Community willingness to pay for maternal transport in Kabarole District, Western Uganda: A cross-sectional study

Andrew Kuguminkiriza Tusubira[1,&], Christine Muhumuza[2], Aloysius Mutebi[1], Nathan Ruhinda[1], Doreen Tuhebwe[1], Michael Ediau[1], Angela Nakanwagi Kisakye[1], Freddie Ssengooba[1], Sebastian Olikira Baine[1]

[1]Department of Health Policy, Planning and Management, Makerere University College of Health Sciences, School of Public Health, P.O Box 7072, Kampala, Uganda, [2]Department of Epidemiology and Biostatistics, Makerere University College of Health Sciences, School of Public Health, P.O Box 7072, Kampala, Uganda

KEYWORDS: Willingness to pay, maternal transport, household heads

ABSTRACT

Introduction: Saving Mothers Giving Life project in Kabarole district has supported maternal transportation to health facilities since 2012. There is need to sustain project outcomes when it winds up. We assessed community willingness to pay (WTP) for the maternal transport services and associated factors. **Methods:** We conducted a cross-sectional study among household heads in Kabarole district. We used simple random sampling to select the villages and households and purposively selected household heads. We administered structured questionnaires to household heads. A household head who reported that he/she was willing to contribute financially to the maternal transport services in the district was categorized as willing to pay. We obtained preferred entity to coordinate and manage the funds, preferred transport means, payment mode and amount of money through structured interviews. We used modified Poisson regression models to determine associations between WTP and the various characteristics of participants. **Results:** A total of 646 household heads were interviewed. The mean age was 33.8 years (SD±8.85). Most, 68% (442/646) were willing to pay for maternal transport. Of the 442 willing to pay, 65.38% preferred monthly payment with an average of UGX 2,207.6/= (<1.00 USD). Education was positively associated with WTP at all levels. Being married, participating in a saving scheme and staying more than five kilometers away from a heath facility were also associated with WTP: (APR 1.15, 95% CI 1.02-1.30), (APR 1.12, 95% CI 1.01-1.25), (APR 1.32, 95% CI 1.15-1.50) respectively. **Conclusion:** Households need to be mobilized, educated about the outcomes of accessing maternal services, and the need to pay for maternal transport. Payment modalities can be agreed upon by all stakeholders in a participatory and iterative process.

[&]CORRESPONDING AUTHOR
Andrew Kuguminkiriza Tusubira, Department of Health Policy, Planning and Management, Makerere University College of Health Sciences School of Public Health, P.O Box 7072, Kampala, Uganda. tusumose@gmail.com

RECEIVED
11/02/2020

ACCEPTED
22/06/2021

PUBLISHED
06/08/2021

LINK

https://www.afenet-journal.net//content/article/4/11/full/

CITATION
Andrew Kuguminkiriza Tusubira et al. Community willingness to pay for maternal transport in Kabarole District, Western Uganda: A cross-sectional study. J Interval Epidemiol Public Health. 2021August; 4(3): 11
DOI: https://doi.org/10.37432/jieph.2021.4.3.40

Introduction

Maternal health is one of the major global health challenges [1,2]. In 2017, about 810 women died every day from preventable causes related to pregnancy and childbirth [2]. Although some countries have made remarkable progress, most deaths, (94%), still occurred in low and middle income countries, with sub-Saharan Africa accounting for nearly two-thirds of the maternal deaths [3]. Pregnancy complications are often unpredicatable and delays in obtainig appropriate care greatly contribute to the poor pregnancy outcomes[4]. Thaddeus & Maine [5], distinguished the three major delays that affect pregnancy and childbirth outcomes. These include delay in: deciding to seek appropriate medical care; reaching an appropriate obstetric facility; and receiving adequate care when a facility is reached. The second delay is a direct consequence of transportation systems that are either expensive, poor, non-existent or a combination of factors[6]. Studies in rural Gambia, Kenya, and Uganda indicate that pregnant women experience transport related delays including geographical inaccessibility and lack of money to pay for transport to health facilities [6,7].

The significance of efficient transportation in obstetric care is related to the unpredictability of pregnancy complications and the potential of such a complication to become severe and life threatening [8]. However, effective maternal transport services have financial implications. Costs must be incurred by the pregnant mother, her male partner, or a concerned entity. It is estimated that less than one percent of the population in low-income countries has access to conventional emergency transport, such as an ambulance. Walking remains a primary mode of transportation for pregnant women thereby severely limiting their ability to reach appropriate healthcare [9]. Therefore most households in resource-limited settings rely on public transportation including hired or shared cars, animal drawn carts, and recently the intervention of project funded transportation for transferring women to health facilities [10,11]. Project funded transport services mainly depend on donor funds and may not be sustained when external support dwindles or ends due to constrained health sector budgets especially in low income countries [12,13].

In Uganda, projects which offer financial assistance for the transportation of pregnant women to access antenatal, delivery, and postpartum care services have been implemented [14,15]. Most of the transport services depend on donor funds, which may not guarantee sustainability of the transport services when the funding ends. In Kabarole district, Western Uganda, a development partner funded a project which facilitated maternal referral transportation through motorized ambulance services and establishment of a vouchers system for the use of commercial motorcycle riders by pregnant women [14]. It is not clear what will happen to the sustainability of the transport services when the development partner funding winds up. Either the government or community may have to raise funds for sustainability.

The World Health Organization has urged member states to introduce health-financing systems or develop prepayment for the health sector through financial contributions, with a view to sharing risk among the population and avoiding catastrophic healthcare expenditure and impoverishment of individuals as a result of seeking care[16]. Well-organized and sustained community based payment arrangements have the potential of developing into strong and acceptable mechanisms to contribute to the sustainability of health interventions [17]. However, no documentation exists on whether community financing can be embraced to sustain maternal transportation services. We therefore assessed community willingness to pay for maternal transport services and associated factors in Kabarole district, Uganda.

Methods

Study setting

We conducted this study in Kabarole district located in Western Uganda. Kabarole is one of the districts in Uganda where maternal transport services have been facilitated by the Saving Mothers Giving Life (SMGL) project [14]. The project´s approaches focused on equipping facilities, improving the supply system and strengthening linkages between communities and facilities through a facilitated transportation system. This has led to a decrease in maternal mortality by 45% since 2012 in these districts [18]. This winding - up project has been funding and functionalizing the maternal transport services in Kabarole district through provision of motor vehicle and motorcycle ambulances, and

vouchers to subsidize private transportation by motorcycles since 2012. Mothers are transported from their homes to the health facilities using motorcycles and their riders are given vouchers to claim payments[14].

Study design

We conducted a cross sectional study, between June and August 2015, using quantitative data collection methods.

Study Population

We interviewed adult household heads in Kabarole district. A household was defined as a group of people who stay together and commonly share a meal. A household head was an individual in the family who had authority to exercise family control and offered support to the dependent members in a household.

We included household heads who were residents of the selected sites and excluded those who had a health condition that would hinder them from providing information.

Sample size

The sample size was estimated using the Leslie Kish formula[19]. The estimated proportion of community members willing to pay for services was 30% [20], we added a design effect of 2 [21] (to cater for clustering of individuals), the total sample size was 646.

Sample selection

Using simple random sampling (SRS), one county (Burahya county) was selected from the rural counties while Fort Portal Municipality was purposively selected. The equivalent of one sub-county was selected from each of the two counties thus, Bukuku sub-county from Burahya county and West Division from the municipality. Using simple random sampling, we randomly selected three villages from each sub-county while using a list with all the villages. In each selected village, we used a household list, updated by Village Health Teams (VHTs), to identify households. This was our sampling frame for the households to be selected. We used proportionate to size sampling to determine the number of households selected per village. For each selected household, we purposively selected the household head. In case the head was not present, at least two re-calls would be made before selection of another household.

Study variables and measurements

The primary outcome variable was "willingness to pay" defined as a household head who was willing to contribute to the maternal transport services in the district. It was a binary outcome, whether the respondent was "willing to pay" or "not willing" and measured as a proportion of those willing to pay for maternal transport services. Those willing to pay were asked for preferred payment amounts. We also obtained information on preferred entity to coordinate and manage the funds, the preferred transport means and payment mode.

The independent variables were classified into socio-demographic factors, community factors, and Perceptions about community funded maternal transport. Socio-demographic factors included; age, marital status, sex, level of education and religion. To classify socio-economic status (SES), principal components analysis (PCA) was done on 7 household assets: 1) a mobile phone, 2) a bicycle, 3) a radio, 4) a television, 5) a motorcycle, 6) a motor vehicle and 7) land. These items were used in the Uganda Demographic and Health Survey [22] to determine wealth index which is a good proxy for measuring wealth of households. The component on which most items loaded was used to generate a socio-economic status score for each respondent. Respondents´ socio-economic status scores were then grouped into three-quantiles of socio-economic status. Other two covariates included: 1) distance from health center (categorized into: health facility within a radius of five kilometers and health facility in more than five kilometers); and 2) preferred place of birth delivery sought (whether health facility or traditional birth attendants (TBAs)).

Data collection

We used structured questionnaires designed using variables from previously conducted study tools on willingness to pay [23-25]. The tools were pretested in Kibiito town council, a similar population outside the study area before the actual field study. Data were collected using face-to-face interviews by ten

research assistants who had attained at least a diploma and could comprehend both English and Rutoro, the local language. Research assistants were supervised by the Principal Investigator during the data collection exercise. Collected data were entered, edited and cleaned using Epi info prior to analysis using Stata version 13.

Data analysis

At univariate analysis level, we obtained frequencies and proportions to describe the study population and also obtained the proportion of willingness to pay. We estimated bivariate and multivariable modified Poisson regression models to establish association between dependent variable (WTP) and the independent variables. We estimated bivariate modified Poisson regression models to obtain prevalence ratios (PR) with 95% confidence intervals. We used prevalence ratios rather than odds ratios as the measure of association because the outcome (WTP) was highly prevalent at 68.4%. In such scenarios, when the outcome is highly prevalent, odds ratios tend to overestimate the strength of association [26,27].

Prevalence ratios were estimated using the Modified Poisson regression analysis model via generalized linear models with family (Poisson), link (log) and with robust standard errors [28]. We then estimated a multivariable regression model to determine adjusted prevalence ratios of factors associated with willingness to pay. We obtained the independent effects for willingness to pay after running the final model. The factors adjusted for included; age, sex, place of residence, education level, marital status, occupation, participation in a saving scheme, household wealth index, distance to health facility, perceived quality of health care and perceived ability to pay. Variables in the model were eliminated if they were not consistently significant in further multivariable analysis. The goodness of fit checks and likelihood ratio tests were conducted to select the final model with adjusted estimates. Adjusted prevalence ratios with 95% confidence intervals and P-value less than 0.05 were considered statistically significant. All analysis was conducted using Stata version 13.

Ethics approval and consent to participate

This study was approved by Makerere University school of Public Health Higher Degrees Research and Ethics Committee (HDREC). Since this work was part of the field research studies done in fulfillment of a master´s degree, ethical approval was provided by HDREC on behalf of the Uganda National Council for Science and Technology (UNCST). Further permission to conduct the study was sought from the District Health office of Kabarole District and from the local council leaders. Written informed consent was obtained from participating household heads and they signed to confirm consent. Filled questionnaires were kept safe to ensure confidentiality of all the information obtained.

Results

Socio-demographic characteristics of study respondents

We found that respondents´ mean age was 33.8 years (standard deviation +/-8.85). Majority of the respondents 489/646 (75.7%) were male and 51.7% were residents in rural settings. The largest proportion of respondents had attained primary education 341/646 (52.8%), 63.3% were in a marital union, more than half (53.4%), were farmers and 396 (61.3%) were in the lowest quantile of wealth index Table 1.

Willingness to pay for maternal transport services in Kabarole district

Out of the 646 respondents, 442 (68.42%) were willing to pay for the maternal transport services in the district. Half of those willing to pay 221/442 (50%) were farmers, 217/442 (49.10%) were residents in rural settings and most, 291/442 (65.84%), were married.

Preferences by respondents willing to pay for the maternal transport services

In terms, of the 442 respondents willing to pay, most, (65.38%), preferred monthly payment with an average amount of UGX 2,207.6/= (<1.00 USD); 55 (12.44%) preferred bi-annual payment with an average amount of UGX 6,581.8/= (2.0 USD); and 98 (22.17%) preferred an annual payment with an average amount of UGX 11,418.3/= (3.5 USD).

More than half, 53.39% (236/442) preferred a Non-Government Organization (NGO) while 32.13% (142/442) preferred the Government to manage the funds. Majority 71.71% (317/442) preferred the management of funds to be done at sub- county level and most 61.54% (272/442) were willing to pay for motor vehicle ambulances Table 2.

Factors associated with willingness to pay for maternal transport services

Table 3 shows the bivariate association between willingness to pay and respondents´ background characteristics. Even though 50.90% of the respondents willing to pay were from urban settings, place of residence had no statistical significance with willingness to pay (PR 1.11 95% CI 0.99 - 1.23). Thus, in both setting (i.e., rural or urban), the largest proportion were willing to pay. Having attained any level of education was significantly associated with willingness to pay at bivariate level (P-value < 0.001). Though most of the respondents willing to pay were between 25 and 35 years of age (46.38%), age was not statistically associated with willingness to pay. Similarly, religion, occupation, and marital status were not statistically associated with willingness to pay.

In the adjusted model, those who had ever attained any level of education, primary (APR 1.35, 95% CI 1.10-1.66), secondary (APR 1.34, 95% CI 1.07 - 1.68) and tertiary (APR 1.56, 95% CI 1.20 - 2.03) education were more willing to pay for the transport services compared to those who had never attained any education. Being married (APR 1.16, 95% CI 1.03 - 1.32), having ever participated in a saving scheme (APR 1.13, 95% CI 1.01 - 1.26) and having a health facility at a distance of more than five kilometers (APR 1.28, 95% CI 1.11 - 1.46) were positively associated with willingness to pay. Other factors such as age, sex, place of residence, occupation, and wealth index (social economic status) were not significantly associated with willingness to pay in the final model Table 4.

Discussion

We found that majority (68%) of the respondents in both rural and urban communities were willing to pay for maternal transport. Most participants preferred monthly payment, a NGO to manage the funds and payment mainly for the motor vehicle ambulances. Being educated, married, participating in a saving scheme and staying more than five kilometers away from a heath facility were positively associated with WTP. This result is in line with similar study findings on willingness to pay for maternal health care where most of the respondents were willing to pay [29,30].

Even when stratified by sex (i.e., male or female) and residence (urban or rural), majority in each stratum were willing to pay for the maternal transport services. This was contrary to findings by two studies in Nigeria [17,31], which reported that the place of residence had influence on peoples´ willingness to pay. The high response to willingness to pay could be attributed to the benefits and the impact of the Saving Mothers Giving Life project in the district as noted by the evaluation reports [14,32].

Most respondents in this study preferred monthly payment at an average amount of Ugandan Shillings (UGX 2207.6) (< 1.0 USD). Studies on willingness to pay for maternal health in low- and middle-income countries have mainly reported monthly payment modality as a payment preference [29,33]. This study adds to the existing literature that monthly payment modality was also preferred for transport services. We however would like to note that the average amount suggested by respondents in this study is lower than what is reported in these studies. The low amount could also be because most respondents were in the lower social economic status category of the wealth index and majority of those willing to pay were subsistence farmers who could be low-income earners. Still in line with preferences, our study shows that more than half of those willing to pay preferred a Non-Governmental organization to manage the contributed funds. This could be because it has been a Non-Governmental organization running the operations of the saving mothers giving life project [14].

Our study results show that being married was positively associated with willingness to pay. This is consistent with previous studies on willingness to pay [34-36] . A study in Nigeria reported that marital status was found to increase willingness to pay by 51% [34]. Marital status has been shown to influence positive behavior towards health services [37] including easy mobilization of resources [20]. Their positivity towards payment probably shows that they

are more likely to have children, hence an anticipated need of transport services.

Being educated was associated with a persons´ willingness to pay for the transport services in the district. This is in line with several studies on willingness to pay for health care [38-41]. The influence of education on WTP could be through increase in positive attitudes which enhances acceptance as noted by Worasathit et al.,[42]. Similarly, those who had ever participated in a saving scheme were more willing to pay for the maternal transport services. This result is consistent with the finding in a Nigerian study where membership to a savings and loan group was a predicted willingness to pay for maternal services [43]. This could be due to the fact that, those who have participated in saving and loan group schemes are aware of the need for protection against financial risks during health emergencies.

Geographical location from a health facility has been identified as one of the determinants of willingness to pay for health care [34,39,44,45]. In this study, residing more than five kilometers from a health facility was associated with willingness to pay for the transport services. This was consistent with studies done in rural Nigeria [46,47] and Burkina Faso [44] which reported that households that had to travel longer distances to access health care were more willing to pay than those that had to travel lesser distances. This could be because individuals are often willing to pay when they are certain that an intervention will improve their access and quality of health care [48]. This finding is likely to vary in a situation where public transport systems like "taxis" or "*boda bodas*" are readily available or not.

The following limitations should be considered while interpreting the results. Though we did not obtain information about having plans for childbirth or being pregnant to grasp the intention for future use of these services, information on being married was proximate to this context. Besides, further research can be done to understand childbearing plans and willingness to pay for maternal transport services. This study was done among a population, which had functional maternal transport services. Therefore, the findings may not be generalizable to communities that have not yet experienced referral transport services at a localized level.

Conclusion

Most of the respondents were willing to make a monthly contribution towards the maternal transport services in Kabarole district. Majority preferred management of funds to be at sub- county level and motor vehicle ambulance was the most preferred means of transport. Having attained education, being married, ever participated in a saving scheme and having a health facility at a distance of more than five kilometers were positively associated with willingness to pay. There is need to embrace this positive response towards WTP and consider the possibility of community contribution to maternal transport services. A scheme geared towards monthly contribution can be established in the district to enhance saving for maternal transport services. Sensitization on importance of community contribution to maternal transport will also be crucial.

What is known about this topic

- This study recognizes that the existance of efficient transport mechanisms during pregnancy and childbirth is inevitable in the efforts of low income countries, such as Uganda, to reduce maternal mortality.
- There have been project funded transportation services for pregnant and postpartum mothers through motorized ambulance services and establishment of a vouchers system for the use of commercial motorcycle riders in Western Uganda.
- It is already known that effective maternal transport services have financial implications, and where these transport services largely depend on donor funds, sustainability questions arise in case donor support dwindles.

What this study adds

- This study provides evidence that supports household willingness to pay for maternal transport services.
- We add to existing literature that recommends or advocates for the introduction or development of community-based payment arrangements. Specially, our study reinforces community's support to

contribute money for the sustainability of a life-saving health intervention.

- We describe preferences from household heads of how transport-financing system can be managed, transport means most preferred and preferred mode of payment.
- This study adds to the literature about factors that positively influence willingness to pay, especially, for maternal healthcare.
- Our study provides information that stimulates further inquiry and research including qualitative exploration on willingness to pay for maternal health services in low resource settings.

Competing interests

The authors declare no competing interests.

Funding

This study was funded by Makerere University School of Public Health through Cooperative Agreement Number: 5U2GGH000817-03 ("Provision of Comprehensive HIV/AIDS services and developing national capacity to manage HIV/AIDS Programs in Uganda") from the US-Centers for Disease Control and Prevention. The African Field Epidemiology Network (AFENET) funded the scientific writing workshop that led to the production of a complete draft of this manuscript.

Authors' contributions

AKT conceived and led the design of the study protocol, data collection, data analysis and initial interpretation of data. He wrote the first draft of the paper and revised the paper for substantial intellectual content. He was also responsible for submission of the paper. SOB, CM, and AM, made substantial contributions to the design of the study, worked on data interpretations and were involved in the drafting of manuscript. They revised the paper for important intellectual content. NR, DT, ME made substantial contributions to the conception and design of the study. They contributed to the data collection process, data interpretation and reviewed the manuscript drafts for important intellectual content. FS made substantial contributions to the conception and design of the study. He contributed to the interpretation of data and revision of the manuscript drafts. He revised the paper for important intellectual content. ANK reviewed the final drafts of the manuscript. All authors read and approved the final version.

Acknowledgements

The authors acknowledge the Makerere University School of Public Health Resident Mentors and staff who provided technical guidance, follow-up and support throughout the process. We thank the administration of Kabalore district and the District Health Team for supporting the team during data collection. We acknowledge all the study participants and the research assistants for their invaluable contributions.

Tables

Table 1: Demographic characteristics of the study participants
Table 2: Preferences by the respondents willing to pay for maternal transport services in Kabarole District, Western Uganda
Table 3: Bivariate association between willingness to pay and demographic characteristics
Table 4: Adjusted factors associated with willingness to pay for maternal transport services in Kabarole District, Western Uganda

References

1. Knaul FM, Langer A, Atun R, Rodin D, Frenk J, Bonita R. Rethinking maternal health. Lancet Glob Health. 2016 Apr 4(4):e227-8.**https://doi.org/10.1016/S2214-109X(16)00044-9** . **Google Scholar**

2. World Health Organization. **Maternal mortality: factsheets**. WHO. 2019. Accessed July 2021.

3. World Health Organization. **Trends in maternal mortality 2000 to 2017: estimates by WHO, UNICEF, UNFPA, World Bank Group and the United Nations Population Division**. WHO. 2019. Accessed July 2021. **Google Scholar**

4. Rajé F. Rural Transport Interventions to Improve Maternal Health Outcomes. Manchester Metropolitan University. 2018. **Google Scholar**

5. Thaddeus S, Maine D. Too far to walk: Maternal mortality in context. Soc Sci Med. 1994 Apr; 38(8):1091-110.**https://doi.org/10.1016/0277-9536(94)90226-7** . **Google Scholar**

6. Jammeh A, Sundby J, Vangen S. Barriers to emergency obstetric care services in perinatal deaths in rural gambia: a qualitative in-depth interview study. Int Sch Res Not. 2011; 2011:98109.**https://doi.org/10.5402/2011/981096** . **PubMed** | **Google Scholar**

7. Ekirapa-Kiracho E, Waiswa P, Rahman MH, Makumbi F, Kiwanuka N, Okui O, Rutebemberwa E, Bua J, Mutebi A, Nalwadda G, Serwadda D, Pariyo GW, Peters DH. Increasing access to institutional deliveries using demand and supply side incentives: early results from a quasi-experimental study. BMC Int Health Hum Rights. 2011 Mar; 11(1):S11.**https://doi.org/10.1186/1472-698X-11-S1-S11** . **Google Scholar**

8. Hussein J, Kanguru L, Astin M, Munjanja S. The Effectiveness of Emergency Obstetric Referral Interventions in Developing Country Settings: A Systematic Review. PLoS Med. 2012 Jul; 9(7):e1001264.**https://doi.org/10.1371/journal.pmed.1001264** . **PubMed** | **Google Scholar**

9. Treacy L, Bolkan HA, Sagbakken M. Distance, accessibility and costs. Decision-making during childbirth in rural Sierra Leone: A qualitative study. PLoS One. 2018 Feb; 13(2):e0188280.**https://doi.org/10.1371/journal.pone.0188280** . **PubMed** | **Google Scholar**

10. Wilson A, Hillman S, Rosato M, Skelton J, Costello A, Hussein J, MacArthur C, Coomarasamy A. A systematic review and thematic synthesis of qualitative studies on maternal emergency transport in low- and middle-income countries. Int J Gynecol Obstet. 2013 Sep; 122(3):192-201. **https://doi.org/1016/j.ijgo.2013.03.030**. **Google Scholar**

11. TRANSAID. **Linking rural communities with health services: assessing the effectiveness of the ambulance Services in meeting the needs of rural communities in West Africa- final report**. UK Gov't. 2013. Accessed July 2021.

12. Africa Progress Panel. **Maternal health: Investing in the Lifeline of Healthy Societies & Economies**. Africa Progress Panel, Geneva. 2010. Accessed July 2021.

13. Gottret P, Schieber G. **Health financing revisited: a practitioner´s guide**. The World Bank. 2006. Accessed July 2021.

14. SMGL. **Saving Mothers Giving Life Uganda, Phase 1 Dissemination Report: In Fort Portal, Uganda**. SMGL. 2014. Accessed Jul 2021.

15. Mutebi A, Ekirapa E kiracho. 132: Benefits of a Maternal and Child Health Transport Voucher Study. a Transporter´s Perspective in Pallisa District in Eastern Uganda. BMJ Open. 2015 Aug 1; 5:(Suppl 1):bmjopen.**http://dx.doi.org/10.1136/bmjopen-2015-forum2015abstracts.132** **Google Scholar**

16. World Health Assembly 58. **Sustainable health financing, universal coverage and social health insurance**. World Health Organization. 2005. Accessed July 2021.

17. Bukola UA. Preferred mode of payments for community based health care financing scheme among households in Osun State, Southwestern Nigeria. J Nat Sci Res. 2013;3(1):93-101. **Google Scholar**

18. Morof D, et al. Addressing the Third Delay in Saving Mothers, Giving Life Districts in Uganda and Zambia: Ensuring Adequate and Appropriate Facility-Based Maternal and Perinatal Health Care. Glob Health Sci Pract. 2019 Mar; 7(Suppl 1):S85-103.**https://doi.org/10.9745/GHSP-D-18-00272** . **PubMed** | **Google Scholar**

19. Mostreig Estadistic Kish L. Survey Sampling. New York: John Wiley & Sons, Inc; 1965. **Google Scholar**

20. Kuwawenaruwa A, Macha J, Borghi J. Willingness to pay for voluntary health insurance in Tanzania. East Afr Med J. 2011; 88(2):54-64. **Google Scholar**

21. Gebresilassie FE, Mariam DH. Factors Influencing People´s Willingness-to-buy Insecticide-treated Bednets in Arbaminch Zuria District, Southern Ethiopia. J Health Popul Nutr. 2011 Jun; 29(3):200-6.**https://doi.org/10.3329/jhpn.v29i3.7867** . **PubMed** | **Google Scholar**

22. Uganda Bureau of Statistics (UBOS) and ICF International. **Uganda Demographic and Health Survey 2011 Kampala, Uganda**. UBOS and Calverton, Maryland: ICF International Inc. 2012. Accessed July 2021.

23. Fleischman F, Foreit J. **Willingness to pay surveys for setting prices for reproductive health products and services**. Compass. 2004. Accessed Jul 2021.

24. Kanayo O, Ezebuilo U, Maurice O. Estimating the Willingness to Pay for Water Services in Nsukka Area of South-Eastern Nigeria Using Contingent Valuation Method (CVM): Implications for Sustainable Development. J Hum Ecol [Internet]. 2013 Feb; 41(2):93-106.**https://doi.org/10.1080/09709274.2013.11906556** . **Google Scholar**

25. Wedgwood A, Sansom K. Willingness-to-pay surveys - a streamlined approach: Guidance notes for small town water services. Leicestershire UK: Loughborough University; 2003. **Google Scholar**

26. Lee J, Tan CS, Chia KS. A practical guide for multivariate analysis of dichotomous outcomes. Ann Acad Med Singap. 2009; 38(8):714-9. **Google Scholar**

27. Thompson ML, Myers JE, Kriebel D. Prevalence odds ratio or prevalence ratio in the analysis of cross sectional data: what is to be done? Occup Environ Med [Internet]. 1998 Apr; 55(4):272-7.**http://dx.doi.org/10.1136/oem.55.4.272** . **Google Scholar**

28. Zou G. A Modified Poisson Regression Approach to Prospective Studies with Binary Data. Am J Epidemiol. 2004 Apr; 159(7):702-6.**https://doi.org/10.1093/aje/kwh090** . **Google Scholar**

29. Kanya L, Obare F, Bellows B, Mdawida B, Warren C, Askew I. Estimating willingness to pay for maternal health services: The Kenya reproductive health voucher programme. Afr Health Monit. 2015 Oct 1;43-50. **Google Scholar**

30. Gartoulla P, Liabsuetrakul T, Pradhan N. Change in willingness to pay for normal delivery and caesarean section during pregnancy and after delivery in Kathmandu. Trop Med Int Health. 2010; 15(10):1227-34.https://doi.org/10.1111/j.1365-3156.2010.02596.x . Google Scholar

31. Onwujekwe O, Okereke E, Onoka C, Uzochukwu B, Kirigia J, Petu A. Willingness to pay for community-based health insurance in Nigeria: do economic status and place of residence matter? Health Policy Plan. 2010 Mar; 25(2):155-61.https://doi.org/10.1093/heapol/czp046 .

32. Ngoma T, et al. Addressing the Second Delay in Saving Mothers, Giving Life Districts in Uganda and Zambia: Reaching Appropriate Maternal Care in a Timely Manner. Glob Health Sci Pract. 2019 Mar; 7(Suppl 1):S68-84.https://doi.org/10.9745/GHSP-D-18-00367 . PubMed | Google Scholar

33. Shafie AA, Hassali MA. Willingness to pay for voluntary community-based health insurance: Findings from an exploratory study in the state of Penang, Malaysia. Soc Sci Med. 2013 Nov; 96:272-6.https://doi.org/10.1016/j.socscimed.2013.02.045 . Google Scholar

34. Usman AB, Bukola A. Willingness to pay for community based health care financing scheme: a comparative study among rural and urban households in Osun State, Nigeria. J Dent Med Sci. 2013; 5(6):27-40. Google Scholar

35. Haile M, Ololo S, Megersa B. Willingness to join community-based health insurance among rural households of Debub Bench District, Bench Maji Zone, Southwest Ethiopia. BMC Public Health. 2014 Jun; 14:591.https://doi.org/10.1186/1471-2458-14-591 . PubMed | Google Scholar

36. Lang H-C, Lai M-S. Willingness to pay to sustain and expand National Health Insurance services in Taiwan. BMC Health Serv Res. 2008 Dec; 8(1):261.https://doi.org/10.1186/1472-6963-8-261 . PubMed | Google Scholar

37. Asgary A, Willis K, Taghvaei AA, Rafeian M. Estimating rural households´ willingness to pay for health insurance. Eur J Health Econ Former HEPAC. 2004 Sep; 5(3):209-15.https://doi.org/10.1007/s10198-004-0233-6 . Google Scholar

38. Adebayo EF, Uthman OA, Wiysonge CS, Stern EA, Lamont KT, Ataguba JE. A systematic review of factors that affect uptake of community-based health insurance in low-income and middle-income countries. BMC Health Serv Res. 2015 Dec; 15(1):543.https://doi.org/10.1186/s12913-015-1179-3 . PubMed | Google Scholar

39. Ahmed S, Hoque ME, Sarker AR, Sultana M, Islam Z, Gazi R, Khan JAM. Willingness-to-Pay for Community-Based Health Insurance among Informal Workers in Urban Bangladesh. PLoS One. 2016 Feb; 11(2):e0148211.https://doi.org/10.1371/journal.pone.0148211 . PubMed | Google Scholar

40. Dakoye D, Anguyo RO, Govule P, Katongole SP, Ayiko R, Nabyonga-Orem J. Communities´ Willingness to Pay for Healthcare in Public Health Facilities of Nakasongola District, Uganda. Uganda martyrs University. August 2015. Google Scholar

41. Aizuddin AN, Sulong S, Aljunid SM. Factors influencing willingness to pay for healthcare. BMC Public Health. 2012 Nov; 12(2):A37. https://doi.org/10.1186/1471-2458-12-S2-A37. Google Scholar

42. Worasathit R, Wattana W, Okanurak K, Songthap A, Dhitavat J, Pitisuttithum P. Health education and factors influencing acceptance of and willingness to pay for influenza vaccination among older adults. BMC Geriatr. 2015 Oct; 15(1):136.https://doi.org/10.1186/s12877-015-0137-6 . PubMed | Google Scholar

43. Basheer Yahya M, Pumpaibool T. Factors affecting women-willingness to pay for maternal, neonatal and Child health services (MNCH) in Gombe state, Nigeria. J Womens Heal Care. 2017; 6(10.4172):2167-0420.

44. De Allegri M, Kouyaté B, Becher H, Gbangou A, Pokhrel S, Sanon M, Sauerborn R. Understanding enrolment in community health insurance in sub-Saharan Africa: a population-based case-control study in rural Burkina Faso. Bull World Health Organ. 2006; 84:852-8.https://doi.org/10.2471/blt.06.031336 . PubMed | Google Scholar

45. Nanyonjo A, Bagorogoza B, Kasteng F, Ayebale G, Makumbi F, Tomson G, Källander K, for the inSCALE study group. Estimating the cost of referral and willingness to pay for referral to higher-level health facilities: a case series study from an integrated community case management programme in Uganda. BMC Health Serv Res. 2015 Aug; 15(1):347.https://doi.org/10.1186/s12913-015-1019-5 . PubMed | Google Scholar

46. Ataguba JE. Community Health Insurance Scheme as a viable option for rural population in Nigeria. International Household Survey Network (IHSN). 2008.

47. Ataguba J, Ichoku EH, Fonta W. Estimating the Willingness to Pay for Community Healthcare Insurance in Rural Nigeria. PEP working paper serie 2008-10. Sept 2008.http://dx.doi.org/10.2139/ssrn.3171544 .

48. Pavel MS, Chakrabarty S, Gow J. Assessing willingness to pay for health care quality improvements. BMC Health Serv Res. 2015 Feb; 15(1):43.https://doi.org/10.1186/s12913-015-0678-6 . PubMed | Google Scholar

Table 1: Demographic characteristics of the study participants		
Variables	**Frequency (n= 646)**	**Percent (%)**
Place of residence		
Rural setting	334	51.7
Urban setting	312	48.3
Age group		
18-24	104	16.1
25-35	283	43.81
36-45	193	29.88
Above 45	66	10.21
Sex		
Male	489	75.70
Female	157	24.30
Education level		
None	94	14.55
Primary	341	52.79
Secondary	154	23.84
Tertiary	57	8.82
Marital status		
Single	178	27.55
Married	409	63.32
Previously married	59	9.13
Religion		
Catholic	284	43.96
Protestant	239	37.00
Other	123	19.04
Occupation		
Salaried	59	9.13
Business	218	33.75
Farming	345	53.41
Others	24	3.72
Household wealth index		
Lowest	396	61.3
Middle	226	34.98
Highest	24	3.72
Distance to Health facility (H/F)		
≤ 5km	468	72.45
> 5km	178	27.55
SES- social economic status		

Table 2: Preferences by the respondents willing to pay for maternal transport services in Kabarole District, Western Uganda		
Total	**Frequency (n=442)**	**Percent (%)**
Payment mode		
Monthly	289	65.38
Bi -annual	55	12.44
Annual	98	22.17
Fund management		
Government	142	32.13
Ngo	236	53.39
Private entity	64	14.48
Level of management		
Sub county	317	71.72
District	70	15.84
Ministry	55	12.44
Means of transport		
Motor vehicle ambulance	272	61.54
Tri-cycles	14	3.17
Motorcycles	156	35.29

Table 3: Bivariate association between willingness to pay and demographic characteristics				
Variables	**Willing to pay**		**Unadjusted PR**	**P - value**
	No (n=204)	**Yes (n=442)**	**PR (95% CI)**	
	N (%)	**N (%)**		
Place of residence				
Rural	117 (57.35)	217 (49.10)	1.00	
Urban	87 (42.65)	225 (50.90)	1.11 (0.99 - 1.23)	0.051
Age group				
18-24	29 (14.22)	75 (16.97)	1.00	
25-35	78 (38.24)	205 (46.38)	1.00 (0.87 -1.15)	
36-45	74 (36.27)	119 (26.92)	0.85 (0.73- 1.01)	
>45	23 (11.27)	43 (9.73)	0.90 (0.73 -1.12)	0.66
Sex of h/h head				
Male	157 (76.96)	332 (75.11)	1.00	
Female	47 (23.04)	110 (24.89)	1.03 (0.92 – 1.16)	0.611
Education level				
No education	47 (23.04)	47 (10.63)	1.00	
Primary	101 (49.51)	240 (54.30)	1.41 (1.14 -1.74)	
Secondary	44 (21.57)	110 (24.89)	1.43 (1.14 -1.79)	
Tertiary	12 (5.88)	45 (10.18)	1.58 (1.24 -2.01)	< 0.001
Marital status				
Single	63 (30.88)	115 (26.02)	1.00	
Married	118 (57.84)	291 (65.84)	1.10 (0.97 -1.25)	
Previously married	23 (11.27)	36 (8.14)	0.94 (0.75 -1.90)	0.128
Religion				
Catholic	93 (45.49)	191 (43.21)	1.00	
Protestant	79 (38.73)	160 (36.2)	0.99 (0.88 - 1.12)	
Others	32 (15.69)	91 (20.59)	1.10 (0.96 -1.26)	0.336
Occupation				
Salaried	15 (7.35)	44 (9.95)	1.00	
Business	59 (28.92)	159 (35.97)	0.98 (0.83 - 1.16)	
Farming	124 (60.78)	221 (50.00)	0.86 (0.73 - 1.02)	
Other	6 (2.94)	18 (4.07)	1.01 (0.76 – 1.32)	0.085
h/h household				

Table 4: Adjusted factors associated with willingness to pay for maternal transport services in Kabarole District, Western Uganda

	Total	**Willing to pay**		**Adjusted**
		Frequency	**Percent**	**APR (95% CI)**
Age group				
18-24	104	75	72.12	1.00
25-35	283	250	72.44	0.98 (0.85 – 1.14)
36-45	193	119	61.66	0.06 (0.72 – 1.08)
>45	66	43	68.42	0.70 (0.77 – 1.19)
Gender				
Male	489	332	67.89	1.00
Female	157	110	70.06	1.09 (0.98 – 1.22)
Education level				
No education	94	47	50	1.00
Primary	341	240	70.38	1.35 (1.10 – 1.66) *
Secondary	154	110	71.43	1.34 (1.07 – 1.68) *
Tertiary	57	45	78.95	1.56 (1.20 – 2.03) *
Marital status				
Single	178	115	64.61	1.00
Married	409	291	71.15	1.16 (1.03 – 1.32) *
Previously married	59	36	61.02	1.01 (0.80 – 1.27)
Ever been in saving scheme				
No	350	233	66.57	1.00
Yes	296	209	70.61	1.13 (1.01 – 1.26) *
Distance to H/F				
≤ 5km	468	310	66.24	1.00
> 5km	178	132	74.16	1.28 (1.11 – 1.46) *

Adjusting for place of residence, household wealth index and occupation.

H/C - Health care, H/F- health facility. * P-value > 0.05