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HIV Retesting among Pregnant Women with Gestational Age of 36 Weeks or Higher Attending Antenatal Clinic at Temeke Regional Referral Hospital, Tanzania

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Abstract

Background

Although Tanzania has set a target of 90% Human Immunodeficiency Virus (HIV), retesting among pregnant women, the rate of re-uptake is still low despite the service being free of charge. This study determined HIV retesting among pregnant women with the gestational age of 36 weeks or higher attending the antenatal clinic at Temeke Regional Referral Hospital.

Methods

The cross-sectional study design was used. The data was collected from 12th October 2020 to 9th November 2020 in Temeke regional referral Hospital. Two hundred pregnant mothers attending the Reproductive and child health clinic (RCH) clinic who had a gestational age of 36 weeks or above and tested HIV negative from the first test were included. The demographic and obstetrics information were collected by using a structured questionnaire. The descriptive and factors analysis was done by using SPSS version 20. The Chi-square test determined the relationship between variables, and the P-value of less or equal to 0.05 was considered statistically significant.

Results

The percentage for re-uptake of second HIV test was 30% (60/200). Out of 60 who repeated the test, 6.7% (4/60) were HIV seroconverted. Factors associated with re-test were being married (p-value 0.05, X2=7.8), being self-employed (p-value is 0.00 , X2=18.838) ,four and above antenatal clinic visit (p-value is 0.003, X2=11.737) ,having knowledge of repeating (p-value is 0.00 ,X2=59.294) , multiparty (p-value is 0.015 ,X2=8.334 ,positive perception during the first test (p-value is 0.044, X2= 4.039) ,maternal age of 25-29 years old (p-value is 0.053, X2= 10.901) ,and having access to radio and television (p-value is 0.04, X2= 6.442).

Conclusion

The proportion of HIV retesting was 30%, and factors associated with retesting were being married, being self-employed, more than four ANC visits, multiparity, having knowledge about retesting, and positive perception during the first test.

Key words: *Human Immunodeficiency Virus, Re-Testing, Re-Uptake, Sero-Converted, PMTCT and Pregnant women.*

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Introduction

HIV is a global disease in which the transmission rates vary from country to country. Global statistics until the end of 2020 is about 37.7 million [30.2–45.1 million] people were living with HIV, and about 680 000 [480 000–1.0 million] people died from HIV-related causes, and 1.5 million [1.0–2.0 million] people acquired HIV. Also, about 1.3 million [970 000–1.6 million] pregnant women had HIV in 2020, of which an estimated 85% [63–>98%] received antiretroviral drugs to prevent mother-to-child transmission. African countries remain most severely affected, with nearly 1 in every 25 adults (3.6%) living with HIV and accounting for more than two-thirds (25.4 million) of the people living with HIV worldwide at the end of 2020 (1, 2). The current South Africa study shows that HIV incidence is four times higher in pregnant women than in the general population (3). HIV retesting late in pregnancy or labor offers an additional opportunity to prevent Mother-to-Child transmission and further horizontal transmission in the community (3, 4) (5, 6, 7). The Prevention of the mother-to-Child Transmission (PMTCT) is a major preventive measure in reducing the number of children living with HIV(8)(9)(10).

The global response to this epidemic includes declaring the millennium developmental goal of combating HIV/AIDS by giving ART to that infected and strengthening prevention of mother-to-child transmission (PMTCT)(11). WHO has set a guideline of 90% retesting of HIV status among pregnant women attending antenatal clinics during the third trimester. This allows early diagnosis and treatment of infected pregnant mothers, reducing the risk of mother-to-child transmission of HIV. Mother-to-child HIV transmission accounts for 90% of all children living with HIV under 15 years (9, 12). The study done in the United Kingdom shows sustained low HIV transmission rates following different combinations of interventions done during pregnancy, including early diagnosis and medication (13). The study done in Lusaka between 2009 and 2010 from six clinics clearly shows that repeat testing in pregnancy stands at a minimum, even though it is recommended in their PMTCT National Guidelines. The average percentage of mothers retested in all clinics throughout the Lusaka District is only 10.5%. This gives a clear reason why the African region has a large number of people living with HIV worldwide since the guideline for prevention is not well implemented (14). However, the study done in Zambia shows the prevalence of retesting being 11339/16838(67.3%), and out of those who retested, 55/11339(0.5%) were HIV positive (15).In Tanzania, the study done in Njombe shows the prevalence of retesting of about 30.4, which is very low compared to the National target (90%), while the country's progress report on Global HIV/AIDS monitoring shows that children on HIV treatment have increased from

60,000 in 2018 to 61,000 in 2019. This might suggest that PMTCT strategies aren't effective (9, 16, 17, 18).

Tanzania has adopted the WHO guideline of retesting pregnant mothers as one of the strategies for reducing mother-to-child transmission of HIV (9). Early detection of HIV during pregnancy and ART initiation lowers viral load, reducing the chances of mother-to-child transmission (3, 5, 18, 19, 20). Despite this adoption, little is known about the prevalence of retesting in the country, especially from a referral hospital. Therefore, this study aimed to determine HIV retesting among pregnant women with the negative result during the first test and gestational age of 36 weeks or higher attending the antenatal clinic at Temeke Regional referral Hospital.

Material and Methods

Study area, design, and population

This study was conducted in Temeke regional referral Hospital located in Temeke District Dar es Salaam Tanzania. The 2012 Tanzania National Census reported that the population of Temeke District is about 1,368,881 (21). Temeke referral Hospital has a 304-bed capacity with different specialties such as maternal and child care department, surgical department, obstetrics, gynecology department, Outpatient and Inpatient services, internal medicine department, Methadone unit, and antenatal clinic. The antenatal clinic is also comprehensive with a counseling program, family planning services, prevention of mother-to-child transmission services, and a health education program for pregnant mothers.

Study design and population

The analytical cross-sectional study design was used, which involved women with the gestational age of 36 weeks or above who had previously tested HIV negative during the initial test and consented to participate. Exclusion criteria were HIV-positive pregnant mothers in the initial test and those with GA less than 36 weeks.

Sample size

The estimated sample size was obtained by Using the formulae z^2p (100-p)/e^2 marginal error of (e) of 6.4%, z at a 95% confidence interval of 1.96, and the prevalence of 30.4 % from HIV retesting from the study done in Njombe region Tanzania (9), the sample size was calculated to be approximately 200 study participants.

Data collection

The research assistants were at the facility from Monday to Friday from 12th October 2020 to 9th November 2020. Consecutively, the pregnant women with inclusion criteria were approached and informed about the study. Those who consented to participate were included. The Structured questionnaire was used to collect information about socio-demographic characteristics such as age, marital status, occupation, education level, and obstetrics and other characteristics such as the number of antenatal clinic visits, distance from home to the clinic, perception during the first test, knowledge about the importance of retesting, availability of the test kits, parity and lastly, was access to radio and television.

Data analysis

Data entry, cleaning coding, and analysis were done using the Statistical Package for social sciences (SPSS) version 20. Data cleaning was done by obtaining the frequency table for each variable. Descriptive analysis was done, mean, frequency, and proportion was obtained where appropriate. The relationship between variables was done by cross-tabulation. The chi-square test was used for comparison, whereby a p-value of less than or equal to 0.05 was considered statistically significant.

Ethical consideration

Ethical approval was sought from the Hubert Kairuki Institutional Review board, and permission to conduct this study was obtained from the Chief Medical Officer of Temeke regional referral Hospital. Written informed consent was obtained from participants before data collection.

Results

A total of 200 pregnant women were involved in this study. The majority of the study participants were aged 25-29 (36%); more than half were married (55.5%), had four or more antenatal clinic visits (53.5%), and had secondary education (55.5%). The majority were self-employed (40.5%), had access to radio and television (64%), and had a positive perception about the HIV test during the first test (95.5%). More than three-quarters had three meals per day (94.5%). And the majority of the study participants were multipara (43.5). Lastly, more than half of the study participants came from an area of about 4 -8 km. (56.5) (Table 1 and 2 below).

Table 1: Social demographic characteristics of the participants N=200

Variables	Frequency	Percentage (%)
Participants age in years		
15-19	4	2.0
20-24	71	35.5
25-29	72	36.0
30-34	42	21.0
35-39	10	5.0
40-44	1	0.5
Marital status		
Single	42	21.0
Married	111	55.5
Cohabitation	47	23.5
Education level		
Primary school	81	40.5
Secondary school	111	55.5
Colleges and universities	8	4.0
Occupation		
Employed	45	22.5
Self-employed	81	40.5
Not-employed	74	37.0
Social-economic status		
Two meals	11	5.5
Three meals	189	94.5

Table 2: Obstetrics and other characteristics of participants N=200

Variable	Frequency	Percentage
Parity		
Never	50	25.0
Once	87	43.5
Two times and above	63	31.5
Number of antenatal clinic visits		
Two times	10	5.0
Three times	83	41.5
Four times and above	107	53.5
Whether she had STIs		
Yes	5	2.5
No	195	97.5
Access to radio and television		
Yes	128	64
No	72	36

Perception during the first test		
Positive	191	95.5
Negative	9	4.5
Distance to Clinic		
Above 8km from home	34	17.0
Between 4km and 8km	113	56.5
Less than 4km from home	53	26.5

The proportion of women who repeated the second HIV test.

Out of 200 participants involved in the study 60/200(30%) retested for their HIV status, and 4/60 (6.7%) were HIV seroconverted. The reasons for not repeating the test were lack of information from the nurse as the nurses did not inform them as they were attending 130/140 (92.9%), fear of results, 4/140 (2.9 %), and 6/140 (4.3%) it was due to absence of test kits.

Table 3: Factors associated with re-uptake of second HIV test among pregnant women at Temeke regional referral hospital

Variable	Women repeated the test	Total	P-Value	X^2
Participants age in years				
15-19	0(0.0%)	4		
20-24	14(19.7%)	71		
25-29	30(41.7%)	72	0.053	10.901
30-34	12(28.6%)	42		
35-39	4(40.0%)	10		
40-44	0(0.0%)	1		
Marital status				
Single	12(28.6%)	42		
Married	41(36.9%)	111	0.05	7.8
Cohabitation	7(15.2%)	47		
Education level				
Primary school	22(27.2%)	81		
Secondary school	37(33.3%)	111	0.356	2.065
Colleges and universities	1(12.5%)	8		
Occupation				
Employed	11(24.4%)	45		
Self-employed	37(45.7%)	81	0.00	18.838
Not-employed	12(16.2%)	74		
Economic status				
Two meals	4(36.4%)	11	0.636	0.0224
Three meals	56(29.6%)	189		

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Number of ANC visit				
Two times	1(10.0%)	10		
Three times	16(19.3%)	83	0.003	11.737
Greater or equal to four	43(40.2%)	107		
Access to radio & television				
Yes	31(24.2%)	128	0.04	6.442
No	29(40.3%)	72		
Parity				
Never	7(14.0%)	50		
One	32(36.8%)	87	0.015	8.334
Two times and above	21(33.3%)	63		
Perception during the first test				
Positive	60(31.4%)	191	0.044	4.039
Negative	0(0.0%)	9		
Distance to clinic				
Less than 30 minutes	12(25.0%)	48		
More than 30 minutes	30(27.3%)	110	0.118	4.267
More than one hour	18(42.9%)	42		
Whether she had STIs				
Yes	1 (20%)	5	0.621	0.244
No	59 (30.3%)	195		

Various factors associated with re-testing including maternal age of 25-29 year (p-value = 0.053 and X^2=10.901), being married (p-value is 0.05 and X^2 =7.8),being self-employed (p-value =0.00 and X^2 = 18.838), four or above antenatal visits (p value = 0.003 and X^2= 11.737), Having access to radio and television was negatively associated with re-uptake of second HIV test (p-value = 0.04 and X^2= 6.442), being multipara (p-value =0.015 and X^2=8.334) Mothers with positive perception during the first test (p-value is 0.044 and X^2= 4.039), and Mothers who were knowledgeable about re-testing.(p-value is 0.00, X^2= 59.294).

Discussion

This study has found a 30 % prevalence of re-uptake of the second HIV test after the first test, nearly equal to the previous survey done in the Njombe Region, Tanzania (9). The similarity could be due to both studies being done in Urban, and therefore the participants might have similar characteristics. But this prevalence is low than the national target of (90%) retesting, which could be due to various reasons such as low sensitization about the importance of retesting. Also, it can be due to a lack of health education during the first

antenatal clinic visit and nurses' negligence. Various factors were associated with the re-uptake of the second HIV test; Mothers aged 25-29 were more likely to repeat the test than other age groups. Mothers of this age were twice more likely to repeat the HIV test than other age groups, probably because most of the study participants were of this age group. Furthermore, married women were more likely to repeat the test than single mothers, which might be due to an increase in male involvement in PMTC (22, 23). There's no other similar finding from a further study showing the relationship between retesting and marital status. Moreover, Mothers who had secondary education were more likely to repeat HIV tests, similar to the studies done in the Njombe region of Tanzania and Southern Ethiopia (9, 24). It shows that women with secondary education are more likely to accept the repeating test, probably because educated mothers have access to current information about various health issues. Still, they can also anticipate the risks of not retesting by knowing their importance for that service even if the health care providers didn't inform them. Still, also, they will have considerable attention to the instructions given when attending the clinic. Nevertheless, self-employed mothers seemed to retest their HIV status more than those employed. This is similar to the study done in the Njombe region of Tanzania(9). The findings are probably because self-employed mothers are free to plan for their schedule at any time compared to employed who need permission, which may be discouraged and hence having few antenatal clinics visits and hence unlikely to repeat the test. But also, it can be due to missing the permission to go for the required antenatal clinic visit or the mother's negligence due to much work in the workplace. Mothers with four or more visits were most likely to repeat HIV testing, similar to the studies done in the Chilenje clinic in Lusaka, Zambia, and Tanzania (5, 14, 25). This might be due to more visits, increased access to information, and increased client-provider interactions that can be utilized to remind mothers of the importance of HIV retesting, which could increase the likelihood of making such a decision and finally retesting (26).

Furthermore, most women who repeated the test had no access to radio and television, while those who had access to radio and television did not repeat. This is vice versa of expectation, and it might be due to the absence of enough health education sessions on our radios and television. There are no other similar findings from other studies showing the relationship between retesting and access to radio and television, but a study done in Southern Ethiopia shows the importance of awareness for mothers to accept HIV testing. Awareness can be done mostly through radio and television (24, 27). Less than that, multiparous mothers were more likely to repeat the test than those who were pregnant for

the first time. This is probably because they have been attending the clinic several times since the previous pregnancy, so they are more aware of the importance of retesting and implementing it. There's no other study done showing the relationship between retesting and parity.

Positive perception during the first test was associated with retesting. All mothers who retest their HIV status after the first test had positive perceptions during the first test. This is similar to the studies done in the Njombe region of Tanzania and Nigeria, and this is probably because positive perception increase behavior intention (9, 27). Lastly, mothers who knew retesting were more likely to repeat the test. This is similar to the studies done in Chilenje clinic Lusaka, Zambia, Ethiopia, and Cameroon (14, 26, 28, 29). This might be due to knowledgeable women knowing the advantages of retesting. This study has greatly shown the importance of retesting HIV status among pregnant women as one of the PMTCT services and prevention of pregnancy complications related to HIV infections such as anemia, early abortions, bacterial pneumonia, higher reported rates of ectopic pregnancy, oral and recurrent vaginal thrush and urinary tract infection (30).

A pregnant mother having negative results during the first test does not guarantee the same result throughout the pregnancy. In this study, the prevalence of HIV seroconverted is 4/60 (6.7%) during the second test. This prevalence is higher compared to the study done in Zambia, where the prevalence was 55/11339(0.5%). This difference might be due to differences in-country implementation strategies for preventing mother-to-child transmission. Therefore ministry of health community development gender elderly and children should work on the result from this study to speed up retesting to reach the national target of 90% hence lowering the mother to child transmission as shown by the study done in the United Kingdom that effective pregnancy interventions have brought good result as PMTC is concerned (13). Lastly, more epidemiological studies should be done to assess factors that hinder the nation from reaching this target.

Conclusion and Recommendation

This study found the proportion for re-uptake of second HIV test among pregnant women was about 30%. The proportion of mothers who retest their HIV status during pregnancy is still low compared to the national target of 90%. Various socio-demographics and obstetrics characteristics were associated. This gives a red-light indicator to the ministry of health community development gender elderly and children that prevention of mother to child transmission will not be attained to the maximum since mothers who will be seroconverted

during the pregnancy period will not be identified. This study shows four women were seroconverted. Therefore, this study rigorously suggests more education and sensitization are needed to encourage nurses to remind the mother to repeat the test as suggested. Also, the government should ensure testing kits are available in all PMTCT centers.

Study limitation

We collected data during the first wave of covid-19; adhering to prevention protocol for covid 19 especially wearing a facemask, was difficult for some mothers. We encouraged them on the importance of prevention, and we were required to distribute some masks to a few mothers who didn't have masks. Validating the data from antenatal mother cards and signing the consent form was accompanied by hand washing and sanitization, which also increased costs in our budget.

Abbreviations

AIDS	Acquired Immunodeficiency Syndrome
ANC	Antenatal Clinic
ART	Antiretroviral Therapy
HIV	Human Immunodeficiency Virus
PMTCT	Prevention of Mother to Child Transmission
RCH	Reproductive and Child Health Clinic
SPSS	Statistical Package for Social Sciences

Author contributions

UA and PJ conceptualized the study. UA collected the data, perform the analysis and wrote the first draft. PJ reviewed and approved the final version.

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