens, how and why in facilitated therapeutic writing?*).

From the analysis of included studies it is not immediately apparent what the mechanisms are within unfacilitated EW, as described by Pennebaker and Chung and in the various other models used in practice (e.g. mindfulness writing, positive writing, memory evoking, literary, reflective writing and perspective shifting writing).[10,144] In *Figure 56*, the TW has been termed as black box. Those studies that have used the approach to TW described by Pennebaker and Chung, or modifications of it, invariably cite one or more explanations proposed by Pennebaker and Chung[145] for how TW was meant to work. The possible explanations for why expressive writing might work may be found in *Box 3*.

Pennebaker and Chung[145] state:

> *If you are expecting a clean and simple explanation for the effectiveness of writing, we have some very bad news: There is no single reason that explains it. Over the last two decades, a daunting number of explanations have been put forward and many have been found to be partially correct. Ultimately, there is no such thing as a single cause for a complex phenomenon. The reason is twofold. First, any causal explanation can be dissected at multiple levels of analysis ranging from social explanations to changes in neurotransmitter levels. Second, an event that takes weeks or even months to unfold will necessarily have multiple determinants that can inhibit or facilitate the process over time.*
>
> *Oxford Handbook of Health Psychology edited by Howard S. Friedman (2011): Extract of 115 words (p. 426) from Chapter 18: "Expressive Writing: Connections to Physical and Mental Health" by James W. Pennebaker and Cindy K. Chung (pp. 417–437). Reproduced with permission.*[145]

The data reported within the included studies did not enable any coherent and plausible interpretations on what the possible mechanisms for unfacilitated EW approaches might be. Few of the included studies directly explored potential underlying mechanisms or provided data that would enable any inferences to be made. The challenge here is one of the absence of data in included studies.

In summary, it is reasonable to infer that the realist programme theory for unfacilitated EW is as follows. Participants are offered the option of undertaking unfacilitated EW. This forms the starting context. When offered this resource, participants make a choice about whether to participate. The reasoning in the participant in response to the resource offered is threefold: (1) an initial assessment as to whether or not the individual felt or thought there was any value in participating (i.e. will he/she gain any benefit);

BOX 3 Brief overview of possible explanations on why expressive writing works (from Pennebaker and Chung[145])

Individual and social inhibition

When people are encouraged to talk or write about a previously inhibited event, health improvements would be seen. Once people put their experience into words, they would no longer have the need to inhibit.

Emotions and emotional expression

The emotional response from writing fosters important cognitive changes.

Habituation to emotional stimuli

The benefits of writing accrue because individuals habituate to the aversive emotions associated with the trauma that they are made to confront by writing.

Language and emotions: towards an A-to-D theory of emotional processing

When an emotional event is represented in a language format, such as during expressive writing, verbal/conceptual processing becomes possible.

Use of emotion words in writing

Individuals who use very few emotional words or use a very high rate of them may be repressing their emotions of being unable to express their emotions, leading to being or remaining unwell.

Beyond emotions: the construction of a story

Being able to structure emotions into a coherent story helps in the process of addressing the problem.

The components of a story: the analysis of cognitive words

The story created by the participant helps them to come to terms, explain and understand the behavioural and/or mental problem associated with their experiences.

Writing as a way to change perspective

The writing produced by a participant may help them stand back and look at the experience from a different perspective.

Expressive writing and social dynamics

After writing, participants continue to think about what they have written and this may lead to further changes, such as to their day-to-day behaviour.

The big picture: life course correction

The change in perspective from writing may lead to participants re-examining how their life is progressing and how they may need to change.

(2) was this a safe environment in which to write; and (3) was there any support on offer to them? These three responses form the most prominent mechanisms and their contextual triggers are discussed below. In unfacilitated EW, generally no attempts are made (by those offering this resource) to create a safe writing environment. Some studies did provide support should the participant require it (because they felt distressed) either face to face[75] or by telephone.[113]

Once a participant has decided to undertake unfacilitated EW, they are then in a position to experience for themselves its effects, which may range from harms to benefits. No benefit or perceptions of harm appeared to result in non-engagement or inconsistent engagement. When the individual perceives benefits, they seemed to engage in further TW. This perceived benefit seems to accumulate with repeated engagement and become a new contextual trigger for the mechanism related to perceptions of benefit.

What happens, how and why in facilitated therapeutic writing?

A consensus emerged from the programme theory planning meetings with practitioner experts. This was that within the NHS and voluntary sector writing groups, TW was routinely used in a group setting. The group formed part of the intervention in addition to the TW itself and this meant that the programme theory described above and in *Figure 56* needed to be refined and elaborated on.

The practitioner experts contributed their insights into three areas that needed to be incorporated into the initial programme theory (as described above and illustrated in *Figure 56*). These were (1) the functions and purpose of the group; (2) the range of TW approaches used with participants; and (3) the range of outcomes that might be expected by participants. These are elaborated on below, and incorporated into a refined programme theory of facilitated TW (*Figure 57*). The information provided by the expert practitioners indicated that their groups had a range of similar characteristics. They were all voluntary, and, in addition, individuals were welcome to come and go and stay as long or as short a time as they pleased. Participation in TW was not always a compulsory condition for attending the group. There were rules for the group but they were designed to be as inclusive as possible, for example those that attended were expected not to disrupt the group. The groups existed in a context of tolerance. This meant that individuals were given permission to come and go as they please to the groups for the length of time that they chose, to as few or many group sessions, and to engage in TW or not.

The programme theory was refined to include steps that outline the processes involved with how and why individuals may wish to participate in facilitated TW group (left-hand side of *Figure 57*). In the section below, additional data from the 11 studies on facilitated TW[128,129,132–140] found from additional purposive searching is provided to support the changes made to the programme theory. These supplement the data that were already presented to develop and refine the programme theory in *Figure 56*.

Individuals either would self-refer to TW groups or might be encouraged to do so by health-care professionals or another person. The mechanism that seemed to cause attendance and re-attendance might be termed trialability. This concept comes from work on the *Diffusion of Innovations* theory,[130] and suggests that any new innovation may be more likely to be adopted when the user has opportunities to experiment with it. There are some data (from the studies included in the effectiveness review and from further searching for the realist synthesis) to indicate that, for many potential participants, TW in groups was not something in which they had engaged and participated in the past and so the opportunity to see what it was all about was important.

> *Our workshop became a space, a sandbox, in which they could come to play.*[128]

> *Patients who are generally withdrawn and reticent have found this [newsletter] a valuable means of communication and now are rarely short of ideas for articles.*[135]

Data from the practitioner experts indicated that attendance in TW groups in the real world was very fluid. Individuals would come and go to the groups, sometimes only to talk to other group members or to make use of other services being offered (e.g. the food provided). In some groups, individuals might be absent

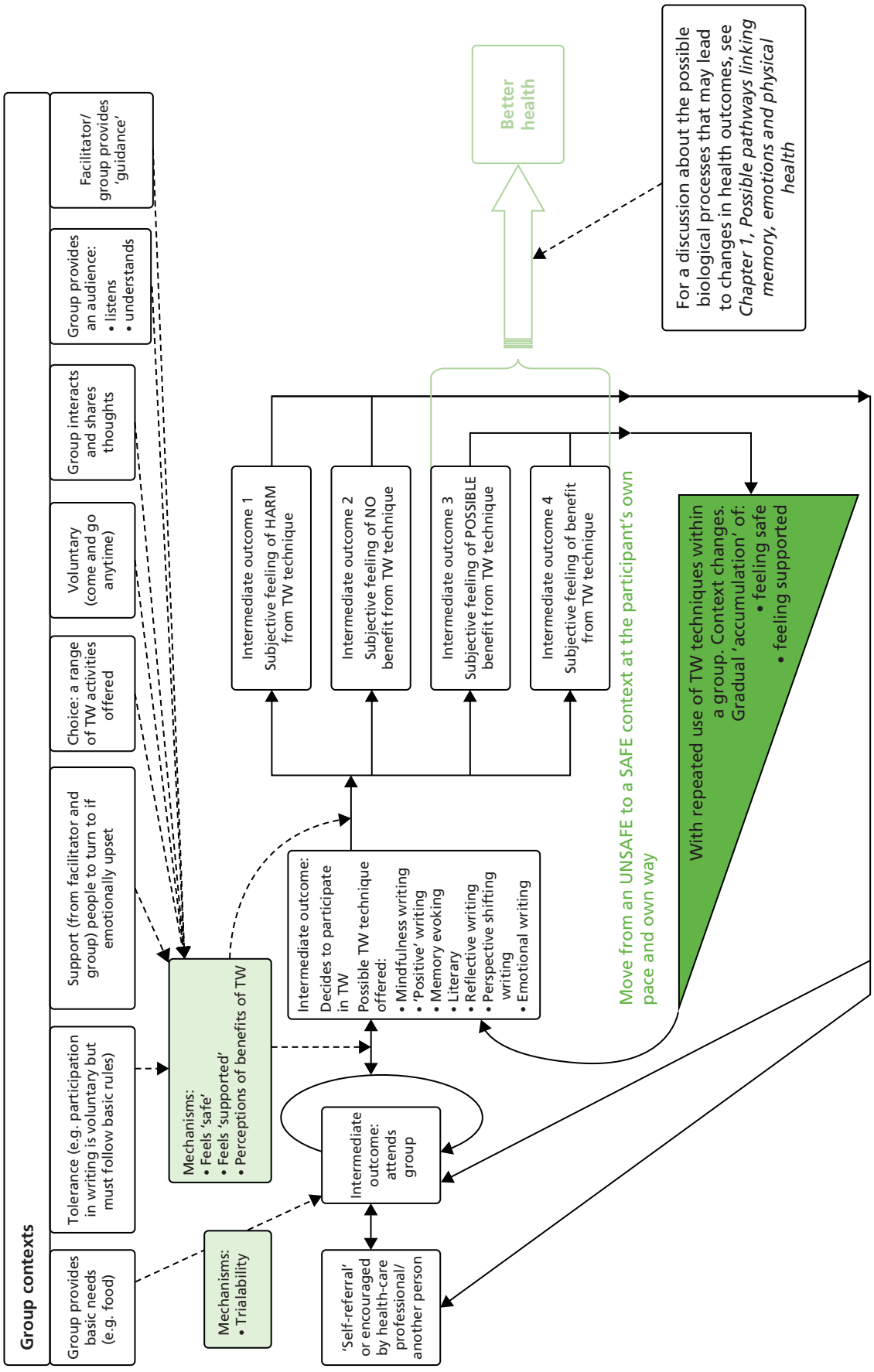

FIGURE 57 Programme theory for facilitated TW. Light green shading indicates mechanisms and dashed lines indicate where mechanisms or contexts have their influences.

for some time, only to appear and attend more consistently later. Group attendance was thus a fluid affair, as indicated in *Figure 57*, and participation was driven more by the individuals own perceptions and feelings about what their needs were.

An important distinction has been made in the programme theory between group attendance and participation with TW. Those who attend may not necessarily undertake any TW. There appears to be complex interactions between contexts and mechanisms here when it comes to the intermediate outcome of whether or not an individual participates in a TW activity.

Group attendance enables an individual to make decisions about whether to participate in TW. In effect it exposes them to what TW is all about, and what benefits they might obtain from the TW activity itself and being an active participant in the a group.

Data from included studies indicate that the degree of tolerance of the group, the level of support on offer from the group, the range of therapeutic activities available, the voluntary nature of the group, interaction with the group, listening and understanding are all context influences that may trigger perceptions of benefits of TW.

> *The informal and relaxed atmosphere of the group encourages patients to read their work aloud and to welcome discussion, criticism and admiration.*[135]

> *Participants told us that they enjoyed the technical challenges of writing poetry and the opportunity to meet as a group to share their writing and get feedback. They were particularly proud to have the anthology of their own writing, interspersed with poems by recognized Australian poets, as a tangible outcome.*[66]

> *If I could think of any ideas of how the group can be improved, well, it's to get more people. Like I know a lot of people are very shy or afraid of coming out and forcing themselves out there, thinking that they're gonna be exposed, but it's really an environmentally friendly place where we have the group. So it could be improved if more people would join and say how they really feel about living with HIV or AIDS [aquired immunodeficiency virus].*

Reprinted from Arts Psychother, *vol. 39, Fair CD, Connor L, Albright J, Wise E, Jones K. "I'm positive, I have something to say": assessing the impact of a creative writing group for adolescents living with HIV. pp. 383–9. Copyright © 2012, with permission from Elsevier.*[134]

Perceiving that TW (or the group itself) may have benefits does not necessarily mean an individual will participate. Attendance at a group enables individuals to make subjective and/or objective judgements on some of the context influences mentioned above – degree of tolerance, support, nature and type of the interaction and so on. Another two mechanisms appear to be triggered if the context is right – individuals can not only perceive benefits from participating in TW, but will also feel that it is safe to do so and they will be supported. These mechanisms speak to the potential emotional costs of engaging in TW: embarrassment, ridicule, feeling exposure, upset, and so on.

> *Allowing persons to safely share their thoughts and feelings about themselves reassures them that it is okay to experience the feelings they have.*[74]

> *The paper became that space where the students could meet themselves and their concerns unimpeded by the predetermined expectations of others; the classroom became a safe place to read the stories that could not be heard elsewhere.*[128]

> *. . . many people were unable to write directly about significant, traumatic experiences without re-experiencing overwhelming emotions. One woman, an experienced licensed counsellor, wrote copious and beautiful poetry but became rigid and almost frantic when we worked with memoir. Interestingly, in her poetry, deep issues and memories would surface. She was able as well to write a fictional, third person story full of effective emotional content and events similar to her life. Yet to approach her past directly frightened her. There was clearly no safe place for her to go to in her own history.*

Baker S. Tell it slant: history, memory, and imagination in the healing writing workshop. Traumatology *vol. 15 pp. 15–23, 2009. Published by American Psychological Association and reprinted with permission.*[128]

> *. . . in reading this piece to a group who had been with her the better part of 6 months, she was able to reveal herself in a way that felt safe.*[128]

> *The interaction with a group of HIV-positive peers provided them with a safe place to talk openly about their experiences, which not only served to deepen their understanding of their illness, but also resulted in increased support. A 15-year old male explained that group members knew Everybody [in the group] was born with it [HIV], and we talked about how it was nobody's fault.*
>
> *Reprinted from* Arts Psychother, *vol. 39, Fair CD, Connor L, Albright J, Wise E, Jones K. "I'm positive, I have something to say": assessing the impact of a creative writing group for adolescents living with HIV. pp. 383–9. Copyright © 2012, with permission from Elsevier.*[134]

An example of the safety of the group is seen in the following quotation from a group leader:

> *And so really the group became a way for them to help one another, and the older kids sort of took over in that regard, and kind of became peer counsellors in a way and were able to help them answer some responses to people . . . there was one girl, the oldest girl in the class, just felt like everyone should be out and open about it and perhaps that would release the stigma. So really a means for them to figure things out on their own and figure out how they wanted to represent themselves and HIV or if they wanted that to be a part of who they were.*
>
> *Reprinted from* Arts Psychother, *vol. 39, Fair CD, Connor L, Albright J, Wise E, Jones K. "I'm positive, I have something to say": assessing the impact of a creative writing group for adolescents living with HIV. pp. 383–9. Copyright © 2012, with permission from Elsevier.*[134]

> *Working in a group creates an inner/outer dynamic that can help people to make sense of illness.*[66]

Positive changes in the adolescent were attributed to the experience of meeting other young people living with HIV.

> *One mother stated participation in the group lets them know that there are other young people out there that are dealing with the same issues that they're dealing with. Another mother agreed: more than anything else, being able to be around someone as themselves and see someone just like them and see that they're doing things and going on with their lives and not having pity parties. I thought it was good.*
>
> *Reprinted from* Arts Psychother, *vol. 39, Fair CD, Connor L, Albright J, Wise E, Jones K. "I'm positive, I have something to say": assessing the impact of a creative writing group for adolescents living with HIV. pp. 383–9. Copyright © 2012, with permission from Elsevier.*[134]

Parents and guardians reported few concerns. Most had longstanding relationships with the social worker who first introduced the idea of a creative writing group; their trust in her contributed to their confidence that the group experience would be helpful.

One mother stated:

> *I knew she was in good hands it was going to be a good educational experience for her. I thought it was great.*[134]

In contrast, there are data to indicate that some potential participants in some context may find that the private nature of unfacilitated TW may be more suitable to their needs.

> *The structured, private nature of the intervention was particularly helpful to people who were unable to express emotion or who had ambivalent attitudes about expressing emotions to others.*[100]

As described above and illustrated in *Figure 57*, there are data to support the gradual accumulation of perceived and real benefits of TW, of being in a group, and feelings of safety and support. To reflect this reinforcing cycle – of engagement with TW, being in a group, accruing benefits, feeling safe and supported – the shaded triangle and text in *Figure 57* have been used. Within a group with the relevant mix and balances of contexts, individuals move from an unsafe to a safe context at a pace that is under their control.

As previously mentioned, the practitioner experts pointed out that within the NHS and voluntary sector a broader range of TW techniques or activities were used (e.g. mindfulness writing, positive writing, memory evoking, literary, reflective writing and perspective shifting writing). The practitioner experts provided explanations on when these different techniques might be used and for what ends. An example of the information provided can be seen in *Appendix 2*.

There were no data within the included studies to inform the relevance and/or importance of these different TW techniques in the programme theory. Different TW techniques are used in the included studies, but the paucity of the reported data does not enable any firm conclusions to be made. This is one area of the programme theory that is thinnest and would benefit from the search for further relevant studies and documents.

Finally, the practitioner experts reported that the benefits an individual gains from engaging in TW can occur early and later as well as be broad and unpredictable. In the section above, data from the studies included in the systematic review, which support their observations, have already been presented. Below are data gleaned from studies on when TW was used in a group setting that provides further support.

> *My guiding principle is that the individuals healthy self will gravitate toward what it needs; that I as the practitioner cannot know whether this is ahead of time and that my job is to listen to the emerging self and allow it expression.*[128]

In summary, it is reasonable to infer that the realist programme theory when TW intervention is used as part of a group (facilitated TW) is as follows. Within the NHS and voluntary sector, TW is usually offered as an activity within a group context. Potential participants either self-refer or are encouraged to attend. These groups tend to operate in a context in which actual participation in TW is voluntary and non-participation is tolerated. Such a context enables potential participants to try out (the mechanism here being trialability) the group – seeing for themselves how it works and what goes on. A range of group-related contexts appear to be important in influencing potential participants to participate in a TW technique. With repeated attendance at the group, potential participants can subjectively and objectively assess the (contextual influences of) degree of tolerance, support and guidance (from others and the facilitator), the range of activities on offer, voluntariness, interactivity of the group, and so on. These appear to trigger the mechanisms of perceptions of benefits, safety and support. Potential participants feel that it is safe to take part in TW when they perceive that they are likely to receive support from the group if potentially troubling emotions are surfaced. If they perceive subjective benefits, continuing participation is more likely to occur.

Once a participant has decided to undertake TW, they are then in a position to experience for themselves its effects – from harms to benefits. No benefit or perceptions of harm will likely result in non-engagement or inconsistent engagement. When the individual perceives benefits, he/she is likely to engage in further TW. This perceived benefit seems to accumulate with repeated engagement and become a new contextual trigger for the mechanism related to perceptions of benefit. The range of benefits that a participant obtains from TW appears to be individually specific; they may be immediate or delayed to some degree and not necessarily predictable in advance or those that are measured by the researchers in the included studies.

Within the realist synthesis, we were unable to clarify further the mechanisms of how different TW techniques are meant to produce desired outcomes.

Chapter 6 Discussion

This is the first comprehensive systematic review of TW interventions for people with LTCs. There are many various forms of TW interventions that have been suggested as potential therapies for the treatment of mental and physical illnesses. However, in this systematic review, unfacilitated EW such as described in 1986 by Pennebaker and Beall[1] was the most frequently used approach. As few as five studies[66–70] reported a facilitated type of TW intervention. However, even these five studies are not that similar to the form of TW which has been described by TW practitioners as the most frequently used writing therapy in both NHS and voluntary sectors in the UK.

Statement of main findings

Systematic review

Five studies[66–70] were identified which examined the effect of facilitated TW on four different disease areas (two studies in PTSD,[69,70] and one each in dementia,[67] psychiatric problems,[68] and serious physical problems – primarily cancer[66]). The actual TW interventions studied were extremely varied, two being internet based. Three of the studies[66,67,70] were very small, and across the studies quality was mostly unclear. The studies measured different outcomes but all reported positive outcomes in favour of the writing intervention, suggesting that facilitated TW may be beneficial but it requires much more evaluation, which should be conducted rigorously.

Unfacilitated EW was evaluated in 59 studies.[71–119] There was considerable heterogeneity in participants, interventions (context, content, delivery mode), comparators (factual writing, time management, non-writing, waiting list or SMC) and outcomes (type measured and length of follow-up). For measurement of outcomes, 172 instruments were used and more than 300 different measures were reported. All but four[52,53,78,87] of the studies were RCTs. Methodological quality was frequently unclear, but most studies were likely to have introduced performance or detection biases that could have increased the likelihood of finding a positive result.

- Of the six heterogeneous studies[50,55,56,71–73] in patients with HIV, five were very small[50,55,71–73] and all were of very unclear quality. Overall, there was no evidence of benefit in any of the outcomes examined (disease markers and psychological instruments), nor did a meta-analysis show any evidence of evidence of benefit on depressive symptoms.
- Eight studies[53,54,74–79] examined EW in patients with breast cancer: one was very large,[76] and their quality ranged from unclear to poor (Hughes[54]). Most examined mood, depressive symptoms or QoL but there was no convincing evidence of benefit from EW across the studies or on meta-analysis of mood or depressive symptoms.
- Five studies[80–84] examined genitourinary and gynaecological cancers, and, again, quality ranged from unclear to poor. Across the wide variety of outcomes examined there was no consistent pattern of benefit from TW. Two other studies[85,86] of unfacilitated EW in patients with various cancers also failed to identify any benefit from EW.
- Three studies[90–92] explored substance misuse: two were very small and study quality was unclear or poor; across a wide range of outcomes they found no evidence of benefit from EW.
- Five small studies[93–97] of variable quality examined EW in patients with various psychiatric conditions; there was little consistent evidence of benefit from TW across a variety of outcomes or on meta-analysis of the effect on anxiety or depression in the short term.
- Two very small, low-/poor-quality studies[9,98] looked at EW for PTSD; in the immediate or short term, both report inconsistent beneficial results on mood or PTSD symptoms with unfacilitated EW.
- Three studies[102–104] of variable quality found no consistent evidence of benefit in CVD.
- Four studies[58,106–108] (of mixed quality) investigated unfacilitated EW in patients with asthma but no evidence of benefit on a variety of outcomes was seen, and meta-analysis suggested that there was no benefit on short-term FEV_1.

- Two low-quality studies[52,109] of IBS reported mostly positive results.
- Three low-quality studies[110–112] of psoriasis found little effect from the intervention.
- For inflammatory arthropathies (six studies[107,113–117]) there was a reduction in disease severity ($n = 191$, SMD –0.61, 95% CI –0.96 to –0.26) in the short term on meta-analysis of four studies,[107,114,115,117] with a random-effects model and with non-significant heterogeneity, $I^2 = 1\%$.
- Four low-quality studies[51,57,118,119] in FM and chronic pain showed mostly positive results.
- Single studies looking at EW in sickle cell disease,[87] diabetes mellitus,[88] cystic fibrosis,[89] BN,[99] amyotrophic lateral sclerosis,[100] migraine and tension headache,[101] and chronic lung disease (COPD and IPF)[105] were nearly all of low or unclear quality and found no evidence of benefit from EW.
- The meta-analyses in the breast cancer studies[53,54,74–79] showed no significant differences in depression (among 562 participants), positive and negative mood at short term (among 618 participants each) for the EW group compared with the control group. Likewise, the remaining meta-analyses on HIV (depression at short term in 249 participants); asthma (lung function at short term in 281 participants); mental and psychiatric disorders (anxiety at short term in 127 participants); inflammatory arthropathies (disease activity at both immediate and short term in 146 participants); and FM and chronic pain (pain severity at two different short term assessments in 216 participants) found no significant differences between EW groups and control subjects.
- Twenty-four studies[50,51,56–58,71,83,89,90,99,101,104–108,110–113,115–117,119] reported disease-based outcomes across different LTCs, and only two studies[104,110] found a significant beneficial effect for EW: on DBP, but not SBP, in cardiovascular disease, and on the severity of psoriasis.
- For anxiety and depression, across different LTCs, none of the meta-analyses showed significant effects.

Economic considerations

The review of economic evidence did not identify any true economic evaluations, quantifying both the monetary costs and health consequences of TW interventions. Only one of the studies[89] included in the systematic review attempted to quantify the cost of delivering the TW intervention itself and made an estimate of cost savings. Some studies did report on the impact of TW on patients' use of other health services: there was a significant reduction in reported use of medications with TW, but no significant effect on the use of other health services. Costs for delivering programmes of TW are likely to vary, depending principally on the amount of paid practitioner time per participant. The estimated direct cost to the NHS ranged from as little as £12 for unfacilitated interventions to > £2000 for a series of 16 one-to-one facilitated TW sessions. There is insufficient evidence to estimate how much, if any, of this cost would be offset by savings from reduced use of other NHS services. There is also insufficient evidence to estimate the overall cost-effectiveness of TW to the NHS. Cost–consequence analysis suggested that there might possibly be a favourable balance of participant benefits to NHS costs for selected interventions in selected LTC groups.

Realist synthesis

The realist synthesis was able to develop two programme theories that (to some extent) explained some of the findings within the studies included in the systematic review. Uncertainty continues to exist over why individuals with LTCs might wish to participate in TW (of any variety) and what, how, and in what way these individuals hope to gain from TW. For unfacilitated EW, there remains uncertainty as to how and why it generates any outcomes of interest, for whom, and in what circumstances. In facilitated TW the relative importance of the different processes within it (i.e. what processes need to be used – how and why – to generate desired outcomes) is unclear.

In unfacilitated EW, when participants were offered the option of undertaking EW, this formed the starting context. When offered this resource, participants made a choice about whether or not to participate. The participant reasoning in response to the resource offered might be threefold: (1) an initial assessment as to whether or not the individual felt or thought there was any value in participating (i.e. will he/she gain any benefit); (2) was this a safe environment in which to write; and (3) was there any support on offer to them? These three responses formed the most prominent mechanisms and their contextual triggers are discussed in more detail with reference to facilitated TW. Studies using unfacilitated EW generally did not attempt to create a safe writing environment or provide support. Once a participant had decided to

undertake unfacilitated EW, they were then in a position to experience for themselves its effects – which may range from harms to benefits. No benefit or perceptions of harm appeared to result in non-engagement or inconsistent engagement. When the individual perceived benefits, he/she seemed to engage in further TW. This perceived benefit seemed to accumulate with repeated engagement and became a new contextual trigger for the mechanism related to perceptions of benefit. The range of benefits that a participant obtained from TW appeared to be individually specific; they may have been immediate or delayed to some degree, and not necessarily predictable in advance or those that were measured by the researchers in the included studies.

The programme theory for facilitated TW is an elaboration of that for unfacilitated EW. Within the NHS and voluntary sector, TW is usually offered as an activity within a group context. Potential participants either self-refer or are encouraged to attend. These groups tend to operate in a context in which actual participation in TW is voluntary and non-participation tolerated. Such contexts enables potential participants to try out (the mechanism here being trialability) the group – seeing for themselves how it works and what goes on. A range of group related contexts appear to be important in influencing potential participants to participate with a TW technique. With repeated attendance at the group, potential participants can subjectively and objectively assess the (contextual influences of) degree of tolerance, support and guidance (from others and the facilitator), the range of activities on offer, voluntariness, interactivity of the group, and so on. These appear to trigger the mechanisms of perceptions of benefits, safety and support. Potential participants feel safe to take part in TW, when they perceive that they are likely to receive support from the group if potentially troubling emotions arise. If they perceive subjective benefit, continuing participation is more likely to occur. The programme theory for facilitated TW and unfacilitated EW are the same once a participant has decided to undertake TW. Within the realist synthesis we were unable to clarify further the mechanisms of how different TW techniques are meant to produce desired outcomes.

Strengths

Systematic review

The systematic reviews and realist synthesis were supported during all phases by the expert advice of four TW professional practitioners. The systematic review has been undertaken following PRISMA criteria[63] and was registered with PROSPERO at the start of the project. Comprehensive database searches were adopted, supplemented by checking citation lists, theses and grey literature and contacting experts in the field.

Selection criteria were developed to include only participants with documented diagnoses of LTCs and the list of LTCs considered was generous, with careful consideration of whether or not specific medical conditions could be considered long term (e.g. patients with bladder papilloma following resection). No restrictions were applied regarding the intervention (i.e. all types of therapies falling within the TW umbrella were considered). Included was any comparative study, not only RCTs, and careful consideration of appropriate comparators was given; where the control intervention appeared to have an inadvertent EW component, for example when patients with cancer were asked to write about the facts of their treatment, these studies were not included.

The assessment was not restricted to stated primary outcomes only. Independent double data extraction for all numerical data was used. The reporting of all results is very comprehensive and analyses were very thorough. Study authors (32 out of 64 included studies) were contacted for missing numerical data and 14 responded. In the report results were categorised by ICD-10 code as a systematic way of dealing with the very wide range of conditions in which TW had been investigated. Categorising by ICD-10 code is an unusual way to present systematic review results, and can be used sensibly only when an intervention can be applied to a wide range of conditions – in this case both psychiatric and physical conditions. Meta-analyses were conducted both within and across conditions to fully explore any potential effects of these interventions.

Economic considerations

The review of published economic evidence was nested within a thorough systematic review, following accepted methodological guidelines. An attempt was made to estimate the costs of TW from a NHS perspective, based on information about the range of interventions provided in the included studies and expert advice on how TW is used in practice. The cost–consequence summaries brought together best-available evidence of effects on outcomes of importance to patients with simple estimates of NHS costs for three illustrative case studies.

Realist synthesis

This realist synthesis has been undertaken following (where applicable) the RAMESES (Realist and Meta-review Evidence Synthesis: Evolving Standards) quality standards for realist syntheses.[146] Two programme theories have been developed. Document selection and appraisal applied the principles of relevance and rigour, and data extraction has focused on extracting data that are capable of supporting programme theory refinement. Where possible, a realist logic of analysis has been applied to the data and the synthesis has been reported following the RAMESES publication standards for realist syntheses.[146] Reporting for the realist synthesis has been distributed across different sections of this report as some of the processes used are similar to those of the systematic review. For example, the searching process of the systematic review was used as the starting point of the realist synthesis. This also meant that the document flow diagram is shared across both reviews. Additional searching (of a limited nature) was undertaken and this has not been shown in the main document flow diagram (see *Figure 1*). Based on the focus of the realist synthesis (to explain the outcome patterns found in the systematic review) no scoping of the literature was undertaken. No changes were made to the initially planned review process other than a much more limited additional searching due to time constraints. The RAMESES publication standards have been followed and an overview of compliance may be found in *Appendix 7*.

Weaknesses

Systematic review

We were not able to identify a UK-based therapeutic practitioner of unfacilitated EW as an expert advisor. We double checked only 10% of our retrieved titles and abstracts, so there is a risk that we missed relevant studies; however, our 10% checks did show excellent agreement between reviewers. We did not exclude studies in which the underlying condition was poorly described (e.g. patients with various cancers). The facilitated/unfacilitated TW split was a post hoc decision based on the background literature[21] and discussion with the TW expert practitioners collaborating in the project. We tried to be consistent with our decisions around selection of interventions and comparators, particularly in the meta-analyses, but not all interventions and comparators were similar, introducing some heterogeneity. For example, when a study had two interventions – one with positive writing and one with standard unfacilitated EW – the latter group was selected. If a study had one intervention only, it would be included in the meta-analyses even if participants were asked to write about positive aspects of their experience, particularly on the last day of writing.

A disadvantage of using ICD-10 codes to categorise studies meant we had a large number of categories, often with relatively few studies in them, and this, in turn, constrained the sensitivity analyses that we could conduct within these categories.

Studies not reporting any numerical data (raw scores or proportions for any one of the outcomes) were excluded from the systematic review. Therefore, relevant studies might have been omitted. However, strenuous efforts were made to contact study authors regarding missing data. Authors were not contacted about study quality or when an explanation of a given instrument was not provided.

Many of the meta-analyses had high levels of statistical heterogeneity and should be interpreted with caution. Additionally, meta-analyses are on small numbers only. A post hoc decision was made to conduct overall meta-analyses across all LTCs for the outcomes of depression and anxiety. This decision was made

before knowing the individual LTC meta-analyses results and was based on the large number of studies reporting these outcomes, and their clinical usefulness as an exploratory analysis.

Regarding the study designs, both RCTs and non-RCTs were included but no sensitivity analyses of randomisation compared with non-randomisation design were performed. This was because there were so few studies within each ICD-10 code that further subdivision was thought to be unhelpful. We also did not conduct any sensitivity analyses by study quality; we described study quality comprehensively but did not use it further in our analyses.

We made a pragmatic decision not to investigate subgroup analyses within the included studies because almost all appeared to be post hoc analyses, and the studies were not sufficiently powered for these analyses. Therefore, we did not look for moderators, which was in the aims and objectives in our original proposal. Regarding interventions, self-completion books were included as a TW intervention.

Economic considerations

The lack of evidence on cost and cost-effectiveness from published comparative studies was a major challenge. Most studies did not report impact on health-care resource use, only 12 out of 64 studies included such information.[57,68,75,77,83,89,90,97,98,104,109,119] In addition, the reporting standards for resource use in most papers were weak. It was also difficult to estimate the cost of the interventions in some studies, owing to a lack of detail on the level of practitioner input. The diversity of the studied populations, the inconsistent and sparse nature of the available effectiveness evidence, and, particularly, the lack of evidence on QoL outcomes, made de novo decision modelling an unrealistic prospect.

Realist synthesis

Although searches were exhaustive, selection criteria for the realist synthesis could have been identified earlier in order to conduct even more iterative searches. There was only one qualitative study[147] identified as being useful for the realist synthesis process. Additional searching would have been desirable as it would have enabled more relevant data sources (especially those that contained potentially relevant existing substantive theories) to have been identified. However, because of time constraints, only one single round of additional searching specifically for the realist synthesis was undertaken. The absence of these additional searches is likely to have impacted on the degree of the explanatory powers of the realist synthesis. In addition, it was not possible to include the studies found in the updated search (to January 2015) in the realist synthesis.

The selection criteria for the realist review could have been more closely defined, or tailored earlier, in order to capture more relevant literature. Studies investigating healthy students and non-comparative studies were identified as a potentially useful tool for further programme theory development.

The development of the programme theory relied predominantly on the data contained within randomised, non-randomised and case–control study data. Previous review teams have identified that the data necessary for conducting a high-quality realist synthesis is often not found in RCTs. However, as the included studies consisted of a broader range of study types and much larger numbers of studies than that found in Dieleman *et al.*[148] and Kane *et al.*[149] it was anticipated during the project that sufficient data would be available. To supplement the data within the studies included in the effectiveness review, two additional searches were undertaken: one to look for studies on facilitated TW and the other for studies of any type that reported on one or more of the included studies. Despite these two additional searches, gaps in the data existed, which meant that it was not possible to fully elucidate and test a number of aspects of the programme theories, such as:

- The mechanisms underlying the TW techniques encountered in this project. Additional searching for data from different disciplines (e.g. humanities) might have been more informative. In addition, there exists a large body of research on the use of unfacilitated EW in populations without LTCs and data from this body of work might have been valuable in mechanism identification and elucidation.

- The role of the group in facilitated TW requires greater elucidation. The realist synthesis identified a number of contextual influences and mechanisms, but these are unlikely to be the only relevant ones. A large body of work exists on groups in general and on therapeutic groups specifically. Further searching in these areas would likely have provided further relevant data. The role and competencies of the group facilitator also needs further elucidation and additional searching for data on this topic area would have been helpful.
- The value placed by participants in TW on the presence of an audience was noted in some of the data. This is another area with a large body of literature located within disciplines outside of health services research that is worthy of further attention.

This is the first realist synthesis that has sought to develop a realist programme theory that attempts to explain the outcome patterns for unfacilitated EW and facilitated TW when used for LTCs. In other words, it is the first attempt that tries to unpack the black box of TW when used in a population with LTCs. The programme theory provides potentially transferable knowledge about how these types of TW techniques might fare under different contexts. However, an important caveat on this programme theory is that it requires further development and refinement. This is because it includes only some of the relevant and important mechanisms and related contextual triggers. The paucity of relevant data in the studies used to develop and refine the programme theory has had an impact on both its detail and extent. In addition, the strength of the inferences made has been affected by the rigour of the included studies. Many of the outcomes reported within the included studies must be considered to be less trustworthy as a result of the conduct of the studies. For example, all reported findings of benefits, harms, correlations and/or associations were treated with caution when used in programme theory development. Findings that could reasonably be considered to be more trustworthy were those that had not been as a result of statistical manipulation and/or interpretation by the authors. Consideration was still given as to how such data were generated, for example the interview method for qualitative data. The result is that many of the inferences made in the development of the programme theory were often tentative. The implication is that further testing and refinement of the programme theory is needed, through future secondary or primary research.

This project faced two significant methodological challenges in trying to undertake both a systematic review and realist synthesis. The first related to the purpose of the realist synthesis and the other to human resources required. The purpose of the realist synthesis was to explain the outcome patterns reported in the studies included in the systematic review. Thus the realist synthesis was not able to proceed in earnest until it had been clearly decided what the final set of included studies were for the systematic review. This process for confirming the final set of included studies for the systematic review did not occur until month 11/12 of the project. This meant that the realist synthesis could only begin in the last third of the project. An additional related challenge that emerged from the focus of the realist synthesis was around the nature of the included studies. About midway through the project, the expert advisors had indicated that within the NHS and voluntary sector for LTCs, the main form of TW used was facilitated TW. Only when the final set of included studies for the systematic review had been finalised and were being analysed did it emerge that the vast majority of these related to the use of unfacilitated EW. This unexpected finding meant that additional unanticipated work was needed in the realist synthesis, as it had to develop one or more programme theories to make sense of both unfacilitated EW and facilitated TW.

In terms of human resource requirements, it must be kept in mind that both systematic reviews and realist syntheses are labour intensive. Within this project the majority of the researchers time was devoted to the systematic review. This meant that one of the two reviews had to be truncated – in this case the realist synthesis. Once the included studies had been identified, data extraction, analysis and synthesis took place in parallel for the systematic review and realist synthesis. As the project had only one full-time researcher (OPN) and almost all of her time was devoted to the systematic review, less human resources allocation, and time was available for the realist synthesis before the expected end date of the project. Within the 3-month time frame left to undertake the realist synthesis (especially in light of the additional work needed, as explained above), it was not possible to undertake the additional searches that would be

needed to more fully develop the programme theories for unfacilitated EW and facilitated TW. These would have been especially important, as the studies included in the systematic review did not contain sufficient relevant data. There was simply not the spare human resources capacity or time to do so.

The challenges mentioned above provide important lessons to review teams and funders who wish to undertake both combined systematic reviews and realist syntheses.

(a) *Sequencing* If the purpose for undertaking a realist synthesis is to explain the outcome patterns of studies included in a systematic review then additional time is likely to be needed to enable the rigorous execution of the realist synthesis component. Identifying the included studies takes time and the realist synthesis can pragmatically start only once it is clear what the included studies are. Its start is thus delayed and it is likely that an additional minimum of 9 months (ideally 12–18 months) is needed for a rigorous realist synthesis to take place. Review teams and funders need to expect that such combined reviews are going to take longer to complete.
(b) *Human resources* Both systematic reviews and realist syntheses are labour intensive. Planning and budgeting needs to reflect the need for additional researcher(s) time when a project gets to the stage when data extraction, analysis and synthesis is taking place for both the systematic review and realist synthesis. Otherwise, one or the other of the reviews is likely to suffer. Ideally, two different individuals with sufficient funded time are needed with the necessary skill sets to undertake the systematic review and realist synthesis separately.

Uncertainties

Systematic review

Most interventions evaluated were unfacilitated EW and did not mirror those currently used by professional TW practitioners in clinical practice in the UK. The main uncertainty is the clinical effectiveness of TW as it is practised by therapeutic practitioners, including within the NHS. It must be noted that the facilitated TW interventions included in the systematic review do not mirror those used in current NHS practice. There is insufficient clinically relevant evidence on facilitated TW as practised within these studies to know whether or not it is beneficial. It is uncertain if unfacilitated EW might be harmful, particularly in psychotic patients, but there was little evidence of harm in the studies evaluated.

Economic considerations

The economic case for the NHS to fund TW interventions for people with LTCs remains unproven. Depending on the level of practitioner input, these interventions are likely to be relatively inexpensive, and there is some evidence suggestive of possible cost savings related to reduced use of other health care, although this evidence is sparse and inconsistent. The cost–consequence case studies also suggest that there may be positive impacts on measures of health and well-being for some types of TW in some patient groups but these are exploratory analyses. Until there is robust evidence of patient benefit, it is difficult to conclude that TW would be a cost-effective use of NHS money.

Realist synthesis

Unfacilitated TW appears to have some effect in that the people who took part did notice some changes to intermediate or more proximal outcomes. However, the outcome of interest was health functions of some form, but TW does not seem to have much of an effect on this final desired outcome.

Within another realist synthesis, one could try to work out what outcomes (final desired and/or intermediate/proximal) might be influenced by unfacilitated TW. This would be the programme theory development aspect of a realist synthesis of unfacilitated TW. In this project we could touch on this only because of insufficient relevant data. This further realist synthesis could try to build a more detailed realist programme theory [i.e. one that further explains what has caused each outcome (final/intermediate) and under what contexts], the causal force being the mechanism(s).

We did not look at unfacilitated EW on healthy students but these studies may or may not inform what outcomes (final/intermediate) might be possible with unfacilitated TW, under what contexts and what the mechanisms might be. So there may be contexts within which it is reasonable to extrapolate what can be learnt from the healthy students studies to those who are unhealthy – based on making (and if possible testing) the assumption that the same mechanism(s) might be in operation under these different contexts.

The programme theory for unfacilitated EW and facilitated TW in LTCs highlights how complex these interventions are. It cannot and should not be assumed that they will work as expected when applied in differing contexts. The outcomes participants will get from TW are at present neither predictable nor necessarily achieved. In addition, these outcomes are rarely the ones hoped for by the researchers who have undertaken the primary studies included in the effectiveness reviews and realist synthesis. A number of contexts appear to influence whether or not individuals will choose to participate and continue with TW. In the real-world setting of clinical practice (such as in the NHS and voluntary sectors), due consideration needs to be given to ensuring that these contexts exist (or can be made to) if there is to be any hope that meaningful and continued participation in TW is to take place. Of note is that many of these contextual influences are beyond the TW technique itself and sit in the wider world that surrounds the individual and the TW technique. Despite the development of the programme theory, at present there is too much uncertainty surrounding too many aspects of it to enable a firm recommendation to be made about the benefits for the large-scale introduction of unfacilitated EW or facilitated TW into routine clinical practice.

Chapter 7 Conclusions

The systematic reviews and realist synthesis together with the economic considerations provided further and robust assessment of TW interventions across a broader range of chronic conditions than previously published research.

The clinical utility of TW interventions must be questioned, particularly the unfacilitated type of EW interventions frequently evaluated in different chronic conditions over almost two decades with no clear benefit on physiological, physical, psychological or QoL outcomes. In the UK, professional TW practitioners use other types of TW interventions, usually facilitated and with a variety of types of writing; however, such interventions have not yet been formally trialled. In addition, there is little information on any adverse effects of the evaluated TW and EW interventions, although increased negative mood immediately after the unfacilitated EW exercise was reported in nearly all of the included studies that looked at this, and may be worse among people with higher levels of baseline distress.

Further research

Realist synthesis

From the programme theory developed in the realist synthesis, it can be seen that further research might fruitfully be conducted in a number of areas. The primary research to date where TW (facilitated or not) is used to treat patients with LTCs appears to be highly under-theorised. Little is known about a number of aspects of these interventions. Although it is possible that a further dedicated realist synthesis might be able to make more sense of these intervention types, it is likely that greater mileage would be gained by first conducting additional primary research, particularly in patients with LTCs. This is especially the case if there is any intention to use unfacilitated EW for patients with LTCs. The existing studies demonstrate that greater attention is needed on theorising why it might be that such an intervention type would even work in the first place. In other words, in summary, better theorised TW interventions are first needed prior to undertaking any further realist synthesis. To provide guidance the following three questions are probably the most pressing areas to address with suitably designed primary research. This is because the answers to the following questions are most likely to provide data that are relevant for further programme theory refinement:

- Why do people with LTCs want, or not want, to participate in TW (of any type or form)?
- What do people with LTCs hope to get out of participating in TW (of any type or form)? How and why?
- Which has a bigger influence on outcomes in facilitated TW, the group, the facilitator or the writing technique? How and why?

Unfacilitated emotional writing

- There are large numbers of RCTs of unfacilitated TW in a variety of LTCs. The results suggest that there is no consistent and predictable benefit with this type of intervention. However, there may be some conditions where further robustly designed research with adequate sample sizes, comparing TW to usual care, might be useful, in particular, in people with substance misuse (because they may have experienced considerable trauma), and in PTSD (because there is weak evidence of possible benefit from the studies included in this review), or other areas in which people may have experienced traumatic events and have difficulty expressing themselves. If further research in unfacilitated writing is to be conducted, an explicit choice of patients and outcomes should be declared and CONSORT (Consolidated Standards of Reporting Trials) guidelines should be followed.[150] In view of the generally poor quality of the evidence to date, attention to statistical power and the maintenance of study quality are essential. Capturing any adverse events is important. Programme theory presented here might be a useful starting point to help researchers conceptualise unfacilitated EW. For example, if researchers are to investigate patients with COPD there needs to be a coherent and plausible reason as to why they think that FEV_1 might be affected by TW. It would be very useful if standard outcomes for the different conditions were measured [COMET (Core Outcome Measures in Effectiveness Trials)][151] to facilitate comparison with other interventions and length of follow-up should be considered.
- From the current research base, there are few data on patients understanding of, or expectations from, unfacilitated EW. Most of the trials appear to be explanatory and, in many cases, the researchers were at pains to withhold all information from participants about the possible nature of the intervention before they were randomised. If further research on unfacilitated EW in a health context is conducted, we recommend including qualitative studies to explore patients' understanding of, and experience of undergoing, EW interventions.

Facilitated therapeutic writing

- An audit of the types of TW currently being used in the NHS in both primary and secondary care would be very useful.
- Further, robust research into the facilitated TW interventions that are used in clinical practice and the voluntary sector is recommended. Developmental work on the role of the facilitator, TW and group dynamics would be required. Some TW disciplines are very well developed but have not yet been formally evaluated in clinical settings.[16] Programme theory presented here might be a useful starting point to help researchers conceptualise facilitated TW. Development work and feasibility or pilot studies should probably be conducted prior to full evaluation. Cluster RCTs and studies of other appropriate designs could be conducted on these interventions, evaluating patients with chronic physical or mental ill health. The comparators could be standard practice without TW or other comparable therapeutic interventions, such as relaxation CDs or reading bibliotherapy. Outcomes would be the standard clinical outcomes for the patient's medical condition, and patient satisfaction, HRQoL and costs. The sample sizes would need to be large enough to find a potentially modest effect.

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The final report and any errors remain the responsibility of Queen Mary University of London; Professor Stephanie JC Taylor, principal investigator of this 18-month research project, is guarantor.

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Data sharing statement

No new data were generated from this project.

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Appendix 1 Therapeutic writing experts' perspectives

Carol Ross's perspective

TABLE 75 Types of writing used by Carol Ross (or recommended to patients) in psychiatric inpatient units

Symptoms/diagnosis/detail	Mindful writing: Descriptive	Mindful writing: Expressive	Free writing	Reflective writing	Writing inspired by metaphors/symbols	Journaling: Celebrating positives	Journaling: Expressive writing	Unsent letters	Positive memories	Traumatic memories	Fictional characters	Creative writing	Collaborative poems	Responding to published poetry
Depression: mild/moderate	***		***			***			***		***			***
Depression: severe	***										***	***	***	***
Entirely negative thinking	***										***	***	***	***
Anxiety/agitation	***	***	***											***
Heightened psychological arousal	***		***											***
Difficulty with self expression	***	***	***		***				***		***			***
Manic episode	***		***		***									
Psychotic episode	***		***		***									
Schizophrenia	***		***		***									
Obsessive compulsive disorder	***	***				***								
Personality disorder	***		***	***		***		***	***		***			***
Detox	***	***	***	***		***		***						***
Grief	***	***						***	***					***

■, generally would not use; ■, use only with caution; ■, might use; ***, very likely to use/recommend.

Victoria Field's perspective

A practitioner's perspective: some snapshots

Types of writing

I concur with the list that Carol Ross provided – these are tried-and-tested writing suggestions that have therapeutic potential.

Rather than techniques being necessarily applicable to certain diagnoses, my own model is more to do with the level of wellness of the person or the group. The techniques are adapted according to the following continuums:

1. *Containing factors*

These keep the process safe and accessible.

(a) *Length of time* For someone in distress, writing for a minute might be sufficient.
(b) *Length of writing* Sometimes, for someone withdrawn, one word might be the starting point.
(c) *Amount of direction/structure* Structured suggestions can help with inchoate material.

2. *Complexity*

Tolerance of complexity is a marker of mental health and I would use TW techniques that encourage nuanced responses with a more well population or with a group that has been meeting for a while. This determines the kinds of writing suggestions I make, such as:

(a) metaphor – narrative
(b) direct – elaborated
(c) first-person – second-person – third-person writing
(d) single perspective – multiple perspective.

3. *Focus*

(a) *Self – others – wider world* These dimensions are all important to understanding experience – as a practitioner, I make judgements about when it is appropriate to encourage writing in a different direction.
(b) *Pain/distress – positive aspects of life – as above* There is evidence that it is important to acknowledge a sense of victimhood before beginning to write a new story.
(c) *Past – present – future* Again all are important but for example, the very elderly often appreciate writing that stays in the moment, especially nature writing.

Settings

My experience with TW includes the following health-care settings in which patients had LTCs, and we worked in groups unless otherwise stated:

1. stroke rehabilitation unit – some group work and one-to-one at the bedside
2. Arts for Older People – in care homes
3. Age Concern day centre
4. day treatment centre for people with severe and enduring mental illness
5. primary care – a health centre attached to a GP practice
6. one-to-one with a dementia patient in her home (referred by an occupational therapist) and, subsequently, on a psychogeriatric inpatient ward.

I have also worked in the following community settings in which participants have often had mental health issues, some severe and enduring, and other LTCs, but these were not the primary reason for attending. For example, the library promotional literature said service users welcome but people were not required to self-identify.

1. St Petroc's Centre, offering services for street homeless people
2. open-access sessions in public libraries
3. Adult education Writing for Self-Discovery courses
4. Truro Cathedral (was writer-in-residence in 2006).

I also supervised a number of pilot projects in TW by other practitioners, which included the following client groups as part of an Arts Council England-funded Arts in Health project:

1. prisoners at risk of self-harm
2. children in hospital long term
3. long-term unemployed
4. patients at a GP surgery with mild depression
5. women at a clinic for pelvic pain.

The model for my intervention is a psychosocial rather than medical one. However, the outcomes can be measured in medical terms.

There follows a couple of examples that might exemplify some of approaches, justifications and outcomes:

- On the stroke unit, I was part of a multi-art form team offering afternoon sessions for a year as a way of preventing boredom and depression, which, in turn, had an impact on motivation to get well, which, in turn, impacts on length of stay. Elevated mood was seen as a way of making it more likely patients would do the physiotherapy prescribed, for example.

The different art forms worked best with different patients but one characteristic of the writing was that it enabled catharsis and safe expression of emotions, such as despair and hopelessness, which were not permitted with medical staff or family: permission to be oneself is a characteristic of TW.

The average length of time on the unit was 96 days; to justify the intervention financially, this would need to reduce by 4.4 days per patient. The full report is available from: www.artsforhealthcornwall.org.uk/wp-content/uploads/2010/10/Arts-for-Stroke-Rehabilitation-Evaluation.pdf

- On the Arts for Older People project in care homes (also an Arts for Health Cornwall and Isles of Scilly initiative), the improvements were mostly social and psychological – I feel all twinkly (care home resident) – but there are benefits from just moving residents into a group setting that indirectly led to more interaction and motivation to be more mobile, which, in turn, might help with constipation and the other common problems of being sedentary (summarised as poetry makes you poo).

The work can also change perceptions and lead to better care. One participant, relatively young, a retired headmaster, who had had a stroke and was severely depressed, was wheeled in to weekly care home sessions and never spoke nor made eye contact until the sixth session when he contributed one word and then smiled; subsequently, speech therapy was accessed and he made considerable progress.

Victoria Field, 9 May 2013

Appendix 2 Realist synthesis: expert practitioners' feedback

TABLE 76 Carol Ross: views on how TW was meant to work, for whom and why

INTERVENTION PROCESS/ASPECTS OF THE INTERVENTION: What do you do and why?	RECRUITMENT/SUITABILITY: Who is it suitable for and why?	OUTCOMES IMPACT: What do you hope to achieve and why?
Note on duration of writing: In my sessions in MH units, the writing done in the exercises listed below lasts from 2-minute bursts to 15 minutes. Most often writing is 5–10 minutes in duration and 25–30 minutes in total for a 1-hour session (very brief writing is the subject of this research article: Burton and King[152])		
Writing about positive experiences, or positive aspects of situations *Why*: People with MH problems can become totally focused on their problems and lose interest in their normal life. I have been influenced by the research of Laura King and collaborators (e.g. Burton and King,[153,154] Mackenzie *et al.*[155])	Flexible enough to be used in PICU and adult and older people's MH units. The technique is good for most MH problems, but I do not use, or else use with caution, when people are severely depressed because they can turn even positive writing around to be negative	Increased positivity and motivation Lifted mood Rediscovery of remembered interests and pleasures Focus on exceptions to their problem-saturated life Hope
Mindful writing about the world – notice something in the world and write to describe it in detail *Why*: Mindfulness is recognised to be useful in MH conditions and has been incorporated into therapies such as Dialectical Behaviour Therapy (McKay *et al.*,[156] chapter 3)	Very helpful in all of the MH units in which I work, and something I recommend as daily practice. I use an adapted form frequently in PICU – writing to describe large landscape photographs. Especially useful when someone is experiencing symptoms of mania, psychosis, anxiety, agitation, stress	Calming Increased mental focus Increased interest in the real world Grounding External perspective Respite/distraction
Mindful expressive writing – how I feel right now In a ward situation I would say scan body from toes to top of head writing about how each part of the body feel, and then move on to write about thoughts and feelings right now *Why*: Mindfulness is recognised to be useful in MH conditions and has been incorporated into therapies such as Dialectical Behaviour Therapy (McKay *et al.*,[156] chapter 3). See also Poon and Danoff-Burg[157]	Not something I use in PICU or, so far, with older people but I do use it in the general adult MH unit with people who are well enough to manage to do it. When these individuals are sufficiently recovered, I recommend this, along with mindful writing about the world, as daily practice to people with MH issues. Many people who find meditation difficult are able to do mindful writing instead	Calming Shift of focus from past/present worries to the here and now Insight Clarification of thoughts and feelings With regular practice can look back at how things have changed
Creating a fictional character and writing about them. I start with a variety of prompts such as photographs of (unknown) people, pieces of fabric, a character questionnaire *Why*: To raise awareness of others' lives and shift focus away from self. No reference – I developed this one based on my own observations of MH inpatients	I find this useful in all of the MH units in which I work. Especially useful where someone is completely wrapped up in themselves and their own problems. I have found this useful in individuals with MH problems from severe depression to personality disorder to paranoid schizophrenia	Perspective shift away from self and own problems External focus Could help with emotional connections and relationships Respite/distraction

continued

TABLE 76 Carol Ross: views on how TW was meant to work, for whom and why (*continued*)

INTERVENTION PROCESS/ASPECTS OF THE INTERVENTION: What do you do and why?	RECRUITMENT/SUITABILITY: Who is it suitable for and why?	OUTCOMES IMPACT: What do you hope to achieve and why?
Neutral writing exercises that I expect will elicit *memories* in many individuals, e.g. older people writing about objects they would have used in the past *Why*: This is a low pressure way of eliciting memories – rather than show an object and asking people to write about a memory evoked by the object, I ask individuals to write about the object and what it makes them think of	Suitable in all MH units as above but particularly helpful with older people and people with Alzheimer's disease if they are able to do it	Stimulation of memory Enjoyment Comfort Social benefits – past experiences the individual remembers can then form topics of conversation with family/visitors/other patients and so help with emotional connections and relationships
Second- and third-person writing and unsent letters This type of writing is very varied, e.g. someone could write a letter from a future version of him/her, who is well, to a person who helped and inspired them in their recovery, or someone could write a third-person account of a conversation from the other person's point of view *Why*: To change perspective in some way, e.g. externalising a problem. Example reference: East *et al*.[158]	Very useful in MH settings. I do not use often in PICU because the inpatients tend to be too unwell to do this sort of writing. I have found this type of writing helpful with people with different problems from personality disorder to bereavement. Some voice-hearing patients find it helpful to write letters to their voice, for example	Insight Externalisation of problem Closure Catharsis Acceptance Empathy Hope Perspective shift Could help with emotional connections and relationships
Visualisation writing, e.g. imagining oneself into a landscape or building or on a journey I prompt the writing with a photograph or a short piece of writing about their favourite way of travelling, or (occasionally) with a guided visualisation *Why*: Stimulating the imagination, a positive flight of fancy, a visit to a world outside the ward environment	I often use variations on this idea with working age MH inpatients, and have had some success even with someone who was severely depressed	Stimulating interest in the world Motivation Respite/distraction
Writing in response to a fairly **random prompt** such as single words, symbols, shapes, colours Often the writing is freewriting (writing fast without stopping to think or correct anything) *Why*: Very flexible, minimal structure, freeing up the writing and allowing the individual to write whatever comes into their mind	I use this in the adult MH unit mainly, but also with some patients in PICU. This type of writing, e.g. using symbols and metaphor, can be especially useful with people who have schizophrenia. However, I would not use where individuals are clearly manic, psychotic or voice hearing at the time of the session	It's difficult to predict what the effects will be with this sort of exercise but it can bring out unexpected/subconscious thoughts and can spark an interest in doing more writing – which can be helpful Could help with freeing up mental blocks

TABLE 76 Carol Ross: views on how TW was meant to work, for whom and why (*continued*)

INTERVENTION PROCESS/ASPECTS OF THE INTERVENTION: What do you do and why?	RECRUITMENT/SUITABILITY: Who is it suitable for and why?	OUTCOMES IMPACT: What do you hope to achieve and why?
Poetry therapy – writing in response to selected published poems *Why*: They can reflect common experiences, clear or metaphorical. Also thought provoking and stimulates group discussion	Suitable for anyone in a MH unit who is capable of doing the exercise	Recognition that others have similar problems Stimulating interest in the world apart from self and problems Self-expression Insight Hope Positivity
Re-writing a memory – not to change or block it but to express the memory with a shift of perspective, e.g. re-writing a memory to show how the individuals strengths helped them get through it *Why*: To shift perspective about a traumatic or difficult memory so that it can become less dominant	I believe this could be very useful in conditions such as PTSD and for survivors of abuse (as many MH patients are). This kind of idea, although not written, is at the heart of narrative therapy. I have suggested this kind of writing to one or two individuals as something they might try for themselves, but have not as yet used it in a group setting	Externalising and reducing the emphasis on problems Seeing the past from a more helpful perspective Seeing the future in a more hopeful light
Structured journal techniques, e.g. write one word every hour, for a whole day, which sums up how you feel right then, or write a daily journal containing only positives	Suitable for anyone, I would think, as long as the techniques are tailored for the individual. Unstructured journals can also be very helpful too – pouring out one's thoughts and feelings to an impartial observer. I would worry about people, who are of completely negative thinking, writing an unstructured journal, however, because writing down negative thoughts repeatedly is likely to reinforce them	Depends on technique used: self-expression, positive thinking, motivation, insight, catharsis, clarification of thoughts and feelings, coming to terms with things
Creative writing in a group, e.g. collaborative poems, each writing the story depicted by a picture *Why*: To give participants a thought-provoking, surprising, enjoyable group experience	This is a bit different. This kind of exercise works best with a group in which all participants are well enough, and thinking clearly enough, to manage it. Of all the exercises, this one is as much about group members sharing and relating to each other as about what is actually written in the exercise	Lifted mood Increased self-esteem and confidence Group bonding External focus Could help with emotional connections and relationships Respite/distraction

continued

TABLE 76 Carol Ross: views on how TW was meant to work, for whom and why (*continued*)

INTERVENTION PROCESS/ASPECTS OF THE INTERVENTION: What do you do and why?	RECRUITMENT/SUITABILITY: Who is it suitable for and why?	OUTCOMES IMPACT: What do you hope to achieve and why?
Benefit finding about an illness or problem, for example what are you able to do, or do more of, since having the illness that you couldn't do previously *Why*: Change perception of illness to help with acceptance. Example references: King and Milner;[159] Danoff-Burg and Mosher[160]	Not something I use with MH inpatients but I can see it could be helpful with some long-term physical conditions	Increased positivity and motivation Improved acceptance of illness Decreased focus on illness Insight
Head chatter – writing everything that comes into your head for a timed period, say 5 minutes *Why*: To clear the mind, for example before going to bed or before doing a writing session	I believe this to be a good daily journal practice for many people, e.g. doing this late evening every day could help with sleep. However, I never use this in MH units because it is too unstructured, which means it is difficult for most inpatients to do and could well give opportunity for a voice or negative thoughts to dominate the writing	Clearing the mind of a confused jumble of thoughts Calming Increased mental focus Can bring out unexpected/ subconscious thoughts and help with freeing up mental blocks
Expressive writing about illness/ problem/trauma – write your deepest thoughts about . . . along the lines of Pennebaker and Beal[1] *Why*: Expressing one's deepest thoughts and feelings in writing can be easier than speaking them aloud	Not something I use in inpatient MH units but I can see that it could be helpful, e.g. in long-term physical conditions and with undisclosed trauma. In inpatient MH units, I believe this kind of writing should be either at the individual's instigation or that of his/her clinical psychologist/psychiatrist and under that clinician's guidance. Some individuals write in this way during sessions or in between group sessions, but not at my direction. Some individuals ask me to pass this type of writing to their named nurse, or to shred it, which I do	Insight Catharsis Getting to the point of being able to talk to therapist Improved self-expression Clarification of thoughts and feelings Coming to terms with illness/ problem Acceptance

MH, mental health; PICU, paediatric intensive care unit.

TABLE 77 Victoria Field: views on how TW was meant to work, for whom and why

RECRUITMENT/SUITABILITY: Who is it suitable for and why?	INTERVENTION PROCESS/ASPECTS OF THE INTERVENTION: What do you do and why?	OUTCOMES IMPACT: What do you hope to achieve and why?
General population with mild anxiety and/or depression: Can be due to ongoing mental health problems, life circumstances, such as bereavement, divorce, or caring responsibilities, or LTCs or adjustment to disability or just being at that difficult stage between birth and death	**Reflective writing** – a whole variety of writing prompts (including lists, free writing, acrostics, dialogues, mind maps, responding to images, music, environment, realia, fictionalising) – this writing may be kept private or shared • Using the reflective writing as a means of processing, e.g. using deeper prompts, questioning the material that arises, proprioreceptive writing. This stage is important to prevent someone writing themselves into a dark place and where the *interactive* aspect of the process is crucial • Using published poems as stimuli for writing • Doing all of the above in a group	Connection with self and inner processes • Catharsis • Emotional expression • Ability to observe self from outside • Reality orientation • Encouraging mindfulness • Encouraging clearer articulation Reducing black-and-white thinking • Introducing possibilities • Establishing mastery over both writing and self • Promoting resilience • Promoting a sense of agency Isoprinciple, i.e. other people have similar feelings, which offers solace • Pleasure in responding to an artistic artefact • Containment of complex feelings • Tolerance of ambiguity • Developing AND-AND thinking – especially useful with LTCs • Exercise of imagination • Ability to reflect on experience rather than remain within it • Ability to transform experience into art Sense of connection – with self, great literature, the human condition • Sense of community endeavour • Being heard, given equal status • Validation of emotions – happy and sad • Pleasure and surprise • Sense of common humanity AND individuality

Appendix 3 Original systematic review searches

TABLE 78 Databases and time span of the searches

Database	Time span of the search (mapping search)	Provider (platform)
AMED	From 1985 to March 2013	Ovid
ASSIA	1987–week 12 2013	ProQuest
CAB Abstracts	From 1973 to week 11 2013	Ovid
The Campbell Collaboration Library of Systematic Reviews	From 2005 to Issue #4, Volume 9 2013	The Campbell Library
CENTRAL	From 1992 to Issue 1 of 12, January 2013	The Cochrane Library
CDSR	From 1992 to Issue 2 of 12, February 2013	The Cochrane Library
CINAHL	1981–week 12 March 2013	EBSCO*host*
DARE	From 1994 to Issue 1 of 4, January 2013	The Cochrane Library
EMBASE	From 1974 to 11 March 2013	Ovid
ERIC	1966–18 March 2013	ProQuest
HTA Database	Issue 1 of 4, January 2013	The Cochrane Library
Linguistic and Language Behaviour Abstracts (LLBA)	1973–18 March 2013	ProQuest
MEDLINE	From 1946 to 11 March 2013	Ovid
NHS EED	From 1995 to February 2013	The Cochrane Library
PEDro	1929–4 March 2013	Centre for Evidence-Based Physiotherapy/University of Sydney
Periodicals Index Online (PIO)	1665–95	ProQuest
PILOTS	1871–18 March 2013	ProQuest
PsycINFO	From 1806 to March week 2 2013	Ovid
SSCI	1970–15 March 2013	Web of Knowledge
SCI	1970–15 March 2013	Web of Knowledge
Zetoc	1993–18 March 2013	Mimas

CAB Abstracts: the monitoring and search service for global research publications; NHS EED, NHS Economic Evaluation Database.
Zetoc: the monitoring and search service for global research publications.

Search strategy

TABLE 79 MEDLINE (via Ovid) searches

#	Search term
1	chronic*.mp
2	((persistent or (long* adj term) or ongoing or degenerative) adj3 (disease* or disab* or ill* or condition* or (health adj condition*) or (medical adj condition*) or impairment)).tw.
3	LONG TERM CARE/
4	(long* adj term adj care).tw.
5	exp CARDIOVASCULAR DISEASE/
6	((heart adj disease*) or (heart adj failure) or (myocardial adj ischemia) or (angina adj pectoris) or (coronary adj disease*) or (coronary adj artery adj disease*) or (myocardial adj infarction) or hypertension or (high adj blood adj pressure)).tw.
7	exp LUNG DISEASES OBSTRUCTIVE/
8	((obstructive adj lung adj disease*) or (obstructive adj pulmonary adj disease*) or copd or asthma or bronchitis).tw.
9	exp EMPHYSEMA/
10	exp PULMONARY EMPHYSEMA/
11	emphysema.tw.
12	exp CEREBROVASCULAR DISORDERS/
13	((cerebrovascular adj disease*) or (cerebrovascular adj disorder*) or (brain adj ischemia) or (cerebral adj infarction) or (carotid adj artery adj disease*) or stroke or epilep*).tw.
14	exp NEURODEGENERATIVE DISEASES/
15	(neurodegenerative or (Huntington* adj disease) or (Parkinson* adj disease) or (amyotrophic adj lateral adj sclerosis) or (motor adj neuron* adj disease)).tw.
16	exp MULTIPLE SCLEROSIS/
17	(multiple adj sclerosis).tw.
18	exp INFLAMMATORY BOWEL DISEASES/
19	IRRITABLE BOWEL SYNDROME/
20	((inflammatory adj bowel) or (irritable adj bowel)).tw.
21	Kidney disease/
22	((renal adj failure*) or (renal adj insufficienc*) or (kidney adj failure*) or (kidney adj insuffcienc*)).tw.
23	DIABETES MELLITUS/
24	(diabetes or diabetic*).tw.
25	exp ARTHRITIS/
26	exp RHEUMATIC DISEASE/
27	(arthritis or osteoarthritis or rheumati* or fibromyalgia).tw.
28	exp low back pain/
29	exp backache/
30	NECK PAIN/
31	((back adj pain) or (neck adj pain)).tw.
32	exp OSTEOPOROSIS/
33	osteoporosis.tw.

TABLE 79 MEDLINE (via Ovid) searches (*continued*)

#	Search term
34	exp THYROID DISEASE/
35	exp NEOPLASMS/
36	(cancer* or oncolog* or neoplasm* or carcinom* or tumo?r* or malignan*).tw.
37	exp HIV INFECTIONS/
38	((hiv adj infect*) or (hiv adj disease*)).tw.
39	ENDOMETRIOSIS/
40	endometriosis.tw.
41	exp MENTAL DISORDERS/
42	DEPRESSION/
43	((mental* adj ill*) or (mental adj disorder*) or (mental adj disease*) or (mental adj distress*) or (mental adj disab*) or (mental adj problem*) or (mental adj health*) or (mental adj patient*) or (mental adj treatment) or (psychiatr* adj ill*) or (psychiatr* adj disorder*) or (psychiatr* adj disease*) or (psychiatr* adj distress*) or (psychiatr* adj disab*) or (psychiatr* adj problem*) or (psychiatr* adj health*) or (psychiatr* adj patient*) or (psychiatr* adj treatment) or (psychological* adj ill*) or (psychological*ADJ and disorder*) or (psychological* adj disease*) or (psychological* adj distress*) or (psychological* adj disab*) or (psychological* adj problem*) or (psychological* adj health*) or (psychological* adj patient*) or (psychological* adj treatment)).tw.
44	((personality adj disorder*) or (mood adj disorder*) or (dysthymic adj disorder*) or (cognit* adj disorder*) or (anxiety adj disorder*) or (stress adj disorder*) or (eating adj disorder*) or (adjustment adj disorder*) or (reactive adj disorder*) or (somatoform adj disorder*) or (conversion adj disorder*) or (behavio* adj disorder*) or (percept* adj disorder*) or (psycho* adj disorder*) or (impulse adj control adj disorder*) or (development* adj disorder*)).tw.
45	(psychos#s or psychotic* or paranoi* or schizo* or neuros#s or neurotic* or delusion* or depression or depressive or bipolar or mania or manic or obsessi* or compulsi* or panic or phobic or phobia or anorexia or bulimia or neurastheni* or dissociative or affective or borderline or narcissis* or suicid* or (self adj injur*) or (self adj harm) or dementia or Alzheimer*).tw.
46	or/1-45
47	((writ* adj therap*) or (therapeutic* adj writ*) or (writ* adj cure*) or (writ* adj heal*) or (self adj management adj writ*) or (self adj help adj writ*) or (self adj conceal* adj writ*) or (self adj disclosure adj writ*) or (creative adj writ*) or (expressi* adj writ*) or (emoti* adj writ*) or (EMO adj writ*) or (sensitiv* adj writ*) or (sensor* adj writ*) or (reactive adj writ*) or (reflective adj writ*) or (descriptive adj writ*) or (biography* adj writ*) or (workshop adj writ*) or (epistolar* adj writ*) or (fiction* adj writ*) or (paradigm adj writ*) or (group adj writ*) or (letter* adj writ*) or (Pennebaker adj writ*) or (reminiscence adj review*) or (story adj writ*) or (stories adj writ*) or blog* or forum* or (memoir* adj writ*) or (journal* adj writ*) or (narrative* adj writ*) or (hand adj writ*) or (poe* adj writ*) or (health adj status adj writ*) or "program* writ*").tw.
48	((emoti* adj disclosure adj tip*) or (emoti* adj disclosure adj key*) or (emotional adj disclosure adj writ*) or (emotio* adj disclosure) or catharsis).tw.
49	((express* or creativ* or emoti* or sensitiv* or reflect* or therap* or disclos* or conceal* or manag* or pennebaker or cathar* or "writing paradigm") adj2 (writ* or "hand writ*" or blog or epistol* or letter* or story or stories or memoir* or narrat* or diary or diaries or poem or poet* or reminisc* or "life review" or "life writing" or journaling or "Journal Writing" or ("health status" adj2 writ*) or "program* writ*")).tw.
50	46 and 49
51	47 and 48
52	Writing/
53	46 and 52
54	50 or 51 or 52

TABLE 80 EMBASE (via Ovid) searches

#	Search term
1	chronic*.mp.
2	((persistent or (long* adj term) or ongoing or degenerative) adj3 (disease* or disab* or ill* or condition* or (health adj condition*) or (medical adj condition*) or impairment)).tw.
3	LONG TERM CARE/
4	(long* adj term adj care).tw.
5	exp CARDIOVASCULAR DISEASE/
6	((heart adj disease*) or (heart adj failure) or (myocardial adj ischemia) or (angina adj pectoris) or (coronary adj disease*) or (coronary adj artery adj disease*) or (myocardial adj infarction) or hypertension or (high adj blood adj pressure)).tw.
7	exp LUNG DISEASES OBSTRUCTIVE/
8	((obstructive adj lung adj disease*) or (obstructive adj pulmonary adj disease*) or copd or asthma or bronchitis).tw.
9	exp EMPHYSEMA/
10	exp PULMONARY EMPHYSEMA/
11	emphysema.tw.
12	exp CEREBROVASCULAR DISORDERS/
13	((cerebrovascular adj disease*) or (cerebrovascular adj disorder*) or (brain adj ischemia) or (cerebral adj infarction) or (carotid adj artery adj disease*) or stroke or epilep*).tw.
14	exp NEURODEGENERATIVE DISEASES/
15	(neurodegenerative or (Huntington* adj disease) or (Parkinson* adj disease) or (amyotrophic adj lateral adj sclerosis) or (motor adj neuron* adj disease)).tw.
16	exp MULTIPLE SCLEROSIS/
17	(multiple adj sclerosis).tw.
18	exp INFLAMMATORY BOWEL DISEASES/
19	IRRITABLE BOWEL SYNDROME/
20	((inflammatory adj bowel) or (irritable adj bowel)).tw.
21	Kidney disease/
22	((renal adj failure*) or (renal adj insufficienc*) or (kidney adj failure*) or (kidney adj insuffcienc*)).tw.
23	DIABETES MELLITUS/
24	(diabetes or diabetic*).tw.
25	exp ARTHRITIS/
26	exp RHEUMATIC DISEASE/
27	(arthritis or osteoarthritis or rheumati* or fibromyalgia).tw.
28	exp low back pain/
29	exp backache/
30	NECK PAIN/
31	((back adj pain) or (neck adj pain)).tw.
32	exp OSTEOPOROSIS/
33	osteoporosis.tw.
34	exp THYROID DISEASE/

TABLE 80 EMBASE (via Ovid) searches (*continued*)

#	Search term
35	exp NEOPLASMS/
36	(cancer* or oncolog* or neoplasm* or carcinom* or tumo?r* or malignan*).tw.
37	exp HIV INFECTIONS/
38	((hiv adj infect*) or (hiv adj disease*)).tw.
39	ENDOMETRIOSIS/
40	endometriosis.tw.
41	exp MENTAL DISORDERS/
42	DEPRESSION/
43	((mental* adj ill*) or (mental adj disorder*) or (mental adj disease*) or (mental adj distress*) or (mental adj disab*) or (mental adj problem*) or (mental adj health*) or (mental adj patient*) or (mental adj treatment) or (psychiatr* adj ill*) or (psychiatr* adj disorder*) or (psychiatr* adj disease*) or (psychiatr* adj distress*) or (psychiatr* adj disab*) or (psychiatr* adj problem*) or (psychiatr* adj health*) or (psychiatr* adj patient*) or (psychiatr* adj treatment) or (psychological* adj ill*) or (psychological*ADJ and disorder*) or (psychological* adj disease*) or (psychological* adj distress*) or (psychological* adj disab*) or (psychological* adj problem*) or (psychological* adj health*) or (psychological* adj patient*) or (psychological* adj treatment)).tw.
44	((personality adj disorder*) or (mood adj disorder*) or (dysthymic adj disorder*) or (cognit* adj disorder*) or (anxiety adj disorder*) or (stress adj disorder*) or (eating adj disorder*) or (adjustment adj disorder*) or (reactive adj disorder*) or (somatoform adj disorder*) or (conversion adj disorder*) or (behavio* adj disorder*) or (percept* adj disorder*) or (psycho* adj disorder*) or (impulse adj control adj disorder*) or (development* adj disorder*)).tw.
45	(psychos#s or psychotic* or paranoi* or schizo* or neuros#s or neurotic* or delusion* or depression or depressive or bipolar or mania or manic or obsessi* or compulsi* or panic or phobic or phobia or anorexia or bulimia or neurastheni* or dissociative or affective or borderline or narcissis* or suicid* or (self adj injur*) or (self adj harm) or dementia or Alzheimer*).tw.
46	or/1-45
47	((writ* adj therap*) or (therapeutic* adj writ*) or (writ* adj cure*) or (writ* adj heal*) or (self adj management adj writ*) or (self adj help adj writ*) or (self adj conceal* adj writ*) or (self adj disclosure adj writ*) or (creative adj writ*) or (expressi* adj writ*) or (emoti* adj writ*) or (EMO adj writ*) or (sensitiv* adj writ*) or (sensor* adj writ*) or (reactive adj writ*) or (reflective adj writ*) or (descriptive adj writ*) or (biography* adj writ*) or (workshop adj writ*) or (epistolar* adj writ*) or (fiction* adj writ*) or (paradigm adj writ*) or (group adj writ*) or (letter* adj writ*) or (Pennebaker adj writ*) or (reminiscence adj review*) or (story adj writ*) or (stories adj writ*) or blog* or forum* or (memoir* adj writ*) or (journal* adj writ*) or (narrative* adj writ*) or (hand adj writ*) or (poe* adj writ*) or (health adj status adj writ*) or "program* writ*").tw.
48	((emoti* adj disclosure adj tip*) or (emoti* adj disclosure adj key*) or (emotional adj disclosure adj writ*) or (emotio* adj disclosure) or catharsis).tw.
49	((express* or creativ* or emoti* or sensitiv* or reflect* or therap* or disclos* or conceal* or manag* or pennebaker or cathar* or "writing paradigm") adj2 (writ* or "hand writ*" or blog or epistol* or letter* or story or stories or memoir* or narrat* or diary or diaries or poem or poet* or reminisc* or "life review" or "life writing" or journaling or "Journal Writing" or ("health status" adj2 writ*) or "program* writ*")).tw.
50	46 and 49
51	47 and 48
52	Writing/
53	46 and 52
53	50 or 51 or 53

TABLE 81 The Cochrane Library: CENTRAL, DARE and NHS EED searches

#	Search term
1	chronic*
2	((persistent or "long* term" or ongoing or degenerative) near/2 (disease* or disab* or ill* or condition* or "health condition*" or "medical condition*" or impairment))
3	MeSH descriptor: [Long-Term Care] explode all trees
4	long* term care
5	MeSH descriptor: [Cardiovascular Diseases] explode all trees
6	"heart disease*" or "heart failure" or "myocardial ischemia" or "angina pectoris" or "coronary disease*" or "coronary artery disease*" or "myocardial infarction*" or hypertension or "high blood pressure"
7	MeSH descriptor: [Lung Diseases, Obstructive] explode all trees
8	"obstructive lung disease*" or "obstructive pulmonary disease*" or copd or asthma or bronchitis
9	MeSH descriptor: [Emphysema] explode all trees
10	MeSH descriptor: [Pulmonary Emphysema] explode all trees
11	emphysema
12	MeSH descriptor: [Cerebrovascular Disorders] explode all trees
13	"cerebrovascular disease*" or "cerebrovascular disorder*" or "brain ischemia" or "cerebral infarction" or stroke or epilep*
14	MeSH descriptor: [Neurodegenerative Diseases] explode all trees
15	neurodegenerative or "Huntington* disease" or "Parkinson* disease" or "amyotrophic lateral sclerosis" or "motor neuron* disease"
16	MeSH descriptor: [Multiple Sclerosis] explode all trees
17	Multiple Sclerosis
18	MeSH descriptor: [Irritable Bowel Syndrome] explode all trees
19	MeSH descriptor: [Inflammatory Bowel Diseases] explode all trees
20	inflammatory bowel or "irritable bowel"
21	MeSH descriptor: [Kidney Diseases] explode all trees
22	MeSH descriptor: [Renal Insufficiency] explode all trees
23	"renal failure*" or "renal insufficienc*" or "kidney failure*" or "kidney insufficienc*"
24	MeSH descriptor: [Diabetes Mellitus] explode all trees
25	diabetes or diabetic*
26	MeSH descriptor: [Arthritis] explode all trees
27	MeSH descriptor: [Arthritis, Rheumatoid] explode all trees
28	arthritis or osteoarthritis or rheumati* or fibromyalgia
29	MeSH descriptor: [Back Pain] explode all trees
30	MeSH descriptor: [Neck Pain] explode all trees
31	"back pain" or "neck pain"
32	MeSH descriptor: [Osteoporosis] explode all trees
33	Osteoporosis

TABLE 81 The Cochrane Library: CENTRAL, DARE and NHS EED searches (*continued*)

#	Search term
34	MeSH descriptor: [Thyroid Diseases] explode all trees
35	MeSH descriptor: [Neoplasms] explode all trees
36	cancer* or oncolog* or neoplasm* or carcinom* or tumo?r* or malignan*
37	MeSH descriptor: [HIV] explode all trees
38	"hiv infect*" or "hiv disease*"
39	MeSH descriptor: [Endometriosis] explode all trees
40	endometriosis
41	MeSH descriptor: [Mental Disorders] explode all trees
42	MeSH descriptor: [Depression] explode all trees
43	"mental* ill*" or "mental disorder*" or "mental disease*" or "mental distress*" or "mental disab*" or "mental problem*" or "mental health*" or "mental patient*" or "mental treatment" or "psych* ill*" or "psych* disorder*" or "psych* disease*" or "psych* distress*" or "psych* disab*" or "psych* problem*" or "psych* health*" or "psych* patient*" or "psych* treatment"
44	"personality disorder*" or "mood disorder*" or "dysthymic disorder*" or "cognit* disorder*" or "anxiety disorder*" or "stress disorder*" or "eating disorder*" or "Nustment disorder*" or "reactive disorder*" or "somatoform disorder*" or "conversion disorder*" or "behavio* disorder*" or "percept* disorder*" or "psycho* disorder*" or "impulse control disorder*" or "development* disorder*"
45	psychos?s or psychotic* or paranoi* or schizo* or neuros?s or neurotic* or delusion* or depression or depressive or bipolar or mania or manic or obsessi* or compulsi* or panic or phobic or phobia or anorexia or bulimia or neurastheni* or dissociative or affective or borderline or narcissis* or suicid* or "self injur*" or "self harm" or dementia or Alzheimer*
46	#1 or #2 or #3 or #4 or #5 or #6 or #7 or #8 or #9 or #10 or #11 or #12 or #13 or #14 or #15 or #16 or #17 or #18 or #19 or #20 or #21 or #22 or #23 or #24 or #25 or #26 or #27 or #28 or #29 or #30 or #31 or #32 or #33 or #34 or #35 or #36 or #37 or #38 or #39 or #40 or #41 or #42 or #43 or #44 or #45
47	((express* or creativ* or emoti* or sensitiv* or reflect* or therap* or disclos* or conceal* or manag* or pennebaker or cathar* or "writing paradigm") near/2 (writ* or "hand writ*" or blog or epistol* or letter* or story or stories or memoir* or narrat* or diary or diaries or poem or poet* or reminisc* or "life review" or "life writing" or journaling or "Journal Writing" or ("health status" adj2 writ*) or "program* writ*"))
48	MeSH descriptor: [Writing] this term only
49	#47 or #48
50	#46 and #49

TABLE 82 PsycINFO (via Ovid) searches

#	Search term
1	chronic*.mp.
2	((persistent or (long* adj term) or ongoing or degenerative) adj3 (disease* or disab* or ill* or condition* or (health adj condition*) or (medical adj condition*) or impairment)).tw.
3	LONG TERM CARE/
4	(long* adj term adj care).tw.
5	exp cardiovascular disorders/
6	((heart adj disease*) or (heart adj failure) or (myocardial adj ischemia) or (angina adj pectoris) or (coronary adj disease*) or (coronary adj artery adj disease*) or (myocardial adj infarction) or hypertension or (high adj blood adj pressure)).tw.
7	exp lung disorders/
8	((obstructive adj lung adj disease*) or (obstructive adj pulmonary adj disease*) or copd or asthma or bronchitis).tw.
9	exp EMPHYSEMA/
10	exp PULMONARY EMPHYSEMA/
11	emphysema.tw.
12	exp CEREBROVASCULAR DISORDERS/
13	((cerebrovascular adj disease*) or (cerebrovascular adj disorder*) or (brain adj ischemia) or (cerebral adj infarction) or (carotid adj artery adj disease*) or stroke or epilep*).tw.
14	exp NEURODEGENERATIVE DISEASES/
15	(neurodegenerative or (Huntington* adj disease) or (Parkinson* adj disease) or (amyotrophic adj lateral adj sclerosis) or (motor adj neuron* adj disease)).tw.
16	exp MULTIPLE SCLEROSIS/
17	(multiple adj sclerosis).tw.
18	exp colon disorders/
19	IRRITABLE BOWEL SYNDROME/
20	((inflammatory adj bowel) or (irritable adj bowel)).tw.
21	Kidney disease/
22	((renal adj failure*) or (renal adj insufficienc*) or (kidney adj failure*) or (kidney adj insuffcienc*)).tw.
23	DIABETES MELLITUS/
24	(diabetes or diabetic*).tw.
25	exp ARTHRITIS/
26	exp rheumatoid arthritis/
27	exp joint disorders/
28	(arthritis or osteoarthritis or rheumati* or fibromyalgia).tw.
29	exp back pain/
30	chronic pain/
31	((back adj pain) or (neck adj pain)).tw.
32	exp OSTEOPOROSIS/
33	osteoporosis.tw.

TABLE 82 PsycINFO (via Ovid) searches (*continued*)

#	Search term
34	exp thyroid disorders/
35	exp NEOPLASMS/
36	(cancer* or oncolog* or neoplasm* or carcinom* or tumo?r* or malignan*).tw.
38	((hiv adj infect*) or (hiv adj disease*)).tw.
39	gynecological disorders/
40	endometriosis.tw.
41	exp MENTAL DISORDERS/
42	DEPRESSION/
43	((mental* adj ill*) or (mental adj disorder*) or (mental adj disease*) or (mental adj distress*) or (mental adj disab*) or (mental adj problem*) or (mental adj health*) or (mental adj patient*) or (mental adj treatment) or (psychiatr* adj ill*) or (psychiatr* adj disorder*) or (psychiatr* adj disease*) or (psychiatr* adj distress*) or (psychiatr* adj disab*) or (psychiatr* adj problem*) or (psychiatr* adj health*) or (psychiatr* adj patient*) or (psychiatr* adj treatment) or (psychological* adj ill*) or (psychological*ADJ and disorder*) or (psychological* adj disease*) or (psychological* adj distress*) or (psychological* adj disab*) or (psychological* adj problem*) or (psychological* adj health*) or (psychological* adj patient*) or (psychological* adj treatment)).tw.
44	((personality adj disorder*) or (mood adj disorder*) or (dysthymic adj disorder*) or (cognit* adj disorder*) or (anxiety adj disorder*) or (stress adj disorder*) or (eating adj disorder*) or (adjustment adj disorder*) or (reactive adj disorder*) or (somatoform adj disorder*) or (conversion adj disorder*) or (behavio* adj disorder*) or (percept* adj disorder*) or (psycho* adj disorder*) or (impulse adj control adj disorder*) or (development* adj disorder*)).tw.
45	(psychos#s or psychotic* or paranoi* or schizo* or neuros#s or neurotic* or delusion* or depression or depressive or bipolar or mania or manic or obsessi* or compulsi* or panic or phobic or phobia or anorexia or bulimia or neurastheni* or dissociative or affective or borderline or narcissis* or suicid* or (self adj injur*) or (self adj harm) or dementia or Alzheimer*).tw.
46	or/1-45
47	((writ* adj therap*) or (therapeutic* adj writ*) or (writ* adj cure*) or (writ* adj heal*) or (self adj management adj writ*) or (self adj help adj writ*) or (self adj conceal* adj writ*) or (self adj disclosure adj writ*) or (creative adj writ*) or (expressi* adj writ*) or (emoti* adj writ*) or (EMO adj writ*) or (sensitiv* adj writ*) or (sensor* adj writ*) or (reactive adj writ*) or (reflective adj writ*) or (descriptive adj writ*) or (biography* adj writ*) or (workshop adj writ*) or (epistolar* adj writ*) or (fiction* adj writ*) or (paradigm adj writ*) or (group adj writ*) or (letter* adj writ*) or (Pennebaker adj writ*) or (reminiscence adj review*) or (story adj writ*) or (stories adj writ*) or blog* or forum* or (memoir* adj writ*) or (journal* adj writ*) or (narrative* adj writ*) or (hand adj writ*) or (poe* adj writ*) or (health adj status adj writ*) or "program* writ*").tw.
48	((emoti* adj disclosure adj tip*) or (emoti* adj disclosure adj key*) or (emotional adj disclosure adj writ*) or (emotio* adj disclosure) or catharsis).tw.
49	((express* or creativ* or emoti* or sensitiv* or reflect* or therap* or disclos* or conceal* or manag* or pennebaker or cathar* or "writing paradigm") adj2 (writ* or "hand writ*" or blog or epistol* or letter* or story or stories or memoir* or narrat* or diary or diaries or poem or poet* or reminisc* or "life review" or "life writing" or journaling or "Journal Writing" or ("health status" adj2 writ*) or "program* writ*")).tw.
50	46 AND 49
51	47 AND 48
52	exp Creative Writing/
53	exp Journal Writing/
54	46 and (52 OR 53)
55	50 or 51 or 54

TABLE 83 Allied and Complementary Medicine Database (via Ovid) searches

#	Search term
1	chronic*.mp.
2	((persistent or (long* adj term) or ongoing or degenerative) adj3 (disease* or disab* or ill* or condition* or (health adj condition*) or (medical adj condition*) or impairment)).tw.
3	LONG TERM CARE/
4	(long* adj term adj care).tw.
5	exp CARDIOVASCULAR DISEASE/
6	((heart adj disease*) or (heart adj failure) or (myocardial adj ischemia) or (angina adj pectoris) or (coronary adj disease*) or (coronary adj artery adj disease*) or (myocardial adj infarction) or hypertension or (high adj blood adj pressure)).tw.
7	exp LUNG DISEASES OBSTRUCTIVE/
8	((obstructive adj lung adj disease*) or (obstructive adj pulmonary adj disease*) or copd or asthma or bronchitis).tw.
9	exp EMPHYSEMA/
10	exp PULMONARY EMPHYSEMA/
11	emphysema.tw.
12	exp CEREBROVASCULAR DISORDERS/
13	((cerebrovascular adj disease*) or (cerebrovascular adj disorder*) or (brain adj ischemia) or (cerebral adj infarction) or (carotid adj artery adj disease*) or stroke or epilep*).tw.
14	exp nervous system disease/
15	(neurodegenerative or (Huntington* adj disease) or (Parkinson* adj disease) or (amyotrophic adj lateral adj sclerosis) or (motor adj neuron* adj disease)).tw.
16	exp MULTIPLE SCLEROSIS/
17	(multiple adj sclerosis).tw.
18	exp INFLAMMATORY BOWEL DISEASE/
19	IRRITABLE BOWEL SYNDROME/
20	((inflammatory adj bowel) or (irritable adj bowel)).tw.
21	Kidney disease/
22	((renal adj failure*) or (renal adj insufficienc*) or (kidney adj failure*) or (kidney adj insuffcienc*)).tw.
23	DIABETES MELLITUS/
24	(diabetes or diabetic*).tw.
25	exp ARTHRITIS/
26	exp RHEUMATIC DISEASE/
27	(arthritis or osteoarthritis or rheumati* or fibromyalgia).tw.
28	exp low back pain/
29	exp backache/
30	NECK PAIN/
31	((back adj pain) or (neck adj pain)).tw.
32	exp OSTEOPOROSIS/
33	osteoporosis.tw.
34	exp THYROID DISEASE/

TABLE 83 Allied and Complementary Medicine Database (via Ovid) searches (*continued*)

#	Search term
35	exp NEOPLASMS/
36	(cancer* or oncolog* or neoplasm* or carcinom* or tumo?r* or malignan*).tw.
37	exp HIV INFECTIONS/
38	((hiv adj infect*) or (hiv adj disease*)).tw.
39	ENDOMETRIOSIS/
40	endometriosis.tw.
41	exp MENTAL DISORDERS/
42	DEPRESSION/
43	((mental* adj ill*) or (mental adj disorder*) or (mental adj disease*) or (mental adj distress*) or (mental adj disab*) or (mental adj problem*) or (mental adj health*) or (mental adj patient*) or (mental adj treatment) or (psychiatr* adj ill*) or (psychiatr* adj disorder*) or (psychiatr* adj disease*) or (psychiatr* adj distress*) or (psychiatr* adj disab*) or (psychiatr* adj problem*) or (psychiatr* adj health*) or (psychiatr* adj patient*) or (psychiatr* adj treatment) or (psychological* adj ill*) or (psychological*ADJ and disorder*) or (psychological* adj disease*) or (psychological* adj distress*) or (psychological* adj disab*) or (psychological* adj problem*) or (psychological* adj health*) or (psychological* adj patient*) or (psychological* adj treatment)).tw.
44	((personality adj disorder*) or (mood adj disorder*) or (dysthymic adj disorder*) or (cognit* adj disorder*) or (anxiety adj disorder*) or (stress adj disorder*) or (eating adj disorder*) or (adjustment adj disorder*) or (reactive adj disorder*) or (somatoform adj disorder*) or (conversion adj disorder*) or (behavio* adj disorder*) or (percept* adj disorder*) or (psycho* adj disorder*) or (impulse adj control adj disorder*) or (development* adj disorder*)).tw.
45	(psychos#s or psychotic* or paranoi* or schizo* or neuros#s or neurotic* or delusion* or depression or depressive or bipolar or mania or manic or obsessi* or compulsi* or panic or phobic or phobia or anorexia or bulimia or neurastheni* or dissociative or affective or borderline or narcissis* or suicid* or (self adj injur*) or (self adj harm) or dementia or Alzheimer*).tw.
46	or/1-45
47	((writ* adj therap*) or (therapeutic* adj writ*) or (writ* adj cure*) or (writ* adj heal*) or (self adj management adj writ*) or (self adj help adj writ*) or (self adj conceal* adj writ*) or (self adj disclosure adj writ*) or (creative adj writ*) or (expressi* adj writ*) or (emoti* adj writ*) or (EMO adj writ*) or (sensitiv* adj writ*) or (sensor* adj writ*) or (reactive adj writ*) or (reflective adj writ*) or (descriptive adj writ*) or (biography* adj writ*) or (workshop adj writ*) or (epistolar* adj writ*) or (fiction* adj writ*) or (paradigm adj writ*) or (group adj writ*) or (letter* adj writ*) or (Pennebaker adj writ*) or (reminiscence adj review*) or (story adj writ*) or (stories adj writ*) or blog* or forum* or (memoir* adj writ*) or (journal* adj writ*) or (narrative* adj writ*) or (hand adj writ*) or (poe* adj writ*) or (health adj status adj writ*) or "program* writ*").tw.
48	((emoti* adj disclosure adj tip*) or (emoti* adj disclosure adj key*) or (emotional adj disclosure adj writ*) or (emotio* adj disclosure) or catharsis).tw.
49	((express* or creativ* or emoti* or sensitiv* or reflect* or therap* or disclos* or conceal* or manag* or pennebaker or cathar* or "writing paradigm") adj2 (writ* or "hand writ*" or blog or epistol* or letter* or story or stories or memoir* or narrat* or diary or diaries or poem or poet* or reminisc* or "life review" or "life writing" or journaling or "Journal Writing" or ("health status" adj2 writ*) or "program* writ*")).tw.
50	46 and 49
51	47 and 48
52	Writing/
53	46 and 52
54	50 or 51 or 52

TABLE 84 Published International Literature on Traumatic Stress (via ProQuest) searches

#	Search term
1	((chronic*) OR (persistent) OR (long* term) OR (ongoing) OR (degenerative))
2	(catharsis AND (writ* OR typ* OR key*)) OR ((emoti* disclos* typ*) OR (emoti* disclos* key*) OR (emotion* disclos* writ*))
3	((writ* therap*) OR (therapeutic* writ*) OR ("writ* cure*") OR ("writ* heal*") OR ("self management writ*") OR ("self help writ*") OR ("self conceal* writ*") OR ("self disclosure writ*") OR ("creative writ*") OR ("expressi* writ*") OR ("emoti* writ*") OR ("Emotion* writ*") OR ("sensitiv* writ*") OR ("sensor* writ*") OR ("reactive writ*") OR ("reflective writ*") OR ("descriptive writ*") OR ("biography* writ*") OR ("workshop writ*") OR ("epistolar* writ*") OR ("fiction* writ*") OR ("paradigm writ*") OR ("group writ*") OR ("letter* writ*") OR (Pennebaker writ*) OR ("reminiscence review*") OR (writ* reminisc*) ("story writ*") OR ("writ* stories") OR (blog*) OR (forum*) OR (memoir* writ*) OR ("journal* writ*") OR ("narrative* writ*") OR ("writ* narrative*") OR ("hand writ*") OR (poe* writ*) OR ("health status writ*") OR ("program* writ*") OR (writ* diar*))
4	1 and (2 or 3)

TABLE 85 Education Resource Information Centre (via ProQuest) searches

#	Search term
1	((chronic*) OR (persistent) OR (long* term) OR (degenerative)) AND ((disease*) OR (disab*) OR (ill*) OR (condition*) OR ("health condition*") OR ("medical condition*") OR (impairment))
2	(catharsis AND (writ* OR typ* OR key*)) OR ((emoti* disclos* typ*) OR (emoti* disclos* key*) OR (emotion* disclos* writ*))
3	(("writ* therap*") OR ("therapeutic* writ*") OR ("writ* cure*") OR ("writ* heal*") OR ("self management writ*") OR ("self help writ*") OR ("self conceal* writ*") OR ("self disclosure writ*") OR ("creative writ*") OR ("expressi* writ*") OR ("emoti* writ*") OR ("Emotion* writ*") OR ("sensitiv* writ*") OR ("sensor* writ*") OR ("reactive writ*") OR ("reflective writ*") OR ("descriptive writ*") OR ("biography* writ*") OR ("workshop writ*") OR ("epistolar* writ*") OR ("fiction* writ*") OR ("paradigm writ*") OR ("group writ*") OR ("letter* writ*") OR (Pennebaker writ*) OR ("reminiscence review*") OR (writ* reminisc*) ("story writ*") OR ("writ* stories") OR (blog*) OR (forum*) OR (memoir* writ*) OR ("journal* writ*") OR ("narrative* writ*") OR ("writ* narrative*") OR ("hand writ*") OR (poe* writ*) OR ("health status writ*") OR ("program* writ*") OR (writ* diar*))
4	1 AND (2 OR 3)

TABLE 86 Linguistic and Language Behaviour Abstracts (via ProQuest) searches

#	Search term
1	((chronic*) OR (persistent) OR (long* term) OR (degenerative)) AND ((disease*) OR (disab*) OR (ill*) OR (condition*) OR ("health condition*") OR ("medical condition*"))
2	(catharsis AND (writ* OR typ* OR key*)) OR ((emoti* disclos* typ*) OR (emoti* disclos* key*) OR (emotion* disclos* writ*))
3	("writ* therap*") OR ("therapeutic* writ*") OR ("writ* cure*") OR ("writ* heal*") OR ("self management writ*") OR ("self help writ*") OR ("self conceal* writ*") OR ("self disclosure writ*") OR ("creative writ*") OR ("expressi* writ*") OR ("emoti* writ*") OR ("Emotion* writ*") OR ("sensitiv* writ*") OR ("sensor* writ*") OR ("reactive writ*") OR ("reflective writ*") OR ("descriptive writ*") OR ("biography* writ*") OR ("workshop writ*") OR ("epistolar* writ*") OR ("fiction* writ*") OR ("paradigm writ*") OR ("group writ*") OR ("letter* writ*") OR (Pennebaker writ*) OR ("reminiscence review*") OR (writ* reminisc*) ("story writ*") OR ("writ* stories") OR (blog*) OR (forum*) OR (memoir* writ*) OR ("journal* writ*") OR ("narrative* writ*") OR ("writ* narrative*") OR ("hand writ*") OR (poe* writ*) OR ("health status writ*") OR ("program* writ*")
4	1 AND (2 OR 3)

TABLE 87 The British Library's Electronic Table of Contents (via Mimas) searches

#	Search term
1	therap* writ*
2	written emotional disclosure
3	expressive writing
4	pennebaker writing
5	writing emotion
6	1 OR 2 OR 3 OR 4 OR 5 [NB: have to be collated separately, this function cannot be performed by Zetoc]

TABLE 88 The Campbell Collaboration Library of Systematic Reviews (The Campbell Collaboration) searches

#	Search term
1	Therapeutic writing
2	Written emotional disclosure
3	Expressive writing

TABLE 89 CAB Abstracts, Periodicals Index Online, ASSIA, PEDro and CINAHL searches

#	Search term
1	(writing or written or blog or story) and (disease or disorder) and (chronic or long-term)

Appendix 4 Data extraction form and quality assessment methods used

Systematic review data extraction forms

Baseline data

TABLE 90 Data extraction form template: study overview

# (reference number in the citation manager)		
Publication details	Author(s)	
	Year	
	Title	
	Journal	
	Volume	
	Issue	
	Pages	
	Format of publication	
Study overview	Study name	
	Study objectives	
	Study overall conclusions	
	DID TW WORK?	
	Why does it work? Why not? Who do they think it works for?	
	Country/region of the study	
	Time span of the study	
	Number of sites	
	Funding	Description of funding (public/private, etc.)
		Funded? Yes/No
Study moderators and/or mediators	Moderator(s) effect? Including: effect moderators (patients' characteristics) interacting with the intervention to change outcome – baseline variables that affect outcome but not interact with intervention	
	Mediator(s) effect? Including: change-in-process factors impacting outcome with or without interaction with intervention	

TABLE 91 Data extraction form template: intervention and participant's characteristics

Study intervention: exposure and comparator	Intervention type(s)	
	Definition	
	Site of the intervention(s)	
	Intervention(s) exposure episode and duration	
	Length of the intervention(s)	
	Comparator type	
	Comparator definition	
	Time of assessment	
	Concomitant therapies	
	Intervention fidelity	
	Intervention credibility or subjective essay evaluation or manipulation checks	
Participant(s) type	Target population	LTC category
		LTC type and diagnostic criteria
		LTC category
		ITT (and PP) sample size
		ITT sample size by groups (treatment arms)
Participants selection criteria	Main inclusion criteria	
	Main exclusion criteria	
Participants baseline characteristics	Baseline characteristics	Age
		Gender
		Ethnicity
		Disease status and severity
		Comorbidities
	Other characteristics	

PP, per protocol.

TABLE 92 Data extraction form template: primary studies' participation and types of outcomes evaluated

Study flow diagram	Study participation [based on Sohanpal *et al.*, www.systematicreviewsjournal.com/content/1/1/66 (accessed June 2014)]	# participants ELIGIBLE to the study (and # of non-participants)
		# participants RECRUITED (# of study participants willing to take part)
		# study participants NON-ATTENDERS (recruited not willing to attend intervention)
		# study ATTENDERS (attending at least one session of the intervention)
		# study attenders DROPPING OUT (after one session or more)
		# programme COMPLETERS (# participants completing all sessions of the intervention)
		Study DROP-OUTs (# non-attenders or programme dropouts or programme completers that drop out also from the study)
Recruitment method(s)		
Type(s) of outcome(s) reported (by responding Yes/No)	Outcomes assessed	
	Physical health	Physiological
		Haematological/immunological/hormonal
		Disability/handicap
		Pain
	Non-physical health	Psychological
		Social health
		Mental status
		Behavioural
		Performance
	HRQoL	
	Costs/resource use	
	Safety	
	Compliance	
	Other	

Results section

TABLE 93 Data extraction form template: outcomes reported

Physiological outcomes	Description	Selected end point(s)
		Definition(s) and type of outcome
		Time of assessment(s) and overall outcome follow-up
		Type of analysis
	Results	Values
		Summary of the impact of intervention(s) on patient-reported outcomes
Haematological/immunological outcomes	Description	Selected end point(s)
		Definition(s)
		Time of assessment(s) and overall outcome follow-up
		Type of analysis
	Results	Values
		Summary of the impact of intervention(s) on patient-reported outcomes
Physical disability/handicap assessment	Description	Selected end point(s)
		Definition(s)
		Time of assessment(s) and overall outcome follow-up
		Type of analysis
	Results	Values
		Summary of the impact of the intervention
Pain measurement	Description	Selected end point(s)
		Definition(s)
		Time of assessment(s) and overall outcome follow-up
		Type of analysis
	Results	Values
		Summary of the impact of intervention(s) on patient-reported outcomes
Psychological assessment	Description	Selected end point(s)
		Definition(s)
		Time of assessment(s) and overall outcome follow-up
		Type of analysis
	Results	Values
		Summary of the impact of intervention(s) on patient-reported outcomes

TABLE 93 Data extraction form template: outcomes reported (*continued*)

Social health assessment	Description	Selected end point(s)
		Definition(s)
		Time of assessment(s) and overall outcome follow-up
		Type of analysis
	Results	Values
		Summary of the impact of intervention(s) on patient-reported outcomes
Mental status assessment	Description	Selected end point(s)
		Definition(s)
		Time of assessment(s) and overall outcome follow-up
		Type of analysis
	Results	Values
		Summary of the impact of intervention(s) on patient-reported outcomes
Behavioural assessment	Description	Selected end point(s)
		Definition(s)
		Time of assessment(s) and overall outcome follow-up
		Type of analysis
	Results	Values
		Summary of the impact of intervention(s) on patient-reported outcomes
Performance assessment	Description	Selected end point(s)
		Definition(s)
		Time of assessment(s) and overall outcome follow-up
		Type of analysis
	Results	Values
		Summary of the impact of intervention(s) on patient-reported outcomes
General health status and quality of life	Description	Instrument(s) type
		Definition
		Time of assessment(s) and overall outcome follow-up
		Type of analysis
	Results	Values
		Summary of the impact of intervention(s) on patient-reported outcomes
Assessment of adverse events due to intervention (and not related to concomitant therapy)	Description and identification of AEs	Selected end point(s)
		Definition(s)/reported categories of AEs
		Time of assessment(s)
		Type of analysis
	Results	

continued

TABLE 93 Data extraction form template: outcomes reported (*continued*)

Assessment of compliance (adherence)	Description	Selected end point(s)
		Definition(s)
		Time of assessment
	Results	
Costs and levels of resource use (related to specific intervention)	Resource use	Type
		Analysis
		Levels of resource used
		Summary of the impact of intervention(s) on resource used
	Perspective	
	Currency	Currency
		Price year
		If inflated, inflator
	Time period to which costs relate	
	Unit cost	
	Total costs	
Specific findings helping programme theory	Theories or mechanisms postulated by study's authors to explain the success of the intervention	
	Process factors identified by study authors helping the successful theory	
	Theories or mechanisms postulated by study's authors to explain the failure(s) of the intervention	
	Process factors identified by study authors helping the failure of the theory	
	How study contributes to realist review	
Summary of the impact of intervention(s) on patient-reported outcomes		
Additional comments to the study (does the study support previous research?)		
Correspondence required with authors for missing data?		
References not captured by the review (cross-referencing)		
Notes		

AE, adverse event.

Realist synthesis data extraction forms

TABLE 94 Tabular summary for data collection in realist synthesis

First author, date	Data to support programme theory included in the systematic review	Primary study author's explanation for how TW works

TABLE 95 Questions formulated for practitioner experts during programme theory development

Recruitment/suitability	Intervention process/aspects of the intervention	Outcomes impact
Who is it suitable for and why?	What do you do and why?	What do you hope to achieve and why?

Quality assessment tools

Clinical trials: Cochrane Handbook for Systematic Reviews of Interventions

TABLE 96 Data extraction form template: quality of the methods used in clinical trials

Study design	Trial design	
Study quality checklist (based on the checklist in the Cochrane Handbook)	Randomisation	Sequence generation (selection bias)
		Allocation concealment (selection bias)
	Blinding	Outcome
		Performance
	ITT analysis? (Yes/No)	
	Description of outcomes differences between groups (selective reporting)	
	Description of withdrawals (attrition bias)	
	Pre-specified criteria for eligibility of patients	
	Similarity of groups at baseline regarding prognostic factors	
	Statement supporting the quality of the methods used	

Observational studies: Newcastle–Ottawa checklist

TABLE 97 Data extraction form template: quality of the methods used in observational studies

Study quality checklist	Case–control studies	Selection	Is the case definition adequate?
			Representativeness of the cases
			Selection of controls
			Definition of controls
		Comparability	Comparability of cases and controls on the basis of the design or analysis
			Factor(s)
		Exposure	Ascertainment of exposure
			Same method of ascertainment for cases and controls
			Non-response rate
	Cohort (and cross-sectional) studies	Selection	Representativeness of the exposed cohort
			Selection of the non-exposed cohort
			Ascertainment of exposure
			Demonstration that outcome of interest was not present at start of study
		Comparability	Comparability of exposed and unexposed (design or analysis)
			Factor(s)
		Outcome	Assessment of outcome
			Was follow-up long enough for outcome to occur
			Adequacy of follow-up

Appendix 5 Characteristics of included studies

Study design

TABLE 98 Study design of included studies

First author, year	Country	Study design	*n* of intervention groups	*n* of control groups
Abel 2004[50]	USA	RCT	1	1
Arden-Close 2013[80]	UK	RCT	1	1
Averill 2013[100]	USA	RCT	1	1
Bartasiuniene 2011[102]	Lithuania	RCT	1	2
Bernard 2006[93]	UK	RCT	1	1
Broderick 2004[113]	USA	RCT	2	1
Broderick 2005[118]	USA	RCT	1	1
Canna 2006[94]	USA	RCT	2	2
Cepeda 2008[85]	Colombia	RCT	1	2
Craft 2013[74]	USA	RCT	2	2
Dennick 2014[88]	UK	RCT	1	1
D'Souza 2008[101]	USA	RCT	1	1
Gellaitry 2010[75]	UK	RCT	1	1
Gidron 1996[98]	Israel	RCT	1	1
Gillis 2006[119]	USA	RCT	1	1
Golkaramnay 2007[68]	Germany	Controlled cohort	1	1
Graf 2008[95]	USA	RCT	1	1
Graham 2008[51]	USA	RCT	1	1
Grasing 2010[90]	USA	RCT	1	1
Halpert 2010[52]	USA	Controlled cohort	1	1
Hamilton-West 2007[114]	UK	RCT	1	1
Harris 2005[106]	USA	RCT	2	1
Henry 2010[53]	USA	Case–control	1	1
Hevey 2012[103]	Ireland	RCT	1	1
Hong 2011[67]	Korea	RCT	1	1
Hughes 2007[54]	USA	RCT	1	1
Ironson 2013[71]	USA	RCT	1	1
Jensen-Johansen 2013[76]	Denmark	RCT	1	1
Kraaij 2010[55]	Netherlands	RCT	1	1
Krpan 2013[96]	USA	RCT	1	1
Lange 2003[69]	Netherlands	RCT	1	1
Lumley 2011[115]	USA	RCT	2	1

continued

TABLE 98 Study design of included studies (*continued*)

First author, year	Country	Study design	*n* of intervention groups	*n* of control groups
Lumley 2014[116]	USA	RCT	2	2
Mann 2001[72]	USA	RCT	1	1
McElligott 2006[87]	USA	Non-RCT	1	1
Meshberg-Cohen 2010[91]	USA	RCT	1	1
Milbury 2014[81]	USA	RCT	1	1
Mosher 2012[77]	USA	RCT	1	1
Paradisi 2010[110]	Italy	RCT	2	1
Park 2012[78]	Korea	Controlled cohort	1	1
Pauley 2011[82]	USA	RCT	2	1
Petrie 2004[56]	New Zealand	RCT	1	1
Richards 2000[97]	USA	RCT	1	2
Rickett 2011[66]	Australia	RCT	1	1
Rini 2014[86]	USA	RCT	3	1
Robinson 2008[99]	UK	RCT	1	1
Rosenberg 2002[83]	USA	RCT	1	1
Sharifabad 2010[105]	USA	RCT	1	1
Sloan 2012[70]	USA	RCT	1	1
Smyth 1999[107]	USA	RCT	1	1
Smyth 2008[121]	USA	RCT	1	1
Stark 2010[57]	USA	RCT	3	1
Tabolli 2012[111]	Italy	RCT	1	1
Taylor 2003[89]	USA	RCT	1	1
Theadom 2010[58]	UK	RCT	1	1
Van Dam 2013[92]	Netherlands	RCT	1	1
Vedhara 2007[112]	New Zealand	RCT	1	1
Wagner 2010[73]	USA	RCT	1	1
Walker 1999[79]	USA	RCT	2	1
Wallander 2011[109]	USA	RCT	1	1
Warner 2006[108]	USA	RCT	1	1
Wetherell 2005[117]	UK	RCT	1	1
Willmott 2011[104]	UK	RCT	1	1
Zakowski 2004[84]	USA	RCT	1	1

Participants' conditions

TABLE 99 Long-term conditions, ICD-10 codes and diagnostic criteria used at study entry in included studies

First author, year	LTC	ICD-10 code	LTC: inclusion criteria/diagnostic tool(s)
Abel 2004[50]	HIV	B24	Taking ART for their diagnosis, able to report their last VL of < 80 000–100,000 copies/ml, free of major psychiatric problems (self-report)
Arden-Close 2013[80]	Ovarian cancer	C56	Disease stage from I to IV, with CA125 level checked by oncologist and categorised above or below 35 U/ml for the prognosis of the cancer and within 5 years of treatment
Averill 2013[100]	ALS	G12	Definite or probable ALS using El Escorial criteria at least 6 months prior to study entry (World Federation of Neurology Research Group on Neuromuscular Diseases, 1994); FVC in the 50th percentile or higher
Bartasiuniene 2011[102]	CVD	I51	
Bernard 2006[93]	PTSD	F43	First episode of psychosis conforming to broad ICD-10 criteria (F20, F22, F23, F25)
Broderick 2004[113]	RA	M06	Formal diagnosis of RA
Broderick 2005[118]	FM	M79	Formal diagnosis of FM by a physician
Canna 2006[94]	Axis I anxiety or mood disorder	F41	Individuals with axis I anxiety or mood disorder primary diagnosis
Cepeda 2008[85]	Cancer	C80	Any type of cancer and reporting average pain intensity levels of at least 5/10 on a 0–10 scale; scored > 50% in the Karnofsky scale
Craft 2013[74]	Breast cancer	C50	Invasive or non-invasive early stage breast cancer, definitive treatment (surgery, chemotherapy and/or radiation therapy) completed, time from diagnosis < 2 years
Dennick 2014[88]	Type 2 diabetes mellitus	E11	
D'Souza 2008[101]	Tension/migraine headaches	G43/G44	International Headache Society criteria for either tension or migraine headaches
Gellaitry 2010[75]	Breast cancer	C50	Patients with early-stage breast cancer, attending the last radiotherapy appointment at the outpatient clinic and without a defined psychiatric disorder
Gidron 1996[98]	PTSD	F43	PTSD assessed with the Mississippi Scale for PTSD
Gillis 2006[119]	FM	M79	Rehabilitation hospital patients with CVD
Golkaramnay 2007[68]	Mental disorders	F41–F60	Inpatient from hospital with mental health conditions according to the ICD-10 criteria
Graf 2008[93]	Psychiatric disorder	F99	Participants from an university-based outpatients' psychiatric clinic and student counselling centre
Graham 2008[51]	Chronic pain	Unclassifiable	Patients had experience for at least 6 months and were recruited during routine visits to a university hospital-affiliated outpatient pain centre
Grasing 2010[90]	Cocaine dependence	F14	Meeting DSM-IV criteria for cocaine dependence at the time of admission

continued

TABLE 99 Long-term conditions, ICD-10 codes and diagnostic criteria used at study entry in included studies (*continued*)

First author, year	LTC	ICD-10 code	LTC: inclusion criteria/diagnostic tool(s)
Halpert 2010[52]	IBS	K58	Fulfilled the Rome III Criteria for IBS
Hamilton-West 2007[114]	AS	M45	Inflammation of the joints in the pelvis; low back pain and stiffness for > 3 months, which improves with exercise but is not relieved by rest; limited movement of the lower back and restricted chest expansion
Harris 2005[106]	Asthma	J45	Asthma was confirmed by a history of asthma diagnosed by a physician and either evidence of reduced expiratory volume and reversibility obtained through medical records or evidence of reduced expiratory volume evaluated by study staff
Henry 2010[53]	Breast cancer	C50	Female breast cancer survivors attending radiation oncology clinics
Hevey 2012[103]	MI	I21	Patients with confirmed MI, who received treatment at a large teaching hospital
Hong 2011[67]	Dementia (Alzheimer's disease/ vascular dementia/ Parkinson's disease)	F03 (F00/F01/F02)	Elderly people housed in a nursing home and already medically diagnosed with dementia, and scoring ≤ 19 on the MMSE-K
Hughes 2007[54]	Breast cancer	C50	Stage I, II or III breast cancer women receiving curative radiation therapy for breast cancer
Ironson 2013[71]	HIV (plus PTSD)	B24 (plus F43)	HIV-positive, falling into a CD4 range of 100–600. Included were also those with one Category C symptom (AIDS defining) but without C symptoms 1 year prior to study entry. The stress of HIV was considered sufficient to enter the study and no other trauma was required
Jensen-Johansen 2013[76]	Breast cancer	C50	Female Danish residents, able to read and write Danish, aged 18–70 years, and treated surgically within 3 weeks of their diagnosis (mastectomy or lumpectomy) for invasive breast cancer, stages I and II
Kraaij 2010[55]	HIV	B24	HIV-diagnosed patients. No restricted criteria regarding the VL or the CD4+ count
Krpan 2013[96]	Depression	F41	According to SCID
Lange 2003[69]	PTSD	F43	Participants had to score below the cut-off scores of the Depression subscale of the SCL-90 in the Dutch norm, the SDQ-5, and the Dutch Screening Device for Psychotic Disorder of the Dutch norm group
Lumley 2011[115]	RA	M06	Patients with RA who met American College of Rheumatology criteria for non-juvenile RA. Patients had to report experience pain or disability due to their RA in the preceding week
Lumley 2014[116]	RA	M06	RA patients meeting American College of Rheumatology criteria for non-juvenile RA. Patients had to report experience pain or disability due to their RA in the preceding week
Mann 2001[72]	HIV	B24	Women being treated for HIV or diagnosed with AIDS
McElligott 2006[87]	Sickle cell disease	D57	Medically diagnosed with sickle cell disease

TABLE 99 Long-term conditions, ICD-10 codes and diagnostic criteria used at study entry in included studies (*continued*)

First author, year	LTC	ICD-10 code	LTC: inclusion criteria/diagnostic tool(s)
Meshberg-Cohen 2010[91]	SUD	F19	The Structured Clinical Interview for DSM-IV-TR – Alcohol and Substance Use Disorders Module (SCID) was used as the diagnostic interview assessing SUD diagnosis, including alcohol and other drugs
Milbury 2014[81]	RCC	C64	Newly diagnosed with stage I–IV RCC and with a Zubrod performance status of < 2
Mosher 2012[77]	Breast cancer	C50	Distressed women with stage IV breast cancer
Paradisi 2010[110]	Psoriasis	L40	Plaque-type psoriasis involving > 10% of body area
Park 2012[78]	Breast cancer	C50	Stage II and III, breast cancer survivors, women. No restriction to staging, surgery or drugs intake
Pauley 2011[82]	Testicular cancer	C62	Testicular cancer survivors, men. No restriction to staging, surgery or drugs intake
Petrie 2004[56]	HIV	B24	Documented HIV infection and not had their classified oral drug regimen changed in the previous 12 months
Richards 2000[97]	Mental disorder	F41–F60	Diagnosed with at least one mental disorder, as classified with the DSM-III-R
Rickett 2011[66]	Cancer	C80	All diagnosed with cancer except for one participant with a history of severe CVD, and one with an autoimmune disorder
Rini 2014[86]	Following stem cell transplant	C80	
Robinson 2008[99]	BN	F50	Diagnosis was made using information from the QEDD using DSM-IV (American Psychiatric Association, 1994) for definitions of disorders. Included were those with a diagnosis of BN (purging or non-purging)
Rosenberg 2002[83]	Prostate cancer	C61	Histological diagnosis of adenocarcinoma of the prostate being followed with serial PSAs. Previously local treatment (prostatectomy or radiation) within the last 4 years
Sharifabad 2010[105]	COPD plus IPF	J44 plus J84	Medically diagnosed with COPD or IPF
Sloan 2012[70]	PTSD	F43	Participants met DSM-IV PTSD Criterion A for a traumatic stressor (American Psychiatric Association, 1994)
Smyth 1999[107]	Asthma/RA	J45/M06	RA diagnosis was confirmed by board-certified rheumatologists and all patients met American College of Rheumatology criteria Asthma was diagnosed by a history of asthma, confirmed by a physician; patients were also required to provide a documented reduction in expiratory function (either in physician records or when evaluated by study staff)
Smyth 2008[121]	PTSD	F43	Based on PTSD diagnosis verification defined by the DSM-IV
Stark 2010[57]	FM plus facial pain	M79	Diagnosis made by the referring physician

continued

TABLE 99 Long-term conditions, ICD-10 codes and diagnostic criteria used at study entry in included studies (*continued*)

First author, year	LTC	ICD-10 code	LTC: inclusion criteria/diagnostic tool(s)
Tabolli 2012[111]	Psoriasis	L40	Diagnosis by an experienced staff dermatologist, according to established internationally accepted criteria, with ≥ 10% of body surface affected
Taylor 2003[89]	Cystic fibrosis	E84	Medically diagnosed with cystic fibrosis
Theadom 2010[58]	Asthma	J45	Diagnosed with asthma and requiring regular inhaled medication (British Thoracic Society step 2 or higher; British Thoracic Society and Scottish Intercollegiate Guidelines Network, 2005)
Van Dam 2013[92]	SUD	F14	Diagnosed with SUD
Vedhara 2007[112]	Psoriasis	L40	A clinically verified diagnosis of psoriasis for at least 6 months
Wagner 2010[73]	HIV	B24	Diagnosed with HIV only
Walker 1999[79]	Breast cancer	C50	Women completing radiation therapy for breast cancer stage I or II with a Karnofsky performance status of ≥ 70%
Wallander 2011[109]	GI RAP	R10	Patients with GI RAP, who met Apley's (1975) criteria for functional RAP as determined by a paediatric GI specialist
Warner 2006[108]	Asthma	J45	Participants classified with mild, persistent asthma (i.e. asthma symptom activity at least 2 days per week and nocturnal symptoms at least twice monthly)
Wetherell 2005[117]	RA	M06	Diagnosed with RA
Willmott 2011[104]	MI	I21	Participants were the first patients with MI who were receiving treatment at two acute hospital clinics
Zakowski 2004[84]	Prostate plus gynaecological cancer	C61 (prostate) plus C55 (uterus), C56 (ovary), C53 (cervix)	Participants with a first-time diagnosis of prostate or gynaecological cancer within the last 5 years

AIDS, acquired immunodeficiency virus; MMSE-K, Mini Mental State Examination Korean Version; PSA, prostate-specific antigen; SCL-90, Symptom Checklist-90; SDQ-5, somatoform dissociation questionnaire-5.

Included studies categorised by *International Classification of Diseases*, Tenth Edition code by the reviewers

TABLE 100 Included studies by ICD-10 code

First author, year	LTC	ICD-10 code
Abel 2004[50]	HIV	B24
Kraaij 2010[55]	HIV	B24
Mann 2001[72]	HIV	B24
Petrie 2004[56]	HIV	B24
Wagner 2010[73]	HIV	B24
Ironson 2013[71]	HIV (plus PTSD)	B24
Craft 2013[74]	Breast cancer	C50
Gellaitry 2010[75]	Breast cancer	C50
Henry 2010[53]	Breast cancer	C50
Hughes 2007[54]	Breast cancer	C50
Jensen-Johansen 2013[76]	Breast cancer	C50
Mosher 2012[77]	Breast cancer	C50
Park 2012[78]	Breast cancer	C50
Walker 1999[79]	Breast cancer	C50
Arden-Close 2013[80]	Gynaecological and genitourinary cancer	C57 (ovarian)
Rosenberg 2002[83]	Gynaecological and genitourinary cancer	C61(prostate)
Zakowski 2004[84]	Gynaecological and genitourinary cancer	C61 (prostate) plus C55 (uterus), C56 (ovary), C53 (cervix)
Pauley 2011[82]	Gynaecological and genitourinary cancer	C62 (testicular)
Milbury 2014[81]	Gynaecological and genitourinary cancer	C64
Cepeda 2008[85]	Cancer from various sources	C80
Rickett 2011[66]	Cancer from various sources	C80
Rini 2014[86]	Cancer from various sources	C80
McElligott 2006[87]	Sickle cell disease	D57
Taylor 2003[89]	Cystic fibrosis	E84
Hong 2011[67]	Dementia (Alzheimer's disease/vascular dementia/Parkinson's disease)	F03 (F00/F01/F02)
Grasing 2010[90]	Cocaine dependence	F14
Meshberg-Cohen 2010[91]	SUD	F19
Van Dam 2013[92]	SUD	F19
Bernard 2006[93]	First episode psychosis	F41–F60
Canna 2006[94]	Mental disorder (Axis I anxiety or mood disorder)	F41–F60
Golkaramnay 2007[68]	Mental disorder	F41–F60
Richards 2000[97]	Mental disorder	F41–F60
Graf 2008[95]	Mental disorder (psychiatric disorder)	F41–F60 (F99)

continued

TABLE 100 Included studies by ICD-10 code (*continued*)

First author, year	LTC	ICD-10 code
Krpan 2013[96]	Depression	F41
Gidron 1996[98]	PTSD	F43
Lange 2003[69]	PTSD	F43
Sloan 2012[70]	PTSD	F43
Smyth 2008[121]	PTSD	F43
Robinson 2008[99]	BN	F50
Averill 2013[100]	ALS	G12
D'Souza 2008[101]	Tension/migraine headaches	G43/G44
Hevey 2012[103]	MI	I21
Willmott 2011[104]	MI	I21
Bartasiuniene 2011[102]	CVD	I51
Sharifabad 2010[105]	COPD plus IPF	J44 plus J84
Harris 2005[106]	Asthma	J45
Theadom 2010[58]	Asthma	J45
Warner 2006[108]	Asthma	J45
[a]Smyth 1999[107]	Asthma/RA	J45/M06
Halpert 2010[52]	IBS	K58
Wallander 2011[109]	IBS (GI RAP)	K58 (R10)
Paradisi 2010[110]	Psoriasis	L40
Tabolli 2012[111]	Psoriasis	L40
Vedhara 2007[112]	Psoriasis	L40
Broderick 2004[113]	RA	M06
Lumley 2011[115]	RA	M06
Lumley 2014[116]	RA	M06
Wetherell 2005[117]	RA	M06
Hamilton-West 2007[114]	AS	M45
Broderick 2005[118]	FM	M79
Gillis 2006[119]	FM	M79
Stark 2010[57]	FM	M79
Graham 2008[51]	Chronic pain	M79

a Smyth *et al.*[107] has been reported twice under J45 and M06/M45 ICD-10 categories.
Note that this table includes the studies classified as assessing an unfacilitated TW intervention.

Interventions assessed

Interventions assessed

TABLE 101 Intervention groups as described in included studies

First author, year	Experimental condition		Control condition	
	Intervention group 1	Intervention group 2	Control group 1	Control group 2
Abel 2004[50]	EW disclosure (unfacilitated type of TW)		Daily activities writing	
Arden-Close 2013[80]	Written emotional disclosure (unfacilitated type of TW)		Details of previous day writing	
Averill 2013[100]	Written or oral expressive disclosure (unfacilitated type of TW) plus completion of study measures		Attentional control writing (completion of study measures)	
Bartasiuniene 2011[102]	Expressive writing (unfacilitated type of TW)		Daily events writing	Non-writing group (wrote nothing)
Bernard 2006[93]	Written emotional disclosure (unfacilitated type of TW)		Non-EW (activities that day, the room they were in, and plans for the next week)	
Broderick 2004[113]	Standard expressive writing (unfacilitated type of TW)	Enhanced meaning writing	Day-to-day activities in relation to the time invested	Educational attention control group
Broderick 2005[118]	Written emotional expression with cognitive reappraisal		Day-to-day activities in relation to the time invested	Non-writing (usual care)
Canna 2006[94]	Expressive writing plus CBT	CBT	Inexpressive writing plus CBT	Waiting list
Cepeda 2008[85]	Narrative emotional disclosure		Questionnaire writing	Usual care
Craft 2013[74]	Breast-cancer trauma writing (unfacilitated type of TW)	Self-selected trauma writing (unfacilitated type of TW)	Breast cancer factual writing (unfacilitated type of TW)	Non-writing
Dennick 2014[88]	Written emotional disclosure		Previous day's activities	
D'Souza 2008[101]	Written emotional disclosure (unfacilitated type of TW)		Time-management control writing	
Gellaitry 2010[75]	Expressive writing (unfacilitated type of TW)		Routine care	
Gidron 1996[98]	Written disclosure (unfacilitated type of TW) plus oral disclosure of most severe event		Casual daily agenda writing plus oral disclosure of daily activity	
Gillis 2006[119]	Written emotional disclosure (unfacilitated type of TW)		Time-management writing	
Golkaramnay 2007[68]	Group therapy through internet chat		No intervention	

continued

TABLE 101 Intervention groups as described in included studies (*continued*)

First author, year	Experimental condition		Control condition	
	Intervention group 1	Intervention group 2	Control group 1	Control group 2
Graf 2008[95]	Written emotional disclosure (unfacilitated type of TW)		Plans for the rest of the day writing	
Graham 2008[51]	Written anger expression through letter-writing format (Rusing and Nolen-Hoeksema type of TW)		Goals writing through letter-writing format	
Grasing 2010[90]	Written emotional expression (Pennebaker type of TW)		Time-management writing	
Halpert 2010[52]	Expressive writing (unfacilitated type of TW)		Non-writing	
Hamilton-West 2007[114]	EW exercise (unfacilitated type of TW not approved by ethics committee – adapted version used)		Time-management exercise	
Harris 2005[106]	Stressful experiences writing	Positive writing	Neutral topic writing	
Henry 2010[53]	Positive expressive writing (single episode unfacilitated type of TW)		Usual care	
Hevey 2012[103]	Expressive writing (single episode unfacilitated type of TW)		Daily activities writing in the year prior to heart attack	
Hong 2011[67]	Songwriting		Waiting list	
Hughes 2007[54]	Expressive writing		Usual care	
Ironson 2013[71]	Augmented trauma writing (unfacilitated type of TW) plus processing probes		Daily event writing	
Jensen-Johansen 2013[76]	Expressive writing (unfacilitated type of TW)		Daily activities writing	
Kraaij 2010[55]	Structured writing intervention (through website)	Cognitive–behavioural self-help programme	Waiting list	
Krpan 2013[96]	Expressive writing (deepest thoughts and feelings)		How they organised their day	
Lange 2003[69]	Interapy		Waiting list	
Lumley 2011[115]	Written or oral emotional disclosure	Positive writing (or talking)	Neutral topic writing (or talking)	
Lumley 2014[116]	Expressive writing, coping skills training		Neutral writing, coping skills training	
Mann 2001[72]	Positive future writing		Non-writing	
McElligott 2006[87]	Expressive writing (unfacilitated type of TW)		Details of previous day writing	
Meshberg-Cohen 2010[91]	Expressive writing (unfacilitated type of TW)		Neutral topic writing	

TABLE 101 Intervention groups as described in included studies (*continued*)

First author, year	Experimental condition		Control condition	
	Intervention group 1	Intervention group 2	Control group 1	Control group 2
Milbury 2014[81]	Expressive writing (unfacilitated type of TW)		Neutral topic writing	
Mosher 2012[72]	Expressive writing		Neutral topic writing	
Paradisi 2010[110]	Written emotional disclosure (unfacilitated type of TW)	Positive future writing (unfacilitated type of positive TW)	Non-emotional disclosure	
Park 2012[78]	Expressive writing programme (unfacilitated type of TW)		No intervention	
Pauley 2011[82]	Negative expressive writing (unfacilitated type of TW)	Positive expressive writing (unfacilitated type of TW)	Innocuous writing	
Petrie 2004[56]	Written emotional expression (unfacilitated type of TW)		Time-management writing	
Richards 2000[97]	Trauma writing (unfacilitated type of TW)		Trivial writing	Usual routine
Rickett 2011[66]	Poetry writing programme/ workshop		Waiting list	
Rini 2014[86]	Expressive writing	Peer helping, expressive helping	Neutral writing	
Robinson 2008[99]	eBT	Unsupported SDW (unfacilitated type of TW)	Waiting list	
Rosenberg 2002[83]	Expressive writing (unfacilitated type of TW)		Non-disclosure	
Sharifabad 2010[105]	Written emotional disclosure (unfacilitated type of TW)		Neutral topic writing	
Sloan 2012[70]	WET		Waiting list	
Smyth 1999[107]	Disclosure exercise (unfacilitated type of TW)		Neutral topic writing	
Smyth 2008[121]	Expressive writing (unfacilitated type of TW)		Daily plans writing	
Stark 2010[57]	Trauma writing (unfacilitated type of TW) plus Change Theory (King type of TW)		Time management (factual writing)	
Tabolli 2012[111]	Writing exercise (unfacilitated type of TW)		Non-writing	
Taylor 2003[89]	Written self-disclosure intervention (unfacilitated type of TW)		SMC	
Theadom 2010[58]	Written emotional disclosure (unfacilitated type of TW)		Details of previous day writing	
Van Dam 2013[92]	Expressive writing (unfacilitated type of TW)		Treatment as usual	

continued

TABLE 101 Intervention groups as described in included studies (*continued*)

First author, year	Experimental condition		Control condition	
	Intervention group 1	Intervention group 2	Control group 1	Control group 2
Vedhara 2007[112]	Written emotional disclosure (unfacilitated type of TW)		Details of previous day writing	
Wagner 2010[73]	Expressive writing (unfacilitated type of TW)		Trivial writing	
Walker 1999[79]	Single-episode written emotional expression (unfacilitated type of TW)	Three-episode written emotional expression (unfacilitated type of TW)	Attentional control (standard care)	
Wallander 2011[109]	WSD (unfacilitated type of TW)		SMC	
Warner 2006[108]	Written emotional disclosure (unfacilitated type of TW)		Time management	
Wetherell 2005[117]	Emotional disclosure (writing or talking) (unfacilitated type of TW)		Time-management writing	
Willmott 2011[104]	Written emotional expression – positive and negative (unfacilitated type of TW)		Details of previous day's prior to heart attack	
Zakowski 2004[84]	Written emotional disclosure (unfacilitated type of TW)		Details of daily activity writing	

WSD, written self-disclosure.

Interventions definitions

TABLE 102 Intervention definitions as provided by included studies

	Experimental condition			Control condition	
First author, year	Definition group 1	Definition group 2	Definition group 3	Definition group 1	Definition group 2
Abel 2004[50]	To write about innermost thoughts related to diagnosis of HIV and living with the disease	–	–	To write about their daily activities	Inexpressive writing
Arden-Close 2013[80]	To write about the patient's diagnosis and treatment as follows: *Day 1*: describe the diagnosis and treatment chronologically and what led to what, without mentioning emotions *Day 2*: part 1, describe how you felt and what you thought at the time of the diagnosis. Part 2, what impact has your diagnosis and treatment had on your life, and has it caused you to change priorities? *Day 3*: how do you currently feel and think about the diagnosis and treatment? Are your current thoughts and feelings the same as at diagnosis? Would you be able to cope with similar situations better because you have experienced it?	–	–	To write about what the patient did the previous day (time management)	–

continued

TABLE 102 Intervention definitions as provided by included studies (*continued*)

	Experimental condition			Control condition	
First author, year	Definition group 1	Definition group 2	Definition group 3	Definition group 1	Definition group 2
Averill 2013[100]	To write on traumatic and upsetting life experiences: *Session 1*: the most traumatic and upsetting experience of the patient's life *Session 2*: continue writing about the topic described in session 1, or choose an alternate topic *Session 3*: continue writing about the topic described in session 1, or choose an alternate topic *Session 4*: as above, but a suggestion is made to relate experiences to subsequent life events Study measures were also completed	–	–	To complete the study measures	–
Bartasiuniene 2011[102]	Disease (self-focused): to write about their deepest thoughts and feelings related to their illness	–	–	To write about daily routine until illness	Participants in this group did not write anything but received usual care: received standard psychological care, pointed mostly for relaxation (e.g. aromatherapy, music therapy)
Bernard 2005[93]	To write about the most stressful and upsetting aspects of their illness and treatment (or whatever they had reported on the IES-R, e.g. psychosis, paranoia) using a protocol adapted from Pennebaker and Beall[1]	–	–	To write about different non-emotional topics (activities that day, the room they were in and plans for next week) on each day in a factual manner	–

	Experimental condition			Control condition	
First author, year	Definition group 1	Definition group 2	Definition group 3	Definition group 1	Definition group 2
Broderick 2005[118]	To write about any traumatic event, current or past, in their life	To write focusing more on the meaning of their past trauma		To write about day-to-day activities in relation to the time invested. Only facts should be written, excluding any emotions associated with them	Comprised viewing an educational videotape about RA [Education (ED)]
Broderick 2005[118]	The exercise was focused on factual retelling of an important current or past traumatic event, along with emotional expression and cognitive reappraisal. The writing should involve deep thoughts and feelings about the event	–	–	To write without concern about spelling or grammar about day-to-day activities in relation to the time invested Session 1 asked for a description of plans for the past week Session 2 focused on the previous 24 hours Session 3 focused on the upcoming week It was emphasised that only facts should be written, not any emotions associated with them	–
Canna 2006[94]	To write about their deepest thoughts and feelings related to their illness	–	–	Participants in this group were assigned to a non-emotional task, for which they had to describe in detail what they had done since they wake up	–
Cepeda 2008[88]	To write, while at home, for at least 20 minutes, once a week, for 3 weeks, a story about how cancer affected their lives	–	–	As an attention control group, patients were asked to complete, while at home, the McGill Pain Q	Patients were asked simply to attend weekly medical follow-up visits (i.e. the same clinic schedule as the other two groups) to receive usual customary care
Craft 2013[74]	To write about the deepest thoughts and feelings about breast cancer	To write about the deepest thoughts and feelings about a self-selected worst trauma	–	To write about facts of treatment only: day 1, diet; day 2, exercise; day 3, sleep pattern; day 4, medications	Non-writing

continued

TABLE 102 Intervention definitions as provided by included studies (*continued*)

	Experimental condition			Control condition	
First author, year	Definition group 1	Definition group 2	Definition group 3	Definition group 1	Definition group 2
Dennick 2014[84]	To write about their thoughts and feelings about any stressful experience over the last month or current concern (i.e. not specifically diabetes related)			Description of the previous day's activities, without prompt to discuss thoughts or feelings	
D'Souza 2008[101]	To write about a trauma or upheaval or stressful experience that you may be experiencing right now, or that you experienced at some other time in your life, particularly the most stressful that you have experienced and is the most significant to you, and ideally one that you have not talked about in detail with others. Participants were encouraged to write about the facts as well as their deepest feelings, and to try to write about the same events for all 4 writing days	–	–	To write about their activities for the past week (session 1) and past 24 hours (session 2), and their planned activities for the next 24 hours (session 3) and next week (session 4) Instructions asked participants to write only about their actions, but to refrain from writing about their feelings or opinions	–
Gellaitry 2010[75]	This intervention comprises several types of expressive writing performed in a 4-day treatment *Day 1*: emotional disclosure – exploring deepest thoughts and feelings about your experience of breast cancer *Day 2*: cognitive appraisal – making sense of your illness. What does having breast cancer mean to you? *Day 3*: benefit finding – perceived benefits of your experience; challenges you have overcome; changed outlook on life/priorities? *Day 4*: looking to the future – coping strategies; sharing experience with others	–	–	–	–

	Experimental condition			Control condition	
First author, year	Definition group 1	Definition group 2	Definition group 3	Definition group 1	Definition group 2
Gidron 1996[98]	To write about their most traumatic experiences and then in a brief predetermined format to elaborate orally on the most severe event about which they wrote	–	–	To write about their casual daily agenda without affective content and then describe daily activity orally	–
Gillis 2006[119]	Participants were asked to identify a stressful experience that continues to bother them, and they were given additional guidance on how to identify such an experience (e.g. it is difficult to think or talk about, makes them feel anxious or upset when encountering reminders of the experience or prompts intrusive thoughts). They were instructed to make the memories, images and emotions as vivid as possible, and to write both the facts and their deepest feelings about the experience. In addition, they were instructed to explore how the stressful experience has affected your FM or how you deal with having FM or you might want to explore how the experience has affected your relationships with others. Participants were encouraged to work on and resolve one stressful experience at a time, and this means that you might write about the same experience over several days or all 4 days. However, if they find that they had worked it out or feel better about one experience, they should go on and write about another stressful experience	–	–	To write about different time periods for each of the 4 writing days and to write about only their actual behaviours or planned actions rather than their feelings or opinions These four time periods were: *Day 1*: what they did with their time over the last week *Day 2*: what they did with their time over the last 24 hours *DAY 3*: what they plan to do with their time over the next 24 hours *Day 4*: what they plan to do with their time over the next week	–
Golkaramnay 2007[68]	The group members met in virtual chat rooms through which they communicated through written messages. The text-based communication was synchronous and in real time	–	–	No intervention	–

continued

TABLE 102 Intervention definitions as provided by included studies (*continued*)

	Experimental condition			Control condition	
First author, year	Definition group 1	Definition group 2	Definition group 3	Definition group 1	Definition group 2
Graf 2008[95]	To write about the most stressful and upsetting experiences of your entire life	–	–	To write about their plans for the rest of today for 20 minutes. You may or may not want to discuss your writing or the themes of your writing with your therapist. This is your choice. Your writing will be kept completely confidential. Do not worry about spelling, sentence structure, or grammar	–
Graham 2008[51]	Before writing each letter, intervention group participants completed a short exercise designed to focus their attention on existing anger related to their pain experience. In this brief questionnaire, participants were asked to consider if they currently or recently felt anger towards a health-care provider, themselves, or someone or something else and, if so, to remember and/or focus on it. Participants were given a writing tablet and instructions to write a letter to the person at whom or thing at which they were most angry. They were instructed to focus on their anger rather than other emotions	–	–	Participants in the control group did not complete the short anger-focusing exercise and were instructed to write a letter to a person of their choosing, describing their plans for the upcoming day. They were instructed to write about their goals in detail but without discussing any of their thoughts and feelings. Control group participants believed they were providing information about what they were able to do in a given day	–
Grasing 2010[90]	The writing task focused on traumatic and upsetting life experiences *Session 1*: the most traumatic and upsetting experience of the patient's life *Session 2*: continue writing about the topic described in session 1, or choose an alternative topic *Session 3*: continue writing about the topic described in session 1, or choose an alternative topic *Session 4*: as above, but a suggestion is made to relate experiences to subsequent life events	–	–	The time-management task emphasised objective, factual events. Time-management control group wrote about how time was spent during the previous day; current day (prior to the session); during the remainder of the current day (after the session); during the upcoming week	–

	Experimental condition			Control condition	
First author, year	Definition group 1	Definition group 2	Definition group 3	Definition group 1	Definition group 2
Halpert 2010[52]	To write about the thoughts and feelings about IBS. They had to really let go, and explore the very deep emotions and thoughts	–	–	Participants who intended to write but did not start writing were offered the option to remain in the study and complete the follow-up questionnaires without writing formed the non-writing group	–
Harris 2005[106]	Trauma writing described as writing about stressful of traumatic experiences	To write about positive experiences such as events that stimulated feelings of happiness or joy		To write on neutral topics focused on the events of the previous day (control group)	–
Hamilton-West 2007[114]	To write about any stressful experiences encountered over the last month, or any worries or concerns that are currently troubling you These might be related to the AS or not	–	–	To write in detail about the plans for the following day. Participants were permitted to write about one topic only, or move from one topic to another	–
Henry 2010[53]	To write about positive thoughts and feelings regarding their experience with breast cancer	–	–	Participants did not write, just received treatment as usual	–
Hevey 2012[103]	They were asked to write about their thoughts and feelings in relation to having had a heart attack	–	–	To described daily activities in the year prior to their heart attack	–
Hong 2011[67]	Music therapy programme, using songwriting-related activities consisted of three stages: *Stage 1*: preparing songwriting for finding preferred songs *Stage 2*: doing songwriting *Stage 3*: reinforcing songwriting	–	–	Free time was given to the participants allocated to the control group for the 16 weeks the intervention took place. Subjects just underwent the usual daily life at the nursing home	–
Hughes 2007[54]	To write about their very deepest thoughts and feelings about [their] cancer and cancer treatment	–	–	Participants were given general health information typically offered to patients by their health-care providers, and was considered a treatment as usual control	–

continued

TABLE 102 Intervention definitions as provided by included studies (*continued*)

	Experimental condition			Control condition	
First author, year	Definition group 1	Definition group 2	Definition group 3	Definition group 1	Definition group 2
Ironson 2013[71]	To write about their worst trauma/current conflicts and then to write about what they did and future plans	–	–	To write about daily events	–
Jensen-Johansen 2013[76]	To write about a traumatic or distressing event and to explore their deepest feelings and emotions associated with this experience. They were free to write about their breast cancer as well as non-cancer experiences, and to switch topics during the intervention	–	–	To write as objectively and as detailed as possible in an emotionally neutral manner about their daily activities	–
Krpan 2013[96]	To write about their deepest thoughts and feelings about an extremely important emotional issue that had affected them and their life	–	–	How they organised their day	
Kraaij 2010[55]	To describe their deepest thoughts and feelings regarding their HIV-positive status or any other emotionally significant topic. Participants were instructed to pay special attention to issues that they had not previously disclosed to others. All writing assignments were completed through a website that was especially designed for the present study	The self-help programme consisted of a workbook, a work programme and a CD-ROM. In the first week, participants were asked to do mindfulness-based relaxation exercises, and to continue these exercises in the following 3 weeks. In the second and third week, participants learned to identify and change irrational cognitions and to practise counterconditioning. In the fourth week, they were guided to formulate a realistic, concrete goal and to improve their self-efficacy to reach this goal		Participants on the waiting list did not receive any intervention. They were offered the interventions after completion of the study	–

	Experimental condition			Control condition	
First author, year	Definition group 1	Definition group 2	Definition group 3	Definition group 1	Definition group 2
Lange 2003[69]	To stimulate self-confrontation, participants had to write in the first person and in the present tense, describing in as much detail as possible the sensory perceptions that they experienced at the time of the traumatic event, including olfactory, visual and auditory sensations	–	–	For ethical reasons, the participants in the control condition were not kept waiting until the treatment group had completed the follow-up. They received treatment directly after the treatment group had terminated treatment	–
Lumley 2011[115]	To write (or speak) in a journal about this stressful experience, incorporating both facts and deepest feelings	To write (or speak) about positive emotional events in their lives, including both facts and feelings, and to describe their memories as vividly as possible	–	To write (or speak) about their daily activities over four different time intervals: day 1, the previous week; day 2, the previous day; day 3, their plans for the next day; day 4, their plans for the next week Time-management type of control	–
Lumley 2014[116]	To identify a stressful or traumatic experience that continued to cause them stress and to write about their most vivid memories and innermost thoughts and feelings about that experience. Also about finding meaning from it and anything they had learned, and how they coped with it now	Coping skills training		How they spent and managed their time over the previous week, including eating, physical activity and sleep	Arthritis education
Mann 2001[72]	To write about a somewhat positive future To write in journals nor were told to imagine an optimistic future in which they would only have to take one pill per day for HIV	–	–	Participants did not write nor were told to imagine an optimistic future in which they would only have to take one pill per day for HIV. However, efforts were made to equalise the amount of time that researchers spent with participants in the two conditions	–
McElligott 2006[87]	To write about their deepest thoughts and feelings related to their illness	–	–	To write about details of previous day	–
Meshberg-Cohen 2010[91]	To write about personal traumatic/stressful experiences	–	–	To write on neutral topics (e.g. what they ate on the previous day, what they did since waking up yesterday)	–

continued

TABLE 102 Intervention definitions as provided by included studies (*continued*)

	Experimental condition			Control condition	
First author, year	Definition group 1	Definition group 2	Definition group 3	Definition group 1	Definition group 2
Milbury 2014[81]	To write about their deepest emotions and thoughts regarding their cancer experience with slightly different probes at each session (e.g. how the diagnosis and treatment interfere with their lives; treatment-related decision-making; and fears about the future)	–	–	To write about four neutral topics: dietary behaviours, physical activity and exercise behaviours, attitudes towards smoking and other substance use, and sleep habits	–
Mosher 2012[77]	Writing about their deepest thoughts and feelings regarding their cancer	–	–	To describe yesterday's activities in a factual manner	–
Paradisi 2010[110]	To describe the worst experience in their lives related to their disease. After each writing session patients were directed to phototherapy	To write about their best possible future self and life goals. After each writing session patients were directed to phototherapy	–	Non-emotional control group. No definition given	–
Park 2012[78]	Express with writing about cancer-related emotion in 20 minutes		–	No intervention	–
Pauley 2011[82]	To write about any aspect of their cancer that they would characterise as positive	To indicate what was negative about their experience	–	To write about the events of the day, the layout of their homes, or the responsibilities at their current position	–
Petrie 2004[56]	To write about the most traumatic and emotional experiences of their lives, about deepest thoughts and feelings about an event that they had not previously discussed with others. They could write about HIV-related topics or any other issues of emotional importance to them	–	–	To write about how they used their time, but with slightly different orientations each day: what they had done in the previous 24 hours, and what their plans were for the next 24 hours, the next week, and the next 12 months. They were encouraged to write in a purely descriptive and objective way with minimum expression of emotions	–
Richards 2000[97]	To write about the deepest thoughts and feelings, regarding an experience that had not been previously shared with others at all or in very little detail	–	–	To write about an assigned topic usually on how they manage their time	Participants were asked to go about their daily routine

	Experimental condition			Control condition	
First author, year	Definition group 1	Definition group 2	Definition group 3	Definition group 1	Definition group 2
Rickett 2011[66]	Workshop series in two groups, split in first and second (control group) workshop times. Participants in group 1 undertook the first poetry writing programme, while the remaining participants in group 2 undertook the second During each meeting, participants read poetry selections, discussed aspects of poetry writing, wrote poems and read them aloud to the group	–	–	The second group was wait-listed to enable comparison with the first group in the workshop	–
Rini 2014[86]	To explore their deepest emotions and emotions about the time before, during and after transplant and then any aspect of their transplant	Peer helping	Expressive helping	They wrote a factual account of their experience before, during and after their transplant	
Robinson 2008[99]	Participants were assigned an e-mail therapist. eBT was administered by a team of therapists of different backgrounds. The therapy included online supervision and feedback from the participants. All treatment included eliciting history; asking participants to keep a dietary and feelings diary; identifying and modifying negative automatic thoughts and other cognitive styles common in eating disorders; encouraging regular meals with adequate carbohydrate; examining relationships and aspects of the participants behaviour which might exacerbate the eating disorder; managing the ending	Participants were sent an e-mail and had to spend some time at least twice a week, writing about their difficulties and to send it to one of the authors	–	Participants were placed on a waiting list. After 3 months they were reassessed and offered either eBT or SDW by random allocation	–
Rosenberg 2002[83]	To write about their experience with cancer and its treatment. They were allowed to write about other experiences in their life	–	–	Any type of writing was performed	–
Sharifabad 2010[105]	To write about their most traumatic or upsetting life experiences	–	–	To write about an assigned neutral topic, describing the specific event or object in detail without describing thoughts or feelings relating to the topic	–

continued

TABLE 102 Intervention definitions as provided by included studies (*continued*)

	Experimental condition			Control condition	
First author, year	Definition group 1	Definition group 2	Definition group 3	Definition group 1	Definition group 2
Sloan 2012[70]	To write about the same MVA event during each writing session, about their deepest emotions and thoughts at the time of the MVA was emphasised, as well as the importance of providing detailed information about the MVA. During the second session, they had to add information about what they were thinking or feeling as the event was happening	–	–	Participants in the waiting list were encouraged to contact the project coordinator any time if they were having problems	–
Smyth 1999[107]	To write about the most stressful experience that they had ever undergone	–	–	To describe their plans for the day (framed as a time-management exercise to reduce stress)	–
Smyth 2008[121]	To write about their traumatic experience	–	–	To write about a neutral topic: time-management control writing related to their daily plans	–
Stark 2010[57]	To write about their most traumatic experience (based on Broderick *et al.*[118]). Concepts of the Change Theory were incorporated by asking also patients to write their experiences as a story with a clear beginning, middle and end, as well as incorporate their deepest thoughts and emotions regarding this event, to try to perceive themselves as survivors and attempts to find any positive results that may have occurred as a result of this traumatic experience	–	–		–
Tabolli 2012[111]	To write longhand, continuously, about the most stressful event in their life, about the experiences with psoriasis After the intervention, participants received information and educational material on the disease and its management	–	–	Control patients received only an educational intervention: patients received information and educational materials	–

	Experimental condition			Control condition	
First author, year	Definition group 1	Definition group 2	Definition group 3	Definition group 1	Definition group 2
Taylor 2003[89]	To write about their deepest thoughts and feelings about the most distressing experience of their entire life for a period of 20 minutes Participants were encouraged to connect their topic to relationships with others (e.g. parents, caregivers, lovers, friends, relatives) and to their past, present, or future	–	–		–
Theadom 2010[58]	To write about your very deepest thoughts and feelings about an extremely important emotional issue that has affected you and your life	-	–	*Day 1*: to write about exactly what you did yesterday from the time you got up until the time you went to bed *Day 2*: to write about what they had eaten the day before *Day 3*: to write about the physical activity they had undertaken the previous day	–
Van Dam 2013[92]	Ten individual sessions of writing: 1. In detail about the most traumatic event(s) they had experienced. The writing had to be in the first person and in the present tense, addressing sensory experiences, painful facts thoughts and emotions experienced during the trauma 2. To write a letter of advice to a friend or loved one, imagining that they had experienced the same event. Patients were asked to give advice on how to handle the thoughts and emotions 3. Write a similar letter to themselves 4. Writing a reflective letter about the trauma and its impact on their life, and their resolutions for dealing with the trauma in future			Treatment as usual	

continued

TABLE 102 Intervention definitions as provided by included studies (*continued*)

	Experimental condition			Control condition	
First author, year	Definition group 1	Definition group 2	Definition group 3	Definition group 1	Definition group 2
Vedhara 2007[112]	To write or talk about traumatic and stressful events	–	–	To provide a factual descriptive (i.e. non-emotional) account of their activities in a specified time period (e.g. yesterday)	-
Wagner 2010[73]	To write about some extremely upsetting or traumatic event that they had experienced in their life	–	–	To describe in detail, as objectively as possible (a) their plans for the remainder of the day; (b) the clothes they are wearing; (c) any particular object or event of their choosing; or (d) the contents of their closet	–
Walker 1999[79]	To write about the deepest thoughts and feelings about their cancer experience (during 1 day only)	To write about the deepest thoughts and feelings about their cancer experience (during 3 separate days)	–	The attentional control received usual care and on their final day of treatment the researcher met with them to chat about plans for trips or current events not related to cancer	–
Wallander 2011[109]	WSD was administered in three 20-minute sessions: one in the clinic and two by telephone in the home (no additional information was reported)	–	–	Participants received SMC appropriate to their health status from a paediatric GI specialist. SMC for RAP generally consists of follow-up office visits and/or telephone consultations, education support, dietary instructions, as well as possible oral medication and supplements to increase dietary bulk, decreased acid or increase motility, as deemed medically appropriate by treating GI specialist	–
Warner 2006[108]	To write about past negative events, about a trauma or problem that they may be experiencing at the moment of the intervention, or that they had experienced at some other time in their life	–	–	To write privately about how you manage their time, writing about a different topic every day	–

	Experimental condition			Control condition	
First author, year	Definition group 1	Definition group 2	Definition group 3	Definition group 1	Definition group 2
Wetherell 2005[117]	To write about their deepest emotions and thoughts about the most upsetting experience in their life, to really let go explore their feelings and thoughts about it. If they were not able to write about it they were prompted to write about anything that had upset them significantly in the past (it had to be a new topic, never discussed)	–	–	To write or talk about one of three topics. To describe, in detail: (1) everything they had done during that day (2) were planning to do the following day *or* (3) during the forthcoming weekend Control patients were instructed that the description should be detailed and factual and to avoid emotion during their accounts	–
Willmott 2011[104]	To write about their thoughts and feelings in relation to having had a heart attack including any emotions (positive and negative) and thoughts about how they might cope Note that on day 3, additionally, they were encouraged to try to wrap things up by, for example, thinking about how the heart attack may affect their future and again the importance of exploring thoughts and feelings was emphasised	–	–	To describe what they usually did on a Saturday, Sunday and Monday before they experienced a heart attack (each day forming the focus of one session's writing) They were asked to describe their activities in detail and encouraged to be as objective as possible when doing so They were told that the important thing was not to get distracted by emotions but to focus on simple descriptions of what they did, such as where they went and the things they ate	–
Zakowski 2004[84]	To write continuously for 20 minutes about their deepest thoughts and feelings regarding their cancer experience	–	–	To describe in detail their daily activities in a non-emotional manner in accord with previously published procedures	–

–, not included; CD-ROM, compact disc read-only memory; IES-R, Impact of Event Scale-Revised; McGill Pain Q, McGill Pain Questionnaire.

Interventions as evaluated by the reviewers

TABLE 103 Facilitated and non-facilitated intervention names in included studies

First author, year	Experimental condition		Control condition		
	Intervention group 1	Intervention group 2	Control group 1	Control group 2	Facilitated intervention? Yes/No
Abel 2004[50]	Unfacilitated EW		Factual writing		No
Arden-Close 2013[80]	Unfacilitated EW		Time-management writing		No
Averill 2013[100]	Unfacilitated EW		Non-writing		No
Bartasiuniene 2011[102]	Unfacilitated EW		Factual writing	Non-writing	No
Bernard 2006[93]	Unfacilitated EW		Factual and time-management writing		No
Broderick 2004[113]	Unfacilitated EW	Unfacilitated EW	Time-management writing	Attention control[a]	No
Broderick 2005[118]	Unfacilitated EW		Time-management writing	SMC	No
Canna 2006[94]	Unfacilitated EW		Factual writing		?
Cepeda 2008[85]	Unfacilitated EW		Attention control[a]	SMC	No
Craft 2013[74]	Unfacilitated EW	Unfacilitated EW	Factual writing	Non-writing	No
Dennick 2014[88]	Unfacilitated EW		Factual writing		No
D'Souza 2008[101]	Unfacilitated EW		Time-management writing		No
Gellaitry 2010[75]	Unfacilitated EW		SMC		No
Gidron 1996[98]	Unfacilitated EW		Factual writing		No
Gillis 2006[119]	Unfacilitated EW		Time-management writing		No
Golkaramnay 2007[68]	Internet chat room		No intervention		Yes
Graf 2008[95]	Unfacilitated EW		Time-management writing		No
Graham 2008[51]	Questionnaire plus unfacilitated EW		Factual goal writing		No
Grasing 2010[90]	Unfacilitated EW		Time-management writing		No
Halpert 2010[52]	Unfacilitated EW		Non-writing		No
Hamilton-West 2007[114]	Unfacilitated EW		Time-management writing		No
Harris 2005[106]	Unfacilitated EW	Positive writing	Factual writing		No
Henry 2010[53]	Positive writing		SMC		No
Hevey 2012[103]	Unfacilitated EW		Factual writing		No
Hong 2011[67]	Songwriting		Waiting list		Yes

TABLE 103 Facilitated and non-facilitated intervention names in included studies (*continued*)

	Experimental condition		Control condition		
First author, year	Intervention group 1	Intervention group 2	Control group 1	Control group 2	Facilitated intervention? Yes/No
Hughes 2007[54]	Unfacilitated EW		SMC		No
Ironson 2013[71]	Unfacilitated EW		Factual writing		No
Jensen-Johansen 2013[76]	Unfacilitated EW		Time-management writing		No
Kraaij 2010[55]	Website structured writing		Waiting list		No
Krpan 2013[96]	Unfacilitated EW		Time management writing		No
Lange 2003[69]	Website Interapy		Waiting list		Yes
Lumley 2011[115]	Unfacilitated EW	Positive writing	Time-management writing		No
Lumley 2014[116]	Unfacilitated EW		Time-management writing		No
Mann 2001[72]	Positive writing		Non-writing		No
McElligott 2006[87]	Unfacilitated EW		Factual writing		No
Meshberg-Cohen 2010[91]	Unfacilitated EW		Factual writing		No
Milbury 2014[81]	Unfacilitated EW		Factual writing		No
Mosher 2012[77]	Unfacilitated EW		Factual writing		No
Paradisi 2010[110]	Unfacilitated EW	Positive writing	Non-EW		No
Park 2012[78]	Unfacilitated EW		No intervention		No
Pauley 2011[82]	Unfacilitated EW	Positive writing	Factual writing		No
Petrie 2004[56]	Unfacilitated EW		Time-management writing		No
Richards 2000[97]	Unfacilitated EW		Time-management writing	SMC	No
Rickett 2011[66]	Poetry writing		Waiting list		Yes
Rini 2014[86]	Unfacilitated EW		Factual writing		No
Robinson 2008[99]	Unfacilitated EW		Waiting list		No
Rosenberg 2002[83]	Unfacilitated EW		Non-writing		No
Sharifabad 2010[105]	Unfacilitated EW		Factual writing		No
Sloan 2012[70]	Written exposure therapy		Waiting list		Yes
Smyth 1999[107]	Unfacilitated EW		Time-management writing		No
Smyth 2008[121]	Unfacilitated EW		Time-management writing		No
Stark 2010[57]	Unfacilitated EW (mixed writing)		Non-writing		?

continued

TABLE 103 Facilitated and non-facilitated intervention names in included studies (*continued*)

First author, year	Experimental condition		Control condition		
	Intervention group 1	Intervention group 2	Control group 1	Control group 2	Facilitated intervention? Yes/No
Tabolli 2012[111]	Unfacilitated EW		Non-writing		No
Taylor 2003[89]	Unfacilitated EW		SMC		No
Theadom 2010[58]	Unfacilitated EW		Factual writing		No
Van Dam 2013[92]	Unfacilitated EW		Treatment as usual		No
Vedhara 2007[112]	Unfacilitated EW		Factual writing		No
Wagner 2010[73]	Unfacilitated EW		Factual and time-management writing		No
Walker 1999[79]	Unfacilitated EW	Positive writing	SMC		No
Wallander 2011[109]	Unfacilitated EW		SMC		No
Warner 2006[108]	Unfacilitated EW		Time-management writing		No
Wetherell 2005[117]	Unfacilitated EW		Time-management writing		No
Willmott 2011[104]	Unfacilitated EW		Factual writing		No
Zakowski 2004[84]	Unfacilitated EW		Factual writing		No

Unfacilitated EW, unfacilitated type of TW or an adaptation of it.

a This attention control group has not been considered for analysis in current systematic review given it was considered to have an active component and therefore not suitable for comparison. It would have been taken into account in the situation where the two other intervention groups had undertaken the same educational activity on top of the writing exercise.

Additional information on the interventions assessed

TABLE 104 Therapeutic writing interventions: descriptions in included studies

First author, year	Funding	Financial compensation[a]	Method of instruction	Topic of the intervention	Number of topics	Topic change allowed	Duration (minutes)	Length	In a group	Type of writing	Collection of writings	Carer feedback
Abel 2004[50]	Yes	Yes	Verbally	Disease self-focused	1	No	20	Three consecutive	NR	Handwriting	NR	NR
Arden-Close 2013[80]	No	No	Telephone	Disease and treatment self-focused	1 (with variations each day)	Yes	20	Three non-consecutive (over 3-week period)	No	Handwriting	Yes	NR
Averill 2013[100]	Yes	No	Telephone	Disease self-focused	1	No	20	Three non-consecutive (over 1 week)	No	Handwriting	NR	No
Bartasiuniene 2011[102]	No	No	In writing	Disease self-focused	1	NR	30	Four consecutive	No	Handwriting	NR	NR
Bernard 2006[93]	No	No	Telephone	Disease and treatment self-focused	1	No	15	Three non-consecutive (over 10 days)	No	Handwriting	No	Yes
Broderick 2004[113]	Yes	No	Videotape	1. Self-selected trauma 2. Enhanced meaning self-selected trauma	2	No	20	Three consecutive	No	Handwriting	No	No
Broderick 2005[118]	Yes	Yes	Verbally	Self-selected trauma	1	No	20	Three non-consecutive (at 1-week intervals)	No	Handwriting	Yes	Yes
Canna 2006[94]	Yes	No										

continued

TABLE 104 Therapeutic writing interventions: descriptions in included studies (*continued*)

First author, year	Funding	Financial compensation[a]	Method of instruction	Topic of the intervention	Number of topics	Topic change allowed	Duration (minutes)	Length	In a group	Type of writing	Collection of writings	Carer feedback
Cepeda 2008[85]	Yes	No	Verbally	Disease self-focused	1	No	20	Three non-consecutive (at 1-week intervals)	No	Handwriting	Yes	NR
Craft 2013[74]	No	No	In writing	1. Disease self-focused 2. Self-selected worst trauma	2	No	20	Four consecutive	No	By hand or word processor	Yes	NR
Dennick 2014[88]	Part	No	In writing	Self-selected trauma	1	Yes	20	3 days over 1 week	No	Handwriting	NR	Yes
D'Souza 2008[101]	Yes	Yes	In writing	Self-selected trauma	1	No	20	Four non-consecutive (at 2-week intervals)	No	Handwriting	Yes	NR
Gellaitry 2010[75]	Yes			Disease self-focused	2	Yes	20	Four consecutive	No	Handwriting	Yes	Yes
Gidron 1996[98]	No	No	Verbally	Self-selected trauma	1	No	20	Three consecutive	No	Handwriting and oral	NR	NR
Gillis 2006[119]	No	No	In writing	Self-selected social trauma disease self-focused	3	Yes	15–20	Four consecutive	No	Handwriting	Yes	NR
Golkaramnay 2007[68]	Yes	No	In writing	Here-and-now tasks	1	NR	90	Weekly for 12–15 weeks	Yes	Word processor	Yes	Yes
Graf 2008[95]	No	No	In writing	Self-selected worst trauma	1	No	20	Two sessions (2 weeks apart)	No	Handwriting	Yes	Yes
Graham 2008[51]	Yes	Yes	In writing	Self-selected anger	1	No	20	Two sessions (2.5 weeks apart)	No	Word processor	Yes	NR

First author, year	Funding	Financial compensation[a]	Method of instruction	Topic of the intervention	Number of topics	Topic change allowed	Duration (minutes)	Length	In a group	Type of writing	Collection of writings	Carer feedback
Grasing 2010[90]	No	Yes	In writing	Self-selected trauma	1	Yes	20	Four sessions over 17 days	No	Handwriting	Yes	NR
Halpert 2010[52]	No	No	In writing	Disease self-focused	1	Yes	30	Four consecutive	No	Handwriting	NR	NR
Hamilton-West 2007[114]	No	NR	In writing	Disease self-focused	1	Yes	20	Three consecutive	No	Handwriting	NR	NR
Harris 2005[106]	Yes	Yes		1. Self-selected trauma 2. Self-selected positive experience	1	No	20	Three non-consecutive (at 1-week intervals)	No	Handwriting	Yes	NR
Henry 2010[53]	Yes	Yes	In writing	Disease, positive self-focused	1	No	20	One session	No	Handwriting	Yes	NR
Hevey 2012[103]	No	NR	In writing	Disease self-focused	1	No	20	Three consecutive	No	Handwriting	Yes	NR
Hong 2011[67]	No	No	Verbally	Self-selected past experience or everyday live	> 1	Yes	60	Sixteen sessions at weekly intervals	Yes	Handwriting	NR	
Hughes 2007[54]	No	No	In writing	Disease self-focused	1	NR	30	Three consecutive (over a five-time period)		Handwriting	NR	Yes
Ironson 2013[71]	Yes	No	In writing	Self-selected worst trauma (or current conflicts)	1	Yes	20	Four consecutive	No	Handwriting	Yes	NR

continued

TABLE 104 Therapeutic writing interventions: descriptions in included studies (*continued*)

First author, year	Funding	Financial compensation[a]	Method of instruction	Topic of the intervention	Number of topics	Topic change allowed	Duration (minutes)	Length	In a group	Type of writing	Collection of writings	Carer feedback
Kraaij 2010[55]	No	No	NR	Disease self-focused	1	Yes	30	Four non-consecutive (at 1-week intervals)	No	Word processor	Yes	NR
Krpan 2013[96]	Yes	Yes	NR	Self-selected past trauma	1	NR	20	3 consecutive days	NR	Handwriting	NR	NR
Jensen-Johansen 2013[71]	Yes	No	Telephone	Self-selected trauma	1	Yes	20	Three non-consecutive (over a 3-week period)	No	Handwriting	Yes	NR
Lange 2003[69]	Yes	No	In writing	Self-selected trauma: description of sensory perceptions including olfactory, visual and auditory sensations	1	NR	45	10 non-consecutive (over 5 weeks at 2-week intervals)	No	Word processor	Yes	Yes
Lumley 2011[115]	Yes	Yes	Verbally and in writing	1. Self-selected stressful event 2. Self-selected positive event	1	No	20	Four consecutive	No	Handwriting	Yes	NR
Lumley 2014[116]	Yes	Yes	Verbally and in writing	Self-selected trauma	4	No	20	Four within 1 week	No	Handwriting	Yes	NR
Mann 2001[72]	Yes	Yes	In writing	Self-selected positive future	1	NR	10	Four non-consecutive (twice a week)	NR	Handwriting	NR	NR
McElligott 2006[87]	No	Yes	Verbally and in writing	Disease self-focused	1	No	NR	Three (at 1-week intervals)	No	Handwriting	No	NR
Meshberg-Cohen 2010[91]	Yes	No	In writing	Self-selected trauma	1	NR	20	Four consecutive	No	Handwriting	Yes	NR

First author, year	Funding	Financial compensation[a]	Method of instruction	Topic of the intervention	Number of topics	Topic change allowed	Duration (minutes)	Length	In a group	Type of writing	Collection of writings	Carer feedback
Milbury 2014[81]	Yes	Yes	In writing	Disease and treatment self-focused	1	NR	20	Four non-consecutive (over 10 days)	No	Handwriting	Yes	NR
Mosher 2012[77]	No	Yes	In writing	Disease (self-focused): deepest thoughts and feelings regarding their cancer	1	NR	20	Four non-consecutive (over 8 weeks)	No	Handwriting	Yes	Yes
Paradisi 2010[110]	Yes	NR	In writing	1. Disease self-focused worst experience 2. Best possible future self and life goals	1	No	20	3 consecutive days	No	Handwriting	No	NR
Park 2012[78]	No	NR	In writing	Disease self-focused	1	NR	20	Four non-consecutive (at 1-week intervals)	Yes	Handwriting	NR	NR
Pauley 2011[82]	Yes	Yes	In writing	1. Disease, positive self-focused 2. Disease, negative self-focused	1	NR	20	3 days (at 1-week intervals)	No	Handwriting and word processor	Yes	NR
Petrie 2004[56]	Yes	NR	In writing	Self-selected worst trauma or self-focused disease	1	Yes	30	4 consecutive days	No	Word processor	Yes	No
Richards 2000[97]	Yes	Yes	In writing	Disease self-focused	1	NR	20	3 consecutive days	No	Handwriting	Yes	NR

continued

TABLE 104 Therapeutic writing interventions: descriptions in included studies (*continued*)

First author, year	Funding	Financial compensation[a]	Method of instruction	Topic of the intervention	Number of topics	Topic change allowed	Duration (minutes)	Length	In a group	Type of writing	Collection of writings	Carer feedback
Rickett 2011[66]	Yes	NR	In writing and verbally	Discussed aspects of poetry writing, wrote poems	1	NR	120	Weekly for 8 weeks	Yes	Handwriting	Yes	Yes
Rini 2014[86]	Yes	Yes	In writing	Disease and treatment focused	4	No	20	Weekly, over 4 weeks	No	handwriting	Yes	NR.
Robinson 2008[99]	No	No	In writing	Self-selected difficulties (not further specified)	1	NR	NR	Two sessions (over 1 week)	No	Handwriting	Yes	Yes
Rosenberg 2002[83]	Yes	No	In writing	Disease and treatment self-focused	1	Yes	20–30	4 consecutive days	No	Handwriting	NR	NR
Sharifabad 2010[105]	Yes	No	In writing and verbally	Self-selected worst experience	1	NR	20	Three sessions (at 1-week intervals)	Yes	Handwriting	NR	NR
Sloan 2012[70]	Yes	Yes	In writing and verbally	Disease self-focused	2	Yes	120	Four sessions	No	Handwriting	NR	Yes
Smyth 1999[107]	Yes	Yes	In writing	Self-selected worst experience	1	NR	20	3 consecutive days	No	Handwriting	Yes	No
Smyth 2008[121]	No	Yes	In writing	Self-selected experience	1	NR	20	Three consecutive sessions (with 15-minute rest interval between each session)	No	Handwriting	NR	NR
Stark 2010[57]	No	Yes	In writing	Self-selected worst experience from a positive perspective	1	No	20	3 consecutive days	No	Handwriting	NR	NR

First author, year	Funding	Financial compensation[a]	Method of instruction	Topic of the intervention	Number of topics	Topic change allowed	Duration (minutes)	Length	In a group	Type of writing	Collection of writings	Carer feedback
Tabolli 2012[111]	Yes	No	In writing	Disease self-focused	1	NR	20	3 consecutive days	No	Handwriting	NR	Yes
Taylor 2003[89]	Yes	No	In writing	Self-selected worst experience	1	NR	20	3 consecutive days	No	Handwriting	Yes	NR
Theadom 2010[58]	Yes	No	In writing	Self-selected emotional issue	1	No	20	3 consecutive days	No	Handwriting	Yes	Yes
Van Dam 2013[92]	Yes	No	Verbally	Self-selected trauma	4	No	45–60	10 sessions, 1 per week	No	Handwriting	Yes	Yes
Vedhara 2007[112]	Yes	No	In writing	Self-selected traumatic and stressful events	1	Yes	20	4 consecutive days	No	Handwriting	Yes	NR
Wagner 2010[73]	No	Yes	In writing	Self-selected trauma, past negative events, problem	1	Yes	20	Four non-consecutive (at 1-week intervals)	No	Word processor	Yes	NR
Walker 1999[79]	No		In writing	Disease self-focused	1	NR	30	2–3 consecutive days	No	Handwriting	Yes	NR
Wallander 2011[109]	Yes	No	In writing and verbally	NR	NR	NR	20	Three sessions (in 6 days)	No	Handwriting	Yes	NR

continued

TABLE 104 Therapeutic writing interventions: descriptions in included studies (*continued*)

First author, year	Funding	Financial compensation[a]	Method of instruction	Topic of the intervention	Number of topics	Topic change allowed	Duration (minutes)	Length	In a group	Type of writing	Collection of writings	Carer feedback
Warner 2006[108]	Yes	Yes	In writing	Self-selected trauma	> 1	NR	15–20	3 consecutive days	No	Handwriting	Yes	Yes
Wetherell 2005[117]	Yes	No	Verbally	Self-selected most upsetting experience	1	NR	20 (with so many breaks as wished)	1 day	No	Handwriting or tape recording	Yes	Yes
Willmott 2011[104]	Yes	No	In writing	Disease self-focused	2	NR	10–20 (time spent writing in each session had to be recorded)	3 consecutive days	No	Handwriting	Yes	NR
Zakowski 2004[84]	Yes	No	In writing and verbally	Disease self-focused	1	No	20	3 consecutive days	No	Handwriting	Yes	NR

NR, not reported.
a Financial compensation could be done for participation in the study or as part of the outcomes collection.

Outcomes assessed

TABLE 105 List of instruments and/or outcome measures used in included studies

First author, year	Physiological measures	Biomarkers measures of disease progression	Patient-reported outcome measures	Resource-use measures	Adherence	Comments
Abel 2004[50]			Cognitive reorganisation			
			Social stigma (stigma scale)			
			Depression (CES-D)			
			QoL (SF-36)			
Arden-Close 2013[80]			Perceived stress (PSS)			
			Intrusive thoughts (IES)			
			QoL (FACT-General)			
Averill 2013[100]			Affect (ABS)			
			Emotional approach coping (specific scale)			
			Depression (GDS)			
			Ambivalence over emotional expression (AEE)			
			Social support (Social Constraints scale)			
			QoL (McGill QOL)			
Bartasiuniene 2011[102]			Emotional states [PANAS-X(b)]			

continued

TABLE 105 List of instruments and/or outcome measures used in included studies (*continued*)

First author, year	Physiological measures	Biomarkers measures of disease progression	Patient-reported outcome measures	Resource-use measures	Adherence	Comments
Bernard 2006[93]			Trauma of psychosis (IES-R)			
			Recovery style (RSQ)			
			Insight (IS)			
			Anxiety – depression (HADS)			
			Mood [PANAS- X(a)]			
Broderick 2004[118]	Disease activity (Disease Activity Rating scale)		QoL (SF-36v2 Health Survey)			
Broderick 2005[118]			Anxiety and depression (STAI-S, BDI-II)			
			Physical health (FIQ, CLINHAQ)			
			QoL (MOS-SF-36, QOL)			
			Pain (McGill Pain Q-SF, MPI)			
Canna 2006[94]			Anxiety (BAI, STAI)	Number of treatment sessions		
			Depression (BDI-II)			
			Distress symptoms (BSI, GSI)			
			Panic symptoms (PSWQ)			
			Physical symptoms (PILL)			
			Mood (PANAS)			
			Life satisfaction (QoLI)			
			Social support (MSPSS)			

First author, year	Physiological measures	Biomarkers measures of disease progression	Patient-reported outcome measures	Resource-use measures	Adherence	Comments
Cepeda 2008[85]			Average pain intensity, well-being			
Craft 2013[74]			QoL (FACT-B)			
Dennick 2014[88]			CES-D			
			PAID			
			EQ-5D VAS and utility			
			SDSCA			
D'Souza 2008[101]	Headache frequency, disability and severity		Physical symptoms (SCL-90-R)			
			Immediate mood [PANAS-X(d)]			
			Behavioural disability from headache (MIDAS)			
Gellaitry 2010[75]			Social support (SOS)	Number of all medical visits (scheduled and unscheduled hospital appointments, GP appointments and visits to the nurse), regardless of whether they were cancer related or not		
			QoL (FACT-B)			
			Mood (POMS)			
			AEs			
Gidron 1996[98]			Physical symptoms (PILL, Mississippi scale for PTSD)	Health-care visits [mean (SD) number of health-care visits in the last month]		
			Mood, depression, negative and positive affect [PANAS-X(a), IES, BDI-II]			

continued

TABLE 105 List of instruments and/or outcome measures used in included studies (*continued*)

First author, year	Physiological measures	Biomarkers measures of disease progression	Patient-reported outcome measures	Resource-use measures	Adherence	Comments
Gillis 2006[119]			Immediate negative mood (PANAS-X) Negative affect (NA subscale of PANAS-X) Pain (pain subscale of AIMS2) Fatigue (FSS) Social support (subscale of AIMS2) Global health status (FIQ) Physical dysfunction (AIMS2) Sleep quality (4-item scale)	Total number of visits to specialist – related or not to FM – during the last month		
Golkaramnay 2007[68]			Patient distress (OQ-45.2) Symptomatic distress [SCL-90-R (GSI)] Subjective physical well-being (GBB) Life satisfaction (FLZ)			
Graf 2008[95]			Mood (DASS) Functioning (OQ-45.2)			

First author, year	Physiological measures	Biomarkers measures of disease progression	Patient-reported outcome measures	Resource-use measures	Adherence	Comments
Graham 2008[51]			Anger expression and meaning making (expressed anger) Sadness/anxiety, depressed mood (CES-D) Pain severity (WHYMPI) Feelings of personal control over pain (SOPA) Resource use (number of years attending the centre)			
Grasing 2010[90]	BP and heart rate (measured with patients in a sitting position)		Craving intensity (BSCS) Mood (POMS, BSI) Stress (PSS)	Total number of contacts completed outpatient mental health clinic visits for treatment of substance abuse disorders		
Halpert 2010[52]			Cognition (CG-FBD) Catastrophising/coping (CT3) IBS-specific QoL (IBS-QoL) IBS severity (IBSSS)			
Hamilton-West 2007[114]			Physical status – fatigue and pain mainly (BASDAI, BASFI, BAS-G) Depression (HADS)			
Harris 2005[106]	Lung function through spirometry (FEV_1, FVC)				Adherence to probes	

continued

TABLE 105 List of instruments and/or outcome measures used in included studies (*continued*)

First author, year	Physiological measures	Biomarkers measures of disease progression	Patient-reported outcome measures	Resource-use measures	Adherence	Comments
Henry 2010[53]			Depressive symptomatology (CES-D) Mood states (POMS) Physical health (Survey – 18 physical symptoms items)			
Hevey 2012[103]			Anxiety and depression (HADS) Coping (Brief COPE) Negative affectivity (DS-14) QoL (Mac New HRQOL)			
Hong 2011[67]			Cognitive functioning (MMSE-K)			
Hughes 2007[54]			Mood (PANAS) Sickness related dysfunction (SIP) Avoidant and intrusive thoughts (IES) Patient's history of prior disclosure (DIS)			
Ironson 2013[71]		CD4+ count (flow cytometry) and VL (quantitative reverse-transcriptase PCR)	HIV-related physical symptoms of HIV (checklist) Psychosocial distress (Davidson PTSD scale), depression (HAM-D)		Yes	

First author, year	Physiological measures	Biomarkers measures of disease progression	Patient-reported outcome measures	Resource-use measures	Adherence	Comments
Jensen-Johansen 2013[76]			Distress (IES)			
			Depression (BDI-SF)			
			Negative mood (POMS)			
			Vigour (POMS-v)			
			Positive mood (PPMS)			
Kraaij 2010[55]			Depressive symptoms (HADS)			
Krpan 2013[96]	–	–	PHQ			
			BDI			
Lange 2003[69]			Intrusions and avoidance (IES)			
			Physical symptoms (SCL-90-R)			
Lumley 2011[115]	RA severity (swollen joint count, walking speed and grip strength). Physician's global rating of disease activity (100-mm VAS)	ESR	Self-reported physical and psychological functioning (AIMS2)			
			Affective and sensory pain (McGill Pain Q-SF)			
			Pain behaviour (structured observation system)			
			Immediate mood (PANAS-X)			
Lumley 2014[116]	RA severity (swollen joint count, walking speed and grip strength). Physician's global rating of disease activity (100-mm VAS)	Inflammation (CRP)	Self-reported physical and psychological functioning (AIMS2)			
			Affective and sensory pain (McGill Pain Q-SF)			

continued

TABLE 105 List of instruments and/or outcome measures used in included studies (*continued*)

First author, year	Physiological measures	Biomarkers measures of disease progression	Patient-reported outcome measures	Resource-use measures	Adherence	Comments
Mann 2001[72]			Optimism (LOT)		Yes	
McElligott 2006[87]			Self-esteem (ADSEI)	Number of visits to the clinic and number of days in hospital		
			Depression (CDI)			
			Behavioural problems (ADSEI)			
			Anxiety (RCMAS)			
			Physical symptoms (PSC, PSC-Y)			
			Physical well-being			
Meshberg-Cohen 2010[91]			Physical health problems (PILL)			
			Distress (BSI, GSI)			
			Depression (CES-D)			
			Affect (PANAS-X)			
			Drug craving (BSCS)			
			PTSD severity (PDS)			
Milbury 2014[81]			Fatigue (BFI)			
			Intrusions and avoidance (IES)			
			Psychological well-being (CES-D)			
			Cancer-related symptoms (MDASI)			
			Sleep disturbance (PSQI)			
			QoL (SF-36)			

First author, year	Physiological measures	Biomarkers measures of disease progression	Patient-reported outcome measures	Resource-use measures	Adherence	Comments
Mosher 2012[77]			Existential well-being (FACIT-Sp) Psychological well-being (DT, HADS-A) Sleep disturbance and fatigue (PSQI, FACIT-F)			The total Global Sleep Quality score was used in this study
Paradisi 2010[110]	Psoriasis severity (PASI)		QoL (Skindex-29, GHQ-12) Psoriasis severity (SAPASI)			
Park 2012[78]			Physical symptoms (PILL, MDASI) Anxiety/depression (HADS)			
Pauley 2011[82]			Expressiveness (ARS-20) Mental health (GHQ-12) General QoL (QLQ-30) Sexual Health and performance (specific measure)			
Petrie 2004[56]		HIV VL (quantitative reverse-transcriptase PCR); CD4+ count (flow cytometry)	Perceived stress (PSS) Self-rated health status			

continued

TABLE 105 List of instruments and/or outcome measures used in included studies (*continued*)

First author, year	Physiological measures	Biomarkers measures of disease progression	Patient-reported outcome measures	Resource-use measures	Adherence	Comments
Richards 2000[97]			Symptom and emotion self-report survey Somatic and cognitive anxiety (CSAQ) Frequency of physical symptoms (PILL)			
Rickett 2011[66]			Non-specific emotional distress (K-10)			
Rini 2014[86]		Relapse Mortality				
Robinson 2008[99]	Eating disorder diagnosis (QEDD) Desired weight (BMI) Bulimia test (BITE)		Depression (BDI)			
Rosenberg 2002[83]		Immune function/disease markers (PSA levels, peripheral blood T-cell proliferation) Serum cytokine levels of TNF-α. IL-4 and IL-10	Health-care utilisation (NMCUES) Pain (BPI) Health-related functioning and QoL (MOS-SF-36, FACT) Psychological symptoms (SCL-90-R; Brief POMS) Rumination (Rumination scale) Coping (The Ways of Coping-Cancer Version)			

First author, year	Physiological measures	Biomarkers measures of disease progression	Patient-reported outcome measures	Resource-use measures	Adherence	Comments
Sharifabad 2010[105]	Exercise capacity (6MWD), lung function through spirometry (FEV_1, FVC)		QoL (CRQ) Impact on overall health, daily life and perceived well-being (SGRQ) Subjective feeling of shortness of breath (MMRC dyspnoea scale)			
Sloan 2012[70]			PTSD diagnostic status (CAPS) Self-reported emotion (SAM) Prior trauma exposure (TLEQ)			
Smyth 1999[107]	Lung function through spirometry (FEV_1), disease severity (DAS)					
Smyth 2008[121]		Cortisol (saliva sample)	Mood (POMS) Positive changes (PTGI) PTSD symptoms (PSS-I)			
Stark 2010[57]			Affect (POMS) Chronic pain experience (MPI) Pain distress (SLESQ) Pain Catastrophising Scale Pain intensity/severity (DDS) Depression (BDI-SF) Mood/affect (POMS)	Number of health centre visits missed Quantity of pain medications taken per month Quantity of psychotropic medication taken per month		

continued

TABLE 105 List of instruments and/or outcome measures used in included studies (*continued*)

First author, year	Physiological measures	Biomarkers measures of disease progression	Patient-reported outcome measures	Resource-use measures	Adherence	Comments
Tabolli 2012[111]	Psoriasis clinical severity (PASI)		Symptoms and emotions (Skindex-29 Symptoms and Emotions scales) General health (GHQ-12, SF-36) Psoriasis severity (SAPASI)			
Taylor 2003[89]	Health status (FEV_1, BMI)		Perceived symptoms (PHQ) Physical complaints (SLESQ), physical, mental health and perceived health status (SF-12) Feasibility and acceptability of the intervention (VSQ)			
Theadom 2010[58]	Lung function through spirometry (FEV_1, FVC)		Asthma-specific QoL instrument (Marks, SSQ Asthma, SSQ Awakenings) Asthma control (ACT) Asthma distress (ABP) Beta-agonist use Corticosteroids use	Number of visits to the clinician (%)		
Van Dam 2013[92]			PDS Number of abstinent days			
Vedhara 2007[112]	Psoriasis clinical severity (PASI)		Skin condition consequences in QoL (DLQI) Mood (POMS, HADS)			

First author, year	Physiological measures	Biomarkers measures of disease progression	Patient-reported outcome measures	Resource-use measures	Adherence	Comments
Wagner 2010[73]			Affect [PANAS-X(a)] Stress (PSS) Optimism (HIV-OS) Coherence (SOC) HIV – QoL (MOS-HIV)			
Walker 1999[79]			Affect [PANAS-X(a)] Intrusive thoughts and avoidance (IES)			
Wallander 2011[109]			GI pain frequency (the Abdominal Pain Frequency Rating) Somatisation severity (the Children's Somatisation Inventory) QoL (PedsQL)	GI clinic outpatient visit		
Warner 2006[108]	Lung function through spirometry (FEV_1)		Asthma symptoms (ASS) Affect [PANAS-X(c)] Behavioural disability (FDI) Internalising behaviour problems (CBCL)		Adherence rate to the writing assignments	
Wetherell 2005[117]	RA severity (swollen and tender joint count), physician global rating of disease activity (100-mm VAS) Disease activity (DAS)	ESR, CRP	Mood (POMS-SF)			

continued

TABLE 105 List of instruments and/or outcome measures used in included studies (*continued*)

First author, year	Physiological measures	Biomarkers measures of disease progression	Patient-reported outcome measures	Resource-use measures	Adherence	Comments
Willmott 2011[104]	Cardiac symptoms (SBP and DBP)		QoL (MOS-SF-36)	GP and attendance at cardiac rehabilitation sessions	Adherence to writing instructions	
Zakowski 2004[84]			Personality factors (NEO-FFI) Distress symptoms (BSI, GSI) Intrusive thoughts and avoidance (IES) Positive and negative moods (POMS-SV)			

6MWD, 6 Minutes' Walk Distance; ABP, Asthma Bother Profile; ABS, Affects Balance Scale; ACT, Asthma Control Test; ADSEI, Adult version of the Coopersmith Self-Esteem Inventory; AE, adverse event; ARS-20, Assertiveness/Responsiveness scale; ASS, Asthma Sum Scale; BAS-G, Bath Ankylosing Spondylitis Disease Global Score; BASDAI, Bath Ankylosing Spondylitis Disease Activity Index; BITE, Bulimia Investigatory Test Edinburgh; BMI, body mass index; Brief COPE, Brief Coping Inventory; BSCS, Brief Substance Craving Scale; CAPS, Clinician-Administered Post-traumatic Stress Disorder Scale; CLINHAQ, Clinical Health Assessment Questionnaire; CRQ, Chronic Respiratory Disease Questionnaire; CT3, catastrophising (maladaptive coping); DASS, Depression Anxiety Stress Scales; DBP, diastolic blood pressure; DDS, Descriptor Differential Scale; DIS, Perception of Disclosure scale; DLQI, Dermatology Life Quality Index; DS-14, Type D scale-14; FACIT-Sp, Functional Assessment of Chronic Illness Therapy, meaning/peace subscale; FACT-General, Functional Assessment of Cancer Therapy Questionnaire–General; FDI, Functional Disability Inventory; FIQ, Fibromyalgia Impact Questionnaire; FLZ, Fragebogen zur Erfassund des Lebenszufriendenheit (Life Satisfaction Scale); FSS, Fatigue Severity Scale; IBS-QoL, Irritable Bowel Syndrome Quality of Life; IES-R, Impact of Event Scale-Revised; IL-4, interleukin 4; IL-10 interleukin 10; IS, Insight Scale; LOT, Life Orientation Test; Mac New HRQOL, Mac New Health Related Quality Of Life scale; Marks, Marks Asthma Quality of Life Questionnaire; McGill Pain Q-SF, McGill Pain Questionnaire-Short Form; McGill QOL, McGill Quality Of Life; MIDAS, Migraine Disability Assessment Scale; MMRC, Modified Medical Research Council, dyspnoea scale; MMSE-K, Mini Mental State Examination Korean Version; MOS-HIV, Medical Outcomes Study HIV Health Survey; MSPSS, Multidimensional Scale of Perceived Social Support; NA, not applicable; NEO-FFI, NEO-Five Factor Inventory; NMCUES, National Medical Care Utilisation Expenditure Survey; PAID, Problem Areas in Diabetes scale; PANAS-X, Positive and Negative Affect Schedule – Expanded Form; PANAS-X(a), Positive and Negative Affect Schedule; PANAS-X(b), Positive and Negative Affect Schedule – Expanded Form; PANAS-X(c), Positive and Negative Affect Schedule for Children; PANAS-X(d), Positive and Negative Affect Schedule – Abbreviated version of the expanded version; PAS, Posttraumatic Stress Diagnostic Scale; PCR, polymerase chain reaction; PDS, Posttraumatic Stress Diagnostic Scale; PedsQL, Paediatric Quality of Life; PHQ, Patient Health Questionnaire; POMS-SV, Profile of Mood States Short Version; POMS-v, Profile of Mood States vigour subscale; PSC, Paediatric Symptom Checklist; PSC-Y, Paediatric Symptom Checklist Youth Report; PSS-I, Post-Traumatic Stress Disorder Symptom Scale Interview; PTGI, Post-Traumatic Growth Inventory; QLQ-30, Quality of Life Questionnaire; QOL, Quality of Life Scale; QoLI, Quality of Life Inventory; RSQ, Recovery Style Questionnaire; SAM, Self-Assessment Manikin; SBP, systolic blood pressure; SDSCA, Summary of Diabetes Self-Care Activities scale; SF-12, Short Form questionnaire-12 items (brief version of the SF-36); SF-36v2, Short Form questionnaire-36 items, version 2; SGRQ, St George's Respiratory Questionnaire; SIP, Sickness Impact Profile; SLESQ, Stressful Life Events Screening Scale; SOPA, Survey Of Pain Attitudes; SSQ Asthma, Wasserfallen Symptom Score Questionnaire, asthma subscale; SSQ Awakenings, Wasserfallen Symptom Score Questionnaire, awakenings subscale; STAI-S, State/Trait Anxiety Scale, state subscale; TLEQ, Trauma Life Experience Questionnaire; VAS, visual analogue scale; WHYMPI, West Haven-Yale Multidimensional Pain Inventory.

Outcomes measures definitions

TABLE 106 Outcome measures from included studies: acronyms and definitions

Acronym	Definitions given in the primary studies	Scale and scoring	Meaning
6MWD	Changes in 6 Minutes' Walk Distance (6MWD) over the study period	Values are given in metres	The longer the distance in the 6MWD, the higher the performance
ABP	The Asthma Bother Profile (ABP) is a 23-item self-administered questionnaire (Hyland *et al.*[162]) designed to measure level of distress caused by asthma. It covers two domains: distress and asthma management measured with a unidimensional scale	6-point Likert scale with 0 (no) and 5 (yes); with use of 0–5 scale. All scores are added up with a maximum of 75 and minimum of 0	Higher scores indicate higher distress caused by asthma
ABS	The Affects Balance Scale (ABS; Bradburn[163]) is a self-reported measure, which rates the degree to which participants experienced 20 positive and 20 negative emotions during the past week through two subscales: Positive Affect Scale (PAS) and Negative Affect Scale (NAS). It is a 10-item outcome measure: it contains five statements reflecting positive feelings and five statements reflecting negative feelings	An affect balance score is calculated based on the difference between the number of yes responses to positive-feeling questions minus the number of yes responses to negative-feeling questions	The greater the score difference, the higher the affect unbalance
Abdominal pain frequency	Stomach pain frequency was rated when it was sufficiently bad not to pursue with normal activity	From 0 to 5 With 0 (not at all), 1 (once), 2 (once a week), 3 (about two or three times a week), 4 (about every other day), 5 (every day)	Higher scores indicate more frequency of abdominal pain
ACT	The Asthma Control Test (ACT), a five-question survey (with 4-week recall) on symptoms and daily functioning, which is self-administered by the patient to measure asthma control in individuals of ≥ 12 years. The survey measures the elements of asthma control as defined by the National Heart, Lung, and Blood Institute: frequency of shortness of breath and general asthma symptoms, use of rescue medications, the effect of asthma on daily functioning, and overall self-assessment of asthma control. ACT is clinically validated by specialist assessment and spirometry (www.thoracic.org/assemblies/srn/questionaires/act.php)	5-point scale for symptoms and activities from 1 (all the time) to 5 (not at all); for asthma control rating from 1 (not controlled at all) to 5 (completely controlled). The scores range from 5 (poor control of asthma) to 25 (complete control of asthma)	Higher scores reflecting greater asthma control. An ACT score of > 19 indicates well-controlled asthma

continued

TABLE 106 Outcome measures from included studies: acronyms and definitions (*continued*)

Acronym	Definitions given in the primary studies	Scale and scoring	Meaning
Adherence	Self-reported adherence in the study by Mann[72] was measured using the general measure of adherence from the RAND Medical Outcomes Study. It consists of five items	6-point Likert scale ranging from 1 (none of the time) to 6 (all of the time)	NA
ADSEI	An adult version (Ryden[164]) of the Coopersmith Self-Esteem Inventory (SEI; Coopersmith[165]): test–retest reliability and social desirability The Coopersmith Self-Esteem Inventory (SEI): 58 short statements that are answered by checking the box like me or unlike me. These items consist of 50 self-esteem items and eight items that compose a lie scale, anxiety, depression, behavioural problems and physical well-being	The test has a built-in lie scale that helps to determine if the participant is trying too hard to appear to have high self-esteem	The higher the number of like me, the greater the participant's self-reports are markedly influenced by the social desirability factor
AEE	The Ambivalence Emotional Expression (AEE; King and Emmons[166]) Questionnaire is a 28-item questionnaire used to assess the extent to which participants feel uncomfortable or regret expressing their emotions (e.g. I'd like to talk about my problems with others but at times I just cannot, I feel guilty after I have expressed anger to someone)	The test predicts more benefit from disclosure	NA
AIMS2	The Arthritis Impact Measurement Scale-2 (AIMS2) is a 28-item scale that surveys the effects of arthritis on multiple domains of functioning during the previous month. It uses six subscales: mobility level (e.g. you were in bed or chair for most of the day), walking and bending (e.g. you had trouble either bending, lifting, or stooping), hand and finger function, arm function, self-care tasks, and household tasks. In the study by Lumley *et al.*[115] they analyse two scales: (1) physical dysfunction, which assesses dysfunction in mobility, walking/bending, hand and finger function, arm functioning, ability to perform household tasks, and self-care; and (2) affective disturbance, which assesses both anxious and depressive symptoms	5-point scale with respect to the frequency (number of days in a week) that a particular behaviour or symptom was experienced from 1 (all days) to 5 (no days). Ratings are averaged	Higher scores indicate greater dysfunction
AIMS2: lack of social support subscale	The 4-item subscale from the AIMS2 assesses one's perceptions that family and friends are available if needed, are sensitive to needs, interested in helping, and understand the effects of the FM. Items were rated regarding how frequently support is available	From 1 (all days) to 5 (no days) and averaged	Higher values indicate less social support

TABLE 106 Outcome measures from included studies: acronyms and definitions (*continued*)

Acronym	Definitions given in the primary studies	Scale and scoring	Meaning
AIMS2: pain subscale	The 5-item pain subscale from the AIMS2, a widely-used instrument that measures health status in rheumatic diseases during the past month. Items were worded for FM rather than arthritis (e.g. you had severe pain from your FM)	5-point scale from 1 (all days) to 5 (no days), reverse scored and averaged	Higher values indicate more pain
AIMS2 for physical dysfunction	The AIMS2 was used and assessed 28 items from six subscales: mobility level (you were in bed or chair for most of the day), walking and bending (you had trouble either bending, lifting, or stooping), hand and finger function, arm function, self-care tasks and household tasks	5-point scale from 1 (all days) to 5 (no days) and scored	Higher scores indicate greater physical dysfunction
ARS-20	The Assertiveness/Responsiveness scale (ARS-20; Richmond and McCroskey[167]) is a 20-item scale consisting of two subscales, one for each trait, with 10 items each	Both scales ask respondents to rate how much they identify with a list of representative behaviours. Behaviours for the Assertiveness scale include items like defend own beliefs and have strong personality, whereas items from the Responsiveness scale include items such as sympathetic and sensitive to the needs of others	Higher scores indicate greater levels
ASS	The Asthma Sum Scale (ASS) is a 9-item scale used to report both asthma and nasal or allergy symptoms during the past 2 weeks	5-point scale from 0 (none) to 4 (severe)	Higher scores indicate greater symptoms
BA use	Beta-agonist use, measured as puffs per day	Numbers of puffs per day were summed up	Higher number of puffs indicated greater symptoms
BAI	The Beck Anxiety Inventory (BAI; Beck and Steer[168]) is a 21-item self-report measure that uses a 4-point Likert scale with ratings from not at all to severely to measure physical and cognitive symptoms of anxiety	Each BAI item is rated on a 4-point scale: 0 (not at all) to 3 (severely, I could barely stand it)	Higher total scores indicate more severe anxiety symptoms
BAS-G	The Bath Ankylosing Spondylitis Disease Global Score (BAS-G; Jones *et al.*[169]) requires patients to respond to two questions regarding the effect of their disease on their health: over the past week, and over the past 6 months. Responses to these scales are indicated by marking a line on a 100-mm VAS	Scale 0–10 VAS, best 10 Total score range from 0 to 10	Higher scores indicate greater effect of AS on the patient's life

continued

TABLE 106 Outcome measures from included studies: acronyms and definitions (*continued*)

Acronym	Definitions given in the primary studies	Scale and scoring	Meaning
BASDAI	The Bath Ankylosing Spondylitis Disease Activity Index (BASDAI) comprises six questions relating to individual domains of fatigue, spinal pain, joint pain and symptoms, together with perception of pain relating to bony areas of the body and to morning stiffness BASFI comprises 10 questions regarding function in AS and ability to meet the physical demands of everyday life. Responses to these scales are indicated by marking a line on a 100-mm VAS	Scale 0–10 VAS, best 10 Total score ranges from 0 to 10	Higher scores indicate higher levels of disease activity
BASFI	The Bath Ankylosing Spondylitis Disease Functional Index (BASFI; Calin *et al.*[170]). Responses to these scales are indicated by marking a line on a 100-mm VAS	Scale 0–10 VAS, best 10 Total score range from 0 to 10	Higher scores indicate to greater limitation of function
BDI	The Beck Depression Inventory (BDI; Beck *et al.*[171]). The full BDI has 21 items, which stress cognitive symptoms of depression, each with four Guttman-type responses choices in the form of statements, ranked in order of severity. In some categories, two alternative statements are assigned the same score	Scale 0–3, reflecting severity Total scores range from 0 to 63	Higher total scores indicate more severe depressive symptoms
BDI-II	The revised Beck Depression Inventory (BDI-II; Beck *et al.*[172]) is a 21-item self-report measure incorporating cognitive, affective and somatic aspects of depressed mood. In this revised version, there is one alternative score for each level (so no statement is assigned the same weight)	Four alternatives for the 21 items ranging from 0 (low) to 3 (high). Total scores range from 0 to 63	Higher total scores indicate more severe depressive symptoms
BDI-SF	The short 13-item version of Beck Depression Inventory (BDI-SF; Beck *et al.*[173] and Furlanetto *et al.*[174]) measures depressive symptoms during the last 7 days	NA	Higher total scores indicate more severe depressive symptoms
BFI	The Brief Fatigue Inventory (BFI; Mendoza *et al.*[175]) is a 10-item questionnaire asking participants to rate the severity of their fatigue and the degree to which it interferes with their lives. BFI has been specifically developed for cancer patient populations	Response to the first question, 'Are you usually tired?' is either yes or no. The remaining nine items are measured on a 11-point Likert scale ranging from 0 (no fatigue) to 10 (worst that you can even imagine). Individual scores are added up in a total score	Higher scores indicate worse fatigue, and a score of > 3 indicates clinically significant fatigue

TABLE 106 Outcome measures from included studies: acronyms and definitions (*continued*)

Acronym	Definitions given in the primary studies	Scale and scoring	Meaning
BITE	The Bulimia Investigatory Test Edinburgh (BITE; Henderson and Freeman[176]). This 33-item scale provides a rating of symptoms of BN and BED, and has a symptom and severity subscale. BITE was used to measure symptoms over the past month, as a response to treatment. The symptom scale comprised 27 items and the severity scale comprised three items	• Items 1, 13, 21, 23 and 31 in the symptom scale scored one point for a no response and the remaining 25 items scored one point for a yes response. The maximum possible score is 30 • Items 6, 7 and 27 constitute the severity scale. The total score is the sum of the numbers corresponding to the circled responses Scorers on this scale can be subdivided into three main groups: high scorers with a score of ≥ 20, medium scorers with a score of 10–19, and low scorers with a score of < 10	• A symptom score of > 20 indicates a highly disordered eating pattern and the presence of binge eating • A symptom score in the medium range (10–19) suggests an unusual eating pattern but not meeting criteria for a diagnosis of bulimia • A symptom score in the 15–19 range may well reflect a subclinical group of binge-eaters, either in the initial stages of the disorder or a recovered bulimic • A symptom score in the low range (0–10) falls within normal limits • A severity score of > 5 is clinically significant • A severity score of > 10 indicates high degree of severity
BMI	In the study by Taylor *et al.*,[89] the body mass index (BMI) was recorded as kg body weight (kg)/height (m^2)	NA	A reduction in the BMI indicated disease progression and/or exacerbation
BPI	The Brief Pain Inventory (BPI), short form, is a 11-item self-report rating scale using simple numeric rating scales to assess the severity of pain (four questions) and impact of pain (seven questions)	From 0 to 10	Higher scores indicate greater pain
Brief COPE	The Brief COPE is a 28-item measure of 14 coping responses (Carver[177]). The responses can be categorised as adaptive coping (e.g. active coping, planning, use of emotional support) and maladaptive coping (e.g. denial, self-blame and behavioural disengagement)	5-point Likert scale ranging from 1 (I haven't been doing this at all) to 5 (I have been doing this a lot) Items are calculated into 14 separate indices	Higher scores indicate greater active coping
Brief POMS	The Brief Profile of Mood States (Brief POMS) provides a summary measure of distress or mood. The original 65-item POMS has been widely used with cancer patients	5-point Likert scale ranging from 0 (not at all); 1 (a little); 2 (moderately); 3 (quite a bit); 4 (extremely)	Higher scores indicate higher distress

continued

TABLE 106 Outcome measures from included studies: acronyms and definitions (*continued*)

Acronym	Definitions given in the primary studies	Scale and scoring	Meaning
BSCS	The Brief Substance Craving Scale (BSCS) is a 12-item self-report instrument assessing intensity, frequency and length of craving over a 24-hour period for substances of abuse. Each of the three items is related to the intensity, frequency and length of craving during the prior 24 hours. In Grasing *et al.*,[90] the reductions in craving intensity were measured and those are calculated by subtracting baseline measures recorded during screening from results obtained at the initial outpatient visit	5-point Likert scale ranging from 0 (not at all) to 4 (extremely). The total score ranges from 0 to 12	Higher scores indicate higher craving
BSI	The Brief Symptom Inventory (BSI; Derogatis and Melisaratos[178]) is a 53-item scale, a shortened version of the SCL-90 (Symptom Checklist-90) that assesses nine symptoms of distress and provides three global distress indices. The BSI measures symptoms associated with distress on nine symptom dimensions (including somatisation, obsessive–compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation and psychoticism). Participants report the extent to which they experienced each of the symptoms in the past week including today. The scale also includes a global index of distress, the Global Severity Index (GSI) used in both studies by Zakowski *et al.* published in 2004[84] and 2011[161]	Likert-type scale ranging from 0 (not at all) to 4 (extremely)	Higher scores indicate higher symptoms
C-QoL	Cancer Quality of Life (C-QoL; Lee[179]) is a cancer-specific type of QoL measurement tool developed in Korea to better reflect the cultural characteristics of the country. The C-QoL was used in Park and Yi[78] and consists of 21 items with specific questions: physical conditions ($n = 6$), emotional states ($n = 6$), social role ($n = 3$), social status ($n = 3$) and coping ability ($n = 4$)	5-point scale (0 = not at all, 1 = a little yes, 2 = moderate, 3 = quite a lot and 4 = very much so) Range from 0 to 84	Higher scores indicate greater QoL

TABLE 106 Outcome measures from included studies: acronyms and definitions (*continued*)

Acronym	Definitions given in the primary studies	Scale and scoring	Meaning
CAPS	The Clinician-Administered PTSD Scale (CAPS; Weathers *et al.*[180]) used to assess PTSD symptom severity. CAPS rates the frequency and intensity of each symptom along 5-point ordinal scales, the impact of symptoms on the patient's social and occupational functioning, the overall severity of the symptom complex, and the global validity of ratings obtained. There is a total score for the CAPS PTSD ratings (frequency and intensity). The CAPS yields both dichotomous (i.e. present or absent) and continuous (i.e. severity) scores for each symptom and for the disorder as a whole	5-point scale ranging from 0 to 136	Higher scores indicate greater severity of PTSD symptoms
CBCL	The Child Behavior Checklist (CBCL) and by youth on the Youth Self-Report of the CBCL (Achenbach[181]) consists of 113 questions used to detect emotional and behavioural problems in children and adolescents	3-point Likert scale ranging from 0 (absent), 1 (occurs sometimes), 2 (occurs often)	Higher scores indicate more emotional and behavioural problems
CD4+ count	CD4+ lymphocyte count was determined by flow cytometry. A square root transformation was used on the CD4+ counts to give an approximately normal distribution. Data were analysed as a multivariate hierarchical model using the hierarchical linear modelling programme HLM 5.04. In Ironson *et al.*,[71] flow cytometry was performed in one laboratory to enumerate CD3+/CD4+ lymphocytes with fluorochrome conjugated monoclonal antibodies in a four-colour system	Threshold used in the study was not reported but used as a predictor of disease progression	Higher count in CD4+ cells when associated with improved immune status and better health
CDI	The Children Depression Inventory (CDI) contains 27 items that represent a range of depressive symptoms including disturbed mood, hedonic capacity, vegetative functions, self-evaluation and interpersonal problems. The child is asked to choose the item that best describes him or her for the past 2 weeks. The five factors for the CDI are negative mood, interpersonal problems, ineffectiveness, anhedonia and negative self-esteem	Each item consists of three statements that are keyed 0, 1 or 2	Higher scores indicating increased severity

continued

TABLE 106 Outcome measures from included studies: acronyms and definitions (*continued*)

Acronym	Definitions given in the primary studies	Scale and scoring	Meaning
CES-D	The Centre for Epidemiological Studies Depression Scale (CES-D; Radloff[182]) is a 20-item scale; participants rated the intensity and frequency of depressive symptoms they had experienced in the past week. The CES-D has been used to measure clinical and subclinical levels of depression in medical populations and effectively identifies depression among patients with chronic pain (Geisser *et al.*[183]). It includes four factors: dysphoria, positive affect, a somatic factor, and an interpersonal factor. In Henry *et al.*,[53] four subscales were calculated from the CES-D: depressed mood (seven items, $\alpha = 0.83–0.92$), (lack of) positive affect (four items, $\alpha = 0.71–0.9$), somatisation or retarded activity (seven items, $\alpha = 0.5–0.9$), and (lack of) interpersonal relations (two items)	4-point Likert-type scale from 0 (rarely or none of the time) to 3 (most or all of the time)	Higher scores indicates the greatest frequency of depressed mood over the past week
CG-FBD	The functional bowel disease-related cognition consisted of CG-FBD Q16 My bowel symptoms make me feel out of control and CG-FBD Q31 Nothing seems to help my bowel symptoms	Scale 0–7, worse cognition 7	Higher scores indicate worse adaptive cognition
CLINHAQ	Three items from the Clinical Health Assessment Questionnaire (CLINHAQ; Wolfe[184]) were used in Broderick *et al.*[118] to assess GI, headache and fatigue symptoms. The CLINHAQ contains self-reports for the Health Assessment Questionnaire (HAQ; Fries[185]) disability index, Arthritis Impact Measurement Scale (AIMS) anxiety and depression index (Hawley and Wolfe[186]), VAS pain, VAS global severity, VAS GI symptoms, VAS sleep problems, VAS fatigue, satisfaction with health, and patient estimate of health status. In 1996, the helplessness subscale of the RAI was added to the CLINHAQ (deVellis *et al.*[187]). The variables contained in this questionnaire consider factors that are thought to be of major importance in FM (Burckhardt *et al.*[188])	On a 100-point VAS	Higher scales indicate greater symptoms

TABLE 106 Outcome measures from included studies: acronyms and definitions (*continued*)

Acronym	Definitions given in the primary studies	Scale and scoring	Meaning
Cortisol	Cortisol reactivity was assessed in Smyth *et al.*[9] by asking participants to collect saliva by placing a sterile cotton wad in their mouth for a few minutes and then sealing the cotton in a salivette, a test tube-like container (Sartstedt, Rommelsdorf, Germany). Samples were kept frozen until shipped for assay at a clinical laboratory	Cortisol levels were assessed in response to imagery-based trauma re-exposure	Lower levels indicate greater health improvement
CRP	The C-reactive protein (CRP), which is another serum measure of inflammation, was measured in Wetherell *et al.*[117] CRP is an acute phase protein, levels of which fluctuate over a shorter time period than ESR (Kushner[189]). CRP therefore provides an objective marker of disease activity in addition to the components of the DAS	CRP is a measure of inflammation and provide markers for clinical status in rheumatic disease. CRP is sensitive and is only raised during periods of acute inflammation	Higher CRP levels indicate greater transitory acute inflammation
CRQ	The Chronic Respiratory Disease Questionnaire (CRQ) is an interviewer-administered questionnaire measuring both physical and emotional aspects of chronic respiratory disease. It has 20 questions in four categories: dyspnoea, fatigue, emotional function and mastery	7-point scale, with 7 indicating no health impairment. A change of 0.5 for each is considered the minimal clinically significant change	Higher scores indicate better HRQoL
CS use	Corticosteroid use, measured as puffs per day	CS use is an indicator of disease status	The higher the use of CS, the worst the disease course
CSAQ	The Cognitive-Somatic Anxiety Questionnaire (CSAQ; Schwartz[190]) a trait anxiety inventory, is a 14-item self-report inventory that is divided into two 7-item scales (cognitive and somatic) that appear to reflect cognitive or somatic anxiety. Participants are asked to rate the degree to which they are generally or typically experiencing symptoms of anxiety by circling a number from 1 through to 5	5-point Likert scale ranging from 1 (not at all) to 5 (very much so). The sums of the circled rating are separately computed for the cognitive and somatic items, and constituted the main dependent measures	Higher total scores indicate higher symptoms
CSI	The Children's Somatisation Inventory (CSI) includes 36 symptoms from the criteria for Somatisation Disorder and the Somatisation factor of the Hopkins Symptom Checklist. Ratings are obtained on the severity with which the youth have experienced each symptom (e.g. headaches, pains in the heart, muscle aches) in the past 2 weeks	5-point scale from 0 (not at all) to 4 (a whole lot). A total score was calculated in the standard fashion to measure severity of general somatisation symptoms	Higher scores indicate higher severity of symptoms

continued

TABLE 106 Outcome measures from included studies: acronyms and definitions (*continued*)

Acronym	Definitions given in the primary studies	Scale and scoring	Meaning
CT3	Catastrophising (maladaptive coping)	Scale 0–36; worse catastrophising, 36	Higher scores indicate worse catastrophising
DAS	The Disease Activity Score (DAS) involves measurement of four variables: counts of the number of swollen and tender joints (assessed by physical examination); a patient self-report measure (All things considered, how are you feeling?), measured using a 100-mm VAS; and a serum measure of inflammation, i.e. ESR. ESR is an indirect measure of acute phase reactions and provides a standardised and validated clinical index for assessing disease activity in RA (Fuchs[191]). A total score can be computed or individual components of the DAS can be used	The DAS ranges from 2 to 10	Scores of < 2.6 indicate disease remission and scores of > 5.1 indicate high disease activity
DASS	The Depression Anxiety Stress Scales (DASS) is a 42-item self-report measure used to assess depression, anxiety and stress in clinical samples over the previous week	4-point Likert scale from 0 (did not apply to me at all) to 3 (applied to me very much, or most of the time)	Higher scores indicate greater symptoms
Davidson PTSD scale	The Davidson PTSD scale (PTSDTOT; Davidson *et al.*,[192] Zlotnick *et al.*[193]) is a 17-item, interview-administered measure based on the PTSD symptom clusters defined by DSM-IV. Respondents are asked to rate each of the 17 items referring to a particular traumatic event, or series of events, according to level of distress based on their ratings of symptoms that have occurred during the past week. Both frequency and severity are rated for each item. If the respondent has experienced multiple traumatic episodes, multiple copies of the scale may be administered	From 0 to 4 for both frequency and severity during the past week Items are summed for a total score, and subscales measure re-experiencing, avoidance and arousal	Higher scores indicate greater symptoms
DBP	Diastolic blood pressure (DBP), measured in mmHg	BP is indicative of chronic complications post MI, such as cardiac arrhythmias and left ventricular failure	Higher DBP indicated greater post-MI complications
DIS	The Perception of Disclosure Scale (DIS) measures the perception of the extent to which participants had already expressed their deepest thoughts and feelings about their cancer experience through writing or discussion with others	Scale ranges from 0 (not all) to 10 (complete disclosure)	Higher scores indicate more complete disclosure

TABLE 106 Outcome measures from included studies: acronyms and definitions (*continued*)

Acronym	Definitions given in the primary studies	Scale and scoring	Meaning
Disease Activity Rating Scale	The Disease Activity Rating Scale is a scale used by physicians to indicate the current status of the patient's RA. Factors that physicians would take into account in making this rating include number of tender and swollen joints, and degree of inflammation and pain	5-point rating scale ranging from 0 (asymptomatic) to 4 (very severe) A 1-point change is considered clinically significant	Higher scores indicate greater disease activity
DLQI	The Dermatology Life Quality Index (DLQI; Finlay and Khan[194]) is used widely in patients with dermatological conditions, including psoriasis. It examines respondents views on the functional consequences of their skin condition on their lives in the previous week. It correlates well with clinical measures of disease severity and boasts of good reliability statistics. It measures how much the skin problem has affected your life. It is designed for young people aged > 16 years and for adults	4-point Likert scale ranging from very much to not at all The scoring is: • Very much scored 3 • A lot scored 2 • A little scored 1 • Not at all scored 0 • Not relevant scored 0 • Question 7, prevented work or studying scored 3 The DLQI is calculated by summing the score of each question, resulting in a maximum of 30 and a minimum of 0	The higher the score, the more QoL is impaired
DS-14	The DS-14 is a 14-item measure of negative affectivity (seven items) and social inhibition (seven items) (Denollet[195]) The DS-14 has good psychometric properties and is widely used with cardiac populations (e.g. Denollet *et al.*[196])	5-point Likert scale from 0 to 4	A score of ≥ 10 on both the negative affectivity and social inhibition scales indicates Type D personality
DT	The Distress Thermometer (DT; Roth *et al.*[197]) assessed general distress	11-point Likert scale from 0 (no distress) to 10 (extreme distress)	Higher scores indicate greater distress
Emotional approach coping	In Averill *et al.*,[100] the emotional approach coping (Stanton *et al.*[198]) was measured to assess emotional processing (four items: e.g. I take time to figure out what I am really feeling; $\alpha = 0.76$) and emotional expression (four items; e.g. I feel free to express my emotions; $\alpha = 0.89$). Because the two subscales were correlated only 0.61, they were used separately in analysis	8-item scale	Lower emotional approach copying are related to lower psychological well-being
EQ-5D	QoL measured by utility and VAS. A measure of perceived health status	Utility: 0–1, where 0 is death and 1 is perfect perceived health VAS: 0–100, where 0 is death and 100 is perfect perceived health	Higher scores indicate better health

continued

TABLE 106 Outcome measures from included studies: acronyms and definitions (*continued*)

Acronym	Definitions given in the primary studies	Scale and scoring	Meaning
ESR	The erythrocyte sedimentation rate (ESR)	ESR is an indicator of inflammation and disease activity	Values of > 20 mm/hour indicate elevated inflammation and disease activity
Expressed anger	In Graham *et al.*,[51] the degree of express anger was uniquely accounted for intervention effects and meaning making mediated effects on depressed mood	From 0 (none) to 4 (very much) A code of 4 was given when the letter included an explicit statement indicating that the participant was, for instance, very angry or furious or if the participant had used many examples that sounded frustrating and/or used underlining, exclamation points, or other techniques for emphasis A code 0 was given when the participant neither identified at all with an anger-related emotion (including frustration) nor gave any examples that seemed frustrating	Higher scores indicate higher expression of anger
FACIT-F	The Functional Assessment of Chronic Illness Therapy Fatigue subscale version 4 (FACIT-F; Yellen[199]) assessed fatigue during the past 7 days. It measures physical well-being, social/family well-being, emotional well-being, functional well-being and additional concerns	All items are measured on a 5-point Likert scale ranging from 0 (not at all) to 4 (very much)	Higher scores indicate greater fatigue
FACIT-Sp	The meaning/peace subscale of the Functional Assessment of Chronic Illness Therapy–Spiritual Well-Being scale (FACIT-Sp; Peterman *et al.*[200]) A 12-item self-report measure comprises two subscales: one measuring a sense of meaning and peace and the other assessing the role of faith in illness A total score for spiritual well-being is produced. In Mosher *et al.*,[77] the FACIT-Sp is used to measure existential well-being by assessing participant's degree of purpose in life and inner peace	Scale ranging from 0 to 48 Two subscales: • Meaning/peace (items 1–8) • Faith (items 9–12)	Higher scores signifying greater spiritual well-being
FACT-General	The Functional Assessment of Cancer Therapy (FACT; Basen-Engquist *et al.*[201]) questionnaire is a 34-item general cancer QoL measure for evaluating patients receiving cancer treatment. It covers five general cancer-related domains (physical well-being, social family well-being, relationship with health-care provider, emotional well-being, and functional well-being) and one disease/site-specific domain	5-point scale from 0 (not at all) to 4 (very much)	Higher scores indicate better QoL

TABLE 106 Outcome measures from included studies: acronyms and definitions (*continued*)

Acronym	Definitions given in the primary studies	Scale and scoring	Meaning
FACT-B	The Functional Assessment of Cancer Therapy-Breast Cancer Version (FACT-B) is a 37-item self-report instrument, with known validity and reliability, containing 27 general items (from the FACT-General) plus 10 breast cancer-specific items (Brady *et al.*[202]) Subscales include physical well-being (seven items), social/family well-being (seven items), emotional well-being (six items) and functional well-being (seven items) The 10 additional items address physical and psychological concerns related to breast cancer Respondents are asked to rate how true each statement had been for them over the past 7 days	5-point Likert-type scale from 0 (not at all) to 4 (very much). All 37 items can be combined for a total QoL score, and subscale scores may be computed as well	Higher scores indicate higher QoL
FDI	The Functional Disability Inventory (FDI; Walker and Greene[203]) is a 15-item assessing difficulty performing various routine behaviours during the last few weeks	Items range from 0 (no trouble) to 4 (impossible) and totalled	Higher scores indicate greater disability
FEV_1	The forced expiratory volume in 1 second (FEV_1)	FEV_1 is one of the primary indicators of health status and disease progression for cystic fibrosis or patients with asthma, for instance	A decrease in FEV_1 indicates disease exacerbation and/or reduction of lung functioning
FIQ	The Fibromyalgia Impact Questionnaire (FIQ) evaluates the global health status using a 10-item survey assessing those components of health that are most affected by FM (physical functioning, work status, depression, anxiety, sleep, pain, stiffness, fatigue and well-being) during the prior week FIQ is an adaptation of the HAQ and the AIMS In Broderick *et al.*,[118] items assessing physical functioning and stiffness were used	Scores range from 0 to 100	Higher scores indicate poorer health or functioning
FLZ	The *Fragebogen zur Erfassung des Lebenszufriendenheit* (FLZ) is a Life Satisfaction Scale used to measure life satisfaction The FLZ uses eight items assessing patient's satisfaction with different areas of their life (e.g. social contacts, partnership, financial situation)	7-point Likert scale from 1 (very satisfied) to 7 (very unsatisfied) The sum score indicates overall life satisfaction	Higher scores indicate less life satisfaction

continued

TABLE 106 Outcome measures from included studies: acronyms and definitions (*continued*)

Acronym	Definitions given in the primary studies	Scale and scoring	Meaning
FSS	The 9-item Fatigue Severity Scale (FSS) assesses the frequency and severity of fatigues interference with physical functioning	Items were rated on a 1–7 scale and averaged	Higher scores indicate greater fatigue
FVC	The forced vital capacity (FVC)	FVC is one of the primary indicators of health status and disease progression for cystic fibrosis or patients with asthma, for instance	A decrease in FVC indicates disease exacerbation and/or reduction of lung functioning
GBB	The *Giessener Beschwerdebogen* (GBB) is a 24-item scale assessing various symptomatic complaints The sum score measures subjective physical well-being	5-point Likert scale ranging from 0 (not applicable) to 4 (strongly) The total score ranges from 0 to 12	Higher scores indicate greater symptoms, decreased subjective physical health
GDS	The Geriatric Depression Scale (GDS; Yesavage *et al.*[204]) is a 30-item scale that is more appropriate for use with people with ALS than other depression instruments that include somatic symptoms regularly experienced in ALS	• A score of > 5 points is suggestive of depression • A score of ≥ 10 points is almost always indicative of depression • A score of > 5 points should warrant a follow-up comprehensive assessment	Higher scores indicate higher symptoms of depression
GHQ-12	The General Health Questionnaire (GHQ-12; Goldberg *et al.*[205]) was used as an indicator of overall mental health in hundreds of studies that assessed both clinical and non-clinical populations Items from the GHQ-12 included: Have you recently been able to concentrate on what you are doing? Have you been able to face up to your normal problems? Owing to the various thresholds of the GHQ-12, the mean GHQ score for a population of respondents was suggested as a rough indicator for the best cut-off point (Goldberg *et al.*[206]). Therefore, based on the mean GHQ score for this sample, the cut-off point is used to determine the respondent's level of psychological well-being	4-point Likert scale The scores are summed up by adding all the items on the scale ranging from 0 to 12	NA
GSI	The Global Severity Index (GSI) is a widely used index of stress and is highly correlated with the BSI subscales. Individuals report the extent to which they experienced each of the symptoms in the past week including today	5-point Likert scale Ranges from 0 (not at all) to 4 (extremely)	Higher scores indicate greater severity

TABLE 106 Outcome measures from included studies: acronyms and definitions (*continued*)

Acronym	Definitions given in the primary studies	Scale and scoring	Meaning
HADS	The Hospital Anxiety and Depression Scale (HADS; Zigmond and Snaith[207]), which contains 14 items (seven anxiety items and seven depression items) This scale requires participants to indicate how they have been feeling during the past week. In Wallander *et al.*,[109] participants with a HADS total score of 15 were classified as being clinically distressed	4-point scale ranging from 0 (not at all) to 3 (most of the time) Total score ranges from 0 to 21	Higher scores indicate higher anxiety/depression
HADS-A	The anxiety subscale of the Hospital Anxiety and Depression Scale (HADS-A; Zigmond and Snaith[207])	A score of 0–7 is considered to be normal Scores of ≥ 20 indicate moderate, severe or very severe anxiety	Higher scores on each individual scale or the entire scale indicate greater anxiety or mood disorder
HADS-D	The depression subscale of the Hospital Anxiety and Depression Scale (HADS-A; Zigmond and Snaith[207])	A score of 0–7 is considered to be normal Scores of ≥ 20 indicate moderate, severe or very severe depression	Higher scores on each individual scale or the entire scale indicate greater depression or mood disorder
HAM–D	The Hamilton Depression Scale (HAM–D; Hamilton[208]) is a 17-item, interview-based measure, considered the gold standard for assessing severity of depression	A score of 0–7 is considered to be normal Scores of ≥ 20 indicate moderate, severe, or very severe depression	Higher scores indicate more depression or mood disorder
Headache frequency	Number of days in the last month with a headache	NA	The higher the frequency the worst the health status
HIV symptom checklist	In Ironson *et al.*,[71] experimenters assessed symptoms relevant to HIV (based on the Centre for Disease Control and Prevention criteria for Category B symptoms) by interview using a HIV symptom checklist Symptoms were assessed for the previous month at baseline and the 1-month visit, and for the previous 6 months, at the 6- and 12-month visits; thus, symptoms were assessed during the complete follow-up period	Examples of symptoms are herpes zoster (shingles), oral thrush, cervical dysplasia, pelvic inflammatory disease, low platelet count (50,000), peripheral neuropathy, chronic unexplained fever and chronic unexplained diarrhoea	More symptoms indicate a worse health
HIV VL	HIV VL was determined using a quantitative reverse-transcriptase PCR assay (Amplicor HIV-1 Monitor, Roche Diagnostic Systems), which measures down to 400 copies of HIV RNA in plasma	Threshold not reported	A reduction in VL indicates better health

continued

TABLE 106 Outcome measures from included studies: acronyms and definitions (*continued*)

Acronym	Definitions given in the primary studies	Scale and scoring	Meaning
HIV-OS	The HIV-Specific Optimism Scale (HIV-OS) is a self-report measure of optimistic beliefs related to HIV issues Seven items were adapted from the LOT (Scheier and Carver[209]) specifically for Wagner *et al.*[73] Sample HIV-OS items include 'I am not counting on things going my way in the course of my HIV infection' and 'Although the future course of my HIV infection is uncertain, I expect the best'	6-point Likert scale ranging from strongly disagree to strongly agree	Higher scores indicate higher levels of optimism related to HIV issues
IBS-QoL	The Irritable Bowel Syndrome QoL	Scale 0–100, best = 100	Higher scores indicate better QoL
IBSSS	The irritable bowel severity (IBS) scale/scoring system (IBSSS; Francis *et al.*[210]) is a 9-item survey designed to enable clinicians to record and monitor the severity of IBS Participants have to answer the questions based on how they feel currently (i.e. over the last 10 days or so) A total IBS severity score is given	• Mild severity: 75–175 • Moderate severity: 175–300 • Severe severity: > 300 The maximum score is 500	Higher scores indicate increase in IBS severity
IES	The Impact of Event Scale (IES; Horowitz *et al.*[211]) assesses frequency of intrusive thoughts and avoidance over the past week including today. Participants are asked to specifically refer to their cancer experience when answering the questions	Responses for each item are 0 (not at all); 1 (rarely); 3 (sometimes); 5 (often) Possible score ranges from 0 to 40	Higher scores indicate the greater extent to which participants have experienced each item, in the preceding 7 days
IES-R	The Impact of Event Scale-Revised (IES-R; Weiss and Marmar[212]), which contains 22 items that measure avoidance, intrusive re-experiences and arousal associated with a traumatic event	5-point scale ranging from 0 (not at all) to 4 (extremely)	Higher scores indicate greater extent to which participants have experienced each item in the preceding 7 days in relation to their psychotic experiences and treatment
IS	The 8-item Insight Scale (IS; Birchwood *et al.*[213]), which measures three dimensions of insight: perceived need for treatment, awareness of illness and relabelling of symptoms as pathological	Response to each item reported as agree, disagree or unsure	NA
K-10	The Kessler Psychological Distress Scale (K-10) detects non-specific emotional distress and has been used in a number of population health surveys in Australia. It contains 10 statements covering the preceding 4 weeks	5-point Likert scale from 1 (none of the time) to 5 (all the time) Possible scores range from 10 (no distress) to 50 (maximal distress)	Higher scores indicate higher distress

TABLE 106 Outcome measures from included studies: acronyms and definitions (*continued*)

Acronym	Definitions given in the primary studies	Scale and scoring	Meaning
LIFE	The Longitudinal Interval Follow-Up Evaluation (LIFE; Keller *et al.*[214]) is a semistructured interview for assessing the longitudinal course of psychiatric disorders It consists of a semistructured interview, an Instruction booklet, a coding sheet, and a set of training materials. An interviewer uses the LIFE to collect detailed psychosocial, psychopathological, and treatment information for a 6-month follow-up interval The weekly psychopathology measures (psychiatric status ratings) are ordinal symptom-based scales with categories defined to match the levels of symptoms used in the Research Diagnostic Criteria The ratings provide a separate, concurrent record of the course of each disorder initially diagnosed in patients or developing during the follow-up Any DSM-III or Research Diagnostic Criteria disorder can be rated with the LIFE, and any length or number of follow-up intervals can be accommodated. The psychosocial and treatment information is recorded so that these data can be linked temporally to the psychiatric status ratings	NA	NA
LIWC	The Linguistic Inquiry and Word Count (LIWC) is a text analysis software program designed by Pennebaker *et al.*[19] LIWC calculates the degree to which people use different categories of words across a wide array of texts, including e-mails, speeches, poems, or transcribed daily speech. With a click of a button, you can determine the degree any text uses positive or negative emotions, self-references, causal words, and 70 other language dimensions (www.liwc.net/)	NA	NA

continued

TABLE 106 Outcome measures from included studies: acronyms and definitions (*continued*)

Acronym	Definitions given in the primary studies	Scale and scoring	Meaning
LOT	The Life Orientation Test (LOT) assesses generalised positive outcome experiences measures optimism on eight items to indicate the extent to which they agree with each statement	5-point Likert scales ranging from 1 (strongly agree) to 5 (strongly disagree) The items are summed to create a score ranging from 8 to 40	Higher numbers indicate more optimism
Mac New HRQOL	The Mac New Health Related Quality Of Life (Mac New HRQOL) scale is a 27-item measure of physical, emotional and social QoL (Valenti *et al.*[215]) In addition to separate physical, emotional and social QoL subscales, an overall index of QoL is provided. It has been extensively used in cardiac populations, and based on data from over 1000 cardiac patients	7-point Likert scale. A change of 0.5 units reflects a minimal clinically important difference (Dixon *et al.*[216])	Higher scores indicate better health
Marks	The Marks Asthma Quality of Life Questionnaire (Marks; Marks *et al.*[217]) is a self-administered questionnaire intended for use with adults Respondents are asked to describe how troubling particular items have been over the past 4 weeks. Covers both physical and emotional impact Should not be confused with the Asthma Quality of Life Questionnaire (AQLQ; Juniper *et al.*[218])	Scaling of items from 1 to 5	NA
McGill Pain Q-SF	The McGill Pain Questionnaire-Short Form (McGill Pain Q-SF; Melzack[219]) assesses these two dimensions of pain, as currently experienced by the patient. It contains 11 items assessing several domains of pain experience: intensity, sensory and affective	Scale from 0 (none) to 3 (severe) scale Ratings were averaged	Higher scores indicate greater severity

TABLE 106 Outcome measures from included studies: acronyms and definitions (*continued*)

Acronym	Definitions given in the primary studies	Scale and scoring	Meaning
McGill QOL	In Averill *et al*.,[100] psychological and existential QoL were measured with the McGill QOL questionnaire to assess the subjective QoL of patients with terminal illness. Psychological QoL reflects the extent to which patients have experienced symptoms of depression, anxiety, sadness and hopelessness. There were six measures of psychological well-being that were highly correlated with each other: positive affect, negative affect, depression, psychological QoL, existential QoL and spirituality Existential QoL reflects patients' ratings of the worth and meaning of their life, their progress towards their goals, their control over their life and the value of each day	11-point Likert scale ranging from 0 to 10 Scores are summed up into a total score	Lower scores indicate better health
MDASI	The MD Anderson Symptom Inventory (MDASI; Cleeland *et al.*[220]) is used to assess multiple symptoms experienced by cancer patients and the interference with daily living caused by these symptoms. Participants rate the severity of 13 core symptoms (in the last 24 hours) common across all cancer diagnoses and treatments and the extent to which these symptoms interfere with daily activities In Park and Yi[78] a Korean version (Yun *et al.*[221]) was adapted	From 0 (symptom has not been present) to 10 (the symptom was as bad as you can imagine it could be)	Higher scores indicate greater severity and interference
MIDAS	The Migraine Disability Assessment Scale (MIDAS) is a 5-item inventory that assesses the number of days in the past month when the respondents functioning was reduced or impaired because of headaches (behavioural disability from headaches) including days of work (including housework), school or other activities missed, as well as the number of days for which productivity was reduced by half A total of five items are calculated and analysed	The number of days is added up, totalling a final number of days from questions 1–5 MIDAS scores thresholds are as follows: • 0–5: no disability • 6–10: mild disability • 11–20: moderate disability • > 21: severe disability	Higher scores indicate greater migraine disability

continued

TABLE 106 Outcome measures from included studies: acronyms and definitions (*continued*)

Acronym	Definitions given in the primary studies	Scale and scoring	Meaning
Mississippi Scale for PTSD	The Mississippi Scale for combat-related PTSD (Hebrew version) is a 35-item self-reported questionnaire describing participant's feeling on each of the items Items 2, 6, 11, 17, 19, 22, 24, 27, 30 and 34 are scored in reverse order The cut-off score for PTSD is set at 107, a score that correctly classifies 90% of all subjects as PTSD or non-PTSD Means for the three validation groups are as follows: PTSD 130 (SD = 18); psychiatric 86 (SD = 26); well adjusted 76 (SD = 18)	Each item receives a score of 1–5 Add all items to obtain the total score	A total score of > 107 indicates a diagnosis of PTSD
MMSE-Korean	The Mini Mental State Examination (MMSE) is often taken to rate cognitive functioning difficulties in a relatively short time: in the present study, the Korean version of MMSE, named MMSE-K, was used in the included study by Hong and Choi[67] The MMSE-K has 30 questions for rating and each question is counted as one point. The full score of MMSE-K is 30 points. It consists of seven subitems. The standard MMSE-K was slightly modified, combining time orientation and space orientation into orientation to which 10 points were allocated, and also unifying memory registration and memory recall to memory to which six points were allocated Diagnostic criteria of dementia in terms of the MMSE-K score are given as follows: a total score of > 23 points is classified as normal, 20–23 points as doubted as dementia and < 20 points as dementia	The score of each item is allocated as follows: (1) 5 points for time orientation, (2) 5 points for space orientation, (3) 3 points for memory registration, (4) 3 points for memory recall, (5) 5 points for attention and calculation, (6) 7 points for language, and (7) 2 points for comprehension and judgement	A total score of < 20 indicates dementia
Modified MRC dyspnoea scale	The Modified Medical Research Council dyspnoea scale (MMRC) is an instrument to document subjective feeling of shortness of breath	From 0 (shortness of breath only with strenuous activity) to 4 (shortness of breath with minimal activity, even dressing or undressing)	Higher scores indicate higher subjective feeling of shortness of breath

TABLE 106 Outcome measures from included studies: acronyms and definitions (*continued*)

Acronym	Definitions given in the primary studies	Scale and scoring	Meaning
MOS-HIV	The Medical Outcomes Study HIV Health Survey, a brief, multidimensional and comprehensive measure of HRQoL used extensively in HIV/AIDS research (MOS-HIV; Wu *et al.*[222]) It measured the physical functioning, pain, and mental health using three subscales: • The 6-item physical functioning subscale is a self-report measure of how long one's health has been limited in vigorous physical activities (such as lifting), moderate physical activities (such as carrying groceries) and other activities of daily living • The pain subscale consists of two items: amount of bodily pain and the extent to which pain interfered with normal work activities • The mental health subscale consists of five items: nervous, calm and peaceful, downhearted and blue, happy, and down in the dumps	• 3-point scale: limited for more than 3 months; limited for the last 3 months and not at all limited • Amount of bodily pain from none to severe, and the extent to which pain interfered with normal work activities from not at all to extremely • Mental health subscale ranges from 1 (all of the time) to 6 (none of the time)	• Higher scores indicate better physical functioning • The higher the scores on the pain subscale, the lower the pain • Higher mental health subscale scores indicate better mental health
MPI	The Multidimensional Pain Inventory (MPI; Kerns[223]) is a 48-item self-reported questionnaire, divided in three sections In the first section, the participant responds about their pain, and how it affects their lives In the second section, the participant responds about how his/her spouse or significant others respond to them in that particular way when they are in pain In the third section, the participant responds to how often they do different daily tasks (such as washing dishes, going to the cinema, take a trip, or engage in sexual activities) Participants can also list any other pain-related problem	*Section 1*: 7-point Likert scale ranging from 0 (not at all) to 6 (extremely) *Section 2*: range from never to often *Section 3*: range from never to often The scoring procedure produces a mean score for each scale	Higher scores indicate greater pain

continued

TABLE 106 Outcome measures from included studies: acronyms and definitions (*continued*)

Acronym	Definitions given in the primary studies	Scale and scoring	Meaning
MSPSS	The Multidimensional Scale of Perceived Social Support (MSPSS; Zimet *et al.*[224]) is a 12-item self-report measure used to measure perceived social support	7-point Likert scale from 1 (very strongly disagree) to 7 (very strongly agree)	Higher scores indicate higher perceived social support
NMCUES	The National Medical Care Utilisation Expenditure Survey (NMCUES; National Centre for Health Statistics[225]) It assesses multiple forms of health-care utilisation and behaviours over a period (3 months in Rosenberg *et al.*[83]) Questions addressed health-care utilisation patterns, current use of medicines and health-related behaviours (e.g. smoking, substance use)	NA	NA
OQ-45.2	The Outcome Questionnaire (OQ-45.2; Lambert *et al.*[226]) is a 45-item self-report measure intended for weekly assessment of client progress through the course of psychotherapy The OQ-45.2 produces a total score and three subscale scores (symptom distress, interpersonal relations and social role)	The total score is calculated by summing the patient's ratings across all 45 items (range 0–180)	Higher scores indicate greater clinical improvement
PAID	Problem Areas In Diabetes scale (PAID; Polonsky *et al.*[227]), otherwise not described	NA	NA

TABLE 106 Outcome measures from included studies: acronyms and definitions (*continued*)

Acronym	Definitions given in the primary studies	Scale and scoring	Meaning
Pain behaviour	In both included studies by Lumley *et al.*[115] and Macklem,[131] a structured observation system[228] which was designed for RA patients, assessed overt pain behaviour At each evaluation, patients were videotaped in the examination room for 10 minutes by a camera in the doorway while they engaged in four standardised manoeuvres (walking, sitting, standing and reclining), which were presented in a random order. The research assistant operated the camera and refrained from interacting with the patient other than to give directions for the next behaviour Raters were trained to code these videotapes by the developer of the system (Francis J Keefe) and achieved high inter-rater reliability during training. Next, these raters, blind to experimental condition, reviewed study videotapes for the presence of seven pain behaviours: guarding, bracing, grimacing, sighing, rigidity, passive rubbing and active rubbing The 10-minute tapes were divided into 20 30-second epochs; the presence or absence of each pain behaviour during each epoch was recorded, and a total score of all behaviours across all epochs was calculated	NA	NA
Pain intensity	In the included study by Cepeda *et al.*,[85] patients rated their average pain intensity using a verbal numerical rating scale In the included study by Macklem,[131] pain intensity was measured using a 100-mm VAS	Verbal numerical rating scale from 0 (no pain) to 10 (the worst pain imaginable) 100-mm VAS ranges from 0 (no pain) to 100 (pain as bad it can be)	Higher scores indicate more pain intensity

continued

TABLE 106 Outcome measures from included studies: acronyms and definitions (*continued*)

Acronym	Definitions given in the primary studies	Scale and scoring	Meaning
PANAS-X(a)	The Positive and Negative Affect Schedule (PANAS; Watson *et al.*[229]) which contains 16 items (eight positive items and eight negative items) In Wagner *et al.*[73] the same scale is reported as PANAS and defined as a 20-item scale with the same 5-point response options. Words that describe feelings and emotions, such as interested, distressed, and proud load on either the positive or negative affect factor (10 items each). In this study, participants were asked to rate their feelings during the past week, including today	5-point scale ranging from 1 (very slightly or not at all) to 5 (extremely)	Higher scores indicate greater mood change
PANAS-X(b)	The Positive and Negative Affect Schedule–Expanded Form (PANAS-X, Watson and Clark[230]) was applied to assess emotional states of patients: 60-item scale, which was created to assess not only general dimensions of emotional experience, but specific emotional states too It included the original PANAS assessing short-term mood fluctuations, with consistent psychometric results in varying populations and over various time frames: this measure consists of two 10-item scales for positive and negative affect In addition to the two original higher order scales, the PANAS-X measures 11 specific affects: joviality, self-assurance, attentiveness, fear, sadness, guilt, hostility, shyness, fatigue, serenity, surprise	5-point scale ranging from 1 (very slightly or not at all) to 5 (extremely)	Higher scores indicate greater mood change
PANAS-X(c)	The Positive and Negative Affect Schedule for Children [PANAS-X(c); Laurent *et al.*[231]] is a 30-item scale, through which items are rated for affect during the past few weeks and averaged separately for positive affect (PA) and negative affect (NA) measures	6-point scale from 0 (very slightly or not at all) to 5 (extremely)	Higher scores indicate greater mood change

TABLE 106 Outcome measures from included studies: acronyms and definitions (*continued*)

Acronym	Definitions given in the primary studies	Scale and scoring	Meaning
PANAS-X(d)	The Positive and Negative Affect Schedule–Abbreviated version of the expanded version [PANAS-X(d), Watson and Clark[232]] was used in the included study by D'Souza *et al.*[101] The four negative moods were highly correlated (e.g. alpha for session 1 was 0.75 for tension and 0.73 for migraine samples), so the four ratings were averaged into one negative mood score and analysed it separately from calmness	Items rated from 1 (not at all) to 7 (a great deal) for four negative moods (anger, guilt, sadness, fear) and for calmness	Higher scores indicate greater mood change
PANAS-X NA subscale	The 10-item negative affect subscale from the 60-item PANAS-X rated the frequency that they experienced each item during the prior 2 weeks	5-point Likert scale ranging from 1 (not at all) to 5 (extremely)	Higher scores indicate greater mood change
PASI	The Psoriasis Area and Severity Index (PASI; Feldman *et al.*[233]) is an internationally accepted, clinician-rated, psoriasis-specific score, based on the body surface area involved and on semi-quantitative estimation of erythema, infiltration and scaling; it is by far the most common tool in clinical studies and in daily practice. The head, trunk, and upper and lower extremities are assessed	Scores range from 0 (no psoriasis) to 72 (extremely severe psoriasis)	Higher scores indicate greater psoriasis severity
PDS	The Posttraumatic Stress Diagnostic Scale (PDS; Foa *et al.*[234]), a 49-item self-reported measure, aids in PTSD diagnosis and symptom severity, with items that parallel DSM-IV criteria A diagnosis of PTSD is made only when DSM-IV criteria A–F are met The PDS includes a symptom severity score. Respondents rate 17 items representing the cardinal symptoms of PTSD experienced in the past 30 days. Finally, respondents rate the level of impairment caused by their symptoms across nine areas of life functioning	4-point scale Scores range from 0 to 51, and this is obtained by adding up the individuals responses of selected items The cut-off points for symptom severity rating are: • 0: no rating • 1–10: mild • 11–20: moderate • 21–35: moderate to severe • ≥ 36: severe	Higher scores indicate higher PTSD symptoms

continued

TABLE 106 Outcome measures from included studies: acronyms and definitions (*continued*)

Acronym	Definitions given in the primary studies	Scale and scoring	Meaning
PedsQL	The Paediatric Quality of Life (PedsQL) is a 23-item well-validated scale with excellent internal consistency – how much of a problem various physical activities, feelings, social situations, and school activities have been in the past month QoL domains were restricted to (a) physical (eight items) and (b) psychosocial (15 items)	5-point scale from 0 (never a problem) to 4 (almost always a problem)	Lower scores indicate better health
PSA spec – CD4+/8+	Peripheral blood T-cell proliferation to specified antigens This technique was assessed by the cell census proliferation assay method. It involves the use of a fluorescent membrane dye that partitions between daughter cells at division, in conjunction with flow cytometry to measure the proliferation of cells With mathematical deconvolution of the fluorescence histograms, the precursor frequency of cells in the original population that responded to a specific stimulus can be derived By using a second tagged fluorescent antibody to stain for lymphocyte subsets, the proliferation of specific phenotypes (CD4+/CD8+) of responding cells can be examined	NA	NA
PHQ	The Patient Health Questionnaire (PHQ; Spitzer *et al.*[235,236]) is designed as a screening instrument for use with health-care seeking populations It provides information on perceived symptoms of (a) depression, (b) anxiety, (c) somatic complaints, and (d) psychological distress The two subscales that measure symptoms of depression (nine items) and anxiety (15 items) employ DSM-IV criteria to screen for the presence of these psychiatric illnesses	For each item: • Depression scale range: from 0 to 3 • Anxiety scale range: from 1 to 4	Depression severity: • 0–4: none • 5–9: mild • 10–14: moderate • 15–19: moderately severe • 20–27: severe
Physician's global rating of disease activity	In Lumley *et al.*,[115] the evaluating physician-rated patient's overall disease activity with a 100-mm VAS In Macklem,[131] scoring was done on a 5-point Likert scale	From 0 to 100 VAS, with anchors of 0 (no activity) to 100 (most activity) Range from 0 (asymptomatic), 1 (mild), 2 (moderate), 3 (severe) to 4 (very severe)	Higher scores indicate higher activity

TABLE 106 Outcome measures from included studies: acronyms and definitions (*continued*)

Acronym	Definitions given in the primary studies	Scale and scoring	Meaning
PILL	The Pennebaker Inventory of Limbic Languidness (PILL), a self-report questionnaire that assess the frequency of each of the most 54 physical symptoms The PILL can be scored by summing up the total number of items on which individuals score C, D or E (every month or so or higher) With this strategy, the mean score is 17.9 (SD = 4.5) based on a sample of 939 college students. You can also simply sum up the 54 items resulting in a mean score of 112.7 (SD = 24.7) (http://homepage.psy.utexas.edu/HomePage/Faculty/Pennebaker/Questionnaires/PILL.pdf)	From 0 to 216: • 0 to 21: below normal range • 22 to 66: well within normal range • 67 to 84: slightly above average, within normal range • ≥ 85: top 25%	Higher scores indicate participants are more nervous, distressed and unhappy
POMS	The Profile of Mood States (POMS) (McNair *et al.*[237]) consists of 34 items aimed at assessing global negative and positive affect Participants indicate how often they experienced a particular feeling (e.g. liveliness, forgetfulness, unhappiness) since their cancer diagnosis or their last survey (for subsequent waves) In the included study by Henry *et al.*,[53] mood disturbance was calculated by summing the negative affect subscales (e.g. anger, depression, tension, fatigue, confusion) and then subtracting the positive affect subscale score (e.g. vigour) In the included study by Smyth *et al.*,[9] the POMS assessed current mood states using subscales for depression–dejection, tension–anxiety, fatigue–inertia, vigour–activity, anger–hostility and confusion–bewilderment	Scale from 0 (not at all) to 4 (extremely often)	Higher scores indicate greater mood disturbance
POMS-n	The negative affect subscale of the Profile of Mood States (POMS; Zevon and Auke[238]) was measured in Jensen-Johansen *et al.*[76] with a 37-item version validated for use with patients with breast cancer (Di Lorenzo and Williamson[239])	Scale from 0 (not at all) to 4 (extremely often)	Higher scores indicate greater negative affect

continued

TABLE 106 Outcome measures from included studies: acronyms and definitions (*continued*)

Acronym	Definitions given in the primary studies	Scale and scoring	Meaning
POMS-SF	The Short Form of the Profile of Mood States (POMS-SF; Shacham[240]) is a 37-item questionnaire that comprises six subscales measuring transient states of six moods: tension–anxiety, depression–dejection, anger–hostility, vigour–activity, fatigue–inertia and confusion–bewilderment Total mood disturbance is assessed as the sum of the scores for these six moods	5-point Likert scale, ranging from 0 (not at all) to 4 (extremely)	Higher scores representing greater mood disturbance, except for vigour/activity, where higher scores indicate lesser mood disturbance and the score of this subscale is subtracted from the sum of the rest to provide the total mood disturbance
Poor sleep quality	The poor sleep quality scale used a 4-item scale designed to evaluate the previous night's sleep regarding sleep quality, degree to which sleep was restorative, waking daytime level of alertness, and ability to concentrate	1–7 scale and averaged	Higher values indicate poorer sleep
Post mTBI Symptom Checklist	The Post Mild Traumatic Brain Injury (mTBI) Symptom Checklist comprised 30 items, describing symptoms that are commonly experienced in the following days or weeks after a mTBI The list comprises questions about physical changes, changes in thinking, changes in emotions or behaviours	NA	The higher number of items ticked, the greater post-mTBI symptoms
PPMS	A Passive Positive Mood Scale (PPMS) was developed for the study by Jensen-Johansen *et al.*,[76] using words reflecting non-active positive mood to supplement the active positive mood items of the POMS vigour subscale The PPMS consists of items reflecting passive positive mood in the past 7 days (positive/bright, balanced, glad, peaceful, relaxed, at ease, calm, contented)	NA	Higher scores indicate better passive positive mood
PSC	The Paediatric Symptom Checklist (PSC) is a 35-item psychosocial screen designed to facilitate the recognition of cognitive, emotional and behavioural problems The PSC is the parent-completed version, as opposite to the Paediatric Symptom Checklist-Youth Report form (PSC-Y), which is the children-completed version (see p. 317)	Items are rated as never, sometimes or often present and scored 0, 1 and 2, respectively The total score is calculated by adding together the score for each of the 35 items	A positive score on the PSC indicates need of further evaluation by a qualified health or mental health professional Both false positive and false negative can occur and this should be interpreted by the appropriate professional

TABLE 106 Outcome measures from included studies: acronyms and definitions (*continued*)

Acronym	Definitions given in the primary studies	Scale and scoring	Meaning
PSC-Y	The Paediatric Symptom Checklist-Youth Report form (PSC-Y; Little *et al.*[241]) contains 35 items to obtain a child's report of their emotional and behavioural problems The items describe specific emotions and behaviours, and the respondent is asked to indicate how often the items apply to them by checking always, sometimes or never	• For children aged 4 and 5 years, the PSC cut-off score is ≥ 24 • For children and adolescents aged 6–16 years, a cut-off score of ≥ 28 indicates psychological impairment • The cut-off score for the PSC-Y is ≥ 30 Items left blank are ignored. If more than four items are left blank, the questionnaire is considered invalid	A positive score on the PSC-Y indicates need of further evaluation by a qualified health or mental health professional. Both false positive and false negative can occur and this should be interpreted by the appropriate professional
PSQI	The Pittsburgh Sleep Quality Index (PSQI; Buysse *et al.*[242]) evaluated habitual sleep disturbances over a 1-month period It differentiates poor from good sleep quality by measuring seven areas (components): subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medications, and daytime dysfunction over the last month	Responses for each item are: 0 (very good); 1 (fairly good); 2 (fairly bad); 3 (very bad) The total score sums the seven item scores together	A total score of ≥ 5 is indicative of poor sleep quality
PSS	The 14-item Perceived Stress Scale (PSS) measure was used to assess the degree to which participants found their daily lives over the period of the past 4 weeks to be unpredictable, uncontrollable and overloading The questionnaire is designed to quantify non-specific appraised stress over the previous month	From 1 (never) to 5 (very often)	Higher scores indicate higher levels of appraised stress

continued

TABLE 106 Outcome measures from included studies: acronyms and definitions (*continued*)

Acronym	Definitions given in the primary studies	Scale and scoring	Meaning
PSS-I	The Post-Traumatic Stress Disorder Symptom Scale Interview (PSS-I; Foa *et al.*[243]) The PSS-I was used to generate three PTSD subscale scores for re-experiencing, avoidance, and arousal symptoms The PSS-I is a 17-item semistructured interview that assesses the presence and severity of DSM-IV PTSD symptoms related to a single identified traumatic event in individuals with a known trauma history. Each item is assessed with a brief, single question. There are no probes or follow-up questions. Interviewees are asked about symptoms they have experienced in the past 2 weeks	For each item, the interviewer assigns a rating to reflect a combination of frequency and severity from 0 (not at all) to 3 (five or more times per week/very much)	Higher scores indicate greater symptoms
PTGI	The Post-Traumatic Growth Inventory (PTGI; Tedeschi and Calhoun[244]) measures the degree of positive changes reported after experiencing a traumatic event The PTGI measures growth in five domains: new possibilities, relating to others, appreciation of life, personal strength, and spiritual changes PTGI is a 21-item self-report inventory. In addition to an overall scale score, the PTGI comprises five factors: • relating to others • new possibilities • personal strength • spiritual change • appreciation for life	6-point Likert type scale, ranging from 0 (I did not experience this change as a result of my crisis) to 5 (a very great degree as a result of my crisis)	Higher scores indicate greater positive changes
QEDD	The diagnosis of eating disorder on the Questionnaire for Eating Disorder Diagnosis (QEDD; Mintz *et al.*[245]) is a 50-item diagnostic instrument based on DSM-I criteria	NA	NA

TABLE 106 Outcome measures from included studies: acronyms and definitions (*continued*)

Acronym	Definitions given in the primary studies	Scale and scoring	Meaning
QOL	The Quality of Life Scale (QOL; Burckhardt *et al.*[246]), used in Broderick *et al.*,[118] is a 16-item instrument (rather than the 15-item one found in the Flanagan version) designed to measure QoL across a broad array of life domains in patients with chronic illness Independence, doing for yourself was added after a qualitative study indicated that the instrument had content validity in chronic illness groups but that it needed an item that reflected the importance to these people of remaining independent and able to care for themselves	7-point Likert scale ranging from 1 (terrible) to 7 (delighted) The instrument is scored by summing the items to make a total score	Higher scores indicate better QoL
RCMAS	The Revised Children's Manifest Anxiety Scale (RCMAS; Reynolds and Richmond[247]) is subtitled What I Think and Feel, and contains 37 written statements describing feelings or behaviours that the individual is asked to respond to by circling yes or no This measure assesses the level and nature of children's anxiety. The yes responses are counted to determine a total anxiety score. There a four subscales (for which scores can be calculated separately): physiological anxiety; worry/oversensitivity; social concerns/concentration; lie	NA	• High scores on the physiological factor (items 1, 5, 9, 13, 17, 19, 21, 25, 29, 33) can indicate physiological signs of anxiety (e.g. sweaty hands, stomach aches) • High scores on the worry/oversensitivity factor (items 2, 6, 7, 10, 14, 18, 22, 26, 30, 34, 37) would suggest that the child internalises their experiences of anxiety and that he/she may feel overwhelmed and withdraw • High scores on the concentration anxiety factor (items 3, 11, 15, 23, 27, 31, 35) would suggest that the child is likely to feel that he/she is unable to meet the expectations of other important people, inadequate and unable to concentrate on tasks

continued

TABLE 106 Outcome measures from included studies: acronyms and definitions (*continued*)

Acronym	Definitions given in the primary studies	Scale and scoring	Meaning
RSQ	The Recovery Style Questionnaire (RSQ; Drayton *et al.*[248]) is a 39-item self-report measure with the categories developed by McGlashan *et al.*[249] integration vs. sealing over styles of adaptation to psychotic illness The RSQ includes 13 aspects of recovery style, each of which is assessed by three items	Using a formula (Drayton 1998), the scores on each of these aspects are combined into the six following classifications along one dimension: • Integration • Towards integrating • A mixed picture in which integration dominates • A mixed picture in which sealing over dominates • Towards sealing over • Sealing over • Scores were summed across the items to provide a total score	Higher scores indicate greater recovery style
Rumination Scale	The Rumination Scale (McIntosh *et al.*,[250]) consists of a 10-item report that assesses people's tendency to engage in ruminative thinking	NA	NA
SAM	The paper-and-pencil version of the Self-Assessment Manikin (SAM; Bradley and Lang[251]) obtains participant's ratings of valence (pleasantness) and arousal in response to each session (self-reported emotion)	9-point Likert-type scale: • *Valence*: from 1 (very pleasant to 9 (very unpleasant) • *Arousal*: from 1 (very calm) to 9 (very aroused)	Higher scores indicate greater pleasantness
SAPASI	The Self-Administered Psoriasis Area and Severity Index (SAPASI; Sampogna *et al.*[252]), a patient-rated, psoriasis-specific outcome measure, is a widely validated instrument that provides an objective measure of disease severity, and has been effectively used in previous studies Participants rate the colour, induration, and scaliness of an average psoriatic lesion using three modified VASs. As in the original PASI, the SAPASI weights the involvement of the head (H), upper extremities (U), trunk (T) and legs (L) as 10%, 20%, 30%, and 40% of the total body area, respectively	$SAPASI = (0,1 \times A_H) + (0,2 \times AU) + (0,3 \times AT) + (0,4 \times AL)$	Higher scores indicate greater severity

TABLE 106 Outcome measures from included studies: acronyms and definitions (*continued*)

Acronym	Definitions given in the primary studies	Scale and scoring	Meaning
SCL-90-R	The Symptom Checklist-90-Revised (SCL-90-R) is a 90-item, self-report measure of current psychological symptomatology, including global psychological distress It is a multidimensional complaint list based on a self-assessment covering an important part of the compliant that can be seen in the psychiatric inpatient clinic	5-point Likert scale ranging from 0 (not at all) to 4 (extremely) Items are summed for a total score	Higher scores indicate greater distress and psychological symptoms
SCS	The Social Constraints Scale (SCS; Lepore and Ituarte[253]) is a 15-item scale assessing perceived inadequacy of social support resulting in reluctance among individuals to express thoughts and feelings about a specific stressor, in this case their cancer experience Example items include: How often did they avoid you? How often did they minimise your problems? How often did they tell you to try not to think about your cancer? and How often did they make you feel as though you had to keep feelings about your cancer to yourself, because they made him/her feel uncomfortable? In Zakowski *et al.*,[84] two forms of the SCS were used: one asking about constraints from patient's spouse or partner and one asking about constraints from people in their lives other than their spouse or partner (e.g. friends or family members) The mean of the two constraint scores in all analyses (among the 19 patients who had no current spouse or partner, the constraints from others score was used, in that we considered this score to be reflective of their average constraint level) were used in the aforementioned study	Scores range from 15 (low constraints) to 60 (high constraints)	Higher scores indicate higher social constraints
SDSCA	Summary of Diabetes Self-Care Activities scale (revised) (SDSCA; Toobert *et al.*[254]) Splits into general diet, specific diet, exercise, blood glucose testing and foot care subscales	NA	NA

continued

TABLE 106 Outcome measures from included studies: acronyms and definitions (*continued*)

Acronym	Definitions given in the primary studies	Scale and scoring	Meaning
Self-rated health status (a)	Compared with the person in excellent health, how would you rate your health at the present time?	7-point scale from 1 (terrible) to 7 (excellent)	Higher scores indicate better health
Self-rated health status (b)	How you rate your health overall?	From 1 (very bad) to 5 (very good)	Higher scores indicate better health
Serum cytokine levels of TNF-α, IL-4 and IL-10	Levels were determined using a high sensitivity ELISA sandwich essay In this method, the concentration of the selected cytokine in the serum is calculated from the linear portion of a standard curve of purified cytokine at known concentrations	The detection limits of the assay were < 0.25 pg/ml	The detectable range for TNF-α was 0.5–32 pg/ml and for IL-10 0.8–50 pg/ml
Sexual health and performance	In the included study by Pauley *et al.*,[82] sexual health and performance was assessed by a designed 6-item measure created by the authors The scale was intended to work as two separate subscales: one measuring performance and the other measuring sexual desire	NA	Higher scores indicate greater levels
SF-12	The Short Form questionnaire-12 items (SF-12; Ware *et al.*[255]) is a widely used, brief generic measure of self-reported health status derived from the larger SF-36 survey Self-ratings are made of severity and frequency of 12 physical and mental health problems, as well as of their impact on the patient's overall perceived health status This modified version of the SF-36 has consistently been shown to have good reliability and validity	It yields both physical health and mental health summary scores, which are reported as standard scores	Slower scores indicated positive psychological and physical health

TABLE 106 Outcome measures from included studies: acronyms and definitions (*continued*)

Acronym	Definitions given in the primary studies	Scale and scoring	Meaning
SF-36	The Medical Outcomes Short Form questionnaire-36 items (SF-36; Ware and Sherbourne[256]) is used to evaluate psychological (SF mental), physical health (SF physical) and general health The eight subscales include (a) limitations in physical activities because of health problems; (b) limitations in social activities because of physical or emotional problems; (c) limitations in usual role activities because of physical health problems; (d) bodily pain; (e) general mental health (psychological distress and well-being); (f) limitations in usual role activities because of emotional problems; (g) vitality (energy and fatigue); and (h) general health perceptions A physical health composite score embodies concepts (a), (c), (e) and (g) and a mental health composite score embodies concepts (b), (d), (e) and (f) This instrument has been also used a measure of HRQoL In the included study by Broderick *et al.*,[118] four additional subscales from the MOS-SF-36 General Health Survey were selected: overall health, social functioning, health distress, and cognitive dysfunction. Three additional items assessing tiredness on awakening, tiredness during the day, and quality of sleep were rated over the past week on 4-point scales	6-point Likert scale from 1 (excellent) to 5 (worst)	Lower scores indicated positive psychological and physical health

continued

TABLE 106 Outcome measures from included studies: acronyms and definitions (*continued*)

Acronym	Definitions given in the primary studies	Scale and scoring	Meaning
SF-36v2 Health Survey	The SF-36v2 Health Survey (Ware[257]) is a 36-item inventory that yields eight scale scores and two summary scores for physical and mental health The 1998 US norm-based scoring in version 2 allows for ready interpretation of scores relative to general population norms The eight scaled scores are the weighted sums of the questions in their section. Each scale is directly transformed into a 0–100 scale. The eight sections are vitality, physical functioning, bodily pain, general health perceptions, physical role functioning, emotional role functioning, social role functioning and mental health In the included study by Broderick *et al.*,[118] the Pain Catastrophising Scale served as a primary outcome, because it measures the physical health status of the patient. The Mental Component Summary (MCS) was also examined to determine whether a psychological impact of the intervention was observed	Total score in each component ranges from 0 to 100	The higher the score the less disability
SGRQ	The St George's Respiratory Questionnaire (SGRQ) is a disease-specific instrument designed to measure impact on overall health, daily life and perceived well-being, to be used in patients with fixed and reversible airway obstruction It has 76 questions in three sections: symptoms (frequency and severity), activity (activities that cause or are limited by breathlessness) and impacts (social functioning and psychological disturbances resulting from airways disease)	Total score ranges from 0 to 100	Higher scores indicate poor health
SIP	The Sickness Impact Profile (SIP; de Bruin *et al.*[258]) used in the included study by Hughes[54] is 136 items The SIP contains three items: the physical functioning scale, mobility subscale (SIP-m), and the recreation and pastimes subscale (SIP-r&p-t) The SIP describes activities of daily living divided in 12 categories	Numerical scale	Higher scores indicate greater dysfunction

TABLE 106 Outcome measures from included studies: acronyms and definitions (*continued*)

Acronym	Definitions given in the primary studies	Scale and scoring	Meaning
Skindex-29	The Skindex-29 (Chren *et al.*[259]) has been shown to be a valuable tool for measuring HRQoL (QoL) in dermatological patients, as reported in the included study by Paradisi *et al.*[110] Its Italian version was developed following guidelines for the cross-cultural adaptation of HRQoL measures and validated in a previous survey[260]	VAS scale from 0 (no pain) to 10 (worst possible)	Higher scores indicate poorer QoL
SOC	The Sense of Coherence Scale (SOC) is a 13-item self-report instrument (Antonovsky[261]) based on the following underlying constructs: comprehensibility, manageability and meaningfulness The SOC items are scored along the 7-point scale	7-point scale with two anchoring phrases: 'until now life has had no clear goals or purpose at all' and 'until now life has had very clear goals and purpose'	Higher scores indicate a strong sense of coherence
Social Constraints Scale	The Social Constraints Scale (Lepore *et al.*[262]) is a 15-item scale assessing perceived inadequacy of social support resulting in reluctance to express thoughts and feelings about a specific stressor, in this case, experience with amyotrophic lateral sclerosis (e.g. How often did they tell you not to think about amyotrophic lateral sclerosis?) All items referred to respondent's experiences over the prior week	5-point scale ranging from 1 (almost never) to 5 (almost always)	Higher scores indicate greater social constraint
Somatisation Scale	The Somatisation Scale (13 items) includes 13 common physical complaints (e.g. stomach pain, back pain, headaches), from which a severity score can be calculated	Range 0–4	NR
SOPA	The control subscale of the Survey of Pain Attitudes (SOPA; Jensen *et al.*[263]) is a questionnaire to measure feelings of personal control over pain The SOPA is the most widely used measure of pain-related attitudes (De Good and Tait;[264] Jensen *et al.*[263])	5-point scale from 0 (this is very untrue for me) to 4 (this is very true for me) After reversing responses on the four absence of control items, responses are summed to create a total score	Higher scores indicate greater control over pain

continued

TABLE 106 Outcome measures from included studies: acronyms and definitions (*continued*)

Acronym	Definitions given in the primary studies	Scale and scoring	Meaning
SOS	The Significant Others Scale (SOS) measured how much practical and emotional support that individual provided responding to two questions for each item: Emotional support answered by: • (1) Can you trust, talk frankly and share your feelings with this person? • (2) Can you lean on and turn to this person in times of difficulty? Practical support: • (1) Does he/she give you practical help? • (2) Can you spend time with this person socially? Responses were rated on	From 1 (never) to 7 (always) scale	Higher scores indicate greater emotional support
SSQ Asthma	The Wasserfallen Symptom Score Questionnaire (SSQ): asthma subscale	NA	NA
SSQ Awakenings	The Wasserfallen Symptom Score Questionnaire (SSQ): awakenings subscale	NA	NA
STAI-S	The State/Trait Anxiety Scale (STAI-S) is a 20-item, self-report instrument that assesses the subjective feelings of apprehension, nervousness and anxiety at the moment	4-point Likert scale ranging from not at all, somewhat, moderately so, to very much so	Higher scores indicate greater state anxiety
Stigma Scale	The Stigma Scale, designed for individuals diagnosed with HIV/AIDS, consisted of 13 items that evaluated fear, avoidance, and perceived negative responses related to HIV status	1–4 ordinal scale reported as strongly, not at all, rarely, sometimes, often Total scores ranging from a low of 13 to a high of 52	Higher scores equating to greater stigma
Survey–18 physical symptoms items	The Survey–18 physical symptoms items includes items derived from other reports for their appropriateness for the sample in the included study by Henry *et al.*[53] (Anderson and Tewfik;[265] Ganz and Coscarelli;[266] Whelan *et al.*[267]) Example symptoms included fatigue, nausea, appetite loss, breast pain, hair loss, weight gain, hot flashes, itchiness or discomfort of the skin, decreased arm mobility and swelling of the arm	A 7-point scale was used, ranging from 1 (not at all) to 7 (severe)	Higher scores indicate greater physical symptoms

TABLE 106 Outcome measures from included studies: acronyms and definitions (*continued*)

Acronym	Definitions given in the primary studies	Scale and scoring	Meaning
SUS	The Social Undermining Scale (SUS; Vinokur and van Ryn[268]) assesses the extent to which each of the four most important people in participant's lives caused them distress by acting in an unpleasant or angry manner towards them, criticising them or making their life difficult	5-point scale	
Swollen joint count	Joint swelling reflects local inflammation and limited motion in affected areas. The patient's rheumatologist, blind to the patient's experimental condition, evaluated 16 joints bilaterally (five interphalangeal and five metacarpal phalangeal joints in addition to shoulder, elbow, wrist, knee ankle and metatarsals, for a total of 32 joints) and the presence or absence of swelling was recorded for each joint		
Symptom and Emotion Self-report Survey	Participants rated the degree to which they were currently experiencing physical symptoms and emotions. The symptom items were averaged to yield a symptom score, and emotion items were averaged to form positive and negative emotion scores	5-point scale from 1 (not at all) to 5 (a great deal) and scored	
Symptom Checklist-90-Revised	Physical symptoms are reported on a 12-item somatisation subscale of the Symptom Checklist-90-Revised (SCL-90-R) In the included study by D'Souza *et al.*[101] symptoms were rated regarding the past month, and ratings were totalled	Rated from 0 (not at all) to 4 (extremely)	
SLESQ	The Stressful Life Events Screening Questionnaire (SLESQ) (10 items) includes 10 psychosocial complaints common among health-care seeking populations (e.g. difficulties with family support, problems with significant others, and financial concerns)	Range 1–4	NR
The Ways of Coping-Cancer Version	The Ways of Coping-Cancer Version is a self-report checklist of coping responses to cancer-related stressors It assesses the frequency of problem-focused and emotion-focused coping efforts		

continued

TABLE 106 Outcome measures from included studies: acronyms and definitions (*continued*)

Acronym	Definitions given in the primary studies	Scale and scoring	Meaning
TLEQ	The Trauma Life Experience Questionnaire (TLEQ; Kubany *et al.*[269]) is a 23-item self-report measure of 22 types of potentially traumatic events including natural disasters, exposure to warfare, robbery involving a weapon, physical abuse and being stalked TLEQ measures type and frequency of trauma event exposures, and responses to these exposures The TLEQ has strong psychometric properties (Kubany *et al.*[269]) and was completed at the baseline assessment Trauma exposure was scored only if the person indicated exposure to the traumatic event and a response to the event that was consistent with DSM-IV PTSD criterion A2	For each event, respondents are asked to provide the number of times it occurred, ranging from never to more than five times, and whether fear, helplessness or horror was present: yes/no	Higher scores indicate greater trauma
TLFB abstinence	Timeline Followback Method (TLFB) of assessing number of abstinent days		Larger number means longer abstinence
UCLA-Charles	The UCLA-Charles R Drew University Women and Family Project (Wyatt and Chin[270]) was adapted to assess changes in meaning and perceived benefits Participants were asked how, if at all, being HIV positive changed the way they think about themselves, changed them as a person, changed the way they are with other people, and changed their priorities Different categories were developed, based on the literature and on an initial analysis of 14 patients	Ten categories of positive changes, six categories of negative changes and three categories of mixed or neutral changes, as well as codes for uncategorised positive and negative changes The number of changes falling into the positive categories and negative categories was computed for each participant	Higher scores indicate greater changes?
VSQ-9	The Visit Specific Satisfaction Questionnaire (VSQ; Ware and Hays[271]), a self-report measure administered to participants and providers at the conclusion of the 3-month follow-up period	To score the VSQ-9, the responses from each individual should be transformed linearly to a 0–100 scale, with 100 corresponding to excellent and 0 corresponding to poor Responses to the nine VSQ items should then be averaged together to create a VSQ-9 score for each person	Higher scores indicate greater satisfaction related to the visits

TABLE 106 Outcome measures from included studies: acronyms and definitions (*continued*)

Acronym	Definitions given in the primary studies	Scale and scoring	Meaning
Walking speed and grip strength	In the included study by Lumley *et al.*,[115] patients were instructed to walk as quickly as possible, but safely down a 50-foot corridor, and recorded the time to do so in seconds In addition, patient's grip strength was assessed by having them squeeze, as firmly as possible, a sphygmomanometer bulb, and the pressure generated was recorded from two trials with each hand; all four values were averaged to a single score	NA	*Walking speed*: higher values mean slower walking *Grip strength*: higher values indicate better functioning
Well-being	In the included study by Cepeda *et al.*[85] each patient's sense of general well-being was rated	7-point Likert scale from awful to excellent	Higher scores indicate better well-being
WHYMPI –pain subscale	The Pain Severity subscale of the West Haven-Yale Multidimensional Pain Inventory (WHYMPI; Kerns *et al.*[272]) is a 61-item self-report inventory across three domains The WHYMPI is for use in chronic pain populations. It generates 13 empirically derived scale scores, including pain severity, perception of how pain interferes with daily life activities, appraisals of the support received from significant others, and perception of how significant others respond to their displays of pain	From 0 to 6	Higher scores indicate more extreme pain

AIDS, acquired immunodeficiency syndrome; CD3+, Cluster of differentiation antigen 3-positive lymphocyte; ELISA, enzyme-linked immunosorbent assay; FIQ, Fibromyalgia Impact Questionnaire; HAQ, Health Assessment Questionnaire; IL-4, interleukin 4; IL-10, interleukin 10; NA, not available; NR, not reported; PCR, polymerase chain reaction; RAI, Rheumatology Attitudes Index; RNA, ribonucleic acid; VAS, visual analogue scale.

Quality assessment

TABLE 107 Quality of the included studies

	Randomisation			Blinding						
First author, year	Sequence generation? (Selection bias)	Method description given?	Allocation concealment? (Selection bias)	Outcome	Performance	ITT analysis?	Selective reporting? (Description of outcomes differences between groups)	Attrition bias? (Description of withdrawals)	Pre-specified criteria for eligibility of patients?	Similarity of groups at baseline regarding prognostic factors?
Abel 2004[50]	Y	N	U	U	U	Y	N	U	U	Y
Arden-Close 2013[80]	Y	Y	Y	U	N	Y	N	N	Y	N
Averill 2013[100]	Y	Y	U	U	Y	N	Y	Y	Y	N
Bartasiuniene 2011[102]	Y	N	U	U	N	Y	N	N	U	Y
Bernard 2006[93]	Y	Y	Y	U	U	N	N	N	Y	N
Broderick 2004[113]	Y	N	Y	U	N	Y	Y	Y	Y	Y
Broderick 2005[118]	Y	Y	Y	U	N	N	U	Y	Y	Y
Canna 2006[94]	Y	N	Y	N	Y	N	N	U	Y	Y
Cepeda 2008[85]	Y	N	Y	Y	U	Y	Y	Y	Y	Y
Craft 2013[74]	Y	Y	U	U	U	N	N	Y	Y	Y
Dennick 2014[88]	Y	Y	Y	Y	Y	Y	N	N	Y	Y
D'Souza 2008[101]	Y	Y	Y	N	Y	Y	N	N	N	Y
Gellaitry 2010[75]	Y	Y	U	U	U	N	Y	N	Y	Y
Gidron 1996[98]	Y	N	U	N	Y	Y	U	Y	U	N
Gillis 2006[119]	Y	Y	Y	U	Y	Y	Y	Y	Y	N

First author, year	Randomisation			Blinding						
	Sequence generation? (Selection bias)	Method description given?	Allocation concealment? (Selection bias)	Outcome	Performance	ITT analysis?	Selective reporting? (Description of outcomes differences between groups)	Attrition bias? (Description of withdrawals)	Pre-specified criteria for eligibility of patients?	Similarity of groups at baseline regarding prognostic factors?
Golkaramnay 2007[68]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Graf 2008[95]	Y	Y	N	U	N	Y	N	N	Y	N
Graham 2008[51]	Y	Y	Y	Y	U	N	Y	Y	Y	Y
Grasing 2010[90]	N	N	N	U	U	U	Y	Y	Y	N
Halpert 2010[52]	N	Y	N	U	N	N	N	Y	Y	N
Hamilton-West 2007[114]	Y	Y	Y	Y	N	Y	Y	Y	Y	U
Harris 2005[106]	Y	Y	Y	N	N	N	N	Y	N	N
Henry 2010[53]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hevey 2012[103]	Y	N	U	U	U	N	Y	N	U	U
Hong 2011[67]	Y	Y	N	U	U	Y	U	U	Y	N
Hughes 2007[54]	Y	U	N	N	N	Y	N	Y	Y	Y
Ironson 2013[71]	Y	N	U	U	U	U	N	U	Y	N
Jensen-Johansen 2013[76]	Y	Y	Y	U	Y	N	N	U		
Kraaij 2010[55]	Y	N	U	U	U	N	Y	Y	U	N
Krpan 2013[96]	Y	U	U	U	U	U	N	U	U	U
Lange 2003[69]	Y	N	U	U	Y	N	Y	Y	N	Y
Lumley 2011[115]	Y	N	U	U	U	Y	Y	Y	N	Y
Lumley 2014[116]	Y	N	N	U	U	Y	Y	Y	N	Y

continued

TABLE 107 Quality of the included studies (*continued*)

	Randomisation			Blinding						
First author, year	Sequence generation? (Selection bias)	Method description given?	Allocation concealment? (Selection bias)	Outcome	Performance	ITT analysis?	Selective reporting? (Description of outcomes differences between groups)	Attrition bias? (Description of withdrawals)	Pre-specified criteria for eligibility of patients?	Similarity of groups at baseline regarding prognostic factors?
Mann 2001[72]	Y	N	U	U	U	N	N	Y	N	N
McElligott 2006[87]	Y	U	N	N	U	Y	N	U	Y	Y
Meshberg-Cohen 2010[91]	Y	U	U	U	U	Y	Y	N	Y	Y
Milbury 2014[81]	Y	Y	U	U	U	N	N	Y	Y	Y
Mosher 2012[77]	Y	Y	U	U	U	Y	U	Y	Y	Y
Pauley 2011[82]	Y	Y	U	U	U	N	Y	N	Y	U
Paradisi 2010[110]	Y	Y	U	U	N	N	Y	Y	Y	Y
Park 2012[78]	N	U	U	U	U	Y	U	U	Y	N
Petrie 2004[56]	Y	Y	Y	U	U	U	N	U	Y	Y
Richards 2000[97]	Y	N	U	U	U	N	U	Y	Y	Y
Rickett 2011[66]	Y	N	U	U	U	N	N	Y	N	U
Rini 2014[86]	Y	Y	Y	Y	Y	Y	U	U	Y	Y
Robinson 2008[99]	Y	Y	N	U	Y	Y	N	N	Y	N
Rosenberg 2002[83]	Y	N	Y	U	U	U	Y	U	Y	N
Sharifabad 2010[105]	Y	N	U	U	U	Y	N	U	Y	N
Sloan 2012[70]	Y	Y	Y	U	U	U	N	Y	Y	Y
Smyth 1999[107]	Y	Y	Y	N	U	N	N	Y	Y	Y
Smyth 2008[121]	Y	N	U	U	U	U	Y	Y	N	U
Stark 2010[57]	Y	Y	U	U	U	N	U	Y	Y	Y

	Randomisation			Blinding						
First author, year	Sequence generation? (Selection bias)	Method description given?	Allocation concealment? (Selection bias)	Outcome	Performance	ITT analysis?	Selective reporting? (Description of outcomes differences between groups)	Attrition bias? (Description of withdrawals)	Pre-specified criteria for eligibility of patients?	Similarity of groups at baseline regarding prognostic factors?
Tabolli 2012[111]	Y	Y	Y	U	U	N	N	Y	Y	N
Taylor 2003[89]	Y	N	U	U	U	Y	N	N	N	N
Theadom 2010[58]	Y	N	U	U	U	N	N	Y	Y	
Van Dam 2013[92]	Y	Y	Y	U	U	N	N	U	U	Y
Vedhara 2007[112]	Y	Y	U	U	U	Y	N	Y	N	Y
Wagner 2010[73]	Y	Y	U	Y	Y	N	Y	Y	Y	U
Walker 1999[79]	Y	N	U	Y	Y	N	N	Y	Y	N
Wallander 2011[109]	Y	Y	N	N	U	N	N	Y	N	Y
Warner 2006[108]	Y	Y	U	N	N	N	U	Y	Y	Y
Wetherell 2005[117]	Y	N	U	Y	U	N	Y	Y	Y	Y
Willmott 2011[104]	Y	Y	Y	U	Y	N	Y	N	Y	N
Zakowski 2004[84]	Y	N	U	U	U	Y	Y	U	N	Y

N, no; NA, not applicable; U, unclear meaning not reported; Y, yes.

TABLE 108 Quality assessment summary

Number of studies	Quality assessment items
53	Studies were truly randomised (a valid method of randomisation was reported)
24	Studies were reported as randomised but the method of randomisation was not given
18	Studies were reported as having concealed the allocation of the sequence randomisation
6	Studies preserved blinding for outcome assessment
11	Studies preserved blinding during performance
25	Studies analysed the outcomes using the ITT approach
44	Studies reported outcomes differences between groups
44	Studies provided a description of withdrawals
44	Studies reported the prespecified criteria for eligibility of patients
33	Studies reported assessing similar groups at baseline

Appendix 6 Excluded studies

List of excluded studies with reasons for exclusion

TABLE 109 List of excluded papers after full-text screening, with reasons

Author(s)	Year	Title	Journal	Volume	Issue	Page(s)	Reason for exclusion
Anon	1999	Can writing about stressful experiences reduce symptoms of chronic disease?	Joint letter	5	4	37–9	Not the study type of interest
Abel E	2007	Women with HIV and stigma	*Family and Community Health*	30	Suppl. 1	S104–14	No numerical data reported
Adenauer H, Catani C, Gola H, Keil J, Ruf M, Schauer M, *et al.*	2011	Narrative exposure therapy for PTSD increases top-down processing of aversive stimuli – evidence from a randomized controlled treatment trial	*BMC Neuroscience*	12	127	43–56	Not TW
Adkins MH, Gavins MV	2012	Self-regulated strategy development and generalization instruction: effects on story writing and personal narratives among students with severe emotional and behavioral disorders	*Exceptionality*	20	4	235–49	Not the study type of interest
Adleman CS	2006	A write choice for stroke recovery	*Beginnings* (American Holistic Nurses Association)	26	3	14–15	Not the study type of interest
Adler JM, McAdams DP	2007	The narrative reconstruction of psychotherapy	*Narrative Inquiry*	17	2	179–202	Not a LTC
Allen NB, Bradley BS	1993	The place of emotion in stories told by children: an exploratory study	*The Journal of Genetic Psychology: Research and Theory on Human Development*	154	3	397–406	Not the comparator of interest
Almeida JP, Mendes R, Henriques M	2009	The impact of expressive writing on glycaemia control of diabetic adolescents	*Psychology & Health*	24	NA	77–8	Abstract
Andersson MA, Conley CS	2013	Optimizing the perceived benefits and health outcomes of writing about traumatic life events	*Stress and Health: Journal of the International Society for the Investigation of Stress*	29	1	40–9	Not a LTC
Anderson SS	2009	The effect of written emotional expression on depression following mild traumatic brain injury: a pilot study	*Dissertation Abstracts International: Section B: The Sciences and Engineering*	69	9-B	57–66	No numerical data reported
Anonymous	1999	Writing for better health	*Health News*	5	6	10	Not available

Author(s)	Year	Title	Journal	Volume	Issue	Page(s)	Reason for exclusion
Anschel DJ, Pike B, Dolce S, Schwartzman A	2006	Analysis of writing in an epilepsy center population: a prospective blinded study	*Epilepsy and Behavior*	9	3	464–8	Not the study type of interest
Austenfeld JL	2007	Effects of writing about emotions versus goals on hostility, depressive symptoms and physical health parameters: the moderating role of emotional approach coping	*Dissertation Abstracts International: Section B: The Sciences and Engineering*	68	4-B	2636	Not a LTC
Bacigalupe G	1996	Writing in therapy: a participatory approach	*Journal of Family Therapy*	18	4	361–73	Not the study type of interest
Baikie KA, Geerligs L, Wilhelm K	2012	Expressive writing and positive writing for participants with mood disorders: an online randomized controlled trial	*Journal of Affective Disorders*	136	3	310–19	Duplicate
Baikie KA, Geerligs L, Wilhelm K	2012	Expressive writing and positive writing for participants with mood disorders: an online randomized controlled trial	*Journal of Affective Disorders*	136	3	310–19	Not a LTC
Baikie KA, Wilhelm K, Johnson B, Boskovic M, Wedgwood L, Finch A, *et al.*	2006	Expressive writing for high-risk drug dependent patients in a primary care clinic: a pilot study	*Harm Reduction Journal*	3	NA	34	Not the study type of interest
Baker S	2009	Tell it slant: history, memory, and imagination in the healing writing workshop	*Traumatology*	15	4	15–23	Not the study type of interest
Bartasiuniene R, Sinkariova L, Petroliene R	2011(a)	The impact of expressive writing intervention on the changes of blood pressure of patients with cardiovascular disease	*Psychology & Health*	26	NA	88	Abstract
Bauer-Wu S, Norris R, Healey M, Powell M, Habin K, Partridge A, *et al.*	2007	An innovative expressive writing intervention for young breast cancer patients: feasibility, preference and psychological effects	*Psycho-Oncology*	16	3	S78–9	Abstract
Baum ES, Rude SS	2013	Acceptance-enhanced expressive writing prevents symptoms in participants with low initial depression	*Cognitive Therapy and Research*	37	1	35–42	Not a LTC
Beckwith KM	2003	The effects of expressive writing on blood pressure, psychosocial adjustment, and heart rate variability in high normal to moderate high blood pressure	*Dissertation Abstracts International: Section B: The Sciences and Engineering*	64	2-B	995	Not a LTC

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TABLE 109 List of excluded papers after full-text screening, with reasons (*continued*)

Author(s)	Year	Title	Journal	Volume	Issue	Page(s)	Reason for exclusion
Bedard-Gilligan MA, Blayney JA, Kaysen DL	2011	Feasibility of a trauma narrative writing exercise during treatment for alcohol dependence: pattern of alcohol cravings and emotions	*Alcoholism: Clinical and Experimental Research*	35	NA	81A	Ongoing study
Behrns I, Ahlsen E, Wengelin A	2010	Aphasia and text writing	*International Journal of Language & Communication Disorders*	45	2	230–43	Not TW
Bennett PR, Elliott M	2013	God give me strength: exploring prayer as self-disclosure	*Journal of Religious Health*	52	–	128–42	Not LTC participants
Bhullar N, Schutte NS, Malouff JM	2011	Writing about satisfaction processes increases well-being	*Individual Differences Research*	9	1	22–32	Not a LTC
Bodor NZ	2004	The health effects of emotional disclosure for individuals with type 1 diabetes	*Dissertation Abstracts International: Section B: The Sciences and Engineering*	64	10-B	5207	Not the comparator of interest
Bohlmeijer E, Valenkamp M, Westerhof G, Smit F, Cuijpers P	2005	Creative reminiscence as an early intervention for depression: results of a pilot project	*Aging and Mental Health*	9	4	302–4	Not the study type of interest
Boritz TZ, Angus L, Monette G, Hollis-Walker L, Warwar S	2011	Narrative and emotion integration in psychotherapy: investigating the relationship between autobiographical memory specificity and expressed emotional arousal in brief emotion-focused and client-centred treatments of depression	*The Cochrane Library*	21	1	16–26	Not TW
Bowers MJ, Buchanan MJ	2007	A group-based program of emotional recovery for younger women following myocardial infarction	*Canadian Journal of Counselling*	41	2	77–90	Not the study type of interest
Brandenstein JS, Cope E, Kerr AJ, Boynes AM, Popp CD, Knapp L	2010	Utilizing social media to reach young arthritis patients	*Arthritis and Rheumatism*	62	NA	1345	Not TW
Bray MA, Kehle TJ, Peck HL, Margiano SG, Dobson R, Peczynski K, *et al.*	2005	Written emotional expression as an intervention for asthma: a replication	*Journal of Applied School Psychology*	22	1	141–65	Not the study type of interest

Author(s)	Year	Title	Journal	Volume	Issue	Page(s)	Reason for exclusion
Bray MA, Theodore LA, Patwa SS, Margiano SG, Alric JM, Peck HL	2003	Written emotional expression as an intervention for asthma	*Psychology in the Schools*	40	2	193–207	Not the study type of interest
Brinkman BS, Hateren KJ, Kleefstra N, Houweling ST, Groenier KH, Bilo HJ	2014	Effects of writing down the request for help: a randomised controlled trial	*European Journal of General Practice*	20	3	214–18	Not TW
Brown BT	2008	The content and structure of autobiographical memories in children with and without Asperger syndrome	*Dissertation Abstracts International: Section B: The Sciences and Engineering*	68	12-B	8427	Not TW
Brown CA, Dick BD	2010	How do you write pain? A preliminary study of narrative therapy for people with chronic pain	*Pain Research and Management Conference*	15	2	NA	Not the study type of interest
Bruera E, Willey J, Cohen M, Palmer JL	2008	Expressive writing in patients receiving palliative care: a feasibility study	*Journal of Palliative Medicine*	11	1	15–19	Not the comparator of interest
Bugg A, Turpin G, Mason S, Scholes C	2009	A randomised controlled trial of the effectiveness of writing as a self-help intervention for traumatic injury patients at risk of developing post-traumatic stress disorder	*Behaviour Research and Therapy*	47	1	6–12	Not a LTC
Burger A, Stout R, Williams R, Lumley M	2008	The effect of internet-based guided written emotional disclosure on migraine headaches	*Annals of Behavioral Medicine*	35	NA	S29	Abstract
Burger AJ	2011	Evaluating outcomes and response profiles of a psychological treatment for people with chronic pain	*Dissertation Abstracts International: Section B: The Sciences and Engineering*	71	10-B	6433	Not the comparator of interest
Byrne-Davis LMT, Wetherell MA, Dieppe P, Weinman J, Byron M, Donovan J, *et al.*	2006	Emotional disclosure in rheumatoid arthritis: participants views on mechanisms	*Psychology & Health*	21	5	667–82	Not the study type of interest
Carmack CL, Basen-Engquist K, Yuan Y, Greisinger A, Rodriguez-Bigas M, Wolff RA, *et al.*	2011	Feasibility of an expressive-disclosure group intervention for post-treatment colorectal cancer patients: results of the Healthy Expressions study	*The Cochrane Library*	117	21	4993–5002	Not TW
Cash TV, Mickens MN, Lageman SK	2013	Expressive writing improves psychosocial functioning of patients with Parkinson's disease and their caregivers	*Journal of Parkinson's Disease*	3	–	203	Conference abstract

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TABLE 109 List of excluded papers after full-text screening, with reasons (*continued*)

Author(s)	Year	Title	Journal	Volume	Issue	Page(s)	Reason for exclusion
Cashin A, Browne G, Bradbury J, Mulder A	2013	The effectiveness of narrative therapy with young people with autism	*Journal of Child & Adolescent Psychiatric Nursing*	26	1	32–41	Not the study type of interest
Chan KM, Horneffer K	2006	Emotional expression and psychological symptoms: a comparison of writing and drawing	*Arts in Psychotherapy*	33	1	26–36	Not a LTC
Cheli S, Focardi F, Velicogna F, Fioretto L	2011	Narratives and interpreters in psycho-oncology: a pilot study	*Psycho-Oncology*	20	NA	136	Abstract
Chen TJ, Li HJ, Li J	2012	The effects of reminiscence therapy on depressive symptoms of Chinese elderly: study protocol of a randomized controlled trial	*BMC Psychiatry*	12	189	NA	Not TW
Chen YY, Contrada RJ	2009	Framing written emotional expression from a religious perspective: effects on depressive symptoms	*International Journal of Psychiatry in Medicine*	39	4	427–38	Not a LTC
Chidiac N	2008	Writing of trauma or trauma of writing? (two women, two stories, two ways of writing)	*Annales Medico-Psychologiques*	166	4	308–14	Not the study type of interest
Chippendale T	2012(a)	The effects of life review writing on depressive symptoms: a randomized control trial	*Journal of the American Geriatrics Society*	60	NA	S81	Not a LTC
Chippendale T	2012	The effects of life review through writing on depressive symptoms and life satisfaction in older adults	*Dissertation Abstracts International: Section B: The Sciences and Engineering*	73	1-B	237	Duplicate
Clausen NS, Beeson PM	2003	Conversational use of writing in severe aphasia: a group treatment approach	*Aphasiology*	17	6–7	625–44	Not TW
Cohen L, Tannir N, Jonasch E, Pisters L, Matin S, Spelman A, *et al.*	2012	Short-and long-term effects of expressive writing in patients with renal cell carcinoma	*BMC Complementary and Alternative Medicine*	12	NA	NA	Duplicate
Combe D	2005	The use of patient diaries in an intensive care unit	*Nursing in Critical Care*	10	1	31–4	Not TW
Conrad R, Allam J, Geiser F, Haidl G, Karpawitz-Godt A, Ven H	2012	Expressive writing in male infertility – a randomized controlled study	*Journal of Psychosomatic Research*	72	6	475	Abstract

Author(s)	Year	Title	Journal	Volume	Issue	Page(s)	Reason for exclusion
Cooper C, Stringer R	2012	An evaluation of an upper limb/handwriting group for people with Parkinson's disease	*Movement Disorders*	27	NA	S300	Not TW
Cornoldi C, Del Prete F, Gallani A, Sella F, Re AM	2010	Components affecting expressive writing in typical and disabled writers	*Advances in Learning and Behavioral Disabilities: Literacy and Learning*	23	NA	269–86	Not the study type of interest
Craft M	2007	Expressive writing in newly diagnosed breast cancer patients	*Oncology Nursing Forum*	34	2	507	Duplicate
Creswell JD, Lam S, Stanton AL, Taylor SE, Bower JE, Sherman DK	2007	Does self-affirmation, cognitive processing, or discovery of meaning explain cancer-related health benefits of expressive writing?	*Personality and Social Psychology Bulletin*	33	2	238–50	Not the study type of interest
Cunha C, Goncalves MM, Hill CE, Mendes I, Ribeiro AP, Sousa I, *et al.*	2012	Therapist interventions and client innovative moments in emotion-focused therapy for depression	*Psychotherapy: Theory, Research, Practice, Training*	49	4	536–48	Not the study type of interest
Cunningham LLC	2000	Emotional expressivity, cognitive processing, and psychological distress in women with breast cancer	*Dissertation Abstracts International: Section B: The Sciences and Engineering*	60	11-B	5767	Not the comparator of interest
Cureton A, Schick E	2009	Survivors writing together: a pilot study	*Psycho-Oncology*	18	S1	S67–8	Not the study type of interest
Danoff-Burg S, Agee JD, Romanoff NR, Kremer JM, Strosberg JM	2006	Benefit finding and expressive writing in adults with lupus or rheumatoid arthritis	*Psychology & Health*	21	5	651–65	Not the comparator of interest
Davidson JU, Robison B	2008	Scrapbooking and journaling interventions for chronic illness: a triangulated investigation of approaches in the treatment of PTSD	*The Kansas Nurse*	83	3	6–11	Not the study type of interest
Davis MC	1998	Life review therapy as an intervention to manage depression and enhance life satisfaction in individuals with right hemisphere cerebral vascular accidents	*Dissertation Abstracts International Section A: Humanities and Social Sciences*	58	7-A	2545	Not TW
Davis MS	1979	Poetry group therapy versus interpersonal group therapy: comparison of treatment effectiveness with depressed women	*Dissertation Abstracts International*	39	11-B	5543	Not a LTC

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TABLE 109 List of excluded papers after full-text screening, with reasons (*continued*)

Author(s)	Year	Title	Journal	Volume	Issue	Page(s)	Reason for exclusion
De Moor C, Sterner J, Hall M, Warneke C, Gilani Z, Amato R, *et al.*	2002	A pilot study of the effects of expressive writing on psychological and behavioural adjustment in patients enrolled in a Phase II trial of vaccine therapy for metastatic renal cell carcinoma	*Health Psychology*	21	6	615–19	Not the comparator of interest
De Moor C, Warneke C, Sterner J, Gilani Z, Amato RJ, Cohen L	2001	An emotional expression writing program for cancer patients	*Psychosomatic Medicine*	63	1	124–5	Duplicate
De Moor JS, Moye L, Low MD, Rivera E, Singletary SE, Fouladi RT, *et al.*	2008	Expressive writing as a presurgical stress management intervention for breast cancer patients	*Journal of the Society for Integrative Oncology*	6	2	5966	Not the comparator of interest
De Roos C, Greenwald R, den Hollander-Gijsman M, Noorthoorn E, van Buuren S, de Jongh A	2011	A randomised comparison of cognitive behavioural therapy (CBT) and eye movement desensitisation and reprocessing (EMDR) in disaster-exposed children	*European Journal of Psychotraumatology*	47	2	1–8	No TW intervention
De Wit R, van Dam F, Zandbelt L, van Buuren A, van der Heijden K, Leenhouts G, *et al.*	1997	A pain education program for chronic cancer pain patients: follow-up results from a randomized controlled trial	*Pain*	73	1	55–69	Not TW
Deters PB, Range LM	2003	Does writing reduce posttraumatic stress disorder symptoms?	*Violence and Victims*	18	5	569–80	Not a LTC
D'Souza PJ	2003	The effects of relaxation training and written emotional disclosure for people with migraine or tension headaches	*Dissertation Abstracts International: Section B: The Sciences and Engineering*	63	11-B	5509	Duplicate
Donovan HS, Ward SE, Serieka SM, Knapp JE, Sherwood PR, Bender CM, *et al.*	2014	Web-based symptom management for women with recurrent ovarian cancer: a pilot randomised controlled trial of the WRITE symptoms intervention	*Journal of Pain and Symptoms Management*	47	2	35–42	Not TW
East P, Startup H, Roberts C, Schmidt U	2010	Expressive writing and eating disorder features: a preliminary trial in a student sample of the impact of three writing tasks on eating disorder symptoms and associated cognitive, affective and interpersonal factors	*The Cochrane Library*	18	3	180–96	Not a LTC

Author(s)	Year	Title	Journal	Volume	Issue	Page(s)	Reason for exclusion
Eid J, Johnsen BH, Saus ER	2005	Trauma narratives and emotional processing	*Scandinavian Journal of Psychology*	46	6	503–10	Not the study type of interest
Emmerik A, Kamphuis JH, Emmelkamp P	2004	CBT and structured writing therapy in preventing chronic PTSD (RCT)	20th Annual Meeting, International Society for Traumatic Stress Studies, November 14–18, New Orleans, LA, 2004: War as a universal trauma: the International Society for Traumatic stress studies	NA	NA	NA	Not TW
Engel-Yeger B, Nagauker-Yanuv L, Rosenblum S	2009	Handwriting performance, self-reports, and perceived self-efficacy among children with dysgraphia	*American Journal of Occupational Therapy*	63	2	182–92	Not TW
Eonta A	2014	Heart rate variability as a moderator of trauma writing outcome	Dissertation	75	5 B(E)	–	Not a LTC
Estilaee F, Sadeghi MM, Ghaffarinejad A	2012	The patient with schizophrenia writes blog; new way for thought pattern perception or the risk in figurative world?	*European Psychiatry*	27	NA	NA	Abstract
Fabricant LE, Abramowitz JS, Dehlin JP, Twohig MP	2013	A comparison of two brief interventions for obsessional thought: exposure and acceptance	*Journal of Cognitive Psychotherapy*	27	3	195–209	No inactive control
Fair CD, Connor L, Albright J, Wise E, Jones K	2012	I'm positive, I have something to say: assessing the impact of a creative writing group for adolescents living with HIV	*Arts in Psychotherapy*	39	5	383–9	Not the study type of interest
Fernandez I, Paez D	2008	The benefits of expressive writing after the Madrid terrorist attack: implications for emotional activation and positive affect	*British Journal of Health Psychology*	13, Part 1	NA	31–4	Not a LTC
Fernandez I, Paez D, Pennebaker J	2004	Expressive writing about the terrorist attacks of March-Eleven 2004 in Madrid: a longitudinal study	*Ansiedad Y Estres*	10, no. 2	NA	233–45	Not a LTC
Flood EM, Zazzali JL, Devlen J	2013	Demonstrating measurement equivalence of the electronic and paper formats of the urticaria patient daily diary in patients with chronic idiopathic urticaria	*The Patient*	6	–	225–31	No inactive control

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TABLE 109 List of excluded papers after full-text screening, with reasons (*continued*)

Author(s)	Year	Title	Journal	Volume	Issue	Page(s)	Reason for exclusion
Foster L	1988	Writers workshops, the word processor and the psychiatric patient	*British Journal of Occupational Therapy*	51	6	191–2	Not the study type of interest
Fraas M, Balz MA	2008	Expressive electronic journal writing: freedom of communication for survivors of acquired brain injury	*Journal of Psycholinguistic Research*	37	2	115–24	Not the study type of interest
Franz RA	NA	Processing traumatic events: a model of emotional processing and account complexification (dissertation)	NA	NA	NA	156	Not a LTC
Frayne A, Wade TD	2006	A comparison of written emotional expression and planning with respect to bulimic symptoms and associated psychopathology	*The Cochrane Library*	14	5	329–40	Not a LTC
Frederiksen Y, Zachariae R, Schmidt L, Ingerslev HJ	2011	Effects of expressive writing intervention on infertility-related symptoms in couples undergoing assisted reproductive technology treatment: a feasibility study	*Human Reproduction*	26	NA	i262	Duplicate
Freyd JJ, Klest B, Allard CB	2005	Betrayal trauma: relationship to physical health, psychological distress, and a written disclosure intervention	*Journal of Trauma & Dissociation*	6	3	83–104	Not the comparator of interest
Furnes B, Dysvik E	2012	Therapeutic writing and chronic pain: experiences of therapeutic writing in a cognitive behavioural programme for people with chronic pain	*Journal of Clinical Nursing*	21	–	3372–81	No numerical results
Gabert-Quillen CA	2012	The efficacy of written emotional expression at reducing back and headache pain in college students	PhD thesis, Kent State University, USA	–	–	–	Not a formally diagnosed LTC
Gandhi N, Tosiello L	1999	Symptom reduction after writing about stressful experiences	*JAMA*	282	19	1811; author reply 1811–12	Not the study type of interest
Garcia-Palacios A, Herrero R, Belmonte MA, Castilla D, Guixeres J, Molinari G, *et al.*	2013	Ecologic momentary assessment for chronic pain in fibromyalgia using a smartphone: a randomised crossover study	*European Journal of Pain*	18	–	862–72	No inactive control

Author(s)	Year	Title	Journal	Volume	Issue	Page(s)	Reason for exclusion
Giannotta F, Settanni M, Kliewer W, Ciairano S	2009	Results of an Italian school-based expressive writing intervention trial focused on peer problems	*Journal of Adolescence*	32	6	1377–89	Not a LTC
Gillis ME, Lumley MA, Koch H, Roehrs TA, Mosley-Williams AD, Leisen JC	2002	Written emotional disclosure in fibromyalgia: effects on sleep quality and fatigue	*Sleep*	25	NA	A384–5	Duplicate
Gillis ME, Roehrs TA, Lumley MA	2005	Physiological reactivity of insomniacs participating in written emotional disclosure: salivary cortisol and respiration	*Sleep*	28	NA	A234	Abstract
Gillis ME	2002(a)	The effects of written emotional disclosure on adjustment in fibromyalgia syndrome	*Dissertation Abstracts International: Section B: The Sciences and Engineering*	63	3-B	1562	Duplicate
Goldstein SL	1990	A songwriting assessment for hopelessness in depressed adolescents: a review of the literature and a pilot study	*Arts in Psychotherapy*	17	2	117–24	Not the study type of interest
Gortner E-M	2006	The mental and physical well-being of formerly depressed college students: a preventive intervention study	*Dissertation Abstracts International: Section B: The Sciences and Engineering*	66	12-B	6921	Not a LTC
Graf MC	2004	Written emotional disclosure: what are the benefits of expressive writing in psychotherapy?	*Dissertation Abstracts International: Section B: The Sciences and Engineering*	65	2-B	1028	Duplicate
Graham JE	2004	Effects of written constructive anger expression on health and coping in patients with chronic pain	*Dissertation Abstracts International: Section B: The Sciences and Engineering*	64	9-B	4601	Duplicate
Greenhalgh T, Collard A, Campbell-Richards D, Vijayaraghavan S, Malik F, Morris J, *et al.*	2011	Storylines of self-management: narratives of people with diabetes from a multi-ethnic inner city population	*Journal of Health Services Research and Policy*	16	1	37–43	Not TW
Halpert A, Godena E	2011	Irritable bowel syndrome patients' perspectives on their relationships with healthcare providers (HCP)	*Gastroenterology*	1	NA	S465–6	Not TW
Halpert A, Rybin D	2009	Expressive writing is a promising therapeutic modality for irritable bowel syndrome (IBS)	*Gastroenterology*	1	NA	A118	Duplicate

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TABLE 109 List of excluded papers after full-text screening, with reasons (*continued*)

Author(s)	Year	Title	Journal	Volume	Issue	Page(s)	Reason for exclusion
Harvey AG, Farrell C	2003	The efficacy of a Pennebaker-like writing intervention for poor sleepers	*The Cochrane Library*	1	2	115–24	Not a LTC
Heimes S	2013	Does expressive writing about best possible self have an influence on affect, coping, and self-efficacy?	*Musik, Tanz und Kunsttherapie*	24	3	117–27	Not a LTC
Hennighausen A, Schilling G	2007	Effect of a expressive writing (Pennebaker-Paradigm) for chronic backpain	*Nervenarzt*	78	Issue 2 supplement	491	Abstract
Herbst N, Voderholzer U, Theil N, Schaub R, Knaevelsrud C, Stracke S, *et al.*	2014	No talking, just writing. Efficacy of an internet-based cognitive behavioural therapy with exposure and response prevention in obsessive compulsive disorder	*Psychotherapy and Psychosomatics*	83		165–75	Not TW
Hofmann AD, Lewis NR	1981	The needle of caring, the thread of love: creative writing on an adolescent medical ward	*Adolescent Psychiatry*	9	NA	88–116	Not the study type of interest
Horne R, Wilmott L, Harris P	2003	The positive effects of writing about the experience of a first myocardial infarction on clinical variables and healthcare utilisation: a randomised controlled trial with six-month follow-up	Fifth International Congress on coronary Artery Disease From Prevention to Intervention, Florence, Italy	NA	NA	NA	Abstract
Ironson G, O'Cleirigh C, Leserman J, Fordiani J, Balbin E, Schneiderman N, *et al.*	2010	Augmented trauma writing effects HIV symptoms and VL in women with PTSD and HIV	*Brain, Behavior and Immunity*	24	NA	S62	Duplicate
Ironson G, O'Cleirigh C, Leserman J, Stuetzle R, Fordiani J, Fletcher M, *et al.*	2012	Gender-specific effects of an augmented written emotional disclosure intervention on posttraumatic, depressive, and hiv-disease-related outcomes: a randomized, controlled trial	*Journal of Consulting and Clinical Psychology*	NA	–	No pagination specified	Duplicate
Jelicic M, Frederix M, Merckelbach H	2013	Brief report: writing about chronic fatigue increases somatic complaints	*Psihologijske teme*	22	3	405–12	Not a LTC
Johansen MB, Zachariae R, Valdimarsdottir H, Bovbjerg D, Zkowski S	2006	Expressive writing and breast cancer: associations between cognitive and positive emotional words and changes in perceived social support	*Psycho-Oncology*	15	2	S278	Abstract

Author(s)	Year	Title	Journal	Volume	Issue	Page(s)	Reason for exclusion
Johnston O, Startup H, Lavender A, Godfrey E, Schmidt U	2010	Therapeutic writing as an intervention for symptoms of bulimia nervosa: effects and mechanism of change	*The Cochrane Library*	43	5	405–19	Not a LTC
Jones C, Smith H, Theadom A, Bowskill R, Hankins M, Horne R, *et al.*	2010(a)	Are the benefits of written emotional disclosure sustained at 12-months? A randomised controlled trial	*Allergy: European Journal of Allergy and Clinical Immunology*	65	NA	190	Abstract
Jones C, Bäckman C, Capuzzo M, Egerod I, Flaatten H, Granja C, *et al.*	2010	Intensive care diaries reduce new onset post traumatic stress disorder following critical illness: a randomised, controlled trial	*Critical Care*	14	NA	Article R168	Not TW
Jones JD	2005	A comparison of songwriting and lyric analysis techniques to evoke emotional change in a single session with people who are chemically dependent. [Erratum appears in *J Music Ther* 2005;**42**:320]	*Journal of Music Therapy*	42	2	94–110	Not the study type of interest
Joplin J	2000	The therapeutic benefits of expressive writing	Executive	14, part 2	NA	124–5	Not the study type of interest
Juknelyte A, Cerniauskaite R, Sinkariova L, Milinaviciene E, Bagdone I	2014	The changes in illness perception, negative emotions and arterial blood pressure applying the method of expressive writing in the patients of ischaemic heart disease	*Annals of Physical and Rehabilitation Medicine*	57		E298	Conference abstract
Junghaenel DU, Schwartz JE, Broderick JE	2008	Differential efficacy of written emotional disclosure for subgroups of fibromyalgia patients	*British Journal of Health Psychology*	13	Part 1	57–60	No numerical data reported
Kallay E, Baban A	2008	Emotional benefits of expressive writing in a sample of Romanian female cancer patients	*Cognitie Creier Comportament*	12, number 1	NA	115–30	Not the study type of interest
Kallay E	2011	Benefits of expressive writing in a sample of Romanian female cancer patients	*Psychology & Health*	26	2	37	Ongoing study
Knowles RE, Tarrier N	2009	Evaluation of the effect of prospective patient diaries on emotional well-being in intensive care unit survivors: a randomized controlled trial	*Critical Care Medicine*	37	1	184–91	Not TW
Konig A, Eonta A, Dyal SR, Vrana SR	2014	Enhancing the benefits of written emotional disclosure through response training	*Behavior Therapy*	45	3	344–57	Not a LTC

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TABLE 109 List of excluded papers after full-text screening, with reasons (*continued*)

Author(s)	Year	Title	Journal	Volume	Issue	Page(s)	Reason for exclusion
Koopman C, Ismailji T, Holmes D, Classen CC, Palesh O, Wales T	2005	The effects of expressive writing on pain, depression and posttraumatic stress disorder symptoms in survivors of intimate partner violence	*The Cochrane Library*	10	2	211–21	Not a LTC
Kovac SH, Range LM	2002	Does writing about suicidal thoughts and feelings reduce them?	*The Cochrane Library*	32	4	428–40	Not a LTC
Kraft CA, Lumley MA, D'Souza PJ, Dooley JA	2008	Emotional approach coping and self-efficacy moderate the effects of written emotional disclosure and relaxation training for people with migraine headaches	*British Journal of Health Psychology*	13	1	67–71	No numerical data reported
Kristjansdottir OB, Fors EA, Eide E, Finset A, Stensrud TL, van Dulmen S, *et al.*	2013	A smartphone based intervention with diaries and therapist-feedback to reduce catastrophizing and increase functioning in women with chronic widespread pain: a randomised controlled trial	*Journal of Medical Internet Research*	5	1 e5	1–22	Not just writing in the intervention; no appropriate control
Kristjansdottir OB, Fors EA, Eide E, Finset A, Stensrud TL, van Dulmen S, *et al.*	2013	A smartphone based intervention with diaries and therapist-feedback to reduce catastrophizing and increase functioning in women with chronic widespread pain. Part 2: 11-month follow up results of a randomised controlled trial	*Journal of Medical Internet Research*	15	3 e72	1–19	Not just writing in the intervention; no appropriate control
Lammerts van Bueren N	2007	Writing assignments about stressful and/or traumatic events do not benefit patients with anxiety disorders (in Dutch)	*Tijdschrift voor Psychiatrie*	49	2	75–84	No numerical data reported
Lange A, Van de Ven JP, Schrieken B, Emmelkamp PMG	2001	Interapy. Treatment of posttraumatic stress through the Internet: a controlled trial	*Journal of Behaviour Therapy and Experimental Psychiatry*	32	2	73–90	Duplicate
Lange A, Schoutrop M, Schrieken B, Van de Ven J-P	2002	Interapy: a model for therapeutic writing through the Internet	NA	NA	NA	215–38	Not a LTC
Lorenz TA, Pulverman CS, Meston CM	2013	Sudden gains during patient-directed expressive writing treatment predicts depression reduction in women with history of childhood sexual abuse: results from a randomized clinical trial	*Cognitive Therapy and Research*	37	4	690–6	Not a LTC

Author(s)	Year	Title	Journal	Volume	Issue	Page(s)	Reason for exclusion
Low CA, Stanton AL, Bower JE, Gyllenhammer L	2010	A randomized controlled trial of emotionally expressive writing for women with metastatic breast cancer	*The Cochrane Library*	29	4	460–6	Not the comparator of interest
Low CA, Stanton AL, Danoff-Burg S	2006	Expressive disclosure and benefit finding among breast cancer patients: mechanisms for positive health effects	*The Cochrane Library*	25	2	181–9	Not the comparator of interest
Lu QA, Stanton AL	2010	How benefits of expressive writing vary as a function of writing instructions, ethnicity and ambivalence over emotional expression	*Psychology & Health*	25	6	669–84	Not a LTC
Lu Q, Man J, Yeung N, You J, Young L, Loh A	2012	Sources of distress and culturally sensitive interventions to reduce distress among Chinese-speaking breast cancer survivors	*Psycho-Oncology*	21	NA	36	Duplicate
Luber RF Jr	1973	Poetry therapy helps patients express feelings	*Hospital & Community Psychiatry*	24	6	NA	Not the study type of interest
Lumley MA, Keefe FJ, Slatcher R, Mosley-Williams A, Rice J, Mayo A, *et al.*	2011(a)	The raised trial: effects of coping skills training and written emotional disclosure on daily diary outcomes for patients with rheumatoid arthritis	*Psychosomatic Medicine*	73 (3)	NA	A120	Abstract
Lumley MA, Sklar ER, Carty JN	2012	Emotional disclosure interventions for chronic pain: from the laboratory to the clinic	*Translational Behavioral Medicine*	2, number 1	NA	73–81	Not the study type of interest
Macklem DJ	2008	Exploration of emotion regulation styles as potential moderators of emotional disclosure in patients with rheumatoid arthritis: testing a model of emotional expression	*Dissertation Abstracts International: Section B: The Sciences and Engineering*	68	10-B	6971	No numerical data reported
MacRobert M	2012	Exploring an acting method to contain the potential madness of the creative writing process: mental health and writing with emotion	*New Writing*	9, number 3	NA	349–60	Not the study type of interest
Maestas KL	2014	The benefits of expressive writing on overgeneral memory and depressive symptoms	PhD dissertation	NA	NA	NA	Not a LTC

continued

TABLE 109 List of excluded papers after full-text screening, with reasons (*continued*)

Author(s)	Year	Title	Journal	Volume	Issue	Page(s)	Reason for exclusion
Manzoni GM, Castelnuovo G, Molinari E	2011	The WRITTEN-HEART study (expressive writing for heart healing): rationale and design of a randomized controlled clinical trial of expressive writing in coronary patients referred to residential cardiac rehabilitation	*The Cochrane Library*	9	NA	51	Ongoing study
Marston CB	2003	Written emotional expression, and its relation to psychological and physical health variables among people with HIV disease	*Dissertation Abstracts International: Section B: The Sciences and Engineering*	64	2-B	969	Not the comparator of interest
Mastel-Smith BA, McFarlane J, Sierpina M, Malecha A, Haile B	2007	Improving depressive symptoms in community-dwelling older adults: a psychosocial intervention using life review and writing	*The Cochrane Library*	33	5	13–19	Not a LTC
Matthiesen S, Klonoff-Cohen H, Zachariae R, Jensen-Johansen MB, Nielsen BK, Frederiksen Y, *et al.*	2012	The effect of an expressive writing intervention (EWI) on stress in infertile couples undergoing assisted reproductive technology (ART) treatment: a randomized controlled pilot study	*British Journal of Health Psychology*	17	NA	362–78	Not a LTC
Maultsby MC Jr	1971	Written homework for the patient with an emotional crisis	*American Family physician*	4	6	69–75	Not the study type of interest
Mazza N	1979	Poetry: a therapeutic tool in the early stages of alcoholism treatment	*Journal of Studies on Alcohol*	40	1	123–8	Not the study type of interest
McGuire KMB, Greenberg MA, Gevirtz R	2005	Autonomic effects of expressive writing in individuals with elevated blood pressure	*The Cochrane Library*	10	2	197–209	Not a LTC
Melton BF, Bigham LE, Bland HW	2013	The feasibility of using video journaling to collect ecological momentary assessment data: application to health behaviour change interventions	*Journal of Computing in Higher Education*	25	–	12–26	No inactive control
Meston CM, Lorenz TA, Stevenson KR	2013	Effects of expressive writing on sexual dysfunction, depression and PTSD in women with a history of childhood sexual abuse: results from a randomised clinical trial	*Journal of Sexual Medicine*	10	–	2177–89	No inactive control

Author(s)	Year	Title	Journal	Volume	Issue	Page(s)	Reason for exclusion
Mitchell SL	NA	The effects of journal-writing and story-listening on world assumptions, health, and religiousness following the terrorist attacks of 11 September 2001 (dissertation)	NA	NA	NA	205	Not a LTC
Mooney P, Espie CA, Broomfield NM	2009	An experimental assessment of a Pennebaker writing intervention in primary insomnia	*Behavioral Sleep Medicine*	7	2	99–105	Not the comparator of interest
Mosher CE, DuHamel K, Lam J, Massie MJ, Dickler M, Norton L	2010	Does expressive writing benefit distressed women with metastatic breast cancer?	*Annals of Behavioral Medicine*	39	NA	80	Duplicate
Mugerwa S, Holden JD	2012	Writing therapy: a new tool for general practice?	*British Journal of General Practice*	62	605	661–3	Not the study type of interest
Muller R, Gertz K, Molton I, Terrill A, Bombardier C, Ehde DM, *et al.*	2014	Pilot testing a positive psychology intervention in individuals with chronic disability-related pain	*Archives of Physical Medicine and Rehabilitation*			E9	Conference abstract
Muresan A, Baban A, Dumitrascu D	2012	The effectiveness of an expressive writing intervention for irritable bowel syndrome in a Romanian sample	*Psychology & Health*	27	NA	286	Abstract
Nes AA, Eide H, Kristjansdottir OB, van Dulmen S	2013	Web-based, self-management enhancing interventions with e-diaries and personalised feedback for persons with chronic illness: a tale of three studies	*Patient Education and Counselling*	93	–	451–8	Not TW
Nitkin-Kaner Y	2009	Relationships between expressive writing about traumatic events and reduction in depressive symptomatology	*Dissertation Abstracts International: Section B: The Sciences and Engineering*	69	7-B	4436	Not a LTC
Nitkin-Kaner Y, Cruess Dean G	2008	Using the expressive writing paradigm as a means to enhance perceived control in women with depression	NA	NA	NA	11–37	No outcome of interest
Norman SA, Lumley MA, Dooley JA, Diamond MP	2004	For whom does it work? Moderators of the effects of written emotional disclosure in a randomized trial among women with chronic pelvic pain	*Psychosomatic Medicine*	66	2	174–83	Not the comparator of interest

continued

TABLE 109 List of excluded papers after full-text screening, with reasons (*continued*)

Author(s)	Year	Title	Journal	Volume	Issue	Page(s)	Reason for exclusion
Norman S, Lumley M, Dooley J, Schram L, Diamond M	2001	Written emotional disclosure in women with chronic pelvic pain	*Psychosomatic Medicine*	63	1	131	Duplicate
Norman SA	2001	The effects of emotional disclosure in women with chronic pelvic pain	*Dissertation Abstracts International: Section B: The Sciences and Engineering*	61	10-B	131	Duplicate
Nortemann M, Friedrichs O, Wiethuchter B, Dietl T, Hohn D, Nortemann S	2007	Therapeutic writing in the stationary psychiatric psychotherapeutic treatment	*Nervenarzt*	78	NA	328	Not the comparator of interest
O'Cleirigh C, Ironson G, Antoni M, Fletcher MA, McGuffey L, Balbin E, *et al.*	2003	Emotional expression and depth processing of trauma and their relation to long-term survival in patients with HIV/AIDS	*Journal of Psychosomatic Research*	54	3	225–35	Not the comparator of interest
O'Cleirigh C, Ironson G, Fletcher MA, Schneiderman N	2008	Written emotional disclosure and processing of trauma are associated with protected health status and immunity in people living with HIV/AIDS	*British Journal of Health Psychology*	13	1	81–4	Not the comparator of interest
O'Connor DB, Ashley L, Jones F, Ferguson E	2014	Maladaptive rumination moderates the effects of written emotional disclosure on ambulatory blood pressure levels in females	*Health Psychology and Behavioural Medicine*	2	1	1067–77	Not a LTC
Panagopoulou E, Montgomery A, Tarlatzis B	2009	Experimental emotional disclosure in women undergoing infertility treatment: are dropouts better off?	*Social Science & Medicine*	69	5	678–81	Not a LTC
Passalacqua S, Dolcetti FR, Pagliarello C, Di Pietro C, Tabolli S	2011	The illness experience in patients with psoriasis: suggestions for strategies to develop quality of care	*British Journal of Dermatology*	165	6	e35	Abstract
Peterkin A, Esplen MJ, Hann J, Lawson A	2013	A pilot study of a narrative competence group to enhance coping and quality of life in patients with HIV	*Arts & Health: an international journal for research, policy and practice*	5	1	5–18	No comparator
Pitblado E, McConnachie F, Maxwell S	2005	What are the benefits of participating in creative writing workshops for people with epilepsy	*Epilepsia*	46	NA	188	Not TW

Author(s)	Year	Title	Journal	Volume	Issue	Page(s)	Reason for exclusion
Possemato KA	2008	An internet-based expressive writing intervention for kidney transplant recipients	*Dissertation Abstracts International: Section B: The Sciences and Engineering*	68	7-B	4842	Duplicate
Possemato K, Ouimette P, Geller PA	2010	Internet-based expressive writing for kidney transplant recipients: effects on posttraumatic stress and quality of life	*Traumatology*	16	1	49–54	Not the comparator of interest
Possis EA, Kemp JJ, Lickel JJ, Sy JT, Dixon LJ, Deacon BJ	2013	A comparison of cognitive and behavioural approaches for reducing cost bias in social anxiety	*Journal of Cognitive Psychotherapy: an International Quarterly*	27	3	210–20	Not TW intervention
Ressler PK, Bradshaw YS, Gualtieri L, Chui KK	2012	Communicating the experience of chronic pain and illness through blogging	*Journal of Medical Internet Research*	14	5	NA	Not the study type of interest
Rivkin ID, Gustafson J, Weingarten I, Chin D	2006	The effects of expressive writing on adjustment to HIV	*AIDS and Behavior*	10	1	13–26	No numerical data reported
Robinson P	2001	Using the internet as a vehicle for treatment of bulimia nervosa: a randomised control trial of cognitive behaviour therapy versus therapeutic writing	*The Cochrane Library*	NA	NA	NA	Not the study type of interest
Schmitter-Edgecombe M, Fahy JF, Whelan JP, Long CJ	1995	Memory remediation after severe closed head injury: notebook training versus supportive therapy	*Journal of Consulting and Clinical Psychology*	63	3	484–9	Not the comparator of interest
Schoutrop MJ, Lange A, Hanewald G, Davidovich U, Salomon H	2002	Structured writing and processing major stressful events: a controlled trial	*Psychotherapy and Psychosomatics*	71	3	151–7	Not a LTC
Segerstrom SC, Averill AJ, Kasarskis EJ	2011	Expressive writing and psychological well-being in amyotrophic lateral sclerosis (ALS)	*Psychosomatic Medicine*	73	3	A83	Duplicate
Sehgal S, Casden D, Bardwell W, Hickman S	2008	The effects of expressive writing on physical and mental functioning in cancer patient survivors	*Psycho-Oncology*	17	3	S94	Not the study type of interest
Seitz DC, Knaevelsrud C, Duran G, Waadt S, Loos S, Goldbeck L	2014	Efficacy of an internet-based cognitive–behavioural intervention for long-term survivors of paediatric cancer: a pilot study	Support Care cancer	22	–	2075–83	No control group
Serchia P	2000	The write stuff. APLAs Writers Workshop begins its second decade	*Positive Living* (Los Angeles, CA)	9	9	16–19, 51–2	Not available

continued

TABLE 109 List of excluded papers after full-text screening, with reasons (*continued*)

Author(s)	Year	Title	Journal	Volume	Issue	Page(s)	Reason for exclusion
Sloan DM, Epstein EM, Dobbs JM, Pontoski KE	2006	Written disclosure as an intervention for PTSD	*Psychophysiology*	43	NA	S93	Duplicate
Sloan DM, Marx BP, Epstein EM	2005	Further examination of the exposure model underlying the efficacy of written emotional disclosure	*Journal of Consulting and Clinical Psychology*	73	3	549–54	Not a LTC
Sloan DM, Marx BP, Epstein EM, Lexington JM	2007	Does altering the writing instructions influence outcome associated with written disclosure?	*The Cochrane Library*	38	2	155–68	Not a LTC
Sloan DM, Marx BP, Greenberg EM	2011	A test of written emotional disclosure as an intervention for posttraumatic stress disorder	*The Cochrane Library*	49	4	299–304	Not a LTC
Smith CE, Holcroft C, Rebeck SI, Thompson NC, Werkowitch M	2000	Journal writing as a complementary therapy for reactive depression: a rehabilitation teaching program	*Rehabilitation Nursing*	25	5	170–6	Not the study type of interest
Smith H	2005	Writing about emotional experience to reduce symptoms and improve lung function and quality of life in patients with asthma – pilot phase of a randomised controlled trial	*The Cochrane Library*	NA	NA	NA	Duplicate
Smith HE, Jones CJ, Theadom A, Horne R, Bowskill R, Hankins M, *et al.*	2009	Writing about emotional experiences reduces beta-agonist use in patients with asthma – 3-month follow up of a randomised controlled trial	*Journal of Allergy and Clinical Immunology*	1	NA	S80	Abstract
Smyth JM	1999	Written emotional disclosure: effects on symptoms, mood, and disease status in patients with asthma or rheumatoid arthritis	*Dissertation Abstracts International: Section B: The Sciences and Engineering*	59	8-B	4543	Duplicate
Solano L, Donati V, Pecci F, Persichetti S, Colaci A	2003	Postoperative course after papilloma resection: effects of written disclosure of the experience in subjects with different alexithymia levels	*Psychosomatic Medicine*	65	3	477–84	Not a LTC
Solano L, Pepe L, Donati V, Persichetti S, Laudani G, Colaci A	2007	Differential health effects of written processing of the experience of a surgical operation in high- and low-risk conditions	*Journal of Clinical Psychology*	63	4	357–69	Not a LTC
Spiegel D	1999	Healing words: emotional expression and disease outcome	*JAMA*	281	14	1328–9	Not the study type of interest

Author(s)	Year	Title	Journal	Volume	Issue	Page(s)	Reason for exclusion
Stanton AL, Danoff-Burg S, Sworowski LA, Collins CA, Branstetter AD, Rodriguez-Hanley A, *et al.*	2002	Randomized, controlled trial of written emotional expression and benefit finding in breast cancer patients	*Journal of Clinical Oncology*	20	20	4160–8	Not the comparator of interest
Stice E, Burton E, Bearman SK, Rohde P	2007	Randomized trial of a brief depression prevention program: an elusive search for a psychosocial placebo control condition	*The Cochrane Library*	45	5	863–76	Not a LTC
Stone AA, Smyth JM, Kaell A, Hurewitz A	2000	Structured writing about stressful events: exploring potential psychological mediators of positive health effects	*The Cochrane Library*	19	6	619–24	Not TW
Tabolli S, Naldi L, Di Pietro C, Pagliarello C, Paradisi A, Sampogna F, *et al.*	2011	The impact of writing exercises on quality of life in patients with psoriasis undergoing systemic treatments	*British Journal of Dermatology*	165	6	e33–4	Duplicate
Tamagawa R, Moss-Morris R, Martin A, Robinson E, Booth RJ	2013	Dispositional emotion coping styles and physiological responses to expressive writing	*British Journal of Health Psychology*	18	–	574–92	Not a LTC
Thompson T, Kreuter MW	2014	Using written narratives in public health practice: a creative writing perspective	*Preventing Chronic Disease: Public Health Research, Practice, and Policy*	11	–	7–14	Not a primary study
Torres GF, Otalvaro MI, Vargas JC, Castellanos Y, Garcia JX, Triana JD, *et al.*	2012	Devising and validating a headache diary in a series of patients with chronic daily headache from Colombia	NA	NA	NA	NA	Not TW
Toussaint L, Barry M, Bornfield L, Markman M	2014	Restore: the journey towards self forgiveness: a randomised trial in patient education on self-forgiveness in cancer patients and caregivers	*Journal of Healthcare Chaplaincy*	20	–	54–74	Not TW
Tsai Y-C, Chaung M-T	2013	Fostering revision of argumentative writing through structured peer-assessment	*Perceptual and Motor Skills*	1	–	210–21	Not a LTC
Ulbrect JS, Trief PM, Wallston KA, Heron KE, Smyth JA	2014	Short term effects of expressive writing as adjuvant treatment in T2DM on clinical status and patient wellbeing	*ADA*	8	–	A2	Conference abstract
Van der Houwen K, Schut H, van den Bout J, Stroebe M, Stroebe W	2010	The efficacy of a brief internet-based self-help intervention for the bereaved	*Behaviour Research & Therapy*	48	5	359–67	Not a LTC

continued

TABLE 109 List of excluded papers after full-text screening, with reasons (*continued*)

Author(s)	Year	Title	Journal	Volume	Issue	Page(s)	Reason for exclusion
Van Middendorp H, Sorbi MJ, van Doornen LJP, Bijlsma JWJ, Geenen R	2007	Feasibility and induced cognitive-emotional change of an emotional disclosure intervention adapted for home application	*Patient Education and Counseling*	66	2	177–87	Not TW
Verrept H, Rogier C, Stuer H, Schillemans L	1990	Writing therapy for chronic disease patients (Dutch)	NA	NA	NA	NA	Not the study type of interest
Wagner LJ	2004	Moderating effects of cognitive adaptability on expressive writing outcomes among persons infected with human immunodeficiency virus	*Dissertation Abstracts International: Section B: The Sciences and Engineering*	65	3-B	1254	Duplicate
Warner LJ	2003	Expressive writing and health in pediatric asthma (dissertation)	*The Cochrane Library*	NA	NA	175	Duplicate
Wilson BM, Proctor A	2002	Written discourse of adolescents with closed head injury	*Brain Injury*	16	11	1011–24	Not TW
Wilson BM, Smith R, Proctor A	2001	The validity of cognitive distance in oral and written discourse	*Brain and Cognition*	46	1–2	304–7	Not TW
You DS, Creech SK, Vichaya EG, Young EE, Smith JS, Meagher MW	2014	Effect of written emotional disclosure on secondary hyperalgesia in women with trauma history	*Psychosomatic Medicine*	76	5	337–46	Not a LTC
Young CM, Rodruigez LM, Neighbours C	2013	Expressive writing as a brief intervention for reducing drinking intentions	*Addictive Behaviours*	38	12	25–32	Not diagnosed LTC
Zakowski SG, Herzer M, Barrett SD, Milligan JG, Beckman N	2011	Who benefits from emotional expression? An examination of personality differences among gynaecological cancer patients participating in a randomized controlled emotional disclosure intervention trial	*British Journal of Psychology*	102	3	355–72	No numerical data reported
Zakowski SG, Morton C, Ramati A, Felch N	2002	Expressive writing moderates the effects of negative social interactions on distress in cancer patients	*Psychosomatic Medicine*	64	1	102	Duplicate
Ziviani J, Hayes A, Chant D	1990	Handwriting: a perceptual-motor disturbance in children with myelomeningocele	*Occupational Therapy Journal of Research*	10	1	12–26	Not TW

NA, not applicable.

Appendix 7 List of items required when reporting a realist synthesis (RAMESES checklist)

Reporting item		Description of item	Reported on page(s)
Title			
1		In the title, identify the document as a realist synthesis or review	i
Abstract			
2		While acknowledging publication requirements and house style, abstracts should ideally contain brief details of: the study's background, review question or objectives; search strategy; methods of selection, appraisal, analysis and synthesis of sources; main results; and implications for practice	vii and viii
Introduction			
3	Rationale for review	Explain why the review is needed and what it is likely to contribute to existing understanding of the topic area	6 and 7
4	Objectives and focus of review	State the objective(s) of the review and/or the review question(s). Define and provide a rationale for the focus of the review	169–71
Methods			
5	Changes in the review process	Any changes made to the review process that was initially planned should be briefly described and justified	169–71
6	Rationale for using realist synthesis	Explain why realist synthesis was considered the most appropriate method to use	169–71
7	Scoping the literature	Describe and justify the initial process of exploratory scoping of the literature	Not undertaken
8	Searching processes	While considering specific requirements of the journal or other publication outlet, state and provide a rationale for how the iterative searching was done. Provide details on all of the sources accessed for information in the review. Where searching in electronic databases has taken place, the details should include, for example, name of database, search terms, dates of coverage and date last searched. If individuals familiar with the relevant literature and/or topic area were contacted, indicate how they were identified and selected	169–71
9	Selection and appraisal of documents	Explain how judgements were made about including and excluding data from documents, and justify these	169–71
10	Data extraction	Describe and explain which data or information were extracted from the included documents and justify this selection	169–71
11	Analysis and synthesis processes	Describe the analysis and synthesis processes in detail. This section should include information on the constructs analysed and describe the analytic process	169–71

Reporting item		Description of item	Reported on page(s)
Results			
12	Document flow diagram	Provide details on the number of documents assessed for eligibility and included in the review, with reasons for exclusion at each stage, as well as an indication of their source of origin (e.g. from searching databases, reference lists and so on). You may consider using the example templates (which are likely to need modification to suit the data) that are provided	172–82
13	Document characteristics	Provide information on the characteristics of the documents included in the review	172–82
14	Main findings	Present the key findings with a specific focus on theory building and testing	172–82
Discussion			
15	Summary of findings	Summarise the main findings, taking into account the reviews objective(s), research question(s), focus and intended audience(s)	183–90
16	Strengths, limitations and future research directions	Discuss both the strengths of the review and its limitations. These should include (but need not be restricted to) (a) consideration of all the steps in the review process and (b) comment on the overall strength of evidence supporting the explanatory insights which emerged	183–90
		The limitations identified may point to areas where further work is needed	183–90
17	Comparison with existing literature	Where applicable, compare and contrast the reviews findings with the existing literature (e.g. other reviews) on the same topic	183–90
18	Conclusion and recommendations	List the main implications of the findings and place these in the context of other relevant literature. If appropriate, offer recommendations for policy and practice	183–90
19	Funding	Provide details of funding source (if any) for the review, the role played by the funder (if any) and any conflicts of interests of the reviewers	xxxvii

Appendix 8 Project details

Title

Does therapeutic writing help people with long-term conditions? Systematic review, realist synthesis and economic considerations

Funding body

NIHR HTA 11/70/01

Simon Bevan

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Project Steering Group Committee

The SGC was formed by the advisors (Carol Ross, Sheila Hayman, Victoria Field) and the Research Team (Olga Perez Nyssen, Stephanie Taylor, Geoff Wong, Elizabeth Steed, Liam Bourke, Joanne Lord, Ailish Higgins, Trisha Greenhalgh and Catherine Meads).

The SGC met every 4 weeks, starting February 2013 until the end of the project. Additionally, regular weekly catch-up meetings were undertaken between Stephanie Taylor and Olga Perez Nyssen.

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