Predictors of Irregularities in PMTCT / eMTCT Service Attendances in Samia Bugwe North: Health Facility Study - Busia - Uganda

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Key words: Predictors, PMTCT / eMTCT, Attendance and Mothers

Abstract

Mother-to-child transmission (MTCT) of HIV remains a major public health problem and continues to account for a considerable proportion of new HIV infections among young children. Utilization of PMTCT / eMTCT services among mothers is generally low and inadequate in many developing Countries. It's a challenge and the success to promote uptake hangs on the ability to establish the possible influencing factors to the problem. [23].

This study gives an estimate of 43.75% (140) of women having not regularly attended PMTCT / eMTCT services and about 20% children who tested HIV positive being of mothers who had irregular attendance in PMTCT / eMTCT services [Facility PMTCT / eMTCT register 2014)]

The study aimed at determining and examining predictors to irregularities in PMTCT / eMTCT attendance by mothers. It was a descriptive, cross-sectional study employing mainly quantitative technique. The quantitative technique was conducted among 175 mothers with irregular attendance in PMTCT / eMTCT complemented by qualitative among 24 health workers providing PMTCT / eMTCT service.

Quantitative data was collected using a semi-structured questionnaire by interview and analyzed by using SPSS version 21.0. Cross-tabulation and *chi-square* were used to determine factors associated with irregular attendance in PMTCT / eMTCT services.

The research detected a prevalence of irregular attendance among PMTCT / eMTCT users as 43.75%. Low level of education (P-value =0.001), low monthly income (p-value=0.001), Occupation (p-value=0.011) and long waiting time (P-value = 0.03) were significantly associated with irregular attendance in the service. The prevalence of irregular attendance (43.75%) was however lower than 54% of [13] although, in agreement with [18] who rated maternal adherence to preventive drug regimens at time of delivery that varied widely across sites between 35% and 93.5%.

The qualitative section used open-ended in-depth interview. The quotes were used in report to complement the findings of quantitative data. The results were that education, distance, economic status and male involvement were highly associated with irregularities in PMTCT / eMTCT attendance.

Key words: Predictors, PMTCT / eMTCT, Attendance and Mothers

Background of the study

The Human Immunodeficiency Virus (HIV) infection which causes the Acquired Immune-Deficiency Syndrome (AIDS) continues to be a serious global problem. Worldwide, there are about 7,400 new infections and 5,500 HIV-related deaths daily. According to [23], an estimated 34 million people worldwide are infected with HIV, 52% of who are women and more than two-thirds (68%) of the global HIV population live in the Sub-Sahara African. Of these, 3.4 million are children under 15 years of age, 90% of whom live in Sub-Saharan Africa and about 150,000 of them live in Uganda [28].

Over one thousand children below 15 years of age get infected with HIV daily, 90% of who live in SSA, where HIV has its greatest toll [23]. HIV is transmitted through many roots including, vertical transmission (MTCT), which occurs during: - pregnancy, labour and breastfeeding, and is responsible for an estimated 20% of all HIV infections and more than 95% of paediatrics HIV transmissions [30].

Human Immunodeficiency Virus (HIV) Mother-to-Child Transmission (MTCT) remains a major public health problem and continues to account for a sizeable proportion of new HIV infections among young children [25]. In addition, the global estimates showed that 370,000 children were newly infected with HIV in 2009 [23]. Most of them were from developing countries with more than 90% found in sub-Sahara African countries. In 2011, in sub-Saharan Africa, the region where 92% of the world's HIV-positive pregnant women live, 59% of them received antiretroviral therapy (ARV) prophylaxis during pregnancy and delivery [24]. Despite the biomedical potential to eliminate vertical HIV transmission, drug adherence to short regimens is often suboptimal [18].

In Uganda, the prevalence of HIV infection is estimated at 6.8%, with 52% of HIV infected individuals being women. The highest prevalence of HIV is among women of child-bearing age of 19 to 25 years. About 78,000 Ugandan women living with HIV become pregnant annually, resulting into about 25,000 annual paediatric HIV infections. An estimated 150,000 children under 15 years of age are living with HIV, making a prevalence of about 0.7 percent [23].

To halt the burden of HIV mother to child transmission, different strategies have been put in place, including the Prevention of Mother-to-Child Transmission program. The later focuses on preventing new cases of HIV among children whose mothers are HIV positive [27]. PMTCT / eMTCT comprises a cascade of services including provider-initiated HIV testing and counseling during antenatal care visits in labour wards and the provision of preventive antiretroviral (ARVs) drugs to both mothers and their infants [27].

During the past decade, significant progress has been made in scaling-up PMTCT / eMTCT services among pregnant women, particularly in resource limited countries. This led to the HIV mother to child transmission decrease to 90%, though the accessibility and the attendance to antenatal and postnatal care services, particularly in developing countries is still a challenge [23]. Different factors are thought to contribute to that problem. The world health organization enumerates some of those factors such as

the inadequate health facilities, inadequate well trained health care providers, inability to offer early and easy diagnosis for children and poor attitudes of PMTCT / eMTCT users [29].

The program of PMTCT / eMTCT in Uganda is free of charge and it involves provider-initiated HIV testing during antenatal care visits in labour wards, provision of antiretroviral (ARV) drugs (for prophylaxis or lifelong therapy to HIV positive mothers and their infants). The package is available at all primary health care system and is provided by midwives mainly. The main challenges that the program faces include inadequate access to antenatal and postnatal services, particularly in developing countries, shortage of health facilities and health care providers [29].

Since the start of the program few studies have been done but focusing more to assessing the effectiveness of the program where the main concern was to know at which extent ARV prevents HIV mother to child transmission and how mothers adhere to them. However, the study seeks establish and examine the factors contributing to the irregularities in attending PMTCT / eMTCT services.

Study area

Location, the research area is mainly rural with about 230 square Kilometers accommodating a total population of 150,142. The biggest size of the research area is rural served by one health Centre IV, and 3 Health Centre IIIs. All the four health facilities provide Mother – Child Health [MCH] Care services including PMTCT / eMTCT.

Socially; the entire health sub-district is predominantly rural with about 96% living in the rural setting. The Health Sub-District is with differing population densities (From urban to typical rural).The area is ethnically characterized by different ethnic groups and most occupied by new occupants than the original indigenous tribe. The indigenous groups are Samias and Iteso. However other in-migrating groups include: - Kenyans, Rwandese, and Sabinis, Gishu, Japadhola, Soga, Banyakore- Bakiga from other parts of Uganda

The age-sex structure follows atypical pattern where the largest population is the youngest (1 day - 5years old) and gradually diminishing with age. 25% of the household in the rural area is being headed by females. The average family size is 5 in rural as compared to 4 in the urban- as per 1991 Population and Housing Census.

Economically: - The majority of the population stays in the rural setting / non-urban and so do practice mixed faming – animal and crop husbandry as a source of living. Minority of the population especially those in urban setting, with exception of the civil servants, gold mining, smuggling, business that include simple retail shops, produce (Fresh and dry) and fish selling, hotels/restaurants, and boarder-boarder riding are the main sources of income.

Education; - The research area has a total of 28 primary schools, 12 secondary schools (Private and Government) and 1 University. Only about 48% of the population (both Males and Female) has had

education up to senior 4 levels. Despite the provision of universal primary and secondary education, and health facilities which are in a distance of 7-10 Km apart underutilization of PMTCT / eMTCT.

Materials and Method

It was a descriptive, cross-sectional, health facility based study carried out during March to August 2015. For study implementation, mainly quantitative research methodologies / philosophies were employed though with minimal qualitative. The project was guided by code of belief of two common but integrated theoretical frameworks in PMTCT / eMTCT care services attendance: - (the social cognitive theory and the stages of change model). The aim of the quantitative piece was to determine prevalence of irregular attendance and determine and describe the factors associated with as qualitative was to seek for views of the key informants towards PMTCT / eMTCT consumption barriers

The study was conducted among 175 mothers enrolled and irregularly attended PMTCT / eMTCT care during their clinic days across the health sub-district in the four health facilities offering the care / services. The research employed a purposive / systematic (none-probability) sampling techniques in the research population for quantitative data collection methodology.

Open- Epi version 3, calculator was used to determine the sample size (n) for the research. The software program applies the under stated formula with Confidence limit as +/-% of 100 and absolute precision of 5%. Design effect of 1.0 for random samples.

Population size(for finite population correction factor or fpc) (*N*): 320

Hypothesized % frequency of outcome factor in the population (*p*):50%+/-5

Confidence limits as % of 100(absolute +/- %)(*d*): 5%

Design effect (for cluster surveys-*DEFF*): 1

Sample Size (*n*) for Confidence Levels 95% being 175

Sample size n = [DEFF*Np(1-p)]/ [$(d^2/Z^2_{1-\alpha/2}$*(N-1)+p*(1-p)]

SPSS Version 21.0 was utilized to analyze quantitative data by which the relationships between the dependent and independent variables were established. A semi-structured in-depth questionnaire was administered to various participants independently after purposive sampling criterion had been applied to select the sample population. Data for qualitative analysis was collected from 12 health works (key informants) using an interview – guide.

Quality of the data collection tool was ensured through pretesting before final use and also translating it into three commonly used local languages – Lusamia, Luganda and Kiswahili. Data measurement level was described under validity and reliability. The validity and reliability of data collection instruments was tested prior to carrying out the research.

Issues of ethical considerations were addressed with most emphasis to Privacy, Confidentiality, Informed consent and special consideration to the minors like the under 18 years, those not able to answer questions in any of the three stated languages.

Results

This study considered a sample size of 175 mothers enrolled and irregularly attended PMTCT / eMTCT clinic in the four Health Centres as distributed under methodology. About 45.3% (145) had irregular attendance in the PMTCT / eMTCT services (PMTCT / eMTCT HSD Register 2014)

Table 1: Participants' distribution in PMTCT / eMTCT services (N = 320). (PMTCT / eMTCT HSD Register 2014)

	Frequency	Percent
Attendance		
Irregular attendance	145	45.3
Regular attendance	175	54.7
Total	320	100.0

Demographic factors

Majority of mothers 46% (n = 81) were in the age group of 20 to 24 years, whereas those aged below 20 years were few *20.4% (n=36).* There were more Catholics *40% (n = 70),* more Samia / Bagwe *46% (n = 80.5).* More of the population was married (Legally and illegally combined) 77.3*% (n = 136*). Majority of the mothers *68.3% (n = 120)* were from monogamous marriages though including both illegal and legal while *42.4% (n = 74)* had had their first or second deliveries. Majority of the mothers *69.5% (n =121)* had low Education level (< P.7), while *42.7% (n = 75*) of mothers were local farmers and *48.4% (n = 85)* were illegally married.

Community factors

Regarding transport to health facilities, *56.2% (n = 98)* of mothers reported walking to health facilities for PMTCT / eMTCT services followed by motorcycle (boda-boda) users *36% (n = 63).* Similarly, *48% (n =84)* of the women were living in 1 to 2 kilometer distance to the health facility taking between 45 to 90 minutes to the facility, explaining probably why most women preferred to walk.

Facility / health workers factors

Majority of the mothers *75.9% (n = 133)* rated the attitude of health workers as good. *48.6% (n = 85)* reported waiting time being dependent on the number of clients one finds on the line and the time of arrival at the facility. Furthermore, regarding the availability of services providers on each clinic day, 95.8% (168) of participants with irregular attendance responded that health care providers are always available on each day of visit. PMTCT / eMTCT attendance was fair with 65*% (n =114*) attending as

scheduled for over 12 month. Much as *62.3% (n = 109*) said they were asked to pay some money, although mostly less than one thousand shillings.

Next of Kin factors

Most next of kin were between 21 to 30 years *55% (n = 96)* and their main occupation was defined business as in form of self-employment. Most mothers *61.6 (n = 108),* reported getting support from their spouses mostly in form of cash to facilitate their transportation to and from the services provision centers. However, many mothers reported using this money as a payment to the services providers.

DISCUSSION

Prevalence rate of irregularities in PMTCT / eMTCT attendance

The data gathered in this study revealed a prevalence of irregular attendance in PMTCT / eMTCT services as being high with 43.75% (n = 140). Although, this percentage is lower than many other peoples' results it still remains an issue to address. The results are noted to be lower than that of [13] in Tanzania though in same range with [10] in Sub-Saharan Africa. The percentage from a research conducted in Tanzania where 54% of HIV positive women who did not attend regularly in PMTCT services [13].The cause of this slight difference may be due to the differences in sampling strategy as they used stratified random sampling strategy. However, the study is in similar range of loss to follow up of mother-child pairs ranged from 19% to 89.4% in the reviewed articles [10].
Using cross tabulation and chi-square test analyzes of the relationships between the irregular attendance in PMTCT / eMTCT and different factors including Age, Marital status, Education levels and Monthly income ware investigated mainly.

The results from this study showed that the rate of PMTCT / eMTCT attendance is affected by various factors; including demographic, communal, facility and next of kin' factors

Table 2: Distribution of the participants according to individual factors associated with attendance in PMTCT services

	Irregular attendance	**P-value**
DEMOGRAPHIC FACTORS	**N (%)**	
Age range		0.800
<20 years	20.4% (36)	
20-24 years	46% (81)	
25-29years	30%(53)	
30 - 34years	19% (33)	
> 35 years	17 (30)	
Total	100% (175)	
Marital status		0.287
Legally married	28.9%(51)	
Illegally married	48.4% (85)	
Single	13.7% (23)	
Divorced	4.5% (8)	

Widowed	4.5% (8)	
Total	100%(175)	
level of Education		0.001
Informal	19%(33)	
Primary	50.5% (88)	
Secondary	224.6% (43)	
Tertiary	5.9% (11)	
Total	100%(175)	
Monthly income		0.001
0 to 10,000 /=.	74.2% (130)	
10,001 to 20,000/=	15.8% (28)	
20,001 to30,000/=	6.4.% (11)	
>30,000/=	3.6% (06)	
Total	100% (175)	
Religion		0.061
Catholic	40% (70)	
Protestant	32.3% (57)	
Moslems	19.3% (33)	
Saved	8.4% (15)	
Total	100% (175)	
Parity		0.056
< 1	5.0% (9)	
1 – 2	42.4% (74)	
3 – 4	36.2%(63)	
>4	16.4% (29)	
Total	100% (175)	
Occupation		0.011
Local farmer	42.7% (74.7)	
Self employed	27.6% (48.3)	
Private - Employed	18.3% (32.0)	
Civil servant	10.4% (20.0)	
Total	100% (175)	

Demographic / Individual factors

The results of this study indicated that mothers with high ratio of irregularities in PMTCT / eMTCT were those with low monthly income (p-value=0.001). This is in agreement with findings of [11], [21], [22] where inadequacy of money and socioeconomic factors in low income areas prevented follow-up visits and proper uptake of the services. Astonishingly, age in this study was not associated with irregularities in attendance of PMTCT / eMTCT services p-value = 0.800 as it was with [1], [3], [8], [18] in their respective studies.

Opposite to these findings and that of [8], [22], research conducted in Sudan, Uganda, Kenya and Sub-Saharan Africa by [1], [3], [8], [18] showed that younger mothers were less likely to receive/adhere to PMTCT services. The reason for differences in findings between this research and [1], [3], [8], [18] may have been due to different in the study designs used, sample size, geographical location.

Regarding the level of education, the study revealed that low level of education (< P.7) was significantly associated with irregular attendance compared to those with advanced level of education

(P-value=0.001). This finding is analogous to that of [1], [3], [18], [28] where lower maternal educational level was associated with poor uptake or not receiving / taking ARV prophylaxis. This depicts the importance of education / knowledge level in the utilization of PMTCT / eMTCT services.

At the level of marital status, (48.4%) of participants who attended irregularly were illegally married as compared to legally married participants who make 28.9% of irregular attendance in PMTCT / eMTCT services. Single, divorced and widowed who have attended irregularly were 13.7%, 4.5% and 4.5% respectively. No significant relationship between marital status and rate of attendance in PMTCT / eMTCT services (P-value = 0.287) was noted. This result is contrary to studies by [2], [28] conducted in Zimbabwe and Rwanda respectively, where married women or those living with a male partner [2] and unmarried women [28] respectively were less likely to use prophylaxis or access antiretroviral therapy. This divergence ought to be due to the fact that the number of participants who were not married was low in the sample size used in this study. Contrary to these findings, in the study conducted in Zimbabwe the number of participants who were not married was high.

Next of kin related findings

The present study, revealed that lack of husband support was associated with irregular attendance in PMTCT / eMTCT services with (P-value = 0.021). This is in agreement with findings by [21], [18] done in Uganda and done in Sub-Saharan Africa respectively, where lack of partner or family support and involvements were frequently mentioned as one of the main barriers to accessing PMTCT / eMTCT services. However, [11] depicted no relationship between husbands' education and involvement in PMTCT / eMTCT

Facility / Institutional related factors

Although participants stated that the time spent is directly proportional to the time of arrival and the number of clients you meet on the line, waiting time before getting PMTCT / eMTCT service was significantly associated with irregular attendance in PMTCT / eMTCT services (P-value = 0.034). This result is in agreement with results from Kenyan study where long waiting time due to high patient turn up was associated with irregular attendance [2], [8],[21]. Relationship between health care providers and the clients attending PMTCT / eMTCT was not found to be associated with the rate of attendance (P-value = 0.711). This is different from the result of a study conducted in South Africa where negative staff attitude was frequently cited as barrier to returning to facilities regularly for PMTCT / eMTCT, limiting the opportunity to receive prophylaxis or combined antiretroviral therapy [6]. This difference may be due to the overwhelming number of clients in South Africa than in Uganda – Busia - district. Maternal sero-conversion in pregnancy and breastfeeding, and possibly false-negative HIV tests, were important reasons for prevention of mother-to-child transmission (PMTCT) failure as stated by other writers.

Communal factors

Long distance to service sites was astoundingly not associated with irregular attendance in PMTCT / eMTCT services (p-value = 0.376). Oppositely, the results found in the study done in Malawi showed that the distance to facilities and frequency of visits required were another key issue affecting access to PMTCT / eMTCT treatment for mother and infants (Kasenga, 2010). This difference ought to be due to improvement in availability and accessibility of health facilities in Uganda – Busia – District than in Malawi. HIV related stigma, is one of the communal factors that hindered the uptake of (PMTCT / eMTCT services in different country round the world [6], [11], [18], [21]

Univariate and multivariate association between factors (independent variables) and PMTCT / eMTCT care attendance (dependent variables) was investigated using an ordered logistic estimation technique using the maximum likelihood approach. The study estimated a standard ordinal logistic regression using $\ln(\vartheta_j) = \alpha_j - \beta_j x_i$ Where ϑ_j = probability (PMTCT / eMTCT Irregular attendance ≥ 1) /1-probability (PMTCT / eMTCT Irregular attendance ≥ 1) and α is the intercept, β is the coefficient for an individual predictor level

Considering the four main hypothetical variables (age, education, economic status and husband support), Univariate analysis did not detect any predicting power on the irregularities in PMTCT / eMTCT attendance. Mothers aged less than 20 years had a 0.11 increased odds (11% increased possibilities) of irregularities in PMTCT / eMTCT attending compared to those aged more than 20years, assuming all other factors are kept constant. Mothers with spouse / husbands' support had increased chance of adherence to PMTCT / eMTCT attendance compared to those who didn't have and this variation in odds ratio was established both at bivariate and multivariate levels (though insignificant, p-value > 0.05).

When education and monthly income were assessed both at bivariate and multivariate levels, the study found that mother with higher education level (≥ Senior 4) and high monthly incomes (20,000 to 50,000Ugshs.) had higher affinity to adhere to the schedule compared to their counterpart with low education (≤ Senior 4) and low monthly incomes, considering all other factors inactive.

Qualitative data collected using open-ended in-depth interviews among 24 health workers were thematically coded based on the major thematic areas of the study that include: - individual, facility, and communal related themes. Finally, some quotes were also used in the report to complement the findings of the quantitative study. The results were that education, distance, economic status and male involvement were highly out lined as predictors of irregularities in PMTCT / eMTCT attendance.

Conclusion and Recommendations

This study establishes the prevalence rate of irregular attendance in PMTC / eMTCT clinics to be 43.73% being highly associated with: - low level of education (p-value=0.001), low monthly income (p-value=0.001), Lack of husband support (p-value=0.021) and long waiting time (p-value=0.034). Many other factors in support of the hypothetical factors in influencing service uptake included presence of traditional birth attendants and husband's education level.

The study therefore recommends the following: - Improve mother's education and knowledge especially towards PMTCT / eMTCT, Improve household monthly incomes through creation of Income generating activities, hold community sensitization with males to promote their involvement in the program. Incensement in the number of health services providers and clinic days,

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