WORKING PAPER

Feasibility of Scaling Up Home-Based HIV Counselling and Testing among Women Delivering at Home: A Geita District Council Case, Tanzania

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Feasibility of Scaling Up Home-Based HIV Counselling and Testing among Women Delivering at Home: A Geita District Council Case, Tanzania

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ABBREVIATIONS

ANC	antenatal care
ART	antiretroviral therapy
ARV	antiretroviral
HBHCT	household-based HIV counselling and testing
MOHSW	Ministry of Health and Social Welfare
PMTCT	prevention of mother-to-child transmission
RCH	reproductive and child health
SSA	sub-Saharan Africa
WDH	women delivering at home
WDTY	women who delivered within two years

EXECUTIVE SUMMARY

Background: Major progress has been made in implementing prevention of mother-to-child transmission of HIV (PMTCT) interventions in sub-Saharan Africa (SSA) over the past 10 years. However, new pediatric infections remain unacceptably high, contributing to over 90 percent of the estimated 390,000 infections globally in 2010 (United States Agency for International Development [USAID], 2010). About half (49%) of women in Tanzania do not deliver at health facilities, where those who are HIV-positive can be enrolled for PMTCT services (Tanzania Demographic Health Survey, 2012). Data on prevalence of HIV infection among women delivering at home (WDH) are scant. Studies have reported seroconversion among pregnant women who initially had negative HIV test results at an antenatal care (ANC) visit (Gay, et al., 2010; Oladeinde, et al., 2011; Mbena, et al., 2014; De Schacht, et al., 2014). A similar situation can happen to other women who deliver at home. Delivering at home is not only a missed opportunity for knowing one's HIV status, but it also increases the chances of mother-to-child HIV transmission.

Objective: The study objective was to determine the feasibility of home-based HIV testing and linking to care for HIV services among WDH in Geita District Council, Tanzania.

Methods: A longitudinal household survey was conducted in Geita District Council in Geita Region, Tanzania. We used embedded mixed-methods to answer study objective. The study involved all mentally-able women who delivered within two years (WDTY) preceding the survey and their children under the age of two.

Results: Of the 993 women who participated in the study, a total of 879 (88.5%) had ever been tested for HIV and 791 (79.7%) tested during an ANC visit. Nearly all (981; 98.8%) accepted household-based HIV counselling and testing (HBHCT) from the research team. Of the 565 WDH participants, 486 (86.0%) had ever tested for HIV. Among these, 433 (76.6%) tested during an ANC visit and 562 (99.4%) accepted HBHCT.

Of the 981 participants who accepted HBHCT, 52 (5.3%) [95%CI: 2.1–12.8%] tested HIV-positive. More than half (28; 53.8%) of the HIV-positive women were in the 25- to 35-years age category and half were newly identified during HBHCT. Among these women, 21 (40.4%) were enrolled in PMTCT services. Of the 32 HIV-positive participants who delivered at home, eight (25.8%) were enrolled in the PMTCT.

Also, HBHCT identified 19 new HIV infections among 393 community members who were not eligible to participate in the study but requested HIV testing.

Conclusion: HBHCT was acceptable and uptake was high. HBHCT detected new HIV infection among WDH as well as seroconversion among women with previously negative HIV tests. HBHCT can be used as an intervention to improve PMTCT services among WDH, because it was acceptable for detecting new HIV infection among WDH as well as seroconversion among women with a negative HIV test in their previous PMTCT HIV testing.

INTRODUCTION

Over the past ten years, there has been major progress in implementing interventions for PMTCT in SSA. Despite this progress, rates of new pediatric HIV infections remain unacceptably high, contributing to most (>90%) of the estimated 390,000 infections globally in 2010 (USAID, 2010).

About half (49%) of women in Tanzania do not deliver at a health facility where they can be enrolled for PMTCT services if they are HIV-positive (Tanzania Demographic Health Survey, 2012). There is a dearth of data on the number of WDH tested for HIV and the HIV prevalence among these women, even though 97 percent of health facilities with reproductive and child health (RCH) services provide PMTCT services (Ministry of Health and Social Welfare [MOHSW], 2009). According to Tanzania's national guidelines, all pregnant women should be tested for HIV, yet about 10 percent of women attending ANC in an RCH facility providing PMTCT services are not tested (Tanzania Demographic Health Survey, 2010).

A review in SSA on uptake of PMTCT services identified several key barriers: poor knowledge of HIV, antiretroviral therapy (ART), and vertical transmission; lower maternal educational level; lack of partner support; stigma; fear of disclosing status to a partner, family, or community members; psychological issues following HIV diagnosis; and lack of reliable and affordable transportation to the health center (Gourlay, et al., 2013, Hiarlaithe, et al., 2014). However, there is little evidence on the barriers of PMTCT uptake among WDH in Tanzania, particularly in Geita District Council.

The PMTCT program has been shown to effectively reduce mother-to-child transmission of HIV. Women are enrolled in the program at the health facility, either at an ANC visit, or when they come for delivery. However, this misses half of the women in Tanzania who deliver at home (Tanzania Commission for AIDS, Office of the Chief Government Statistician, & ICF, 2013). Furthermore, only around 60 to 70 percent of pregnant women had HIV counselling and testing for their last pregnancy (Gunn, et al., 2016; Holmes, et al., 2008; Kizito, et al., 2008; Tchendjou, et al., 2011).

Early linkage to HIV care and treatment, including PMTCT services, following a positive HIV test result, improves the lives of mothers and prevents HIV transmission to the newborn (Wanyenze, et al., 2011), however, most women are not aware of their HIV status (Tabana, et al., 2012). To achieve the 90-90-90 goals by 2020, where 90 percent of all people living with HIV will know their HIV status, 90 percent of all people with diagnosed HIV infection will receive sustained ART, and 90 percent of all people receiving ART will have viral suppression (Joint United Nations Programme on HIV/AIDS, 2014) requires well-thought out and piloted strategies to detect HIV infection early and link HIV-positive individuals to care.

Studies have reported seroconversion among pregnant women who initially had negative HIV test results at an ANC visit (Gay, et al., 2010; Oladeinde, et al., 2011; Mbena, et al., 2014; De Schacht, et al., 2014). Delivering at home is not only a missed opportunity for HIV testing and counselling, but also increases the chances of mother-to-child HIV transmission.

Household-based HIV counselling and testing has been shown in different countries to be effective. HBHCT is an in-home HIV testing service where, if the person tests positive, she/he is referred to a health facility for subsequent care. Though there are documented drawbacks and conflicting results, HBHCT's effectiveness is widely accepted, including in Tanzania. HBHCT's benefits include: feasibility (Negin, et al., 2009a), affordability (Suthar, et al., 2013; Coates, et al., 2014; Parker, et al., 2015a), effectiveness (Chamie, et al., 2012; Parker, et al., 2015a), acceptability (Sekandi, et al., 2011b), and its positive effect on increasing HIV testing uptake (Negin, et al., 2009; Sweat, et al., 2011; Suthar, et al., 2013; Coates, et al., 2014b; Parker, et al., 2015). HBHCT has also been shown to effectively work in areas with stigma (Low, et al., 2013), and is a recommended model for reaching a large proportion of the population (Khumalo-Sakutukwa, et al., 2008; Molesworth, et al., 2010).

Documented HBHCT drawbacks include its low effectiveness in linking patients to care (Bassett, et al., 2014) and relatively higher costs (Negin, et al., 2009; Shrestha, et al., 2008). A perceived drawback of HBHCT is the model's lack of responsiveness to handle the associated consequence following knowledge of one's HIV status (Mantell, et al., 2014; Njau, et al., 2012).

There are several determinants to successful linkage to care following a positive HIV test result. Facilitating factors include older age, sex (Hatcher, et al., 2012; Masson, et al., 2015), and disclosing one's HIV status to a family member or partner (Hatcher, et al., 2012). Men above 25 years of age are more likely to link to care. Contrary to this finding, in Malawi, females were reported to be more likely to link to care (Masson, et al., 2015). Also, alcohol use, knowing someone who died of HIV, expecting antiretrovirals (ARV) to be available at the health facilities, distance from health facilities, and social responsibilities (Naik, et al., 2015) were found to influence successful links to care following positive HIV results.

Study Objectives

In line with the goals of USAID and the United States President's Emergency Plan for AIDS Relief (this study's funders) to control the HIV/AIDS epidemic, prevent child and maternal deaths, and do the right things at the right times in the right places, we sought to determine the feasibility of home-based HIV testing and linking to HIV services among WDH in Geita District Council, Tanzania. The study's specific aims were the following:

1. Determine the prevalence of HIV-positive WDH who were enrolled in a PMTCT program.
2. Determine factors associated with the uptake of household-based HIV testing by WDH in Geita District Council.
3. Determine the perceptions of WDH of HBHCT and the influence of those perceptions on PMTCT service uptake among WDH in Geita District Council.
4. Determine factors associated with successful PMTCT uptake and linkages to care among HIV-positive WDH in Geita District Council.

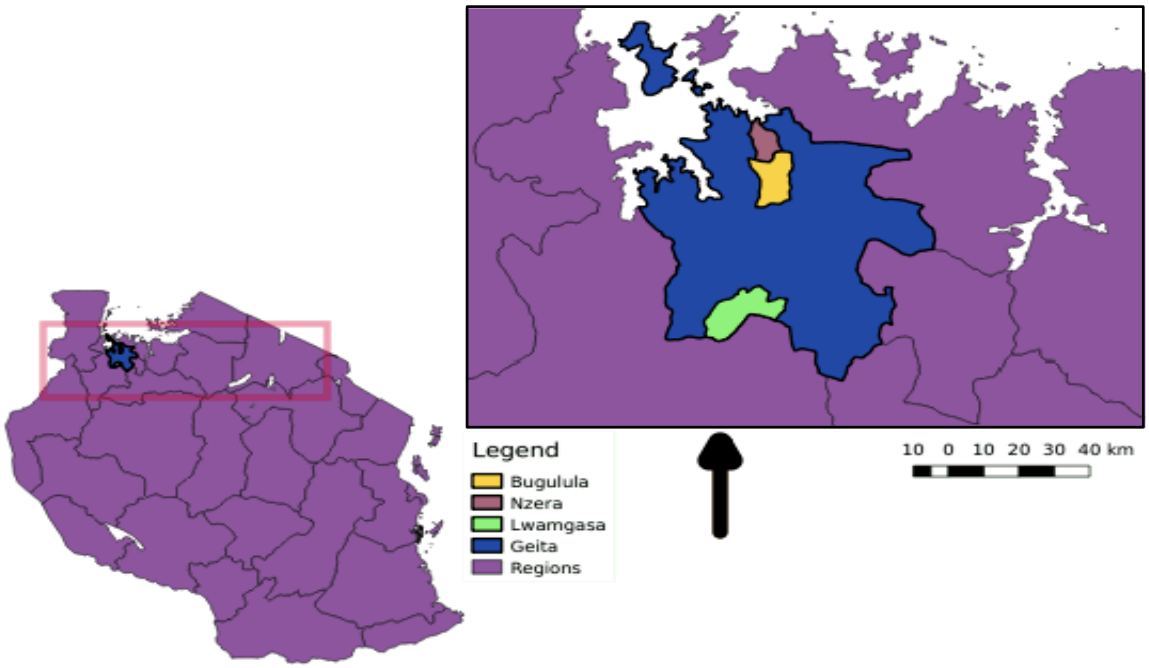
METHODS

Study Design and Setting

This study design and setting was a longitudinal household survey conducted in Geita District Council, a rural area in Geita Region, Tanzania. An embedded mixed-methods approach was used to answer the study objective. In Geita Region, more women deliver at home (52%) than the national average (NBS,2016), but the adult HIV prevalence (3–6%) is on par with the national average (4.7%) (Avert, 2017).

Geita District Council was chosen as it is among the districts with a high prevalence of home deliveries and a relatively high HIV infection rate. Geita District Council's population of 807,619 belongs mostly to the Sukuma and Zinza ethnic groups. Their main activities are subsistence farming, livestock keeping, small business, fishing, and mining. Geita District Council is bordered to the east by Mwanza Region and Nyang'hwale District, to the south by Shinyanga Region and Mbogwe District, and to the west by Chato District.

Figure 1. Study site



Sample Size and Sampling Technique

Though the target population was WDH within the two years preceding the survey (26 May 2015 to 25 May 2017), the study also involved all mentally-able women who delivered within two years preceding the survey along with their children under the age of two.

With no HIV prevalence data among WDTY in Geita District Council, the HIV prevalence of Geita Region was taken as a proxy estimate. We calculated a five percent margin of error and 95 percent confidence interval, giving an initial sample size estimation of 844. A standard 10 percent non-response rate was added to the sample to increase the minimum sample size to 928 WDTY. In total, 993 women participated in the study, along with 52 children whose mothers tested HIV-positive or refused an HIV test.

Selection of Households

The unit of analysis was the WDTY. A multistage cluster sampling technique was used to select households to be involved in the study. First, wards were stratified based on their geographical location. Three representative wards were selected: Nzera, Bugulula, and Rwamgasa. Within each ward, three villages were randomly selected and surveyed (except for Rwamgasa, where two villages were sampled). Two hamlets were selected from each village using simple random selection. The final stage was the systematic random selection of households. The first household was randomly selected using the "pen throwing" technique. The hamlet leader pointed to the center of the hamlet where a research assistant threw a pen. The pen point determined the direction/household to start with. The research assistant then went household-to-household in a clockwise direction until the required sample size was attained. Only one WDTY per household was enrolled. Nine hundred and ninety-three households were included in the study.

Selection of Health Facilities

The research participants were referred to specific health facilities for care and treatment based on their HIV test results. We considered three factors in deciding which health facilities would be involved in the study: closeness to the selected hamlets (within five kilometres); population coverage of the health facility (e.g., a district hospital, which provides services to the whole population in the district); and research participants' usual place of seeking health care.

Data Sources and Collection

We conducted one-on-one interviews during the study and followed up with participants through phone interviews. HIV tests were administered during the study. Data were collected from health facility registers on referral attendance, HIV test results, and PMTCT services uptake. The study trained nurses on how to collect data with digital questionnaires that recorded HIV results as well.

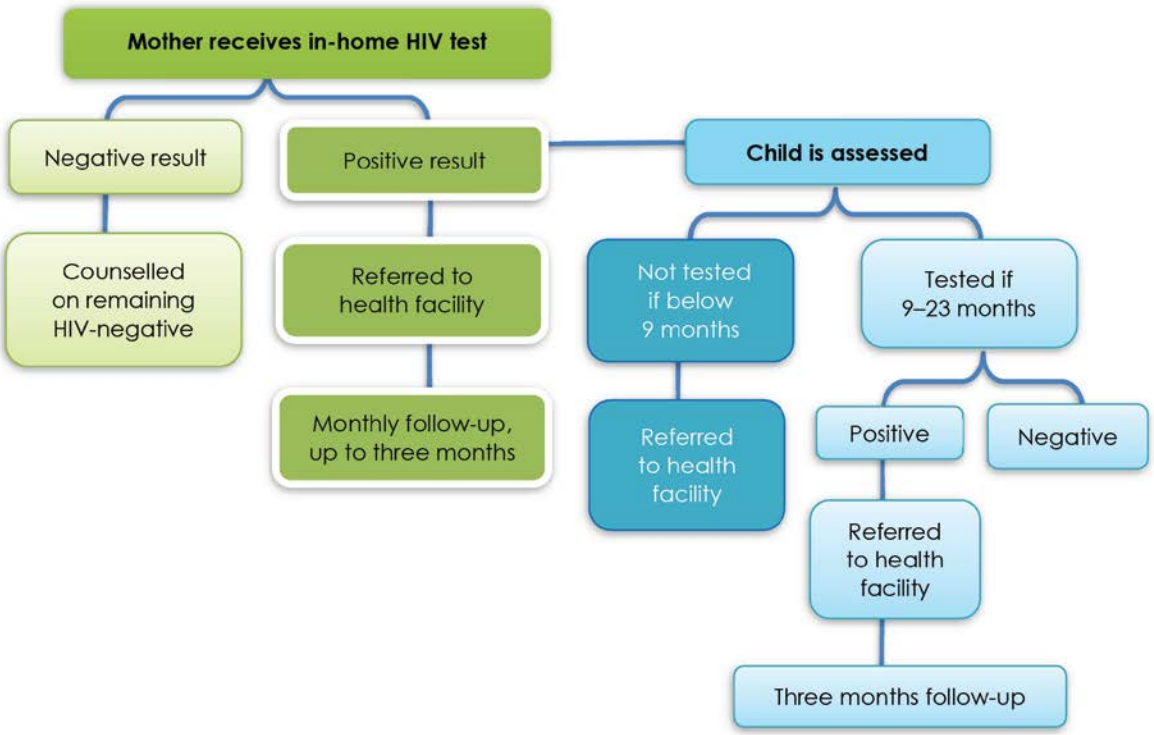
A tested questionnaire with mixed questions (structured and open-ended) was used. Questions were adapted from other researchers who conducted a similar study (Adeleke, et al., 2009). Questions covered a range of topics such as sociodemographic characteristics of the mothers and their children, mother's birth history (including ANC visits), PMTCT information (knowledge of PMTCT services, history of HIV, and number and interval of HIV tests done at ANC), risk factors for acquiring HIV infection, contextual factors that would influence healthcare seeking behaviour, and HIV and PMTCT program interventions. The data collectors collected the study participants' contact information and three contacts close to each participant (relatives, friends, or colleagues). These contacts were used to trace participants in the event the investigators could not get in touch with participants.

Antibody-based HIV (HIV rapid) tests were used to determine the HIV-serostatus of study participants. Rapid diagnostic tests (SD Bioline [Standard Diagnostic Inc., Korea] and Determine [Inverness Medical, Japan]) were used to confirm positive test results (Lyamuya, et al., 2009; Munseri, et al., 2013). In-home testing was conducted with all participants who consented to testing for HIV, and to the children ages 9–23 months whose mothers tested HIV-positive as part of the study-administered HBHCT. The national HIV algorithm for testing and results interpretation was used. Manufacturer directives were followed for testing and interpreting test results.

We referred to a health facility for testing, care, and treatment, as necessary, mothers who had never tested for HIV previously and refused a study-administered HIV test; mothers who knew their HIV-positive status but were not enrolled in PMTCT; and mothers who were identified as HIV-positive by the study.

Participants who were referred to a health facility for subsequent care were followed-up by phone three times (at one month, two months, and three months) to assess if they followed through on their referral, their HIV serostatus, and, if appropriate, uptake of PMTCT services. A successful referral was assessed at the last follow-up.

Figure 2. Study algorithm



Data Quality Assurance and Analysis

To ensure data quality, we resorted to digital data collection using Kobotoolbox®, a free and open-source tool for mobile data collection. The questionnaire was designed with restrictions to include all must-fill questions to avoid missing values. This was experienced during the initial data collection. Data consistency was checked by the principal investigator and another research assistant on the same day of data collection to correct for errors.

The study's primary outcome was the successful link to care of HIV-positive WDH. The secondary outcome was the feasibility of HBHCT.

Table 1. Key definitions

Variable	Definition
HIV Prevalence	The percent of people in our sample who were tested and found to be HIV-positive. We calculated the HIV prevalence as follows: Previously- and newly-identified HIV-positive people/number of study participants tested
Referred	The study referred mothers not aware of their HIV status, those who knew they were HIV-positive but not enrolled in PMTCT, and those with a newly-detected HIV-positive status and their respective children
Feasibility of HBHCT	Measured based on the assessment of the acceptability, perceived effectiveness, efficiency, and early link to HIV care and treatment
Successful link to PMTCT care	Reported referral attendance, plus collected referral slips at the selected referral health facilities

Data were transferred from Kobotoolbox® to Stata Version 15 for cleaning, processing, and analysis. The analysis took into consideration the clustering effect. Hamlets were clusters in this study. With only two villages participating rather than three, Lwamgasa ward was under-represented in the sample while Nzera and Bugulula were over-represented. We used population statistics (National Bureau of Statistics, 2010) to generate post-sampling weight to account for the ward-level variance in sample size.

Age was summarized into median and interquartile range. Categorical data were summarized into percentages. Data were presented in tables and figures. Comparisons were made between WDH and women who delivered at health facilities.

HBHCT uptake among WDH was calculated from the percent of those who received an HIV test over the total WDH who participated in the study. Prevalence of HIV among WDH was obtained from previously- and newly-identified HIV-positive people divided by the number of study participants tested over the total WDH who had HBHCT. Open-ended questions were used to explore barriers to HBHCT uptake and successful links to PMTCT. A probability value of less than five percent was considered for statistical significance independence during comparison between WDH and those delivered at the health facilities. The analysis took into consideration the survey method used to collect data.

Ethical Considerations

The study objectives were explicitly explained to the participants along with advantages, disadvantages, and study limitations. The study participants provided signed informed consent prior to the data collection. A unique identifier was used to de-identify participants for confidentiality. Participants were made aware in the consent form that the contacts they provided (reliable relatives, friends, or colleagues) were collected for the sake of effective follow-up and that information on the health status of the participant would not be disclosed to any of her contacts. Trained research assistants provided counselling to the study participants before and after they administered the HIV test. Community members not involved in the study who requested HIV testing were offered the service as per the study protocol, with an exception of being involved in the analysis.

Ethical clearance to conduct the study was obtained from Kilimanjaro Christian Medical University College Clinical Research Ethics Review Committee. Researchers also received permission from Geita District Council Authority to conduct the study.

RESULTS

Background Characteristics of Participants

In total, 993 WDTY in Geita District Council participated in the study. The median age was 25 years, with the largest proportion in the 16- to 24-year age band. Most resided in Lwamgasa (47.70%), had a primary education (39.6%), were married or in-union (89.10%), and had one or two children (43.6%). Fewer than 10 percent had health insurance coverage, and most (92.5%) did not consider the health facility they usually access for health services as being far from their home (Table 2).

Table 2. Participants' background characteristics (N=993)

Variables	Not weighted		Weighted	
	No.	%	No.	%
Age of participants				
16–24	435	43.80	478	48.20
25–35	413	41.60	374	37.70
36–51	145	14.60	140	14.10
Education of the participant*				
No formal education	342	34.50	324	32.60
Did not complete primary school	206	20.80	217	21.80
Completed primary education	402	40.50	393	39.60
Secondary education	41	4.10	54	5.40
Higher education	1	0.10	5	0.50
Marital status of the participant*				
Single	49	5.00	46	4.70
Married/In union	851	87.10	870	89.10
Divorced	77	7.90	61	6.20
Ward of residence				
Nzera	439	44.20	223	22.50
Bugulula	397	40.00	296	29.80
Lwamgasa	157	15.80	473	47.70
Occupation of the participant				
Small-scale farmers	959	96.58	954	96.06
Self-employed business	29	2.92	36	3.60
Salaried employee	5	0.50	3	0.34
Number of children				
1–2	397	40.00	433	43.60
3–4	264	26.60	262	26.40
5–14	332	33.40	298	30.00
Covered by health insurance*				
No	895	90.20	897	90.40
Yes	97	9.80	95	9.60
Do you consider the usual health facility you access far?				
No	858	86.40	918	92.50
Yes	135	13.60	75	7.50

* Missing values

Nearly all the participants (946; 95.2%) attended at least one ANC visit during their last pregnancy. Among these women, 81.7 percent (773) were tested for HIV during ANC attendance, with 26 (3.34%) testing positive. More than half (56.9%) of the participants had a home birth for their last delivery (Table 3).

Table 3. Participants' reproductive background characteristics

Variables	Not weighted		Weighted	
	No.	%	No.	%
Place of last delivery (N=993)				
Home	554	55.80	565	56.90
Health facility	439	44.20	428	43.10
ANC attendance for the last pregnancy				
No	36	3.60	47	4.80
Yes	957	96.40	946	95.20
HIV test at ANC visit (N=946)				
No	228	23.80	173	18.30
Yes	729	76.20	773	81.70
HIV results at ANC visit (N=773)				
Positive	12	1.65	26	3.34
Negative	708	97.12	741	95.87

Uptake of HIV Testing Services at ANC and HBHCT

Most study participants (879; 88.5%) had ever tested for HIV, with the majority (79.7%) having been tested during an ANC visit. Only 12 women (1.2%) did not accept HBHCT. Among the 565 WDH participants, 486 (86.0%) had ever tested for HIV; of these 433 (76.6%) tested during an ANC visit.

All WDH except for three (99.4%) accepted HBHCT. Reasons for refusing HBHCT included being recently tested for HIV, needing permission from husband, and afraid of receiving a positive test result.

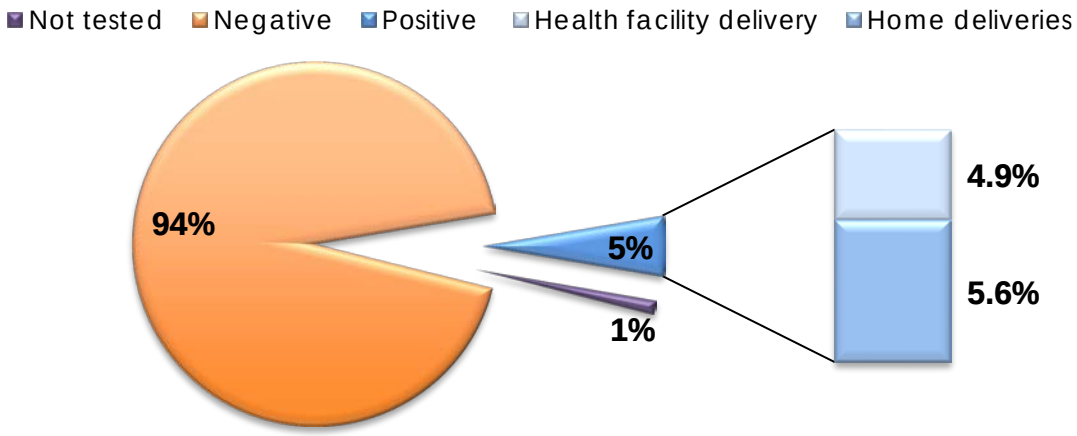
Reasons mentioned for not testing for HIV at an ANC visit included lack of testing kits at the ANC, not being given test results on time, and financial barriers.

> *I wanted to test for HIV, healthcare providers requested 2000 [Tanzania shillings]. Since I know the testing is free I refused, and I did not test.* (Participant; Nzera)

Prevalence of HIV among Women and Enrolment in PMTCT

Among the 981 participants who accepted HBHCT, 52 (5.3%) [95% CI: 2.1–12.8%] tested HIV-positive. Of these, half (26) were newly-identified during the HBHCT. Thirty-one (59.6%) of the HIV-positive participants had delivered at home; among the HIV-positive WDH, more than half (18; 58.1%) were identified during the HBHCT. Most of these women were in the 25- to 35-years age category and resided in Lwamgasa.

Figure 3. HIV prevalence among WDTY and place of delivery



Prevalence of HIV among Children

Twenty-seven of the children delivered by HIV-positive women were tested for HIV. More than half (14; 51.9%) were from the 26 mothers who were newly-detected with HIV infection by the study. Of these children, seven were HIV-positive. Twelve of the children delivered by 26 other mothers who knew their HIV-positive status prior to the study were found to be HIV-negative. Twenty-five children of HIV-positive mothers could not be tested as 24 were below nine months of age and one because of mother's refusal.

Participants' Knowledge of and Attitudes towards PMTCT

Fewer WDH knew that mother-to-child transmission of HIV can be prevented compared to their counterparts who delivered at health facilities (64.3% versus 71.2%; P=0.021) (Table 4). Statistically fewer WDH perceived the importance of recommended practices for PMTCT than those who delivered at health facilities, such as screening pregnant women for HIV (90.6% versus 96.4%), referring HIV-positive pregnant women to the appropriate health facilities (83.9% versus 92.3%), giving ARVs to HIV-positive pregnant women (77.1% versus 84.7%), utilizing skilled birth attendants for HIV-positive pregnant women's deliveries (84.1% versus 90.2%), and stopping breastfeeding by HIV-positive women to protect their children against HIV infection (63.3% versus 68%). There was no statistically significant difference between the two groups in agreement with the statement that HIV-positive pregnant women should not deliver at home (75.3% versus 78.1%).

Table 4. Knowledge and attitude of participants towards PMTCT

Variables	HFD*	HD**	Total	
	No. (%)	No. (%)	No. (%)	X^2 (P-Values)
Mother-to-child transmission of HIV can be prevented	312 (71.2)	355 (64.3)	667 (67.4)	5.32 (0.021)
All pregnant women should be screened for HIV	423 (96.4)	502 (90.6)	925 (93.2)	13.37 (0.001)
All HIV-positive pregnant women should be referred to the appropriate facilities	405 (92.3)	465 (83.9)	870 (87.6)	15.74 (0.000)
All HIV-positive pregnant women should receive ARVs for PMTCT	372 (84.7)	427 (77.1)	799 (80.5)	10.50 (0.005)
HIV-positive pregnant women should be delivered by skilled attendants	395 (90.2)	466 (84.1)	861(86.8)	7.92 (0.019)
HIV-positive pregnant women should not deliver at home	343 (78.1)	417 (75.3)	760 (76.5)	3.32 (0.190)
HIV-positive women may stop breastfeeding to protect their children	298 (68)	350 (63.3)	648 (65.4)	8.4 (0.015)

* Health facility deliveries

** Home deliveries

Barriers to HBHCT and PMTCT Uptake among HIV-Positive WDH

Among the 52 HIV-positive women, 21 were enrolled in PMTCT services. All 13 HIV-positive women who delivered at a health facility and knew their HIV-positive status before the HBHCT were enrolled in PMTCT services, contrary to their 13 WDH counterparts, where only eight were enrolled in PMTCT services.

The five WDH who knew their HIV-positive status before the study mentioned fear of family conflicts as the main reason not to enroll in the PMTCT.

> *I could not enroll in PMTCT because I feared I would rise a concern from my family as to why I often take my child to hospital... I know I can prevent my child from HIV infection by the hospital services but again, I fear my mother-in-law and my husband…I am remained with no option but to continue breastfeeding my child. God will help me so that she does not acquire infection.* (Nzera)

Perception of HBHCT

When participants were asked about their perception of HBHTC services compared to facility-based HIV testing and counselling, most agreed that HBHCT saves time (77.2%), reaches more people (66.7%), and links to PMTCT earlier (59.7%) (Table 5).

Table 5. Perception of participants on HBHTC effectiveness, efficiency, and early care for HIV

N=933	Facility-based delivery	Home-based delivery	Total	
Variables	**No. (%)**	**No. (%)**	**No. (%)**	**X^2 (P-Values)**
HBHCT saves time				
Agree	357 (81.3)	410 (74)	767 (77.2)	7.80 (0.020)
Indifferent	52 (11.8)	97 (17.5)	149 (15)	
Disagree	30 (6.8)	47 (8.5)	77 (7.8)	
Total	439 (100)	554 (100)	993 (100)	
HBHCT reaches more people				
Agree	305 (69.5)	357 (64.4)	662 (66.7)	
Indifferent	48 (10.9)	78 (14.1)	126 (12.7)	3.26 (0.195)
Disagree	86 (19.6)	119 (21.5)	205 (20.6)	
HBHCT links to PMTCT earlier				
Agree	283 (64.5)	310 (56)	593 (59.7)	
Indifferent	138 (31.4)	220 (39.7)	358 (36.1)	7.65 (0.022)
Disagree	18 (4.1)	24 (4.3)	42 (4.2)	
Total	439 (100)	554 (100)	993 (100)	

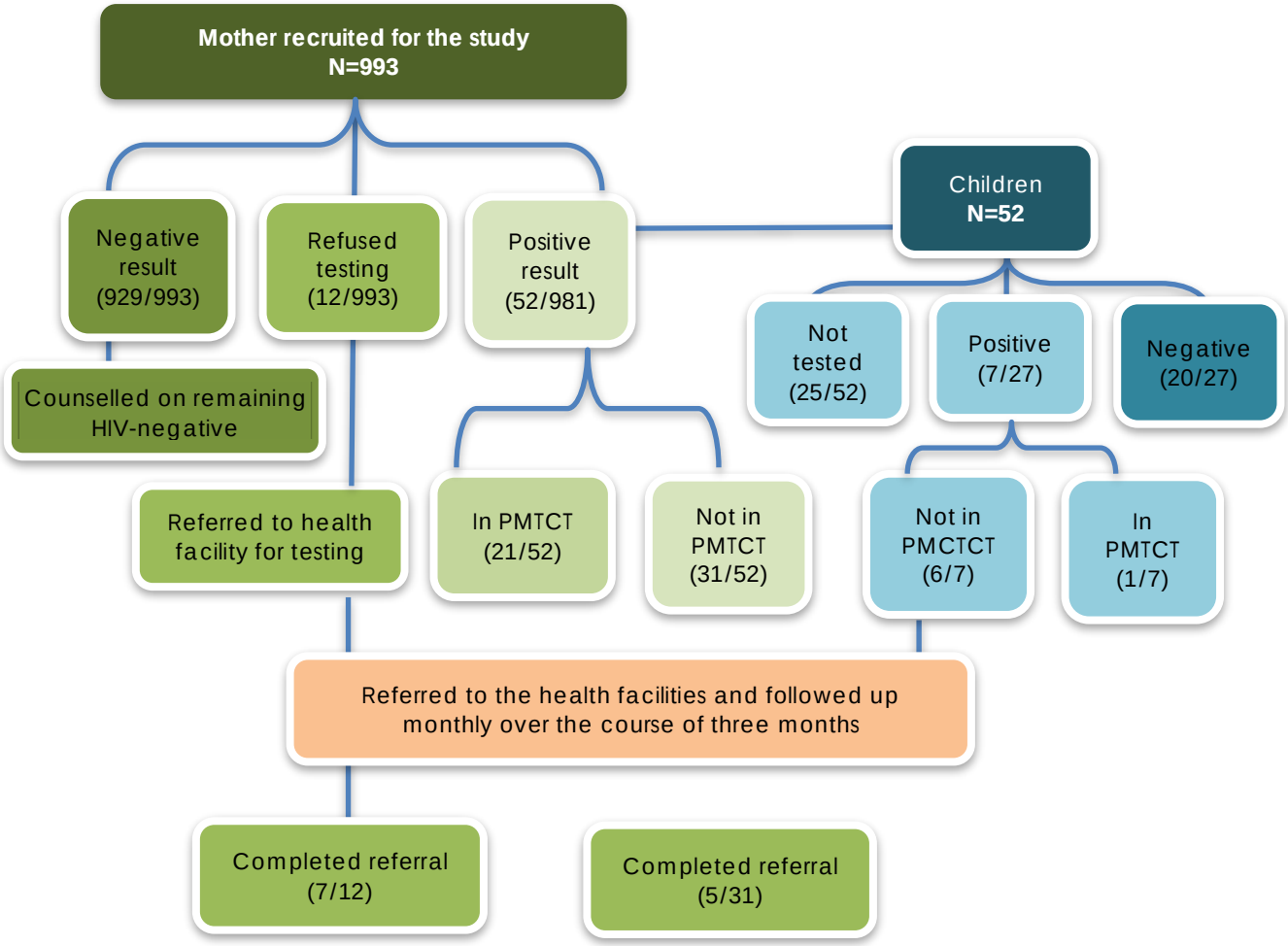
Referrals to HIV Testing and PMTCT

The study team referred 43 mothers to a health facility; 12 for testing after denying HBHCT and 31 for subsequent PMTCT care following positive HIV results. Researchers managed follow-up communication with 16 participants; of these 12 completed the referral. Almost two-thirds (27; 62.8%) of the referred participants were not reachable for different reasons. Of the 12 participants who attended referral, seven were among those referred for testing.

Among the 31 participants who were HIV-positive and referred for subsequent PMTCT care, only five successfully attended referral; of these, four were newly-identified HIV-positive.

Some participants said they did not complete the referral for PMTCT services because they did not understand the research assistant's directives that they were supposed to attend referral. Two participants gave the excuse that they were travelling and one reported lack of time.

Figure 4. Study flowchart



DISCUSSION

This study was conducted to determine the feasibility of HBHCT for early detection of HIV infection among women up to two years postpartum and linking HIV-positive women to subsequent HIV care in Geita District Council, Geita, Tanzania.

The HIV prevalence among the adult study participants was five percent. This prevalence is similar to the HIV prevalence of 3 percent to 6 percent reported by the National Bureau of Statistics (2013). The most affected were in the 25- to 35-years age category and were residents of Lwamgasa—the ward where mining is the main economic activity. These support findings already reported on risky population groups based on the 25- to 35-years age categories living in areas where the main economic activity is mining.

The study showed that HBHCT is highly acceptable, with 99 percent of participants agreeing to be tested. The high acceptability signifies the suitability of HBHCT as a method of early HIV detection among the study population. This finding is similar to those reported in different parts of Africa (Parker, et al., 2015b; Naik, et al., 2012), including Tanzania (Njau, et al., 2012; Sekandi, et al., 2011a). However, this study reported very high acceptability of HBHCT compared to other studies, which reported 60–70 percent acceptance.

High acceptability can be explained by the fact that participants were reached and tested at their homes, which eliminated the cost barrier that has been identified with other community-based HIV care and testing interventions. Some participants mentioned being expected to pay for HIV testing in their usual health facilities. High acceptability can also be explained by the role played by local leaders in informing the community of the study and the trust that was built with the researchers. Local leaders did community mobilization on the screening services as well as escorting us to households during data collection. Research assistants reported community members' readiness and enthusiasm towards HIV testing regardless of their eligibility criteria. This was evident by the 393 men and other women who did not meet the inclusion criteria who asked for the HIV test.

HBHCT identified half (50%) of the HIV cases in our study population. More so, the study revealed seroconversion among women who tested negative during their last HIV test at ANC. These findings not only emphasize the importance of HBHCT in improving access to HIV services (Negin, et al., 2009b) but also the importance of extending re-testing (Drake, et al., 2014; Lawi, et al., 2015) to women who breastfeed to effectively implement PMTCT programs. Seroconversion among pregnant women have previously been reported (De Schacht, et al., 2014; Gray, et al., 2005; Mbizvo, et al., 2001; Moodley, et al., 2009; Mugo, et al., 2011). These findings are similar to those reported in Malawi (Sekandi, et al., 2011a) and Tanzania (Lawi, et al., 2015).

Only about two-thirds (8/13) of the WDH who knew their positive HIV status before HBHCT were enrolled in PMTCT services compared to 100 percent (13/13) of the women who delivered at a health facility. These findings emphasize the importance of health facility deliveries over home deliveries and the importance of scaling up PMTCT services to women who deliver at home.

Apart from the study objectives, we noted irregularities in RCH services, including PMTCT services and deliveries. Participants from one ward reported that they prefer home deliveries as facility-based service providers were not delivering primigravida and grand-multipara—only women with their second, third, and fourth pregnancies. Also, they reported that facility-based providers only help pregnant women during working hours, which creates a disincentive to access RCH services.

Regarding PMTCT services, participants in one ward reported having been asked to pay for HIV testing, even though the national policy is free HIV testing at all public health facilities in Tanzania. From the same ward, participants reported having been told their HIV test result will take a couple of days despite the results from rapid blood tests being available in 15–20 minutes.

Strengths and Limitations

The strength of the study lies in the rigorous planning, data collection, and analysis. The study was able to show the feasibility of HBHCT in terms of acceptability among women who are within two years postpartum and uptake. The study managed to detect the majority of HIV-positive WDH who were unaware of their serostatus and linked them to PMTCT services. The study also managed to provide counselling and testing to 393 community members who requested HBHCT despite being not study participants. We detected new cases of HIV infection (19/393) and all got referred.

However, this study has limitations that are important to be noted. The study's relatively small sample size did not have enough power to detect the effectiveness of HBHCT in linking HIV-positive women to PMTCT and subsequent HIV care. Also, the study suffered from communication barrier challenges which caused loss to follow-up. We used mobile phones to track participants—where we could only contact less than half of the referred participants. Finally, we studied a rural population, so the study findings cannot be representative of an urban population.

RECOMMENDATIONS

HBHCT can be used as an intervention to improve PMTCT services among WDH as it was acceptable for detecting new HIV infection among WDH as well as seroconversion among women with negative a HIV test in their previous PMTCT HIV testing. HBHCT should be included in the package of services delivered by community health workers. This is an appropriate time to make this standard practice as it has been shown in Tanzania that active involvement of community health workers in delivering health services improves maternal health (August, et al., 2016; Lema, et al., 2014).

Responsible authorities need to put some mechanisms (e.g., regular training of service providers, reminders) in place to make sure that HIV testing services are delivered as per the guidelines. Our findings show that of the 946 mothers who received ANC services, only 773 received an HIV test. That means about 20 percent of women are being missed at the facility, despite the protocol that all pregnant women who present at a health facility in Tanzania get tested. This should be addressed.

All participants had used RCH services (e.g., vaccinations and postpartum visits) post-delivery. We recommend that all women attending a postnatal clinic or taking their children for vaccination be tested for HIV to effectively implement PMTCT. Furthermore, as specified in national service delivery guidelines, all health facilities with RCH services must have test kits in stock and providers trained in HIV counselling and testing. Women need to be informed of the availability of free HIV testing services with results obtained within ten minutes. Facilities or service providers that are charging clients for HIV testing should be investigated.

Women should not feel afraid or disempowered to get tested or enroll in PMTCT services because they feel they need their husband's permission or fear their partner's reaction. Thus, men need to be engaged in discussions on how they can be supportive of their partners' health needs, safely caring a pregnancy, raising an HIV-positive child, caring for a baby when the mother is HIV-positive, and keeping the mother HIV-negative.

Regional/District Health Management Teams need to collect information at the community level to understand community-level barriers to healthcare service utilization. Obtaining feedback from both health services users and non-users can be used to improve service delivery.

We recommend further studies to embrace a large representative sample from all administrative zones in the country (rural and urban) to study the prevalence of HIV, PMTCT service utilization, and the feasibility of HBHCT in linking to PMTCT and HIV care among WDH.

CONCLUSION

HBHCT is acceptable and uptake is high. HBHCT detected new HIV infection to WDH as well as seroconversion among women with a negative HIV test in their previous PMTCT HIV testing. More research on assessing the effectiveness of HBHCT in detecting and linking those who are HIV-positive to care is required.

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