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Effect of household couple counselling for male involvement on the utilization of postnatal services at 1 week in Ibanda district, Uganda; A cluster randomized community trial

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Abstract

Introduction: Prompt and Skilled postnatal care attendance coupled with skilled Antenatal and delivery care can drastically reduce maternal morbidity and mortality and also improve newborn outcomes. Research shows that men are decision makers in the home but they may also restrict resources, hence preventing women and children from health care seeking. But however if involved men may lead to better health care seeking behavior and better utilization of Antenatal care, delivery and postnatal care services. The postnatal care attendance at 1 week is low in Uganda, Ibanda district reported 4% in 2018. The aim of this study was to innovate, implement and document an intervention of household couple counseling for male involvement and compare the intervention and control clusters on the utilization of postnatal care services at 1 week.

Methods: This was a two arm cluster randomized Community trial with a parallel design with the aim of comparing utilization of postnatal care services. It was carried out in two intervention parishes and two control parishes and was a superiority trial to test if the intervention of household couple counseling would improve utilization of postnatal care services.

Results: The intervention arm had 200 respondents while the control had 213. The mean age was 27.3 years (SD 6.8). Ninety one point five percent of mother had used skilled delivery services in the intervention compared to 78.4% in the control. Seventy Five percent attended postnatal care at 1 week in the intervention as compared to 21.1% in the control (OR 11.2, P<0.001). The activity that are statistically significantly associated with utilization of postnatal services utilization is providing transport to the postnatal clinic (AOR 30.8, P<0.001) comparing the intervention and control clusters. The others included; accompanying to antenatal clinic, partner attending antenatal clinic, providing transport for delivery, escorting partner for delivery, providing psychological support during delivery and providing necessary drugs during delivery and PNC period but these were not statistically significant.

Conclusion: The study demonstrated that the intervention of household couple counseling for increased male partner involvement improved significantly utilization of postnatal care services. Interventions to improve utilization of postnatal care services should focus on involving male partners to do the supportive activities which help their partners utilize the health care services.

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Keywords: Postnatal service utilization; Male involvement; Supportive activities; Antenatal care

1. Introduction

Reproductive health requires men to be more active as partners in reproduction and sexuality. According to Kwambai, et.al, 2013 men's reproductive health and their behaviours may impact positively or negatively on women's reproductive health outcomes and the newborn and children's well-being. Studies have shown that men may not only act as “gate keepers”, restricting women and children from health care seeking but if involved they may lead to better health care seeking behavior and better utilization of postnatal care (PNC) services and antenatal services [1, 2, 3, 4, 5, 6, 7, 8 & 9]. Male partner involvement has been described by the WHO; using two main approaches which are the ‘gender equity’ and the ‘Instrumental’ approach, The gender equity approach adopts more equitable gender roles such as joint planning and decision-making among couples and shared control of household tasks or parenting [2, 4, 10 & 11]. The second approach sees male involvement as more instrumental; the direct and varying assistance provided by men to improve their partners’ and children’s health through the ANC, delivery and postnatal period. This approach considers the action irrespective of the gender role of the men. This approach considers the action irrespective of the gender role of the men [10 & 11]. The direct assistances may include; providing emotional support that includes; intimacy, providing financial support, providing transportation to health facility, attending ANC, delivery or PNC among others. The maternal mortality ratio of Uganda is still very high at 336 per 100,000 live births [12 &13], which translates into approximately 5040 maternal deaths per year that is about 14 maternal deaths each day (Uganda Buereau Of Statistics 2016 estimates 1.5 million live births per year). This is high Compared to other countries in Africa and globally. The maternal mortality ratio of Ibanda was estimated at 182/100,000 live births according to the District Health Management Information System data of 2018. Most causes of maternal morbidity and mortality are preventable and or treatable if detected early enough during pregnancy, delivery and the postnatal periods. The postnatal care attendance at 1 week is low in Uganda, Ibanda district reported 4% in 2018 other literature in Africa also indicates the same [3 & 6]. These were low and translated into failure to meet the targets for the 4th and 5th Millennium Development Goals (MDGs) [11, 13, 14]. Skilled birth attendance coupled with skilled ANC and PNC can drastically reduce maternal mortality and also improve on newborn outcome and these are still low in Ibanda district [15 & 16]. The aim of this study was to innovate, implement and document an intervention of house hold couple counseling for male involvement and compare the intervention and control clusters on the utilization of postnatal care services at 1 week after birth.

2. Material and methods

The study was carried out in Ibanda district situated in southwestern Uganda. It has predominantly tropical vegetation and climate with some mountainous areas. It consists of 11 sub-counties, 1 municipality, 4 town councils, 54 parishes and 577 villages. The total population is 206,905 of which 112,590 (54.4%) are female and 11,346 (5%) women expected to be pregnant annually. The population growth rate is 2.54% per annum which is slightly lower than the national rate of 3.035. The larger proportions of the population are farmers and live in the rural area. The district has a total of 47 active and reporting health facilities and 3 not actively reporting. They have over 200 active village Health teams consisting of volunteer community health workers with 19 (40.4%) of facilities offering delivery and Postnatal care services.

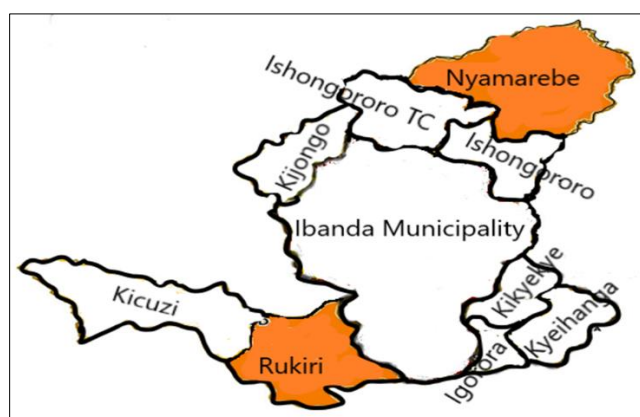


Figure 1 Nyamarebe intervention area, Rukiri control area

2.1 Design

This was a two arm cluster randomized Community trial with a parallel design with the aim of comparing level of utilization of antenatal, skilled delivery and post natal care services. It was carried out in two intervention parishes as the intervention/arm and two control parishes as the control arm and was a superiority trial to test if the intervention of household couple counseling would improve utilization of skilled delivery was more effective than the usual standard care provided by the Village Health Teams (VHT). The randomization was at the level of the cluster which was the parish which had one VHT per village conducting the household counseling for the selected couples in the respective households. A Village Health Team (VHT) member and a health worker from a health facility in the catchment area in all villages in the intervention cluster/arm were trained by the principal author and tools pre-tested. The training focused on the importance of male partner involvement in antenatal, delivery care and postnatal care and then they were given key messages to pass on during the household couple counseling sessions. The training also focused on giving information about; health care seeking behaviors, joint planning, joint decision making, gender factors, family roles, access and availability of services, self-confidence, attitudes and cultural beliefs, nutrition, newborn care and the danger signs of pregnancy and postnatal both for the mother and the newborn as a determinant of health care utilization. In the control parish, VHTs were orientated on counseling and continued to conduct routine community antenatal, delivery and postnatal services as usual in their respective communities.

2.2 Intervention and standard care

In the intervention parishes, VHTs counseled couples with a pregnant woman at household for a period of 15 months that is July 2020 to September 2021. VHTs conducted three pre-delivery household couple counseling sessions at intervals of 4 weeks and one post-delivery household couple counseling session three to five days after delivery. The sessions were on antenatal, delivery, and postnatal care for mother, newborn and on nutrition and gender matters related to reproductive health. To assign the intervention cluster two Sub counties; Nyamarebe and Rukiri were selected from the study district so that there were three other Sub counties geographically located between the two counties that were the buffer. From each of these two counties Nyamarebe represented the intervention clusters while the other Rukiri was the control clusters in rural Ibanda district, Uganda. The selected clusters were homogeneous in terms of social, economic, geographical and cultural factors impacting on health service access and availability and health care seeking behaviors. This focused household couple counseling was in addition to the usual services provided by the VHTs and health care services. Standard care arm had couples having the usual services available. In the control arm the VHT's were expected to continue to provide reproductive community health services in the usual standard way the services are provided. The VHT may visit the homes but did not necessarily counsel the couple or they visited even homes that did not have pregnant women or consoled the women in community groups, tested for malaria and treat sick (You could consider sticking to past or continuous tense for both activities here) children as well as participate in immunization sessions. This was different from the intervention where there was emphasis on the issues of male involvement which are mentioned but not emphasized during the standard care. The intervention and control clusters had similar levels of male involvement in ANC, delivery and PNC as well as similar utilization, availability and access to antenatal, delivery, PNC and VHT community reproductive health services. The study was designed to examine the effect of household couple counseling on utilization of postnatal care services.

2.3 Sampling

This was by multi stage sampling starting with the sub county by simple random sampling, then two sub-counties were randomly selected then simple random sampling four parishes two from each of the sub-counties. One of these was the intervention (Nyamarebe) and the other the control/standard (Rukiri) care arm each with two parishes and all the villages in each parish were the clusters. The couples in the eligible households were the individuals that received the intervention. The selected parishes were then randomly allocated two to the intervention and two to the control arms. All the villages in each of the parishes were selected as the clusters, all households with pregnant mothers not more than 22 weeks of gestation and their male partners (couples) were then eligible and were enrolled. The number of eligible couples per cluster were determined by the number of villages in each of the two selected parishes. These two were fixed (the parishes and the villages in them) and eligible individuals were added until the end of the intervention.

2.4 Sample size estimation

Clusters sampling is prone to diminishing return of power and precision as cluster size increases. Because the number of clusters/villages in this study is fixed I decided to estimate the sample size based on that. The sample size was fixed and determined by the number of clusters/villages and the number of eligible couples in the villages.

I adapted formula 5 by Rutterford et al., 2015 [15] which inflates the sample size by the design effect and takes care of the Intracluster correlations for the outcome variables within the clusters.

$$n = \frac{\left(Z_{1-\frac{\alpha}{2}} + Z_{1-\beta} \right)^2 [P_1 (1 - P_1) + P_2 (1 - P_2)]}{D^2} \times [1 + n - 1]_p$$

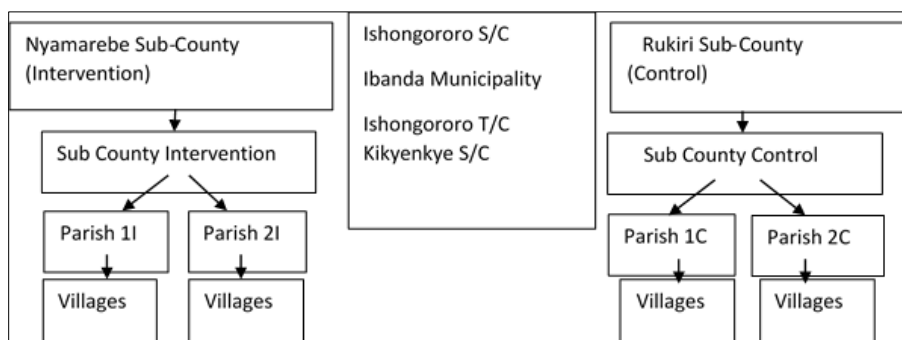
n = We assume;

- Power of 80%, 5% confidence two sided and ICC (ρ) of 0.03
- Design Effect DE = [1+ n-1] ρ, P₁ is Probability of utilization in control arm (0.6)
- P₂ is probability of utilization in intervention arm (0.75)
- D is important difference in utilization between the intervention and control arms of 15%
- Total sample size for each arm calculated at 165 x DE = 173
- With 5% loss to follow up 173 x 1.05 = 182

A feasibility check was done to determine if the available clusters per arm were sufficient to detect a 15% increase in utilization. $k > p(n)$ which is $20 > 0.03 \times 173 = 5.19$ given an estimated Intra cluster Correlation Coefficient (ρ) of 0.03 and power set at 80% (k=20 clusters). It is possible to achieve a difference of 15% in utilization.

All eligible couples were recruited with a total sample size of 200 for each arm (however we were able to recruit 213 for the control [15, 16, 17, 18 & 19]).

The assumption was that there is no difference between the intervention and control arms with regards to the primary outcome of utilization of postnatal care services. The selected clusters were of approximately equal size to help adjust for inconsistencies between the clusters.



Note: Parish 1I and 2I were intervention parishes and Villages 1I and 2I are the intervention villages/clusters with approximately 20 villages; Parishes 1C and 2c were control parishes and Villages 1C and 2C are the control villages/clusters with approximately 20 villages.

Figure 2 Sampling frame diagram

2.5 Data analysis

The study was designed to examine the effect of household couple counseling for pregnant couples on utilization skilled delivery care services as the primary outcome.

The household post intervention survey questionnaire were pre-coded prior to double data entry into EpiData version 3.1 (The EpiData Association, Odense, Denmark), Data was cleaned, errors checked and validated before analysis. Analysis was done in STATA version 14 (Stata Corp LP, College Station, Texas, USA). Analysis was done as intention to treat at cluster and household level. The level and odds of performing supportive activities were compared in the intervention and control clusters. Within the prospective cluster the level of utilization of skilled delivery care services was compared between the intervention and control arm. Using logistic regression modeling Odds Ratios (OR) for associations of independent variables/the activities performed by the male partners when involved with prompt utilization of postnatal care care services were compared in the intervention and control clusters and their confidence intervals calculated at P<0.05 significance level while adjusting for potential confounding.

3. Results

The respondents were 413 females in total who had joined the trial from 22 weeks of gestation and had at list three household counselling sessions pre-delivery and or post-delivery

Table 1 Characteristics of respondents

	Intervention* n(%) n=200	Control ** n (%) n=213	P value
Highest Level of education			
Did not attend school	9 (4.5)	7 (3.3)	0.311
Partial and complete Primary	133 (66.5)	144 (67.6)	
Partial and complete Secondary	39 (19.5)	45 (21.1)	
Tertiary	19 (9.5)	17 (8)	
Marital status			
Married	196 (98)	187 (88)	0.001
Cohabiting	1 (0.5)	1 (0.1)	
Widow	0	1 (0.1)	
Separated	1 (0.5)	8 (3.8)	
Never married	2 (1)	16 (8)	
Living with partner			
Yes	193 (96.5)	179 (85)	< 0.001
No	7 (3.5)	34 (15)	
Attended ANC last pregnancy at health facility			
Yes	199 (99.5)	212 (99.5)	0.964
No	1 (0.5)	1(0.5)	
Delivered last pregnancy by trained health worker			
Yes	183 (91.5)	167(78.4)	<0.001
No	17 (8.5)	46 (21.6)	
Attended PNC after 1week at health facility			
Yes	150 (75)	45 (21.1)	< 0.001
No	50 (25)	168 (78.9)	
Consoled with partner at home last pregnancy			
Yes	195 (97.5)	39 (18.3)	< 0.001
No	5 (2.5)	174 81.7)	
Intended to have last pregnancy/child			
Yes	158 (79)	149 (69.9)	0.039
No	42 (21)	64 (30.1)	
Decided to have last child with partner			
Yes	160 (80)	155 (72.8)	0.225
No	40 (20)	58 (27.2)	

Intervention = Nyamarebe Sub-county* Control= Rukiri Sub-county**

. The intervention arm had 200 respondents while the control had 213 the mean age was 27.3 years (SD 6.8) and range 17 to 47years. The living children of the mothers ranged from 1 to 11 with a mean of 3 (SD 2). Majority of respondents 277 (67%) had partially completed or had completed primary education, most were married, monogamous 328 (79%) and 372 (90%) were currently living with their partners. Most 410 (99%) of them attended antenatal care in health

facility during last pregnancy with 344 (83.3%) attending 4 or more times in both arms. Ninety one point five percent of mother had used skilled delivery services in the intervention compared to 78.4% in the control. Ninety seven percent (n=195) of the respondents had been counseled by VHT during pregnancy and post natal in the Intervention arm while only 39 (18%) in the control arm. Seventy five percent (n=150) of respondents in intervention arm attended postnatal care after 1 week while 45 (25%) attended in the control arm. Details in table 1 above.

3.1 The activities Male partners do to support wives.

There are a number of activities male partners do during antenatal, delivery and postnatal period and these are to enable mothers have a safer pregnancy and better outcome for the mother and the expected newborn. This section compares the intervention and control areas in as far as the male partners' performance of supportive activities: Table 2 highlights the effect of the household couple counseling on the fathers conducting supportive activities. The odds of carrying out most of the activities was higher in the intervention as compared to the control area as shown below; for example male partners in the intervention were 4 times more likely to accompany their spouse for ANC and 11.3 times more likely for their spouses to utilize postnatal care services at 1 week.

Table 2 Activities done by Male partners intervention arm is the reference

Supportive activity	OR	CI	P- value
Accompany you to antenatal care clinic	4.4	2.8 – 6.8	<0.001*
Provide transport to ANC clinic	3.6	2.1 – 5.9	<0.001*
Partner Attend antenatal care clinic	4.7	3.0 -7.2	<0.001*
Help with house chores during pregnancy	1.8	1.0 -3.4	0.047*
Provide food during pregnancy	6.8	2.6 -18.1	<0.001*
Provide love and care during pregnancy	3.1	1.4 -6.5	0.003*
Buy items for expected newborn	4.6	2.1 -10.1	<0.001*
Plan delivery site during ANC	3	1.5 – 5.9	0.002*
Buy necessary drugs during ANC	4.9	2.2 – 10.8	<0.001*
Get Relative to escort you to ANC clinic	1.3	0.8 -2.1	0.243
Provides transport for delivery	3.7	2 – 6.5	<0.001*
Escort you for delivery	4	2.6 – 6.4	<0.001*
Attend the delivery	36.7	20.1 – 65.1	<0.001*
Provide psychological support during delivery	4.9	2.8 - 8.7	<0.001*
Provide necessary drugs during delivery	2	1.1 – 3.7	0.032*
Husbands gets friend or relative to escort for delivery	1.1	0.6 – 1.7	0.822
Provide money for delivery	1.3	0.7 – 2.3	0.278
After delivery did he help with household chores	1.5	0.9 – 2.8	0.112
Provide food during post natal	1.4	0.7 – 2.9	0.249
Provide necessary drugs for PNC	2.2	1.1 - 4.3	0.027*
Provide transport to PNC clinic	8.1	5.2 -12.7	<0.001*
Utilization of services (intervention reference)			
Attend ANC at health facility	0.9	0.1 – 15.1	0.964
Attended skilled delivery by trained health worker	3	1.6 – 5.4	<0.001*
Attend skilled Post natal care at 1 week	11.2	7.1 – 17.7	<0.001*

Odds ratio statistically significant*

3.2 Association of supportive activities with utilization of postnatal care services at 1 week.

The activity that was significantly associated with utilization of postnatal services utilization is providing transport to the postnatal clinic comparing the intervention and control area. The others included; accompanying to antenatal clinic, partner attending antenatal clinic, providing transport for delivery, escorting partner for delivery, providing psychological support during delivery and providing necessary drugs during delivery and PNC period but these were not statistically significant, details are in Table 3 below

Table 3 Bivariate and Multiple Regression for association of the activities with utilization of Postnatal care at 1 week between the intervention and control arms

Postnatal care attendance at 1week	OR	P value	AOR	CI	P value
Accompany you to antenatal care clinic	1.5	<0.001	0.6	0.1 - 2.6	0.473
Partner Attend antenatal care clinic	1.7	0.030	1.7	0.4 - 7.4	0.501
Provide transport to ANC clinic	1.2	0.432			
Help with household chores during pregnancy	1.3	0.507			
Provide food during pregnancy	1.5	0.382			
Provide love and care during pregnancy	1.1	0.897			
Buy items for expected newborn	2.6	0.062			
Plan delivery site during ANC	1.5	0.319			
Buy necessary drugs during ANC	2.0	0.110			
Provides transport for delivery	3.3	0.001	1.1	0.4 - 4.0	0.928
Escort you for delivery	2.5	<0.001	2.1	0.9 - 5.0	0.077
Attend the delivery	1.1	0.825			
Provide psychological support during delivery	2.0	0.030	0.6	0.2 - 1.6	0.283
Providing money during delivery	1.8	0.086			
Provide necessary drugs during delivery	2.8	0.010	0.3	0.1 - 1.2	0.103
Provide necessary drugs for PNC	10.3	<0.001	2.9	0.8 - 10.5	0.115
Provide transport to PNC clinic	31.4	<0.001	30.8	15.6 - 60.1	<0.001*
Couple Intended to have last pregnancy	1.4	0.095			
Attended skilled delivery last pregnancy	2.5	0.011	1.5	0.5 - 4.5	0.426

Adjusted Odds Ratio statistically significant *

4. Discussion

4.1 Utilization of Postnatal care services.

This study investigated whether the intervention of household couple counseling for male involvement in maternal and new born health improved utilization of postnatal care services at 1 week. We found that the utilization of services was 75% and 21.1% ($p < 0.001$) in the intervention and control respectively for the 15 month intervention period. Women in the intervention were 11.2 times more likely to utilize postnatal care services at one week than those in the control area. Although the interventions varied from facility based, community based, men and other community members, home based, media based mobilization, work place based or combinations the findings are consistent with some other literature from Afghanistan, Bangladesh, Eritrea, Ecuador, India, Indonesia, Kenya, Malawi, Nepal & Pakistan [4, 9, 20, 21, 22, 23 & 30]. We had an intervention using Community Health workers (VHTs) and utilization of skilled delivery services increased. Our evidence is consistent with other findings from Bangladesh and Ethiopia that service utilization can improve with the help of Community Health workers in the Health care system [21 & 27]. There is however other evidence in Nepal that suggests that interventions may not always improve postnatal care services uptake which is

contrary to our findings [4]. However overall male involvement interventions have been shown to improve maternal services uptake and utilization as is also demonstrated by this study [1, 2, 3].

4.2 Supportive activities done by male partners

The study also compared the supportive activities done by male partners during pregnancy to the postnatal period between intervention and control and most of them were found to be more prevalent in the intervention area. Those that were significantly more included; partner attending antenatal care clinic, help with household chores during pregnancy, providing food during pregnancy, giving love and care during pregnancy, buying items for expected newborn, planning delivery site during ANC, buying necessary drugs during ANC, providing transport for delivery, escorting for delivery, attending the delivery, providing psychological support during delivery, providing necessary drugs during delivery, providing necessary drugs for PNC and providing transport to PNC clinic. Although all the activities were not necessarily done by each of the individual male partners, the findings are similar to those of other studies done in Afghanistan, Bangladesh, Ethiopia, India, Kenya & Myanmar where specific or a combination of activities were used as an intervention or part of an intervention to improve utilization of skilled delivery care services [3, 5, 10, 22, 23, 24 & 25]. The above activities that were done by the partners are more consistent with the WHO 'Instrumental' approach for describing or defining male partner involvement than to the 'Gender Equity' approach [11 & 12].

4.3 Association of supportive activities to postnatal care services utilization

The study analyzed the activities that significantly associated with utilization of skilled delivery services in the intervention compared to the control and the odds were 11 times greater in the intervention area ($p < 0.001$). The activity that are significantly associated with utilization of postnatal care services was providing transport for postnatal care services. The other activities were done but were not statistically associated with utilization of postnatal care services, Planning delivery site during ANC, escorting partner for delivery and providing transport for delivery and PNC services were similar to other studies in India [10], Ethiopia [3, 24 & 25], Tanzania [26 & 28]. However there is some literature from Kenya [23] and Tanzania [29] which may not necessarily agree with some of our finding in the study for PNC utilization. The activities were not necessarily specifically studied in the available literature but conform to the WHO 'Instrumental' approach [11&12].

Abbreviations

- ANC; Antenatal Care,
- HIV; Human Immunodeficiency Virus,
- PNC; Postnatal Care,
- WHO; World Health Organization,
- COVID; Corona Virus Disease 2019
- VHT; Village Health Team.

5. Conclusion and Recommendation

The study demonstrated that an intervention of household couple counseling for increased male partner involvement can improve significantly utilization of postnatal care services at one week. This is through mainly the various Instrumental and some gender Equity activities that the males do through pregnancy to the postnatal periods.

In order to improve utilization of postnatal care services at 1 week interventions at household level should focus on involving male partners to do the supportive activities which help their wives to have better outcomes of the pregnancy and which are sensitive and acceptable by their respective community.

Limitations

The intervention was carried out partly during the COVID 19 on and of lock downs so that could have obscured it during the time when movement was limited however we tried to recruit and collect the data as and when was possible.

Compliance with ethical standards

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Disclosure of conflict of interest

The authors all declare that there are no competing interests

Statement of ethical approval

The study was approved by the Higher Degree Research Ethics Committee of Makerere University School of Public Health and the Uganda National Council for Science and Technology.

Statement of informed consent

Written permission was got from Ibanda local district authority and informed consent from the individual participants.

Author's contributions

FB was involved in the conception and design of the study, its implementation, analysis of the data, interpretation of the findings, and drafting of the paper. VB participated in the conception of the study and review of the paper. CGO participated in the conception of the study and review of the paper. JK participated in the conception of the study and review of the paper. EN was involved in the conception of the study and review of the paper. LA was involved in the conception and design of the study and review of the paper. All the authors of this manuscript have read and approved it.

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Availability of data

All the data including the audio are available with the corresponding author Fred Bagenda, Department of Community Health, Mbarara University of Science and Technology, PO Box 1410, Mbarara, Uganda, email: bagendaf@gmail.com Tel: + 256772452506.

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