

Missed Prevention of Mother-to-Child Transmission of HIV (PMTCT) Visits and Associated Programmatic Predictors: A Pilot Study

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Abstract

Missed Prevention of Mother-to-Child Transmission of HIV (PMTCT) visits have contributed to the delayed achievement of elimination of mother-to-child transmission of HIV. Missed visits promote attrition from prevention of mother-to-child transmission of HIV program and antiretroviral drug resistance. The purpose of the study was to determine the prevalence of missed PMTCT visits and its associated predictors. A descriptive cross sectional survey was carried out at a District Hospital in Goromonzi, Zimbabwe. Fifty-three women completed closed-ended questionnaires pertaining to PMTCT visits and exposure to PMTCT activities. A total of 24.5% missed at least one scheduled PMTCT visit. Statistically significant predictors of not missing a PMTCT visit were satisfaction with family support ($\beta = -0.73$, $p = 0.029$) and level of satisfaction with PMTCT services ($\beta = -0.00076$; $p = 0.04$). The number of days by which scheduled visits were missed were inversely correlated with visit number ($\beta = -2.99$, $p = 0.04$). Enhanced family support and quality improvement to improve patient satisfaction may reduce missed visits. Availing women with a more active role in PMTCT may also reduce the prevalence of missed visits.

Keywords

Missed Visits, Option B Plus, Pilot Study, PMTCT (Prevention of Mother-to-Child Transmission of HIV), Predictors

1. Introduction

Prevention of Mother-to-Child Transmission of HIV (PMTCT) is a key strategy in the global AIDS response towards elimination of HIV and AIDS by 2030 [1]. Since the launch of the elimination of mother-to-child transmission of HIV initiative (eMTCT) countries such as Cuba, Armenia, Belarus and Thailand have eliminated mother-to-child transmission of HIV (MTCT) [2] [3]. To achieve elimination breastfeeding, countries need to have MTCT rates 5% or below; non-breastfeeding populations need to sustain MTCT rates of 2% or below [4]. Africa, where the majority of countries are breastfeeding countries, has so far been unable to achieve and maintain an MTCT rate of 5% and below. Zimbabwe has managed to reduce MTCT rate to 6.7%, due to effective PMTCT program. However, the program is impeded by poor retention rates. A 2012 survey in Zimbabwe found an attrition rate of 43%, along the PMTCT cascade [5]. Attrition in PMTCT is usually due to loss to follow up and death. Both of the two are associated with missed PMTCT appointments.

Countries are aiming to achieve the 90-90-90 targets by 2020. According to the targets, by the year 2020, 90% of people with HIV should know their status and 90% of people diagnosed with HIV infection should be on lifelong antiretroviral therapy. The last 90 in the 90-90-90 strategy aims to have 90% on ART having viral suppression [6]. Missed PMTCT and HIV care visits may stall progress towards elimination of HIV by increasing resistance to antiretroviral medicine and worsening clinical, virologic and immunologic outcomes. It also increases treatment costs as individuals get managed on relatively expensive second line or third line ARV medicine [7] [8]. About 35% of adults with HIV in Zimbabwe are reported to be on second line ARV drugs.

Many innovative strategies have been used to improve retention in PMTCT, hence reduce the frequency of missed visits. The retention interventions can be health centre based or community-based. In a 2016 systematic review of interventions to improve retention, identified strategies to improve retention in PMTCT included task-shifting to enable nurses to prescribe antiretroviral drugs, integrating PMTCT services in antenatal clinics (ANC), quality improvement at health centres, CD4 testing at health centres, facility-based peer support, encouraging male partner support and using cell phone reminders [9]. Incentives, reinforcement, mobile phone education, laboratory courier for CD4 samples and education of midwives were also proved to improve retention in PMTCT [10].

Despite all these interventions being implemented in most settings, retention remains poor [11]. There is also little documented evidence of missed visits and their correlates in public PMTCT programs, including predictors of missed visits in such settings. More so, the evidence is lacking since the world Health Organization recommended the PMTCT Option B plus and, recently, the test and treat strategy. The purpose of this study was to determine the prevalence of missed PMTCT visits and determine programmatic PMTCT predictors of missed visits.

2. Methodology

The pilot study was conducted through a descriptive survey method in October 2016. Two questionnaires were administered. Both questionnaires had closed-ended items. They were administered to randomly selected women enrolled in PMTCT at Makumbe District Hospital, Zimbabwe. The study site was purposively selected for having a diverse catchment area, which included rural and urban population. Randomization was achieved through coin flipping. Only women enrolled in PMTCT Option B plus at the site and could understand either English or the vernacular Shona language were approached. Women who were enrolled in the Option B program or who visited the PMTCT centre for emergency supply of antiretroviral drugs [ARVs] were excluded from the study. A total of 53 women were selected to participate in the study. The sample size was based on the central limit theorem [12]. The study was then explained, including the concept of voluntary consent. Participants proceeded to complete the questionnaire after giving voluntary documented consent. Participant visit information was obtained from respective OI/ART (Opportunistic Infections antiretroviral therapy) registers. The main outcome measures were missed PMTCT visits and number of days by which scheduled visits were missed.

Ethical Considerations

The study observed ethical principles according to the Nuremberg code. The investigator had a valid competence in ICH-GCP (International Conference on Harmonization—Good Clinical Practice). Approval to conduct the study was granted by both the J REC (Joint Research Ethics Committee for University of Zimbabwe College of Health Sciences and Parirenyatwa Group Hospitals) and The Medical research Council of Zimbabwe (MRCZ). Data were analyzed for descriptive statistics and both multiple linear and multiple logistic regression using STATA software.

3. Results

3.1. Demographic Features

Fifty-three women in PMTCT participated in the study. The age of participants showed a multimodal beta distribution with modal ages of 29, 32 and 33 years ($\gamma = -0.003$; $SD = 6.7$). Forty-one (77.4%) participants had attained secondary school education; one [1.9%] had a tertiary education qualification. Forty-six (86.8%) participants were rural dwellers. Thirty (56.6%) participants were unemployed. It was not surprising that 46 (86.8%) had a monthly income not exceeding US\$250. On the other hand, 48 (90.6%) were Christians while 2 [3.8%] were affiliated to the traditional religion. Thirty participants (56.6%, 95% CI = 0.4; 0.7) were pregnant and 43.4% (95% CI = 0.3; 0.6) were breastfeeding. Both the duration of pregnancy and duration of breastfeeding were negatively skewed. The median duration of pregnancy was 6 months (IQR = 2 months). The median duration of breastfeeding was 5 months (IQR = 9 months). The male con-

dom, used by 19 (35.8%) and The Progesterone only pill (POP), used by 13 (24.5%) participants and Depo Provera[®], used by 10 (18.8%) participants, were the commonly used methods of family planning by the participants. All participants had disclosed their HIV positive status to their husbands or partners. The participants' demographic characteristics are summarized in **Table 1**.

3.2. Current Visit Information

Forty-seven (88.7%) participants the health centre as their usual source of health care and 30 (56.6%) had visited the health centre at least once in the previous year. Only seven (13.2%) spent more than 3 hours coming to the health centre. The participants' mean distance from the Hospital was 8.1km (SD = 5.4 km) and travelled to the Hospital in an average of 57 minutes (SD = 38.3 minutes). Thirteen [(4.5%) participants had missed a scheduled visit. Another 13 (24.5%) were members of an HIV-related support group. Since commencing the recent PMTCT program, the participants had a mean of 7 (SD = 5.4) PMTCT visits. On the other hand, the participants had a median of 12 months (IQR = 19 months, skewedness = 2.7). Lastly, the participants had missed the current scheduled visit by up to 62 days. Those who had come earlier than the scheduled review date did so by up to 23 days before the scheduled PMTCT visit. Those who reported having come to the PMTCT centre were 22 (41.5%). The mean participants' CD4 count was 463 cells/ μ L (SD = 322.6 cells/ μ L). Participants CD4 counts ranged between 6 and 1360 cells/ μ L. Data for the current participant visit is summarized in **Table 2**.

3.3. Participants' PMTCT Experience at the Site

According to **Table 3** which summarizes the participants' PMTCT experience, 39 (73.6%) did not get peer support in PMTCT. Eighteen (34.0%) received community health worker support. Motivation to come for PMTCT visits included cell phone reminders, for 15 (28.3%) participants and cash motivation, for 5 (9.4%). Nobody was referred to another health centre for ARV drugs. While 52 (98.1%) were attended by a female nurse at the PMTCT centre, 27 (50.9%) did not know the nurse by name. Few participants had paid for consultation, medical supplies, laboratory investigations and medication. However, 46 (86.8%) had paid to register their pregnancy at the health centre. Forty-two (79.2%) perceived their health as having improved since they began to take ARV drugs. Ultimately, four (7.5%) had their breastfeeding child having acquired HIV.

3.4. Participant Satisfaction

The instrument for participant satisfaction with the PMTCT programme at the hospital yielded a Cronbach's alpha of 0.92. The mean satisfaction score was bimodal with a median of 28 (IQR = 8). The 33.3 percentile was 25 and the 66.7 percentile was at a total score of 30. Thus, scores below 25 implied poor satisfaction and a score of 30 implied complete satisfaction. Values in between reflected

Table 1. Demographic characteristics (n = 53).

Variable	Frequency	Percentage
Level of education		
Primary	11	20.8
Secondary	41	77.4
Tertiary	1	1.9
Place of residence		
Urban	7	13.2
Rural	46	86.8
Employment		
Formally employed	8	15.1
Self-employed	15	28.3
Unemployed	30	56.6
Monthly income		
\$0 - \$250	46	86.8
\$251 - \$600	6	11.3
Above \$600	1	1.9
Religion		
Christianity	48	90.6
Traditionalist	2	3.8
Moslem	3	5.7
Duration on ART		
Less than 3 months	7	13.2
3 - 12 months	10	18.9
1 to 3 years	20	37.7
More than 3 years	16	30.2
Stage in PMTCT		
Pregnant	30	56.6
Breastfeeding	23	43.4
Family Planning method		
None	2	3.8
Male condom	19	35.8
Female condom	3	5.7
Jadelle®	3	5.7
Depo Provera®	10	18.8
POP	13	24.5
COC	3	5.7
Disclosed to husband or partner		
Yes	53	100.0
Total	53	100

Table 2. PMTCT centre visit information (n = 53).

Variable	Frequency	Percentage
Is this your usual source of health care		
No	6	11.3
Yes	47	88.7
Travel time to hospital		
Less than 1 hour	27	50.9
1 - 3 hours	19	35.8
More than 3 hours	7	13.2
Duration of exposure to Hospital		
Less than 6 months	6	11.3
6 - 12 months	11	20.8
1 - 3 years	16	30.2
More than 3 years	20	37.7
Hospital visits in past 2 months		
None	28	52.8
One or two	9	17.0
More than 2	16	30.2
Hospital visits in the past year		
None	23	43.4
One or two	13	24.5
More than 2	17	32.1
Hospital being planned centre of delivery		
Yes	39	73.6
No	14	26.4
Type of visit		
Scheduled	42	79.2
Unscheduled	11	20.8
Missed a scheduled visit		
Yes	13	24.5
No	33	62.3
Transport cost per visit		
No direct monetary cost	8	15.9
Less than \$10	42	79.2
\$11 - \$20	3	5.7
Membership to a support group		
Yes	13	24.5
No	36	66.0
Do not know	4	7.5
Coming for PMTCT with partner		
Yes	22	41.5
No	31	58.5

Table 3. PMTCT experience.

Variable	Frequency	Percentage
Receiving peer support		
Yes	14	26.4
No	39	73.6
Receiving community health worker support		
Yes	18	34.0
No	35	66.0
Having had a cell phone reminder for PMTCT services		
Yes	15	28.3
No	38	71.7
Cash motivation to come for visits		
Yes	5	9.4
No	48	90.6
Referral for:		
Blood tests	2	3.8
X-ray	8	15.1
Antiretroviral drugs	0	0.0
Cotrimoxazole	4	7.5
Hospital admission	4	7.5
Outpatient treatment	1	1.9
Sex of health care worker		
Male	1	1.9
Female	52	98.1
Know health worker by name		
Yes	26	49.1
No	27	50.9
Services paid for		
Booking	46	86.8
Consultation	1	1.9
Supplies or equipment	5	9.4
Medication	2	3.8
Laboratory tests	3	5.7
Present health		
Excellent	26	49.1
Good	16	30.2
Average	10	18.9
Poor	1	1.9
Progress in PMTCT		
Improved	42	79.2
Still the same	8	15.1
Worsened	3	5.7
Satisfied with family support in PMTCT	48	90.6
Satisfied community support in PMTCT	37	69.8
Current HIV status of child		
Positive	4	7.5
Negative	30	56.6
Unknown	19	35.9

optimal satisfaction. Nineteen (35.8%) had complete satisfaction with PMTCT services at the hospital, **Figure 1**.

Multiple linear regression yielded two statistically significant predictors of missing a visit, namely; satisfaction with family support ($\beta = -0.73$, $p = 0.029$) and level of satisfaction ($\beta = -0.00076$; $p = 0.04$). On the other hand, there was an inverse correlation between the current visit number and the number of missed days ($\beta = -2.99$, $p = 0.04$). Other predictors of missed PMTCT visits such as income, transport cost to health facility, CD4 count, peer support and community health worker support were not statistically significant.

4. Discussion

Findings from this study showed that 24.5% of the women missed a scheduled visit. Satisfaction with the PMTCT programme at the health centre and family support were associated with not missing a PMTCT visit. Not surprisingly, participants who had just been commenced on PMTCT, that is, with few PMTCT visits were more likely to miss a scheduled visit by more days.

In this study 24.5% participants missed the scheduled PMTCT visit. This was a lower figure than in a national survey whereby 43% were lost to follow up by the time of the third drug pick up [5]. However, missing a single PMTCT visit can neither be directly inferred to retention in PMTCT nor to attrition. In this study, peer support and community health worker support were not statistically significant predictors of missed visits. This is not surprising since most community interventions have not been proven to improve retention in PMTCT [13]. For instance, use of community health workers, counselling in the community and HIV disclosure [14] [15]. This may be possible because the interventions tended to give women in PMTCT a passive role in the programme. In this study, participants had not received support: 66% were not members of a PMTCT support group, 73.6% had received no peer support, 90.6% had received no cash

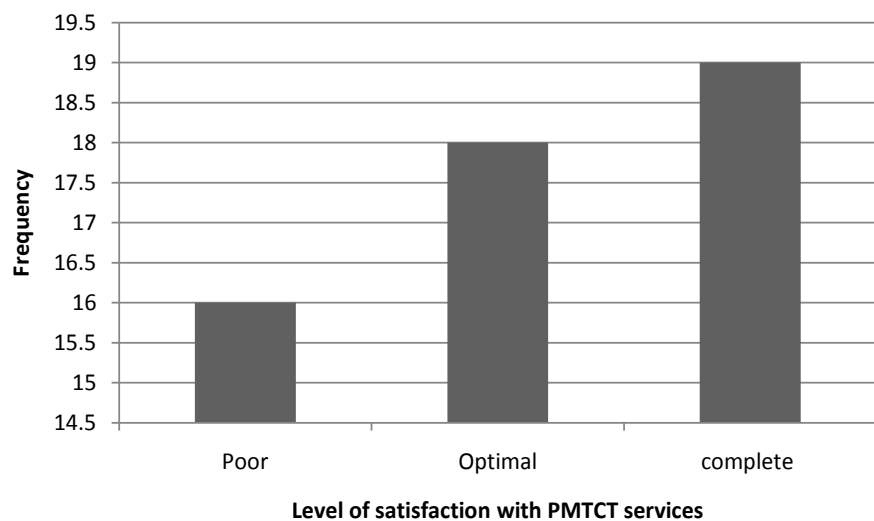


Figure 1. Level of satisfaction with PMTCT services at the hospital.

motivation, and 71.7% had no cell phone reminders. This may imply that coming for scheduled PMTCT visits is much of individual effort. Surprisingly, a study in South Africa found that by six weeks after delivery, 24% women had missed a PMTCT visit [16].

In this study, 35.8% participants had complete satisfaction with PMTCT services. This was a low figure compared to a study in Dar es Salaam where 61% had very good satisfaction. In the Dar es Salaam study, predictors of dissatisfaction included long waiting times, poor comprehension of patient needs and poor interpersonal skills of health workers [17]. In the current study, consultation rooms were quite small and did not offer privacy as other women could overhear conversations between clinicians and patients. Moreover, the consultation began in an open tent, which, however, provided a conducive opportunity for peer interaction. This may imply that women in PMTCT prefer privacy and are somewhat selective on whom to interact with. This may also be supported by the fact that peer support was not a statistically significant predictor of missed visits.

Statistically significant predictors for not missing visits were participants' satisfaction with family support and satisfaction with PMTCT services at the hospital. In this study, 90.6% were satisfied with family support and 69.8% were satisfied with community support. The findings contrast with a Haitian study whereby socio-demographics were not predictors of retention in care [18]. A Zimbabwean study also did not find a statistically significant improvement in retention of women after engaging facility-based peer support groups [19]. In the current study, participants may have wanted family acceptance to come for scheduled visits. PMTCT benefits the family, in part, by reducing vertical transmission of HIV to the child. Elsewhere, satisfaction with facility PMTCT services has been shown to improve retention. The coefficient of determination of 11% in the current study implies that there are other predictors responsible for 89% of variance in missed visits.

However, the statistical power in the current study may have been compromised by the small sample size. The study was also done in a single month, which might have produced a selection bias.

5. Conclusion

Family support and satisfaction with the handling of the PMTCT program may reduce the likelihood of missed PMTCT visits. Women tend to have more missed days in the later days of the PMTCT cascade. A more comprehensive PMTCT site assessment is required. The site assessment may include site retention strategies and the presence of a sustainable PMTCT model capable of retaining women in PMTCT. Hence, reducing the frequency of missed visits may facilitate understanding of health care and community predictors of missed visits. Lastly, a qualitative study to explore the reasons why women miss scheduled PMTCT later after enrollment into the PMTCT programme, may be done to explain patient fatigue along the PMTCT cascade.

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