Journal of Scientific Research & Reports
12(6): 1-10, 2016; Article no.JSRR.27090
ISSN: 2320-0227

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Knowledge and Utilization of PMTCT among HIV Positive Women Attending Postnatal Clinic at Bariadi District Hospital, Tanzania

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Authors' contributions

This work was carried out in collaboration between both authors. Authors DEN and EJK developed research proposal, questionnaire and sought the ethical clearance. Author DEN with research assistants collected the data for the study. Authors DEN and EJK analyzed the collected data. Author EJK wrote the manuscript for publication. Author DEN read the manuscript before submission and agreed to be submitted for publication. Author EJK revised the manuscript based from the reviewers' comments. Authors DEN and EJK read and approved the final manuscript for publication.

Article Information

DOI: 10.9734/JSRR/2016/27090
Editor(s):
(1) Karl Kingsley, University of Nevada, Las Vegas - School of Dental Medicine, USA.
Reviewers:
(1) Sphiwe Madiba, Sefako Makgatho Health Sciences University, South Africa.
(2) Smeon Achunam Nwabueze, Nnamdi Azikiwe University, Nigeria.
Complete Peer review History: http://www.sciencedomain.org/review-history/17488

Original Research Article

Received 18th May 2016
Accepted 13th July 2016
Published 10th January 2017

ABSTRACT

Background: Mother to child transmission of HIV has been one of the major health problems in Tanzania. It occurs when a HIV infected woman passes the virus to her baby at delivery and during breast feeding. It is not known if pregnant women are aware that HIV pregnant women can pass the virus to the expecting baby and utilize the PMTCT as a prevention strategy.
Objective: The aim of the study was to assess knowledge and utilization of PMTCT among HIV positive women attending postnatal clinic at Bariadi District Hospital.
Methodology: A descriptive Cross-sectional study was carried to pregnant HIV positive women attending postnatal clinic and VTC centers using structured questionnaire.
Results: A total of 217 pregnant HIV positive women participated in the study. The results showed 85.7 were between 15-44 age group; 72.8% had primary school education and 54.8% were

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married. Further, the study showed 91.2% had knowledge that HIV could be transmitted from infected mother to her unborn child. The study showed that 90.3% had tested HIV at the booking of ANC. It was learnt that 6.5% underwent caesarean section, 92.2% of women took prophylactic ARV during labor, 87.6% took Nevirapine to save the expected child in the first 72 hours and 81.1% had exclusive breastfeeding as a feeding option to minimize risk of transmission of HIV from mother to child. Above all 86.2% of the study population received counseling and family planning education while attending antenatal clinic.

Conclusion: The findings suggest that on PMTCT during antenatal had significant behavioral change on utilization PMTCT services. This implies that if communities are well informed by an expert on PMTCT can bring behavioral change on the targeted health problem.

Keywords: Tanzania; PMTCT; Utilization; HIV women; mother to child transmission.

1. INTRODUCTION

Global HIV/AIDS epidemic has claimed the lives of nearly 4.3 million children, and about 3.2 million children are living with HIV worldwide [1]. UNAIDS [2] show in 2014, there were roughly 2 million new HIV infections, 11% of these were children. Whereas, WHO and UNAIDS [2] and Cihp [3] argue that every day over 1700 infants becomes infected with HIV; and 90% of these new infections are acquired through mother-to-child transmission (MTCT). MTCT of HIV infection refers to the situation when a mother who is HIV infected spread or transfer the infection to the unborn child either during pregnancy, labour and delivery or during breastfeeding [3]. Kapoor [4] and Adane [5] argue that most of these children live in sub-Saharan Africa are infected via their HIV-positive mothers during pregnancy, childbirth or breastfeeding. This data suggest that MTCT is a major cause of morbidity and deaths in children in developing countries. Apart from increasing HIV positive children in the society, MTCT is also causing great social problem by producing orphans after the death of one or both parents due to AIDS [4].

Currently it is being estimated that without treatment, transmission rates of HIV from mother to infant would range from 20-45%, 5-10% of infants would be infected during pregnancy, 10-15% of infants would be infected during labor and delivery, 5-20% of infants would be infected during breastfeeding [1,2]. MTCT is becoming a serious problem in developing countries and its prevalence varies from 4-32% [3,6]. Various efforts to prevent HIV transmission to expected babies by the infected expecting mothers [2,3] are being done; but majority of these women do not know their sero-status, until they are tested during the ante natal clinic (ANC). HIV infection leads to adverse outcomes such as pre-maturity, low birth weight, congenital malformations and stillbirths [7]. These health problems can be prevented if preventive measures are taken.

Tanzania has about 1.4 million people living with HIV and the prevalence rate is 5% among the adult [8]. HIV prevalence is higher among women (6.2%) than male (3.8%) [1,9]. In total people living with HIV accounts for 6% of the total number of people living with HIV in sub-Saharan Africa, and 4% of all people living with HIV globally [3,9]. Tanzania AIDS Commission (TACAIDS) [9] on the otherhand shows about 1.4 million women become pregnant each year [10]. Of these, 49.3% were women aged 15 and over are living with HIV [11]. It is currently being estimated that 72,000 are new HIV infection occurring in Tanzania. Data from Sentinel Surveillance sites in Tanzania [12] indicate that the overall HIV prevalence among pregnant women attending antenatal clinics is 8.2% [3,9]. Based on this available data in Tanzania, it is being estimated that 99,000 HIV-positive women are likely to deliver exposed infants to HIV annually [13]. Nearly a fifth of all HIV new infections in Tanzania are due to MTCT [8].

Tanzania aims to eliminate MTCT and reach 90% of all pregnant women with PMTCT treatment [8]. In addition it is targeting to reduce the MTCT rate to less than 5%, and maternal and child mortality by 90% by 2017 through Prevention of Mother to PMTCT [8]. PMTCT program in Tanzania started in the year 2000 by the Ministry of Health in collaboration with UNICEF [8]. It started with four Consultant hospitals and one Regional hospital. These were Muhimbili National Hospital, Bugando Medical Center, Mbeya Referral Hospital Kilimanjaro Christian Medical Center and Kagera Regional Hospital [14]. The purpose was to find the feasibility of integrating PMTCT in the routine Reproductive and Child Health services throughout the country. In view of two year experience showed a high feasibility and

acceptance (>80%). Ministry of Health decided to scale up beyond to other health facilities throughout the country [15].

In 2013, 77% of all pregnant women were on antiretroviral treatment for PMTCT [8]. However URT [12] have pointed the analysis of the situation PMTCT in Tanzania by the year 2007 showed a total of 1347 health facilities were providing PMTCT services. Further about 91.6% of these new ANC attendees were tested for HIV. Of those tested, 9.9% were found to be HIV positive, which is slightly higher than 8.2% HIV prevalence from the 2005 ANC sentinel surveillance results. About 60% of those found to be HIV positive through the programme received niverapine prophylaxis (at ANC and L&D), HIV exposed babies who received nevirapine syrup prophylaxis were 30%. Despite this progress in specific programmatic terms, at the end of 2007, only 34% of HIV positive pregnant women in the country are receiving antiretroviral prophylaxis to reduce MTCT [12]. Based on the information one would expect an increased coverage of the prevention of mother to child transmission (PMTCT) programme in Tanzania. It very likely there are some unresolved barriers to the programme.

1.1 Conceptual Framework

Hovland theory, argue people change their opinion as a result of receiving new information that is inconsistent with their established beliefs [16]. If the information is convincing, the people receiving it are expected to modify their beliefs [16]. But not all new information produces opinion change. Hovland further argues that there are four general classes of factors that may be present in the persuasion of settings and these are (1) the characteristics of the sources of the message (2) variations in the setting in which the communication is presented;(3) specific form and content of the message (iv) the components of the target's personal structure that include competence needs, motives, experience, habits, etc. Hovland and Janis [17] argues that for a change of an opinion to take place there are two assumptions.

i. The information presented induces the person to question his/her established or existing beliefs
ii. The information provided an answer to question asked (in our case PMTCT).

This article uses Hovland theory lens to explore the impact of training of HIV pregnant women during the antenatal clinic services on knowledge, attitude and utilization of PMTCT services. The following questions were asked as a way of assessing knowledge, attitude and utilization of PMTCT services;

1. Are child bearing women aware of the importance of PMTCT?
2. What is the proportion of these women utilizes PMTCT services?
3. What are the underlying barriers on utilizing PMTCT services?

To answer the raised questions a study was carried among the HIV positive pregnant women attending postnatal clinic at Bariadi District hospital, Simiyu region, Tanzania. In Tanzania, during the antenatal clinic women are taught HIV and its mode of spread, family planning and utilization of PMTCT services for the infected mothers to save the expected from contracting HIV.

2. MATERIALS AND METHODS

2.1 Study Design

This was a descriptive cross-sectional study that aimed to find barriers on utilization of PMTCT services

2.2 Study Area

The study was conducted in Bariadi District Hospital. Bariadi District is one of the eight districts in Simiyu Region. This district has a total population of 605,509. Total number of males is 286.785 and females 318,724 [18]. Most of the people in Bariadi District lived in houses which were built with mud and few in block bricks houses; and most the houses were roofed with grass. The important economic activities in this district were farming followed by mining, and livestock keeping. The important cash crop is cotton of which majority of people rely on it for cash income. Most of people in the study area were Christians, few Muslim and indigenous religion. The medical staffs were highly trained (with diploma and degrees) in medical field including PMTCT service. District hospital in Tanzania acts as referral hospital for rural dispensaries and health centres.

2.3 Study Population

The target population was all women of child bearing age (15-49) attending postnatal clinic at the reproductive and child health who are HIV positive at Bariadi District Hospital.

Inclusion criteria was all women of child bearing age (15-49) who were HIV positive attending postnatal clinic at the reproductive child and health (RCH) at Bariadi District Hospital and willing to participate were legible for this study; however only those who showed willingness to participate were selected for this study. Exclusion criteria on the other hand were the pregnant women who were not HIV positive and those who showed unwillingness to participate. The study was carried in six months from March –August, 2009.

2.4 Sample Size

The sample size of the study was calculated by using the formulae proposed by Yamane [19] for estimation the minimum sample size

$$N= \frac{Z^2 P (1-P)}{E^2}$$

Where by;

- N = sample size required
- Z = Standard normal deviation set at 1.96
- P = The proportional of women who are HIV positive (Utilizing PMCT methods in Tanzania (83%)
- E = Maximum likely error of the study, which is 0.05 (5%)

Therefore,

$$N= \frac{1.96 \times 1.96 \times 0.83 (1 - 0.83)}{0.0 5 \times 0.05}$$

= Thus, N = 217
Sample size was 217.

2.4.1 Research tool/ instrument

English questionnaire translated into Kiswahili was used for data collection. Kiswahili is the common language in Tanzania.

2.5 Sampling Technique

Random sampling was done for selecting HIV positive women among those attending postnatal clinic and VCT. The files were taken and checked for HIV status. The HIV positive mothers with corresponding files and were willing to participate in the study were interviewed after consenting.

2.6 Ethical Clearance

An introduction letter was obtained from the Department of Biostatistics and Epidemiology at MUHAS for permission to conduct the study. The research team introduced itself with the introductory letter to District Medical officer (DMO) at Bariadi District. The DMO introduced research team to health workers who were on RCH, who then introduced the research team to women who were HIV attending postnatal clinic. Every interviewed woman was assured of confidentiality of the information given and that the information will be used for scientific purposes only.

Before data collection the participants were informed the aim of the study and its importance. The selected participants were free to participate in the study and could leave the study at any time if they found it not good to them. The selected participants who were willing to participate in the study and meet the criteria, a kiswahili forms of consenting were given to them for signing and were collected after signing.

2.7 Data Collection

A one month period was used to collect data using Kiswahili questionnaires with closed end questions. The HIV positive pregnant women who had files that showed were HIV at the hospital during the postnatal clinic visits were interviewed.

2.8 Data Analysis

All questionnaires were assigned into serial numbers. Data coding for the variables to be measured were done, then data were entered into computer program and cleaned. The collected data on socio-demographic characteristics, knowledge of transmission, place of child delivery, utilization of prophylactics ARV and feeding option were analysed using Epi-info computer program. The analysed results are presented in the following section.

3. RESULTS

3.1 Socio-demographic Characteristics of Respondents

The sample size of the study population was 217 HIV positive pregnant women, with age group

15-44 having larger percentage of study participants. The distribution of the respondents by age, level of education, marital status, occupation and religion are shown in Table 1. The findings showed 85.7% were in the age group of 15-44, 72.8% had primary school education followed by those who had never gone to school (24.4%) and with few (2.8%) who had secondary school education. None of the respondents has ever gone beyond secondary school. Marital status, the revealed 54.8% were married, widowed 3.7% and cohabiting 4.6%. On occupation, the findings showed that 69.6% were farmers, followed petty traders (21.7%), civil servants (2.8%) and housewife (3.7%). On religion, 72.4% were Christians, followed by Muslim (20.3%) and very few who were believers of indigenous religion (See Table 1).

Table 1. Distribution of the respondents by age, level of education, marital status ocuupations and religion

Age	Number of respondents	Percent
15-24	119	54.8%
25-34	67	30.9%
35-44	29	13.4%
45-49	2	0.9%
Total	217	100.0%
Level of education		
None	53	24.4
Primary school	158	72.8
Secondary school up to form four	6	2.8
Post secondary education	-	-
Marital status		
Single	64	29.5
Married	119	54.8
Widow	8	3.7
Divorced	16	7.4
Cohabiting	10	4.6
Occupation		
Petty trader	47	21.3%
Farmer	151	69.6%
Livestock keeping	6	2.8%
Civil servant	5	2.3%
housewife	8	3.7%
Total	217	100.0%
Religion		
Christian	157	72.4%
Muslim	44	20.3%
others	16	7.4%
Total	217	100.0%

3.2 Knowledge on HIV Transmission from Mother to Child

The study wanted to establish if the respondents had knowledge on the transmission of HIV from mother to child. The findings revealed that 91.2% were aware on how HIV could be transmitted from infected mother to her new unborn child and very few (8.8%) had no knowledge if the infected mother could transmit HIV to the new born. In the analysis of the findings it was learnt that 86.2% of the respondents received counseling and family planning (FP) education during pregnancy when attending antenatal care and few (13.8%) did not receive FP education. Further it was noted that 98.4% who received counseling were satisfied with counseling process.

Besides the above, the study wanted to learn from the respondents if they had a pre-conception testing as measure of knowing their HIV status and prevention measures to be taken. The analysis of the finding showed 71.4% had tested before. However, there was a significant number (28.6%) who did not test before pregnant. The study showed that 90.3% tested at the booking of ANC; and all did it and took the result after testing. Very few (9.7%) did not test at ANC booking stage.

The study explored the reasons for not testing before from those who did not test as well as for those who did not test at the booking stage. The analysis of the findings revealed 9.7% who did not test at the booking stage were part of 28.6% who did not test before. Among the reasons reported were afraid of testing (50%), felt there was no need (40.9%) and 9.1% did not mention any reason (see Table 2)

3.3 Place of Child Delivery and Utilization of Prophylactic ARV

With the level of knowledge on PMTCT, researchers wanted to know where the HIV mothers delivered the babies. The results showed that 97.2% of the respondents delivered at the dispensary, health center or hospital while 2.8% delivered at home. Further the findings revealed that 6.5% underwent caesarean section as a way of preventing transmission of HIV from mother to child.

PMTCT services provide prophylactic ARV for prevention of the transmission of HIV to the expected baby. The study explored from the respondents who took prophylactic of ARV as

Table 2. Reasons of not testing in %

Reasons for not testing	Number of responses (Double responses were allowed)	Percent
Afraid	31	50.0%
No need	25	40.9%
others	6	9.1%
Total	62	100.0%

way of prevention of the transmission of HIV to the expected baby. The analysis of the findings showed that 92.2% of women took prophylactic ARV during labor while 7.4% did not and 0.5% did not remember. It was further learnt that 88.1% knew that ARV prevents transmission from mother to child. Further, the researchers explored from the respondents if they took nevirapine in the first 72 hours. The findings showed that 87.6% took nevirapine in the first 72 hours while 8.3% did not and 4.1% didn't know. It was also learned that 84.8% of women had knowledge that Nevirapine given to the child in the first 72 hours protects the child.

3.4 Feeding Options for Born Baby

PMTCT goes with feeding options for the newly born baby as prevention measure. The study explored the feeding options used by the respondents who were attending postnatal clinic. The analysis of the findings showed that 81.1% of respondents used exclusive breastfeeding as a feeding option to minimize risk of transmission of HIV from mother to child, 14.7% did not breastfeed at all and 4.1% were breastfeeding and giving them complimentary foods (See Table 3).

Table 3. Responses of respondents on feeding options for their babies in %

Feeding options	Number responses	Percents
Not breastfeeding	32	14.7%
Exclusive breastfeeding for six months	176	81.1%
Breastfeeding and complimentary foods	9	4.1%
Total	217	100.0%

The study also explored the recommendations on the options for feeding from the HIV pregnancy mothers. The analysis of the findings showed 90.8% opted for not breastfeed or exclusive breastfeeding for six months; 5.1% did not know and 4.1% reported breastfeeding and giving complimentary foods were the best option (see Table 4).

4. DISCUSSION

The findings have been analyzed and presented. The findings suggest if effective training by qualified experts can bring behavioral change to HIV positive pregnant women prevent MTCT as shown in present study. For examples 91.2% had knowledge that HIV could be transmitted from infected mother to their unborn children, 90.3% went for HIV testing at the booking for antenatal Clinic; and 6.5% opted for caesarian section as a way of preventing transmission of HIV from mother to child. In this study HIV positive pregnant women wanted to know their HIV status; and those affected took measures to prevent the unborn child from being infected with HIV. The present findings support the study done in a rural Zimbabwe hospital where it was found that 93% of women went for HIV testing when attending ANC services [20]. Comparing the findings from the present study and the national average in Tanzania, Tanzania Demographic Health Survey (TDHs) [21] shows nine in ten women knew the place where to get an HIV test and 59% of women had ever tested for HIV. Whereas James et al. [22] have shown 62% tested and received the results as an impact of VCT services. Increase on awareness on MTCT has also been reported by Karcher et al. [23] on the study carried in Uganda and Tanzania found 73% were aware of MTCT. Training for PMTCT should go hand in hand with availability of medical personnel, equipment and drugs at health facilities at fordable price. One of the factors for the low use of caesarian section reported in this study as a way prevention MTCT partly might be due to expenses, availability of such services and fear of the caesarian process, a common problem in developing countries [24,25]. The noted positive response to PMTCT can be partly explained by Hovland persuasion theory asserts if the information from training or adverts or campaign is convincing, the people receiving the information are expected to modify their beliefs and behavior [16].

Table 4. Responses on recommended feeding option in %

Recommended feeding options	Number of responses	Percent
Don't breastfeed/exclusive breastfeed for six months	197	90.8%
Breastfeed and giving complimentary foods	9	4.1%
Don't know	11	5.1%
Total	217	100.0%

Besides the above, the impact of effective training by qualified experts have facilitated 92.2% pregnant women in this study to take prophylactic ARV during labor and most of them delivered in health facilities; as opposed to national statistics 89.7% took prophylactic and many women (50%) delivered at home [21]. Moreover in this study, it was learnt that 87.6% took nevirapine in the first 72 hours to prevent the HIV transmission of HIV to their babies. The present study echoes a study done by Ngarina [26] and Suthar et al. [27] who revealed that 83% and 85% respectively accepted Nevirapine prophylaxis at delivery, as well as Darmstadt et al. [28] who have also shown that 84% of women gave nevirapine to their baby; and HIV transmission rate was reduced to 7.5% from 19.4%. Nonetheless, the present findings on utilization of Nevirapine to babies was higher when compared to Buhendwa [29] in Malawi 34.2% used Nevirapine in the first 72 hours; and Karcher et al. [23] in Tanzania and Uganda who showed that 43.7% and 24.1% respectively accepted navirapine.

Besides the fore mentioned issues, one of the big problems on PMTCT is feeding options because it is accompanied with stigma [30]. The present findings have shown that 81.1% of HIV positive pregnant women used exclusive breastfeeding as a feeding option to minimize risk of transmission of HIV from mother to child 4.1% were breastfeeding and giving complimentary foods. Okanda et al. [31] on the otherhand their study in Kisumu, Kenya have shown that counseling initiated prior to delivery and continued during the post-partum period provided a consistent message reinforcing the benefits of exclusive breast feeding (EBF) resulted an adherence to EBF in resource limited settings. This is encouraging at least more than three quarters in this study, had the knowledge of protecting their infants feeding options. However, despite the teachings provided in the hospitals and other health facilities there is a significant number of women who do not know the feeding options for HIV infected mothers to their babies. In this study for example 5.1% did not know the breastfeeding options. The present findings on knowledge on feeding option are much better when compared to Ndubuka et al. [32] study in Gaborone, Ethiopia and Hailu at Jimma, Ethiopia respectively who reported 50% and 69.5% did not know the feeding options. It is very likely that many such women in Tanzania and other developing countries as well do not know feeding options. These should be targeted during the intervention in creating awareness and utilization of PMTCT using experts in the field of PMTC during village meetings and as well as mass media written, audio, visional and social digital networks like face book, you tube and cell pone message.

One of the components in VCT is advice and persuasion of the importance of FP to HIV infected mothers as preventive measure [33-38]. In this study findings have shown that 86.2% of the participants received counseling and family planning education during pregnancy; and 98.4% were satisfied with the counseling process. The TDHs [21] on the otherhand has shown that 92.7%% of women in Tanzania were counseled and 45.6% went testing and took the results 3.4% did not take the results. However assessing sub-Saharan African countries as a whole on utilization of VCT for PMTCT remains low particularly in remote rural settings [37]. Many sub-Sahara African countries have more than half the people estimated to be living with HIV are still not aware of their HIV status [38]. These findings signal an alarm to take measures to prevent infections to newborn, rest will be increasing overtime. There is a strong need of improved VCT services that will motivate PMTCT services and MTCT.

5. CONCLUSION

The present study findings supports Hoverland theory that argues if the information of the expected behavior to change is convincing people receiving it are expected to modify their behavior. In this study even though it was hospital based with a too small sample size to reflect the actual findings in larger population, it has shown a change is likely to happen if highly qualified personnel and equipment are involved

in training and provision of the services. As impact of effective training in this study majority of women had knowledge that HIV can be transmitted from infected mother to their unborn children and took steps to prevent MTCT and even few 4.1% underwent caesarian section. It is a big step and needs to be sustained by using highly trained experts in retraining and use of mass media and social media like Wasp, Face book and twitter with well structured messages that trigger people's mind on the use of PMTCT service. It is expensive but can yield good results of preventing MTCT.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Peer-review history:
The peer review history for this paper can be accessed here:
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