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Estimating willingness to pay for maternal health services: The Kenya reproductive health voucher programme

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SUMMARY—As part of a broad evaluation of a reproductive health voucher programme aimed at determining its effect on health outcomes, a willingness to pay (WTP) study was conducted. The purpose of the study was to estimate WTP values for a broad range of reproductive health (RH) services namely: antenatal care (ANC), delivery, postnatal care (PNC) and family planning (FP) services. The study also sought to investigate the effect of the voucher programme on respondents' stated WTP values for the RH services. Women utilizing RH services at both voucher and non-voucher facilities were asked about their WTP for the RH services and WTP values were elicited using a stated preferences method. The study found that women were willing to pay a positive price to access RH services. Results also point to a differential learning effect or experience of the voucher on WTP for ANC, PNC, FP and delivery services. Further analysis also highlights endowment and reference effects with the voucher cost impacting on stated WTP amounts. The findings point to the potential for designing a sliding scale payment mechanism with effective targeting of subsidies such as vouchers to the neediest segments of the population. This will allow potential service users to pay for services within their willingness and ability to pay while also freeing resources to cater for the neediest segments of the population.

Investing in health is fundamental to any poverty reduction strategy as healthy individuals are key to the economic productivity of any country. Both high and low-income countries finance health care using a mixture of five possible sources: taxes, social insurance contributions, private insurance premiums, community financing and direct out-of-pocket payments through, for instance, user fees and patients' direct payment to private providers.[1] Faced with serious economic challenges, many governments in developing countries introduced user fees for health care as part of a sector-wide approach to cost recovery and revenue generation.[1,2] However, available evidence suggests that some service price levels discourage health service utilization by the poor and drive individuals into poverty.[3–6]

Increasingly, governments in low-income countries and other purchasers of health-care services are experimenting with combinations of demand and supply side financing mechanisms such as the use of output-based aid (OBA) voucher subsidies. While supply-side investments aim at supporting the health system issues through initiatives such as capital investments, demand side financing structures target the health system user, driving them to utilize health facility based services. Such mechanisms include health voucher programmes which place purchasing power directly in the hands of potential health-care users, giving them choice of health-care service providers and services. The strategies, mostly targeting the poor, have been used to improve uptake of health-care services in developing countries.[7–12] While vouchers

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are not issued free of charge, the cost is minimal with substantial benefits to the voucher holder, thus heavily subsidizing the cost of health care. However, there have been concerns about the potential impact of subsidies such as vouchers on adoption of pricing mechanisms when the subsidy is withdrawn.[7,13–16] The concerns arise from the fact that in health, like many other fields, decision makers are often faced with the challenge of balancing the need for equitable access to services especially for vulnerable low-income populations and the desire to avoid setting prices that are too low to sustain programmes, which could lead to over-reliance on external funding.[17] It is therefore imperative to price health-care services and products and charge those that can afford to pay a partial or full cost, which is then used to subsidize the cost of care for those who cannot afford to pay for them.

Setting optimal pricing levels for health-care services can be informed by individuals' monetary valuation of the benefits derived from the interventions.[18–20] However, health interventions are not subject to the normal economic market for goods and services, making it difficult to value benefits that can be derived from them. Among the methodologies used to elicit individuals' monetary valuations of programme benefits include WTP studies.[21–24] The theoretical foundations of WTP as a measure of commodity and service value are rooted in consumer demand theory.[25] Individual WTP values point to consumer choice behaviour or preferences with regard to particular goods or services.[25] WTP studies in the health sector build on the quality adjusted life year (QALY) measurement to elicit a dollar value from people for a good that is not subject to market pricing mechanisms.[26,27] Individual preferences are weighted on money, health and time, with immediate and higher impact interventions expected to be valued higher than interventions where the outcome is expected at a future date or deemed to have a lower impact.

A number of possible scenarios have been identified in the literature regarding the possible influence of health-care subsidies on individuals' monetary valuation of benefits. For instance,

where the service has been obtained, beneficiaries are likely to be more willing to pay for subsequent use because they have experienced the true value of the service – the learning effect.[13] Subsidy beneficiaries may also anchor around the subsidy price and would be unwilling to pay more for the intervention later.[13] The price of the subsidy in this case acts as the reference point on which the stated WTP preferences are conditioned.[14–16,28] In other cases, subsidies create an endowment effect whereby individuals' stated WTP preferences are based on their experiences with the subsidized service or intervention (whether positive or negative). In the case of positive experiences, the stated WTP value is expected to be higher while for negative experiences, the stated WTP value is expected to be lower.[29] In the case of cost-free subsidies (such as childhood immunizations in many settings), beneficiaries easily develop an entitlement effect and are unwilling to pay any amount for the intervention later.[14]

Although output-based aid voucher programmes are increasingly being implemented in developing countries to improve the uptake of health-care services especially among economically disadvantaged populations, there is limited understanding of how and the extent to which they influence beneficiaries' monetary valuation of the subsidized services when the voucher is withdrawn. This article examines individuals' WTP for RH services in Kenya. It specifically compares the likelihood that individuals were willing to pay and the amount they would be willing to pay for ANC, delivery, PNC and FP services among voucher and non-voucher clients. Information on WTP values for health-care services is useful for predicting utilization or demand for an intervention, services or commodities.[18,19,30] When obtained before the rollout of a health intervention, an analysis of WTP values can also be used to determine the need for a subsidy.[6,18,19,31] In particular, if the stated WTP is less than the real cost of the intervention, then a subsidy would be needed to ensure equitable access to the services while higher stated WTP values may indicate the ability of the specific population group to pay for the services and may be used in pricing level decisions.

Maternal health indicators in Kenya

Although the year set for achieving the Millennium Development Goal (MDG) targets[32] is upon us, Kenya is far from attaining its indicators on maternal and child health. According to the Kenya Demographic and Health Survey (KDHS), maternal mortality increased from 414 in 2003 to 488 in 2008–09. Despite several interventions to improve health outcomes, skilled birth attendance (SBA) – which is recognized as a key strategy in addressing maternal mortality – is still low at 44%. Moreover, although 92% of expectant women receive ANC from a health-care provider, only 44% of births are delivered in a health facility. Only 47% of mothers seek PNC care services while the contraceptive prevalence rate is 46%.[33] Factors that contribute to the low uptake of the health-care services in Kenya and similar settings include poverty, availability and spread of health facilities, low literacy, shortage of staff and supplies, health-care provider attitudes and sociocultural practices.[33–38] Uptake of RH services remains low especially among individuals from poor households.[33]

Health-care financing in Kenya

Different policy instruments have been utilized by successive governments to finance health care in the country. From a predominantly tax-funded system in 1963, a variety of cost recovery mechanisms including full cost (user fees) and registration fees have been used together with exemption mechanisms to cushion vulnerable segments of the population from finance-related barriers to accessing health care. There is a national health insurance scheme that initially targeted the formal sector but successively opened up to include the informal sector. There are also private health insurance schemes while the government recently commissioned a social health insurance scheme. Under Article 43(1) (a) of the Constitution of Kenya, every person has the right to the highest attainable standard of health, which includes the right to health-care services, including RH care.[39] The full realization of this right has, however, been hampered by

stunted economic growth coupled with competing financial needs against a fixed budget.

As a signatory to the Abuja Declaration, Kenya committed itself to allocating at least 15% of the national budget to the health sector.[40] However, more than a decade after signing the declaration, government funding for health care has remained consistently below 5%.[41] In 2009–10, the government contributed 30% of the health budget, households and other private sources contributed 54%, while donors contributed 16%. However, the total health expenditure for RH accounted for 14% of total health spending and 1% of GDP in 2009–10, a level that has remained unchanged since 2005–2006.[42] Public and private sectors (including households) were the primary sources of RH care financing during the period of analysis with contributions of 40% and 38% respectively.[42] Household financing of health care is largely through formal and informal out-of-pocket payments, which have been linked to poor uptake of facility services, hence poor maternal health outcomes. It is against this backdrop that the Government of Kenya began implementing the RH vouchers programme (described in detail in the next section) in selected regions of the country. The government further declared a policy of free maternal health services (ANC, delivery and PNC services) in all public health facilities in 2013.[43] Following the policy shift, public health facilities have reported influxes in the numbers of maternal delivery.[44]

The reproductive health vouchers programme in Kenya

Through funding from the German Development Bank (KfW), an output-based aid (OBA) RH voucher programme has been implemented by the Government of Kenya since 2006. The OBA concept represents a demand-side approach to financing health care by subsidizing health-care clients directly and dispensing money to health facilities only when services are actually provided. The programme, described in detail elsewhere[12,45–47] is implemented in select sites within three districts (now counties): (Kisumu, Kitui and Kiambu) and two

urban slums (Viwandani and Korogocho) in Nairobi since 2006. The programme was expanded to one additional county (Kilifi) in 2011. The objective of the programme is to significantly reduce maternal and neonatal morbidity and mortality by increasing the number of health facility deliveries and improving access to appropriate RH services for the poor through incentives for increased demand and improved service provision.[8,48,49]

Using a non-standard poverty-grading tool, community-based distributors appointed by the voucher management agency screen self-selecting pregnant women and potential FP clients, who, if eligible, purchase a safe motherhood or FP voucher respectively at a minimal fee or are given for free if living in extreme poverty. The safe motherhood voucher costs KSh 200 (US$ 2.50) and covers four ANC visits, normal or surgical delivery, pregnancy complications and PNC for the mother and baby up to six weeks. The FP voucher costs KSh 100 (US$1.25) and covers long-term and permanent methods (contraceptive implants, intrauterine contraceptive device and voluntary tubal ligation). A third voucher for gender-based violence recovery (GBVR) services is issued for free at selected health facilities to gender-based violence (GBV) survivors. The voucher covers consultation, counselling services, laboratory examinations and treatment of conditions arising from GBV.

Beneficiaries present the vouchers for services at the more than 150 accredited health (voucher) facilities comprising public, private for-profit and private not-for-profit. Following service provision, facilities submit invoices to the voucher management agency for payment against pre-agreed reimbursement rates. The RH voucher programme has been evaluated on several facets including its impact on access to services,[50] impact on quality of care[51] and the economic costs of providing the different RH programme services (unpublished work).

Evaluation of the programme has shown improved service utilization among the target population.[49,11,50]

Methods
Data

Data for this analysis and paper was collected during exit interviews with clients seeking ANC, PNC and FP services in selected health facilities in Kenya. The study was conducted between July and October 2012 as part of a larger project that evaluated the impact of reproductive vouchers programmes in five countries (Kenya, Uganda, United Republic of Tanzania, Cambodia and Bangladesh).

A total of 33 health facilities were randomly sampled from among those that were accredited to provide services to voucher beneficiaries. The sampling was stratified by programme site (Kisumu, Kitui, Kiambu, Kilifi and Nairobi), facility level (hospital, health centre/maternity/nursing home and dispensary/clinic) and facility type of ownership (public, private, faith-based and NGO). A further 18 health facilities were sampled from adjacent non-voucher sites (Makueni, Nyandarua and Uasin Gishu counties) for comparison. Health facilities in the comparison sites were selected on the basis of how comparable they were to those sampled from voucher sites in terms of level and type of ownership. In the absence of pre-implementation data, the study authors chose to compare voucher and non-voucher clients in an effort to separate the effect of the voucher programme on stated WTP values.

The study targeted expectant women making the first (under 24 weeks) and last (36 weeks or more) ANC visit; postpartum women seeking PNC services within 48 hours, two weeks, and four to six weeks after delivery; and women seeking FP services. As part of the larger programme evaluation, the women were first observed during consultation with the providers to determine the quality of care they received. The observations were conducted by trained nurses who were deployed outside the study area. Quality of care assessments were conducted using a different tool to the one used to capture stated WTP values. The detailed methodology and results of the quality of care assessments are not presented in this article but covered in detail in a separate focused paper.[51]

WTP data were captured using a structured questionnaire administered during exit interviews. Following the observations described above, clients were interviewed after consultation sessions by trained research assistants. The structured questionnaires used during the exit interviews captured information on the clients' background characteristics (including age, education level, marital status and household income); childbearing experiences and intentions; perceptions about the services received; accessibility to the facility (mode and time of travel); out-of-pocket expenditure and WTP for the services including a stated WTP value for the different RH services; as well as awareness, use and perceptions about the vouchers. PNC clients were also asked about their experiences during delivery.

Written informed consent was obtained from all participants before conducting the observations and interviews. The interviews were conducted in English, Swahili (the national language) or the local language depending on which one a participant was comfortable with. Ethical approval for the study was obtained from the Population Council Institutional Review Board (Protocol No. 470) and the Kenya Medical Research Institute (Protocol No. 174).

Analysis

Analysis involved descriptive statistics (means and percentages) as well as estimation of multivariate regression models. We compared the proportions of voucher and non-voucher clients who indicated that they were willing to pay for ANC, delivery, PNC and FP services and tested whether there were any significant differences between the two groups. We further compared the average amount of money that voucher and non-voucher clients were willing to pay for the services and tested whether differences, if any, were statistically significant. Voucher clients in this case referred to those who had ever used FP or safe motherhood vouchers even if they did not use it on the day of the interview.

Multivariate regression analysis, on the other hand, involved estimation of logistic and ordinary least squares regression models for the likelihood of WTP and

the amount of money clients were willing to pay for services respectively. A total of eight models were estimated. The first four models examined differences in the likelihood of WTP for the services (ANC, delivery, PNC and FP) among voucher and non-voucher clients. The results are presented as odds ratios. The next set of four models examined differences in the amount voucher and non-voucher clients were willing to pay for the services. The results are presented as coefficient estimates. The models adjusted for clustering of individuals within the same facility. The basic form of the model is given by the following equation:

$$Y_{ij} = \beta_0 + \beta_i X_{ij} + \varepsilon_j$$

where Y_{ij} is the amount paid by individual i in facility j, β_0 is the constant, X_{ij} is the vector of covariates including the indicator of whether one was a voucher client or not, β_i is the associated vector of fixed parameters and ε_j is the error term for individuals identified from the same facility. The models controlled for age, highest education level, marital status at the time of interview, parity, household wealth index, type and level of facility. The definitions and measurement of variables included in the regression models are presented in Table 1.

Results

Interviews were completed with 419 out of 432 ANC clients (97%), 554 out of 568 PNC clients (98%) and 212 out of 216 FP clients (98%).

Characteristics of women

Table 2 presents the distribution of ANC, PNC and FP clients that were successfully interviewed upon exit by background characteristics and use of voucher. There were no significant variations in the distribution of voucher and non-voucher clients seeking various services (ANC, PNC and FP) by age and marital status. However, voucher and non-voucher clients seeking ANC and PNC services significantly differed in terms of highest level of education, household wealth status, and the facility from where they were interviewed. In particular the highest proportion of voucher clients seeking ANC and PNC services had primary level education (57% and 68% respectively). By contrast, the highest proportion of non-voucher clients seeking these services had secondary and above level of education (57% and 52% respectively). Similarly, higher proportions of non-voucher compared to voucher clients

Table 1. Definitions and measurement of variables included in regression analysis

Variable definition	Measurement
Outcome variables	
Willing to pay for services (ANC, delivery, PNC, FP)	0 = No 1 = Yes
Amounts clients are willing to pay	Continuous: Ranges from KSh 10 to KSh 2000 for ANC Ranges from KSh 20 to KSh 25000 for delivery care Ranges from KSh 10 to KSh 8000 for PNC Ranges from KSh 20 to KSh 1000 for FP
Covariates	
Client type	0 = Non-voucher client 1 = Voucher client
Current age of the respondent	Continuous: Ranges from 15 to 44 for ANC clients Ranges from 15 to 49 for delivery and PNC clients Ranges from 17 to 49 for FP clients
Education level	0 = No schooling/pre-unit/primary 1 = Secondary and above
Current marital status	0 = Never/formerly married 1 = Married/living together
Household wealth index	0 = Other 60% 1 = Poorest 40%
Parity	Continuous: Ranges from 1 to 5 for ANC clients Ranges from 1 to 7 for delivery, PNC and FP clients
Facility type	0 = Private 1 = Public
Facility level	1 = Hospital 2 = Health centre/maternity/nursing home 3 = Dispensary/clinic

Kenya shilling (KSh): US$ 1 ≈ KSh 88

seeking the services were from the two bottom quintiles. In addition, although the majority of clients were from public health facilities, a higher proportion of non-voucher compared to voucher clients was from these facilities.

Willingness to pay for services

Table 3 shows the distribution of voucher and non-voucher clients by WTP for RH services. There was no significant difference in the proportion of voucher and non-voucher clients that were willing to pay for ANC services (35% and 33% respectively; p=0.67). However, a significantly lower proportion of voucher compared with non-voucher clients were willing to pay for delivery (34% and 43% respectively; p<0.05) and FP services (25% and 44% respectively;

p<0.05). By contrast, a significantly higher proportion of voucher compared with non-voucher clients were willing to pay for PNC services (47% and 39% respectively; p<0.05). The results further show that voucher clients were willing to pay significantly lower amounts for ANC (p<0.05), delivery (p<0.01) and PNC services (p<0.01) compared with non-voucher clients (Table 3). It is also worth noting that, on average, voucher clients were willing to pay lower amounts than the voucher price for ANC and FP services. By contrast, they were willing to pay almost three times higher for delivery than the voucher price and almost the same price for PNC as the voucher price (Table 3).

Results from the multivariate logistic regression analysis show that voucher clients were significantly less likely to

express WTP for ANC, delivery and FP services compared with non-voucher clients (p<0.05 in each case; Table 4). There was, however, no significant difference between voucher and non-voucher clients in the likelihood of expressing WTP for PNC services. Other results from the analysis show that clients with secondary and above level of education were significantly more likely to report WTP for delivery services compared with those with lower levels of education (odds ratio: 1.65; p<0.01). In addition, contrary to what would be expected, women from the poorest 40% of households and those who sought services from dispensaries or clinics were significantly more likely to report WTP for ANC services compared with those from the other 60% households and those who sought services from hospitals respectively (p<0.05 in each

Table 2. Percentage distribution of voucher and non-voucher clients by background characteristics and services sought

Characteristics	Antenatal care (%)		Delivery/postnatal care (%)		Family planning (%)	
	Voucher clients	Non-voucher clients	Voucher clients	Non-voucher clients	Voucher clients	Non-voucher clients
Age (years)	**p=0.30**		**p=0.25**		**p=0.93**	
15–24	50.0	47.9	52.4	44.7	39.6	37.1
25–34	40.1	45.0	35.6	38.9	47.2	47.8
35 and above	8.8	7.1	10.3	14.5	13.2	14.5
Don't know/missing	1.1	0.0	1.7	1.9	0.0	0.6
Highest education level	**p<0.01**		**p<0.01**		**p<0.05**	
No schooling/pre-unit	6.6	2.9	7.9	2.3	9.4	3.1
Primary	57.1	39.9	67.8	46.2	66.0	58.5
Secondary and above	36.3	57.1	24.3	51.5	24.5	38.4
Current marital status	**p=0.78**		**p=0.62**		**p=0.87**	
Never married	15.4	13.9	11.6	13.4	11.3	9.4
Married/living together	80.8	83.2	86.0	83.2	84.9	85.5
Formerly married	3.9	2.9	2.4	3.4	3.8	5.0
Parity	**p=0.16**		**p=0.01**		**p=0.54**	
0	37.4	41.6	0.3	3.4	0.0	3.1
1–2	38.5	42.9	52.1	63.4	54.7	57.9
3–4	19.2	11.8	33.6	24.4	32.1	27.0
5 and above	5.0	3.8	14.0	8.8	13.2	12.0
Household wealth index	**p<0.01**		**p<0.01**		**p<0.32**	
Poorest quintile	11.0	34.5	8.2	30.5	9.4	17.6
Poorer quintile	19.8	20.2	21.2	19.1	17.0	22.0
Middle quintile	26.4	11.8	25.7	19.9	26.4	17.6
Richer quintile	19.8	18.1	25.7	16.0	18.9	21.4
Richest quintile	23.1	15.6	19.2	14.5	28.3	21.4
Facility type	**p<0.01**		**p<0.01**		**p<0.01**	
Private	37.9	19.8	40.4	19.1	41.5	13.8
Public	62.1	80.3	59.6	80.2	58.5	86.2
Facility level	**p=0.08**		**p<0.01**		**p<0.01**	
Hospital	50.6	60.1	55.5	66.4	20.8	52.8
Health centre/maternity/nursing home	46.2	38.7	39.7	32.4	67.9	46.5
Dispensary/clinic	3.3	1.3	4.8	1.2	11.3	0.6
Number of women	**182**	**238**	**292**	**262**	**53**	**159**

Percentages may not total 100 due to rounding; p values are from chi-square tests of differences between voucher and non-voucher clients

Table 3. Distribution of voucher and non-voucher clients by willingness to pay for reproductive health services

Indicator	Voucher clients		Non-voucher clients	
	Estimate	Number of cases	Estimate	Number of cases
Proportions willing to pay for services (%)				
Antenatal care	35.2	182	33.2	238
Delivery care	33.6	292	42.8*	262
Postnatal care	47.3	292	38.6*	262
Family planning	24.5	53	44.0*	159
Mean amount clients are willing to pay (KSh)				
Antenatal care	67.53	170	130.14*	138
Delivery care	706.40	267	1776.63**	169
Postnatal care	198.80	275	474.98**	191
Family planning	34.23	52	42.89	152
Median amount clients are willing to pay (KSh)				
Antenatal care	0.0	170	40.0	138
Delivery care	0.0	267	500.0	169
Postnatal care	10.0	275	20.0	191
Family planning	0.0	52	0.0	152

Kenya shilling (KSh): US$ 1 ≈ KSh 88; Differences between voucher and non-voucher clients are statistically significant at: *$p<0.05$; **$p<0.01$. Number of cases = number of individuals responding to the question. Estimates for proportions willing to pay for services = percentage based on the total number of respondents for the question. Estimates for the WTP values = absolute values in KSh.

pay for various RH services. Voucher clients were willing to pay significantly lower amounts for delivery and PNC services compared to non-voucher clients ($p<0.01$ in each case). There was, however, no significant difference between voucher and non-voucher clients in the amounts they were willing to pay for ANC and FP services. Other results show that women with secondary and above level of education were willing to pay significantly higher amounts for ANC compared with those with lower levels of education ($p<0.05$). In addition, women who sought services from public health facilities and dispensaries/clinics were willing to pay significantly lower amounts for PNC compared with those who sought services from private facilities and hospitals respectively ($p<0.05$ and $p<0.01$ respectively).

case). By contrast, women who sought services from health centres, nursing or maternity homes were significantly less likely to express WTP for ANC services compared with those who sought services from hospitals ($p<0.05$; Table 4).

Table 5 presents coefficient estimates from ordinary least squares regression analysis for amounts that clients were willing to

Discussion and conclusion

This study explored WTP for RH services among poor women within the context of

Table 4. Odds ratios from logistic regression models for the likelihood of willing to pay for reproductive health services among voucher and non-voucher clients

Covariates	Antenatal care	Delivery care	Postnatal care	Family planning
Voucher client (yes = 1)	0.55* (0.31; 0.99)	0.32** (0.19; 0.54)	0.87 (0.42; 1.79)	0.36* (0.14; 0.94)
Age (single years)	0.96 (0.90; 1.03)	0.98 (0.92; 1.05)	0.95* (0.91; 0.99)	1.02 (0.97; 1.09)
Highest education level (secondary and above = 1)	1.51 (0.99; 2.29)	1.65** (1.16; 2.35)	1.35 (0.91; 2.01)	0.91 (0.50; 1.67)
Current marital status (married/living together = 1)	0.99 (0.49; 2.03)	0.82 (0.45; 1.47)	0.89 (0.51; 1.57)	1.09 (0.50; 2.36)
Parity (continuous)	1.19 (0.97; 1.47)	1.02 (0.83; 1.25)	1.19 (0.99; 1.42)	0.79 (0.62; 1.01)
Household wealth index (poorest 40% = 1)	1.67* (1.03; 2.67)	1.16 (0.98; 2.66)	1.57 (0.97; 2.52)	0.79 (0.38; 1.62)
Facility type (public = 1)	1.13 (0.53; 2.42)	0.72 (0.38; 1.39)	0.47 (0.21; 1.08)	0.62 (0.28; 1.37)
Facility level (ref = hospital)				
Health centre/maternity	0.48* (0.24; 0.96)	0.87 (0.46; 1.67)	0.55 (0.26; 1.15)	0.92 (0.45; 1.89)
Dispensary/clinic	1.92* (1.01; 3.62)	0.64 (0.10; 4.26)	0.55 (0.10; 3.17)	0.57 (0.20; 1.60)
Number of cases	**305**	**426**	**458**	**203**

Ref: reference category; *$p<0.05$; **$p<0.01$

Table 5. Coefficient estimates from ordinary least squares regression models for the amount clients are willing to pay for reproductive health services

Covariates	Antenatal care	Delivery care	Postnatal care	Family planning
Voucher client (yes = 1)	-52.12 (-118.65; 14.40)	-814.26** (-1355.06; -273.45)	-290.20** (-486.21; -94.19)	-13.02 (-45.27; 19.24)
Age (single years)	-4.47 (-10.37; 0.89)	93.73 (-11.55; 199.01)	-4.03 (-18.06; 10.00)	0.41 (-3.93; 4.76)
Highest education level (secondary and above = 1)	66.81* (13.48; 120.14)	241.54 (-364.00; 847.09)	224.16 (-8.08; 456.40)	0.56 (-25.95; 27.06)
Current marital status (married/living together = 1)	-4.87 (-83.27; 73.52)	-642.79 (-1501.00; 215.42)	-11.67 (-224.99; 201.66)	-16.83 (-68.46; 34.79)
Parity (continuous)	14.33 (-5.04; 33.70)	-280.33 (-671.86; 111.20)	25.37 (-22.98; 74.72)	-5.44 (-19.43; 8.56)
Household wealth index (poorest 40% = 1)	13.40 (-49.14; 75.94)	495.06 (-273.61; 1263.72)	-73.64 (-244.62; 97.34)	-19.22 (-42.59; 4.14)
Facility type (public = 1)	-33.03 (-123.60; 57.55)	-582.69 (-1344.04; 178.65)	-248.38* (-492.34; -4.42)	-24.75 (-57.95; 8.46)
Facility level (ref = hospital)				
Health centre/maternity	-64.28 (-130.95; 2.38)	45.44 (-640.76; 731.85)	-129.44 (-325.57; 66.70)	-8.26 (-39.78; 23.26)
Dispensary/clinic	-9.95 (-91.52; 71.61)	-570.85 (-1489.99; 348.30)	-213.97** (-362.89; -65.05)	-17.40 (-62.85; 28.05)
Constant	242.65* (43.38; 441.91)	588.90 (-1365.14; 2542.94)	719.70** (296.37; 1143.02)	92.55* (6.54; 178.56)
Number of cases	**305**	**426**	**458**	**203**

Ref: reference category; *$p<0.05$; **$p<0.01$

a voucher programme and comparable non-voucher sites. In addition to estimating average WTP values for the RH services, this study explored the effect of the subsidy (voucher/voucher price) on WTP for similar services in future.

A key finding of this study was that clients are willing to pay a positive price for the four reproductive health services: ANC, delivery, PNC and FP. This finding mirrors findings in other studies on the effect of vouchers on utilization of facility based RH services in which the voucher is associated with improvements in quality of care and perceived benefit of attending facility based services leading to the increased utilization of facility based services.[12,48,50]

A second finding from these results was that experiencing the services – learning effect of the voucher subsidy impacts differently for the different RH services. A negative effect of the voucher was observed in the lower proportions of voucher clients compared with non-voucher clients, willing to pay for ANC, delivery and FP services while the voucher positively impacts on WTP for PNC services with more voucher than non-voucher clients expressing WTP for the services in future. In the design of the voucher programme before 2014, clients were expected to access PNC services using the safe motherhood voucher. However, the facility reimbursement policy for PNC services offered was not clear as this was lumped into delivery services and thus many facilities did not consider PNC services after delivery and discharge to be part of the voucher benefits. It is possible therefore that voucher clients paid to access PNC services for services offered post discharge. Anecdotal evidence collected from voucher clients in the process of the wider programme evaluation points to poor attitudes towards voucher paying clients at voucher facilities, compared with regular fee-paying clients. These clients intimated that at some of the facilities, providers felt that the voucher programme had led to an influx of clients in their facilities increasing their workload yet they were not compensated for the extra workload. This was observed more in the public facilities where facility earnings from the voucher programme did not directly impact financially on

the service providers. Some of the service providers in such facilities gave preferential treatment to the fee-paying clients, with voucher clients attended to after these had been served. Poor provider attitudes to clients have been documented in other studies as a leading cause of non-utilization of health facilities.[34] These contributed to the clients' decision to conceal the voucher, using it only if they were in an emergency situation.[52] Such experiences would lead to the low stated WTP values for these services when offered in the context of a voucher programme. The low stated WTP values could also be attributed to normalization of services such as ANC and delivery in majority of the communities within the study area, as shown in other studies.[34,38] In these, pregnancy is not associated with any dangers and thus facility attendance is reserved for emergencies. The learning effect also influences the WTP amounts with voucher clients willing to pay less for ANC, delivery services and PNC services. Data on the FP service clients are very limited and the resulting analysis is not sufficiently convincing.

A third major finding is the effect of the current voucher price on the stated WTP amounts for all the services – the reference point effect. Overall, voucher clients are less likely to express WTP for

ANC, delivery and FP services, compared with non-voucher clients. This could also be tied to the above finding on the effect of previous experiences with services offered using the voucher. With a cost price of KSh 200 for the safe motherhood voucher, voucher clients are willing to pay lower than this price for ANC and FP services but almost three times this price for delivery services. Normalization of ANC and FP services could contribute to this. In this, delivery is associated with higher health risks compared with ANC and FP and thus higher WTP values are stated for this. The voucher price does not have an effect on WTP price for PNC services.

The study findings concur with findings in other studies where subsidies have been shown to have a learning effect on stated WTP for the services.[13–15,18] The same studies have also pointed to the potential negative effect of the subsidy cost as used as a reference point, on stated WTP amounts. Findings from this and similar studies can be used to set minimum price levels for health commodities and services, allowing those in the society who can pay a non-zero price to access health care to do so. Interventions aimed at addressing disrespectful and abusive care towards clients, which includes discrimination on the basis of their

socioeconomic background, are ongoing in the country.[53] It is hoped that these will reduce the perceived discrimination of voucher clients on the basis of ownership of the voucher, encouraging equal treatment for equal need.

As has been the case with other studies[18,19,54] findings from this WTP study could help project the market size for RH services if these were priced.

To generate further evidence for resource allocation and pricing decisions, variations of the different methods of eliciting WTP values should be conducted on the same sample as has been suggested by Foreit[17]. This further helps to validate the stated WTP values. In addition, an in-depth evaluation of the reasons for the stated WTP values and non-WTP for services would aid in redesigning payment mechanisms.

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