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## **Does ethnicity, gender or age of physiotherapy students affect performance in the final clinical placements? An exploratory case study.**

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### **Introduction**

Since 2003, widening participation in higher education has been a strategic objective of Higher Education Funding Council for England [1] supported by the Office For Fair Access [2]. This agenda has particular relevance for professions such as physiotherapy, where lack of diversity has raised concerns resulting in some to call for the profession to more appropriately reflect the general population [3]. Indeed, some physiotherapists have suggested that the lack of diversity within the workforce is a barrier to both clinical practice and service provision [4].

Physiotherapy has traditionally been a white, female profession [5,6] but this demographic is changing with the national profile of all students studying physiotherapy in the 2009/10 cohort reported as 30% male and 50% mature entrants [6, 7]. 12% were from minority ethnic backgrounds [7], a leap from under 5% in 2005 [8].

Increasing diversity of the profession is welcomed, but these changes do require Higher Education Institutions (HEI) to be vigilant towards ensuring the progression and success of students from all demographic profiles [9]. Whilst some reports question if increasing diversity may present specific challenges to HEIs due to the potential for different learning needs within these groups [9], there remains limited literature and a lack of clarity as to the

specific challenges this may present within physiotherapy. Examples of previous research includes the suggestion that mature students in general are effective learners, more motivated and achieve more academically than younger students [3]. Conversely, there is also limited data within physiotherapy suggesting achievement of a better final degree classification by standard entry students [10].

Research considering the performance of physiotherapy students based on gender, presents a decline in performance of mature male physiotherapy students when measured for aspiration, satisfaction and identity as a learner as part of a series of questionnaire studies across all three years of physiotherapy training [11]. A later study by Hammond [6] focussed on clinical placement performance alongside related academic requirements (such as reflection portfolio's) both indicated better attainment by female students (female grades 3% higher,  $p=0.001$ ). There was also a significant increase in the number of male students failing clinical placements in comparison to their female counterparts (13% male vs. 2% female).

At present, there is no literature considering physiotherapy students in the UK and the potential relationship between ethnicity and performance. American literature suggests the potential of covert bias in the evaluation of physical therapy student's clinical performance based on ethnicity; with those from minority ethnic groups marked lower [12]. Although there are some significant limitations with this study, corroboration for these findings is in part provided in a later study by Clouten et al[13], who report that a small but significant number of physical therapy clinical instructors in the USA expect students from majority white backgrounds to outperform their minority ethnic peers. They further present data which indicates that minority ethnic students are scored lower in areas of communication

( $p=0.0001$ ) and interpersonal skills ( $p=0.001$ ) although other areas such as critical thinking and problem solving were not deemed to be different. Academically, it is also suggested that there is a difference, with Utzman et al [14] reporting a 200% increase in odds for students from non-white ethnic groups to have academic difficulty and subsequently fail their registration exams. This finding was independent of academic admission criteria although other potential confounding factors such as socio-economic status were not considered.

The literature presented suggests that it is both appropriate and necessary to explore the potential relationship between demographic profile and success within physiotherapy programmes within the UK, with some emphasis on clinical placements as a potential site of difference. The aim of this study was to determine if there is a relationship between age at entry (mature  $\geq 21$ , standard entry  $< 21$ ), gender and ethnicity and the marks awarded in the final clinical placement block.

## **Methods**

A retrospective analysis of the final clinical placement module was conducted for all graduating physiotherapy students in the 2005-2009 cohorts in one London based university. Data from each CAR form for every student was tabulated alongside anonymised demographic data including age, gender and ethnicity. All data were checked by two independent researchers for accuracy.

These five cohorts were selected as they equate to the period of a validated programme which was stable in content and assessment for the study period. The final clinical placement module was chosen as the principle measure of analysis as this is the culmination

of the physiotherapy degree programme and represents most closely students' capacity to perform as clinical therapists. The two clinical placements which form this module are the only two clinical placements which are not associated with academic work and therefore give the truest reflection of clinical performance. Marks awarded were explored in relation to age (mature  $\geq 21$ , standard entry  $< 21$ ), gender, and ethnicity. Age categorisation was considered at the point of entry to the physiotherapy programme and both gender and ethnicity were self-identified categories. Due to the small numbers within ethnic categories identified, ethnicity was later grouped to two; White British and minority ethnic backgrounds.

A standardised clinical assessment form (CAR Form) was used in the assessment of all students. The detailed structure of the assessment form is reported by Hammond [6]. Each student is required to achieve a minimum pass mark of 40% in four areas (Interpersonal skills, professionalism, treatment and clinical reasoning) resulting in a summative award with compulsory (pass/fail) assessment in the areas of safety, ethical practice and professional conduct.

Advice was sought from the School of Health Sciences and Social Care Ethics Committee and the University data protection team and it was agreed that because this was anonymised data routinely collected, no ethical approval was required. The compiled data were held on password protected computers only accessible by the research team.

### **Analysis**

All data were normally distributed. A univariate ANOVA was performed using the total placement mark as the dependent variable with the following 3 independent variables:

gender (2 levels male/ female), age (2 levels <21/=>21), ethnicity (2 levels white British/ minority ethnic). Data were analysed through Statistical Package for the Social Sciences version 18 (SPSS Inc., Chicago, IL, USA).

## Results

Data for 333 students were included. This indicates the total number of students who passed these clinical placements. Over the study period (cohort groups 2005-2009) eight students (5 female, 2 mature, 6 minority ethnic) did not pass one part of the clinical placements and they were removed from the analysis because it was incomplete data.

Of the 333 students 219 (66%) were standard entry (below 21 years), with 114 (34%) mature students (21 years or above). As expected the majority were female (n=230, 69%), with 103 (31%) male. On self report, 251 (75%) of the students were white British with 82 (25%) from minority ethnic backgrounds.

No interaction effects were observed between the independent variables and only ethnicity demonstrated a statistically significant effect (mean difference 2.31% 95%CI 0.419 to 4.203, F= 5.244, p=0.023).

On the basis of this finding an exploratory subgroup analysis was performed on the impact of ethnicity on each sub-score of the clinical education form using univariate ANOVAs.

Significant differences were observed for the Interpersonal section (md 2.21% 95%CI 0.14 to 4.28, F=4.409, P=0.03), the clinical reasoning section (md 2.39% 95%CI 0.53 to 4.25, F=6.37, p=0.012) and the treatment section (md 2.93 95%CI 1.10 to 4.83, F=9.198, p=0.003) and approached significance in the professionalism section (md 2.23 95%CI -0.017 to 4.47

F=3.864, p=0.05). Due to the exploratory nature of this analysis the data was not corrected for multiple comparisons (table 1).

## **Discussion**

The students in this study entered the programme between 2005 and 2009. The profile of these five consecutive cohorts indicates some similarities and differences with the national profile for the following year (2009/10 [7]). The number of standard entry students was higher in the study group (66% versus 43%) as were those from a minority ethnic background (25% versus 12%). The gender profile was in contrast in-keeping with the national cohort.

The findings in relation to age did not follow the pattern described by Kell [11], nor Howard and Jerosch Herald [10] or the viewpoint presented by Sparkes and Mason [3] in their opinion paper. In short, in this study there is no significant difference in the achievements of mature versus standard entry students in their final clinical placements. It is accepted that the clinical placement marks under scrutiny in this study differ to both the outcome measures of the Kell [11] and Howard and Jerosch Herald [10] studies, and equally that the cohorts were from different universities over different time periods, which means the results are not directly comparable. However, the results presented here may indicate that any potential difference on final degree classification based on age, as reported by Howard and Jerosch Herald [10], may lie in academic modules rather than clinically. Equally, the results question a direct relationship between self-reported learning profile and performance clinically.

The finding that gender had no significant influence on clinical grade awarded was in direct contrast to the findings of Hammond [6]. Once again there are differences in the period of clinical marks analysed and absence of related academic work in this current study.

However, the use of the same outcome measure and the fact that the two higher education institutions involved in these studies lie within the same clinical placement geography does make a more direct comparison possible. Without a qualitative arm to either this or the Hammond (*ibid*) study[6], the potential reasons for the differences are difficult to suggest, and this may be a useful area of further enquiry.

The most important finding of this study was in relation to ethnicity, as this is both the first time this has been reported on in the UK and the results illustrate a significant difference in clinical marks awarded. These findings do have resonance with related literature including Clouten et al [13] and Haskins et al [12], which reported higher marks being awarded to white majority students in comparison to students from minority ethnic backgrounds.

Interestingly however, Clouten et al [13] highlight that interpersonal skills were deemed of most concern by their clinical educators, whilst results of this study suggest that although interpersonal skills were judged lower, it was the cognitive and psychomotor skills required for treatment that were most significantly affected. The treatment section of the CAR form carries a third of the weighting of the total clinical mark and therefore this discrepancy has an important impact on the overall mark awarded.

However, despite the statistical significance noted, the actual percentage difference of marks awarded was between 2-3% (mean 2.31%) between the groups. This is a small difference in percentage terms and questions the practical impact of these statistical differences. Indeed, it is possible that the differences noted have no bearing on the final

degree awarded. Nevertheless, the fact that a difference has been noted suggests that the relationship between academic success and ethnicity should be an area of further enquiry.

While the literature on ethnicity within physiotherapy education is very limited, studies from related clinical programmes and ethnicity within higher education more generally can act as a guide to some fruitful areas of future exploration. One such is the profile of students across the level of study and type of assessment. The findings of Utzman [15], suggests that academic profile may be of interest, with Hammond [6] illustrating differences in clinical marks across the years of study. It is also of note that the heterogeneity within the category of minority ethnic needs to be explored. This is challenging when numbers are limited, but as previous studies illustrate differences based on race [12] and age within the minority ethnic group [9], homogeneity must not be assumed.

Exploring why any apparent differences arise is a more complex question. Within clinical placements the judgement of educators has been studied with concerns over overt negative bias noted in both physiotherapy [12, 13] and medicine [16, 17]. Feelings of isolation and hostility in the academic environment have also been noted [9]. However, Connor et al [9] also note a number of socioeconomic and other personal factors such as parental influence, finances and patterns of term-time work which may influence how well students from minority ethnic backgrounds adjust and succeed in their student careers. As none of the studies cited are either based on or specific to physiotherapy education in the UK their relevance is unknown, but examining these potential influences and how they interact would be a useful step forward.

## **Limitations**

In this study findings are presented from one physiotherapy programme in the UK, which may not be representative of all physiotherapy education providers. However, due to the high intake of minority ethnic students at this University, it provides a useful case-study. Furthermore, whilst the final clinical placement marks were specifically selected for examination it is accepted that the marks may not be representative of each student's marks across their complete clinical or academic profile.

## **Implications for practice**

Students from minority ethnic backgrounds make up a quarter of the physiotherapy cohort at the HEI reported in this study and an increasing percentage nationally (12%, [7]). The results presented in this study tentatively suggest that these students are judged to be underperforming in their final clinical placements as compared to their white British peers. Whilst it is only possible to surmise as to the reasons behind these findings, it is now necessary and appropriate for further research to be conducted into the factors associated with the performance of minority ethnic physiotherapy students. In order to address one of the limitations of this study, it would be appropriate to develop national level data on physiotherapy education in relation to relevant sociodemographic data including ethnicity. Regional and local differences in assessment and course structure would need to be considered to ensure equivalence of data compared, but such a data set would facilitate a more comprehensive review and understanding of factors which may influence success and consequently any required interventions in teaching practice.

### **Implications for future research**

Fundamentally, this study highlights a need to explore further the relationship between students' ethnic background and their assessed performance both clinically and academically. Furthermore it is imperative that potential explanations for the finding presented in this study are explored and the most effective ways to ensure student success whatever their ethnic background are scrutinised.

### **Conclusions**

In 2002, Mason and Sparkes presented a series of opinion pieces on widening participation within physiotherapy [3,18,19]. They recommended the need for further research to explore how age, gender and ethnicity impacted on the profession including education. The research presented in this paper has begun to explore such issues across five cohorts of students and has found a difference in performance for students from minority ethnic backgrounds on clinical placements, particularly in the treatment section of the assessment form. More research is required to not only explore whether this relationship between ethnicity and performance is sustained across the programme, but also the potential reasons for the discrepancy. This reflects the mission of HEFCE [1] to support widening participation across the HEI sector.

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## References

- [1] Department of Education and Skills. The Future of Higher Education. 2003. Norwich:DfES.
- [2] Office For Fair Access. <http://www.offa.org.uk/> [accessed 06/11/12].
- [3] Sparkes VJ, Mason C. Widening Participation in Education Part 3: Mature students in undergraduate education. *Physiotherapy* 2002;88:5:285-294.
- [4] Bogg J, Pontin E, Gibbons C, Sartain S. Physiotherapists' perceptions of equity and career progression in the NHS. *Physiotherapy* 2007;93:137-143.
- [5] Bithell C. Entry-Level Physiotherapy Education in the United Kingdom: Governance and Curriculum. *Phys Ther Rev* 2007;12:145-55.
- [6] Hammond A. 2009 Assessment of Clinical Components of Physiotherapy Undergraduate Education: Are There Any Issues With Gender? 2009;95:266-272.
- [7] Chartered Society of Physiotherapy. Annual Quality Review 2010 PD066. London:Chartered Society of Physiotherapy; 2011.
- [8] Oxlade L. The Subtle Face of Racism. *Frontline* 2005;11:9.
- [9] Connor H, Tyres C, Modood T, Hillage J. Why the difference? A closer look at higher education minority ethnic students and graduates. 2004. DfES.

- [10] Howard I & Jerosch-Herold C. Can Entry Qualifications be Used to Predict Fieldwork and Academic Outcomes in OT & PT students? *BJOT* 2002;63:329-334.
- [11] Kell C. Undergraduates' learning profile development: what is happening to the men? *Medical Teacher* 2006;28:16-24.
- [12] Haskins A, Rose-St Prix C, Elbaum L. Covert Bias In Evaluation of Physical Therapist Students' Clinical Performance. *Physical Therapy* 1997;77:155-163.
- [13] Clouten N, Homma M, Shimada R. Clinical Education and cultural diversity in physical therapy: Clinical performance of minority student physical therapists and the expectations of clinical instructors. *Physiotherapy Theory and Practice* 2006;22:1-5.
- [14] Utzman R, Riddle D, Jewell D. Use of demographic and quantitative admissions data to predict academic difficulty among professional physical therapist students. *Physical Therapy* 2007a;87:1164-1180.
- [15] Utzman R, Riddle D, Jewell D. Use of demographic and quantitative admissions data to predict performance on the national physical therapy examination. *Physical Therapy* 2007b;87:1181-1193.
- [16] Woolf K, Cave J, Greenhalgh T, Dacre J. Ethnic stereotypes and the underachievement of UK medical students from ethnic minorities: qualitative study. *BMJ* 2008;337a:1220.
- [17] Stegers-Jager K, Steyerberg E, Cohen-Schotanus J, Themmen A. Ethnic disparities in undergraduate pre-clinical and clinical performance. *Medical Education* 2012;46:575-585
- [18] Mason C, Sparkes V. Widening participation in physiotherapy education. Part 2: Ethnicity among undergraduates. *Physiotherapy* 2002;88:276-284.

[19] Mason C, Sparkes V. Widening participation in physiotherapy education. Part 1: Introduction. *Physiotherapy* 2002;88:273-275.