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Original Article

Modeling Health Systems and Male-Partner Involvement Determinants of Prevention of Mother to Child Transmission of Human Immune-deficiency Virus among Women in Homa Bay County Referral Hospital, Kenya

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ABSTRACT

In 2017, Homa Bay County accounted for 10% of HIV cases among children aged 0-14 years in Kenya. Additionally, it reported 8.8% of new HIV infections among children of the same age group and 9.7% of annual AIDS-related mortalities. In 2018, the County reported a mother-to-child transmission (MTCT) rate of 8.1%, higher than the 5% target set by WHO. Limited studies in Kenya have documented health systems and male-partner involvement determinants of prevention of MTCT (PMTCT) of HIV, which vary by context. Thus, this paper documents health systems and male-partner involvement determinants of PMTCT outcomes among women attending Homa Bay County Referral Hospital. We used an analytical cross-sectional study design that had a sample of 274 (Fishers et al. 1998) randomly selected from 4129 women of reproductive age ever on PMTCT follow-up. Questionnaires were used to collect data from the women on child HIV status, health systems factors, and male partner-involvement factors. The mean age of the women was 32.16 years. Results show that provision and discussion of infant diagnosis results by health care providers increased the chances of occurrence of HIV seronegative PMTCT outcome by 1.5 times (OR=1.530, 95% CI: 0.361-6.486; p<0.0001). Provision of routine pre-conception counselling decreased the odds of determining PMTCT outcome by 60% (OR=0.404, 95% CI: 0.046-3.521; p=0.018). Males knowing the HIV status of their partner had higher odds of determining the occurrence of HIV seronegative PMTCT outcome (OR=6.0, 95% CI: 0.655-54.997; p<0.0001). Health systems factors aligned with the provision and discussion of infant diagnosis results by healthcare provider and male-partner involvement factor related to the male partner knowing the HIV status of participant(s) demonstrated higher chances of predicting the occurrence of HIV seronegative for the child. These findings will inform the formulation of interventions geared towards reducing the high MTCT rates in Homa Bay County.

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INTRODUCTION

More than 90% of HIV-infected children worldwide are from sub-Saharan Africa (SSA). Even though there have been a 54% decline in new Human Immune-Deficiency Virus (HIV) infections since 2010 among children, there were 150,000 new HIV infections in 2020, with 37% of them being from the Eastern and Southern African countries Kenya included (UNAIDS, 2019, 2021). Kenya is among the largest HIV epidemic countries globally (Kimanga et al., 2014). Of the 1.5 million people living with HIV in Kenya, 7% were children below 15 years old by the end of 2017. It was estimated that 15.2% of the 28,200 deaths attributed to illness related to Acquired immune Immune-Deficiency Syndrome (AIDS) in the same year were children (National AIDS Control Council, 2018).

The HIV pandemic has a diverse geographical distribution in Kenya, with the most affected counties being Homa Bay, Kisumu, Migori, and Siaya (National AIDS Control Council, 2018). Homa Bay County has consistently registered high HIV prevalence since 2014, having a prevalence of 25.7% (National AIDS Control Council (NACC), 2014), 26% (National AIDS and STI Control Programme, 2016), and 20.7% (National AIDS Control Council, 2018). The prevalence of HIV in Homa Bay County was 20.7% in 2017, almost 4.2 times higher than the national prevalence (National AIDS Control Council, 2018).

Additionally, Homa Bay County accounted for 10% of children 0-14 years living with HIV in Kenya, and the County also had over 700 new HIV infections among children aged 0-14 years in 2017 (National AIDS Control Council, 2018b). This accounted for 8.8% of all the new HIV infections among children in the same year. There were approximately 420 child mortalities attributable to conditions related to AIDS in the year 2017, accounting for 9.7% of all the AIDS-related deaths among children in Kenya. Nationally, Homa Bay County had the highest numbers of new HIV infections, annual AIDS-related deaths, and the number of children living with HIV aged 0-14 years in 2017 (National AIDS Control Council, 2018).

Vertical transmission of HIV and AIDS, which is the transmission of the infection to an infant during delivery or breastfeeding, is determined by various factors. These factors include health systems and male-partner involvement-related factors. As such, these factors predict or determine PMTCT outcomes amongst infants and children born of HIV seropositive women. Despite these factors posing some influence on PMTCT outcomes, limited studies have been carried out on the same; hence, limited literature is available. Understanding the determinants of the PMTCT outcomes in Homa Bay County was necessary for developing as well as improving interventions aimed at addressing and reducing their impact on MTCT of HIV outcomes.

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Health system factors can influence access to PMTCT services and PMTCT outcomes. According to the World Health Organization (WHO), achieving access to PMTCT services relies heavily on the capability of health systems to deliver the services. The existing gaps in human resource and human resource capacity program management, supply chain, and health financing have been a significant barrier to the scale-up of these services (Goals, 2015). The health system factors associated with MTCT of HIV include health system barriers such as poor provider-client relationships, low uptake of national treatment guidelines, limited HIV education, and overcrowded health systems (Okoko et al., 2017). There is a gap in the literature on how the health system determinants affect the uptake of PMTCT services and the PMTCT outcomes in Homa Bay County based on the client's perspectives.

The involvement of male partners in the uptake of Prevention of Mother-To-Child Transmission (PMTCT) services influences the outcomes in terms of whether the child turns out to be HIV seropositive or negative. In most cases, men influence whether their partners will attend the first ANC clinic and get tested for HIV, whether or not their female partners will deliver in a health facility, and whether or not they will adopt safe infant feeding practices (Beyene et al., 2018). Part of the study objectives was establishing male partner involvement in the uptake of PMTCT services in Homa Bay County and how it influenced the PMTCT outcomes. This paper documents findings on health systems and male-partner involvement factors determining PMTCT outcomes in Homa Bay County, Kenya.

MATERIALS AND METHODS

The study adopted an analytical cross-sectional hospital-based study design assessing health systems and male-partner involvement determinants of the PMTCT outcomes for women receiving HIV treatment at Homa Bay County Referral Hospital at a point in time. This study design has been successfully adopted in similar studies that assessed the barriers to uptake of PMTCT services in an ANC setting in other countries such as Nigeria (Anígilájé et al., 2016) and Malawi (Van Lettow et al., 2018). Quantitative data were collected through a survey using a semi-structured questionnaire.

The study adopted simple random sampling to select study participants. The two hundred and seventy-four (274) participants computed using Fishers *et al*. (1998) formula were randomly selected from four thousand hundred and twenty-nine (4129) women of reproductive age at Homa Bay County Referral Hospital and who had ever been on PMTCT follow-up within the same facility with documented HIV test outcomes for their infants/children. The enrolment register was used to identify the files for these HIV seropositive women patient,s where unique numbers from the registers were used to identify the patient files of these women clients, which formed the sampling frame. The patient files of these clients were then serialised and a random number generator (STAT Trek) was used to generate two hundred and seventy-four (274) numbers within the range of serialised patient files and the random numbers used to pick the respective patient files.

Clients whose files had been sampled and met the eligibility criteria were then contacted via phone, the study purpose and procedure were explained to them, and their consent and permission to be included in the study were sought. In cases whereby a patient whose file had been randomly picked declined to participate in the study, the reasons for declining were sought and documented, and the next client was sampled. This continued until the desired sample size was achieved. Upon consenting participation in the study, a convenient date and venue for administration of the questionaire was agreed upon at the patient's convenience. The option of a telephone interview was also made available for the participants. The dependent variable was PMTCT outcome as abstracted from sampled HEI patient files, and it was measured on a binary categorical scale (HIV seropositive outcome versus HIV seronegative outcome). Independent variables were health systems and male-partner involvement factors assessed on a categorical

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scale. The chi-square (χ^2) test was used to assess associations between maternal factors and PMTC outcome at $\alpha \leq 0.05$. Binary logistic regression was used to measure the likelihood of maternal factors determining PMTCT outcome.

RESULTS

The study targeted 274 women on PMTCT follow-up in the study setting. All were accessible, but one (1) questionnaire was rejected for incompleteness; hence, a response rate of 99.6% (273 participants) is reported for this study.

As shown in Table 1, most participants, 158 (57.9%), were aged between 30 to 39 years. The mean age of the study participants was 32.16 (± 5.54 SD). A majority 131 (48.0%) of the participants had completed secondary school level of education. In terms of marital status, more than three-quarters 224 (82.1%) were married, with a majority of this; 175 (64.1%) reporting to be in monogamous type of marriage. Regarding occupation, most of the participants, 101 (37.0%) reported that they were self-employed.

Table 1: Participant's profile

Characteristic		frequency (F)	Percentage (%)
Age in Years	18to29	90	33
	30to39	158	57.9*
	40to49	25	9.2
	Mean age: 32.16 (± 5.54 SD)		
Highest Level of Education Attained	Never went to school	7	2.6
	Primary	114	41.8
	Secondary	131	48.0*
	Tertiary	21	7.7
Marital Status	Single	18	6.6
	Married	224	82.1*
	Divorced/Separated	12	4.4
	Widowed	19	7
Marriage Type	Married Monogamous	175	64.1*
	Married Polygamous	49	17.9
Occupation	Employed	57	20.9
	Self-employed	101	37
	Casual Jobs	92	33.7
	Not Employed	23	8.4

**: Majority of the participants*

As shown in *Table 2*, there was no existence of significant associations between having regular health talks, waiting time, failure to get FP, ever been given fewer ARV medications, knowing viral load before last pregnancy, viral load count before last pregnancy, and ever missing scheduled viral load sample being taken with PMTCT outcome (p=0.782, p=0.660, p=0.977, p=0.713, p=0.674, p=0.920, and p=0.753 respectively). However, there were statistically significant associations between the provision of routine pre-conception counselling and the provision and discussion of infant diagnosis results by health care provider and PMTCT outcome (p=0.018 and p<0.0001). Provision of routine pre-conception counselling decreased the odds of determining PMTCT outcome by 60% (OR=0.404, 95% CI: 0.046-3.521; p=0.018). Nonetheless, provision and discussion of infant diagnosis results had a high likelihood of determining PMTCT outcome (OR=1.530, 95% CI: 0.361-6.486; p<0.0001) (*Table 3*).

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Table 2: Associations between health systems determinants and PMTCT outcomes

PMTCT Outcome (HIV seropositive or HIV Negative)		Total n (%)	Positive n (%)	Negative n (%)	χ^2	p-value
Health talks are regularly offered during clinic visits	Yes	271 (99.3)	10 (3.7)	261 (95.6)	0.077	0.782
	No	2 (0.7)	0 (0.0)	2 (0.7)		
Waiting time during clinic visit	Short	268 (98.2)	10 (3.7)	258 (94.5)	0.194	0.66
	Long	5 (1.8)	0 (0.0)	5 (1.8)		
Failed to get FP Service	Yes	108 (39.6)	4 (1.5)	104 (38.1)	0.001	0.977
	No	165 (60.4)	6 (2.2)	159 (58.2)		
Have you ever been given fewer ART medications	Yes	152 (55.7)	5 (1.8)	147 (53.9)	0.136	0.713
	No	121 (44.3)	5 (1.8)	116 (42.5)		
Knew viral load before pregnancy	Yes	146 (53.5)	6 (2.2)	140 (51.3)	0.177	0.674
	No	127 (46.5)	4 (1.5)	123 (45.0)		
Viral load count before last pregnancy	LDL copies/ml	197 (77.2)	8 (3.1)	189 (74.1)	0.493	0.92
	<1000 copies/ml	68 (24.9)	2 (0.7)	66 (24.2)		
	>1000 copies/ml	7 (2.6)	0 (0.0)	7 (2.6)		
	Don't know	1 (0.4)	0 (0.0)	1 (0.4)		
Missed having scheduled viral load sample taken	Yes	66 (24.2)	2 (0.7)	64 (23.5)	0.099	0.753
	No	207 (75.8)	8 (3.1)	199 (75.1)		
Routine pre-conception counselling provided	Strongly Disagree	8 (2.9)	2 (0.7)	6 (2.2)	11.851	0.018*
	Disagree	3 (1.1)	0 (0.0)	3 (1.1)		
	Neutral	23 (8.4)	0 (0.0)	23 (8.4)		
	Agree	184 (67.4)	7 (2.6)	177 (64.8)		
	Strongly Agree	55 (20.1)	1 (0.3)	54 (19.8)		
Infant diagnosis results provided and discussed	Strongly Disagree	6 (2.2)	0 (0)	6 (2.2)	27.25	0.000*
	Disagree	1 (0.4)	1 (0.4)	0 (0)		
	Neutral	3 (1.1)	0 (0.0)	3 (1.1)		
	Agree	150 (54.9)	4 (1.5)	146 (53.4)		
	Strongly Agree	113 (41.4)	5 (1.8)	108 (39.6)		

**: Significant at $\alpha \leq 0.05$.*

Table 3: Binary logistic regression model showing Odds Ratio and 95% Confidence Interval for health systems determinants of PMTCT outcome

Variable	P –value	Odds Ratio	95% CI for EXP(B)	
			Lower	Upper
Provided with routine pre-conception counselling	0.018	0.404	0.046	3.521
Infant diagnosis results provided and discussed	0.000	1.530	0.361	6.486

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As shown in *Table 4*, there were no significant associations between the male partner providing transport facilitation, the male partner reminding of PMTCT clinic dates, the male partner paying for services at the clinic, the male partner reminding of ART prophylaxis time, and the male partner administering ART prophylaxis to child when PMTCT mother is absent with PMTCT outcome (p=0.670, p=0.520, p=0.057, p=0.057, and p=0.132, respectively). There were significant associations between the male partners knowing the HIV status of the participant(s) and the male partners' reaction to the discussion on the prevention of HIV transmission to children and PMTCT outcome (p<0.0001 and p<0.0001, respectively).

Table 4: Associations between male-partner involvement and PMTCT outcome

PMTCT Outcome (HIV seropositive or HIV Negative)		Total n (%)	Positive n (%)	Negative n (%)	χ^2	p-value
Male partner knows my HIV status	Yes	224 (82.1)	3 (1.1)	221 (81.0)	26.255	0.000*
	No	30 (11.0)	6 (2.2)	24 (8.8)		
Male partner provides transport facilitation	Yes	89 (32.6)	2 (0.7)	87 (31.9)	8	0.67
	No	165 (60.4)	7 (2.6)	158 (57.8)		
Male partner reminds on PMTCT clinic dates	Yes	101 (37.0)	2 (0.7)	99 (36.3)	1.309	0.52
	No	153 (56.0)	7 (2.6)	146 (53.4)		
Male partner pays for services at the clinic	Yes	154 (56.4)	2 (0.7)	152 (55.7)	5.733	0.057
	No	100 (36.6)	7 (2.6)	93 (34.0)		
Male partner reminds of time to provide ART prophylaxis for child	Yes	97 (35.5)	0 (0)	97 (35.5)	5.732	0.057
	No	157 (57.5)	9 (3.3)	148 (54.2)		
Male partner's reaction to discussion on prevention of HIV transmission to child	Supportive	199 (72.9)	2 (0.7)	197 (73.6)	23.973	0.000*
	Not supportive	43 (15.8)	7 (2.6)	36 (13.2)		
	Others	12 (4.4)	0 (0.0)	12 (4.4)		
In absentia, male partner administers ART prophylaxis to child	Yes	111 (40.7)	1 (0.4)	110 (40.3)	4.049	0.132
	No	143 (52.4)	8 (2.9)	135 (49.5)		

**: Significant at $\alpha \leq 0.05$.*

Table 5: Binary logistic regression model showing Odds Ratio and 95% Confidence Interval for male partner involvement-related determinants of PMTCT outcome

Variable	P -value	Odds Ratio	95% CI for EXP(B)	
			Lower Limit	Upper Limit
Male partner knowing HIV status of participant	0.000	6.000	0.655	54.997
Male partner reaction to discussion on HIV transmission to infant	0.000	0.000	0.000	

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Logistic regression was done to establish how male involvement-related factors demonstrated statistically significant associations at Chi-square, male partner knowing the HIV status of the participant(s) and the male partner's reaction to a discussion on prevention of HIV transmission to child determined PMTCT outcomes. Male partners knowing the HIV status of the participant(s) presented with a high likelihood of determining PMTCT outcome (OR=6.0, 95% CI: 0.655-54.997; p<0.000). Male partner's reaction to a discussion on HIV transmission to child/infant presented with an infinite likelihood of predicting PMTCT outcome (OR=0.000, 95% CI: 0.000-; p<0.000) as shown in Table 5 below.

DISCUSSION

Health system structures remain the core determinants of PMTCT outcomes. This is based on the primary fact that PMTCT interventions are often domiciled in healthcare contexts. Furthermore, the success of other determinants, such as maternal and male-related determinants are often dependent on the nature of health systems factors (Silumbwe et al., 2018). As an example, health systems factors may ensure the provision of viable platforms where males can confidently partake in PMTCT interventions. On the same note, health systems factors determine the ability of mothers to adopt positive maternal-related determinants such as Family Planning (FP). The current study assessed a set of health systems factors that determine PMTCT outcomes. An array of health systems factors assessed by the study did not demonstrate significant associations with PMTCT outcomes. Regular provision of health talks on PMTCT issues at the PMTCT clinics did not show a significant association with PMTCT outcome (p=0.782). Despite almost all participants, 271 (99.3%), reporting that they were accorded regular talks at the clinic, this did not show an association with PMTCT outcome. These findings contradict findings from Onono et al. (2015), who report the absence of health talks on HIV caused MTCT of HIV (OR=3.57, 95% CI: 1.36–9.33).

Waiting time is another health system determinant that was investigated by this study. Waiting time determines different facets aligned with client retention, not only in HIV patient care contexts but across all the health service provision contexts (Genberg et al., n.d.). This notion is confirmed by Anigilaje et al. (2016), who observe that longer waiting times in PMTCT clinics are associated with client attrition because its results in client's failure to honour scheduled clinic visits for ART care and other PMTCT management options. Shorter waiting time at HIV clinics often results in alleged satisfaction with care amongst HIV seropositive persons attending ART clinics (Atnafu et al., 2015; Olowookere et al., 2012). This leverages the attainment of positive treatment outcomes; hence, it may contribute to success in PMTCT outcomes. Nonetheless, this study had no significant association between client waiting time and PMTCT outcomes. Waiting time for most of the participants, 268 (99.8%), was short. However, this did not demonstrate an association with PMTCT outcome (p=0.660).

Family Planning (FP) has been identified as an integral factor in mitigating MTCT of HIV. Therefore, access to FP has been integrated as a crucial component of PMTCT interventions. According to Sarnquist et al. (2014), the use of FP by PMTCT mothers prevents more than 28.6% of MTCT HIV cases when compared to nevirapine prophylaxis. This shows that enhanced provision of FP can provide a viable means of attaining effective PMTCT outcomes. Even so, this was not the case in the current study, whereby we found no statistically significant association between failing to get FP service and PMTCT outcome (p=0.977). However, the study observed an unmet need for FP, as 165 (60.4%) of the participants reported having failed to get the FP service of their choice at the facility. Such an unmet need for FP has a wider array of implications, especially on matters PMTCT because the provision of FP is a critical pillar to planning pregnancy amongst HIV seropositive persons, which is a core aspect in the control and prevention of MTCT of HIV (Wilcher et al., 2013).

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A high proportion of health systems factors dictate the success of PMTCT interventions. To be precise, health systems factors help mitigate common drop-offs along the PMTCT cascade, hence, ensuring the success of PMTCT (Osório et al., 2021). Drop-offs are often evident from an array of factors, such as lack of viral load testing, which hinders the monitoring of Viral Load (VL) as a means of averting high VL incidences amongst mothers as a factor that increases MTCT of HIV (van Heerden et al., 2022). It is worth noting that VL testing is domiciled in the health systems; hence, mothers' intention to ensure routine monitoring of VL may be hindered by the lack of requisite laboratory supplies at the facilities they attend for PMTCT services. In the current study, 24.20% of the participants reported to have missed the VL testing schedule, whereby 22.7% reported that stock out of commodities for VL sampling was the main reason for missing the VL testing schedule. This finding shows that the participants experienced drop-offs along the PMTCT cascade as a result of missing the VL sample collection schedule.

Despite the apparent drop-off mentioned above, the study did not find an association between missing VL sampling and PMTCT outcome (p=0.753). Therefore, for this study, components of VL did not have a relationship with PMTCT outcome, as further evident by the absence of a significant association between VL count before pregnancy and PMTCT outcome (p=0.920). More than three-quarters of the participants, 77.2%, had undetectable VL, which shows that drop-offs related to missing VL sampling were perhaps rare; hence, posing minimal influence on PMTCT outcome. Nonetheless, appropriate action should be taken by stakeholders involved in PMTCT care in the current study settings and other settings to avert any form of drop-offs. This is because leakage or drop-offs related to health systems factors may impact health care delivery, especially for PMTCT mothers, hence, reducing the effectiveness of PMTCT interventions (Sanga et al., 2019).

For this study, specific health system aspects related to the uptake of national PMTCT guidelines, which were the provision of routine pre-conception counselling and provision and discussion of infant diagnosis results, demonstrated significant associations with PMTCT outcome (p=0.018 and p<0.000), respectively. Healthcare providers attached to PMTCT points of care are the primary custodians of the national PMTCT guidelines. Therefore, adequate implementation of these guidelines in patient care processes has a colossal impact on patient care, hence, determining effectiveness of PMTCT outcomes (Genberg et al., n.d.). Adequate provision of pre-conception counselling and appropriate discussion of infant diagnosis results are dependent on the competency of PMTCT service providers. Therefore, the presence of significant associations between PMTCT outcome and uptake of national PMTCT guidelines in the current study may be a proxy indicator of high competency levels of PMTCT providers in the study setting (Cheema et al., 2019). Deductively, the current study affirms that adherence to guidelines on PMTCT care plays a role in mitigating MTCT of HIV. This was also the case in Onono et al. (2015) study, which reports that the risk of MTCT of HIV is increased by healthcare providers failing to comply with guidelines on ART prescription (OR= 8.61, 95% CI: 2.83-26.15).

The success of PMTCT outcomes is often dependent on the support that PMTCT mothers receive from their families. Adequate implementation of PMTCT interventions is demanding and requires concerted efforts amongst those involved, including partners to PMTCT mothers. We assessed specific aspects related to male involvement, whereby some aspects demonstrated significant associations, whereas others did not. For this study, male partner involvement was assessed based on male partners' knowledge of HIV status of the PMTCT mother showed a significant association with PMTCT outcome (p<0.0001). For this study, out of the 82.1% of children born of HIV seropositive mothers whom the male partners knew of their

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HIV status, 81.0% were HIV negative. This shows that only 1.1% of children of PMTCT mothers whose partners knew their HIV status had ineffective PMTCT outcomes (child being HIV positive). The male partner's knowledge of HIV status of the PMTCT mother had 6 times the likelihood (OR=6.00, 95% CI: 0.655–54.997) of determining the occurrence of successful PMTCT outcome (child being HIV negative).

The findings that male partner Knowledge of PMTCT mother's HIV status determines the success of PMTCT outcome is supported by findings by Aluisio et al. (2016), who observed that the mere involvement of a male partner in any PMTCT intervention, such as accompanying the mother to ANC, enhances infant and child HIV free survival. Despite this association, male involvement remains a challenge whereby across different societal contexts, male involvement in matters of PMTCT is a taboo; hence, men are rarely involved. This is despite efforts by the health care providers to pass information to males to be involved in PMTCT care and management. Similar findings on challenges in male partner involvement are reported by (Kalembo et al., 2013), who note that male partners, especially from rural settings, remain reserved on matters of PMTCT involvement. On the other hand, other peer-reviewed studies have failed to observe any associations of male involvement with vertical transmission of HIV (Kalembo et al., 2013).

While it is true that males are rarely involved directly in PMTCT care, they provide other forms of indirect support, such as facilitating access to PMTCT mother by providing means of transport (fare), reminding PMTCT mother of clinic dates, and reminding PMTCT mother of ART prophylaxis. Such forms of indirect support do not seem to have a significant association with PMTCT outcomes. This was evident in the current study whereby indirect male involvement through; a male partner providing transport facilitation, a male partner reminding of PMTCT clinic dates, a male partner paying for services at the clinic, a male partner reminding of ART prophylaxis time, and the male partner administering ART prophylaxis to a child when PMTCT mother is absent with PMTCT outcome (p=0.670, p=0.520, p=0.057, p=0.057, and p=0.132). These findings deduce that direct male partner involvement in PMTCT is persistently low, which was further evident in a study done in Ethiopia, where the male involvement rate was 20% (Haile & Brhan, 2014).

For this study, male partner involvement assessed by their reactions to discussions of HIV transmission was significantly associated with PMTCT outcome (p=0.000). However, this factor had infinite odds of determining PMTCT outcome (OR=0.000, 95% CI: 0.000-). These findings show that male partner involvement has a role in leveraging the success of PMTCT. This confirms assertions by Kalembo et al. (2013) and Muwanguzi et al. (2019) that male partner involvement enhances uptake of PMTCT, which ensures low MTCT of HIV. Male partner involvement provides an environment whereby PMTCT interventions can thrive with ease. This is because male involvement ensures that both the mother and father of a child born of them are provided with adequate means that can assure HIV-free child survival. Male involvement further supports critical elements of PMTCT, such as the use of FP, which ensures that pregnancies are well-planned as a means of minimising MTCT of HIV (Adelekan et al., 2014).

Deductively, male involvement entails direct and indirect involvement. Drop-offs along the cascade of PMTCT are often common when male partners are not involved (Melis & Fikadu, 2022). A reflection on PMTCT services across various healthcare settings shows that they are structured so that it places much of the responsibilities on the females (PMTCT mothers). Overall, PMTCT service provisions represent a female-dominated responsibility and this is a barrier to direct male involvement (Theuring et al., 2009). Indirect male involvement does not make much contribution and support for PMTCT. Indirect male involvement in the PMTCT care continuum creates a situation whereby male partners remain unaware of certain requisites of PMTCT, such as

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the provision of ART prophylaxis for infants. For this study, more than average, 52.4% of the male partners of the participants did not provide ART prophylaxis during situations when the participants were absent. Such situations result in drop-offs along the cascade of PMTCT, which augments the risk of MTCT of HIV.

CONCLUSIONS AND RECOMMENDATIONS

From the study findings, provision of routine pre-conception counselling decreased the odds of determining PMTCT outcome by 60% whereas, provision and discussion of infant diagnosis results had a high likelihood of determining PMTCT outcome. Similarly, Male partners knowing the HIV status of the participant(s) presented with a high likelihood of determining PMTCT outcome. From this study, these are the health systems and male-partner involvement factors that should inform the development of interventions aimed at minimizing MTCT of HIV.

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Availability of Data and Materials

As per the privacy and confidentiality provisions in the informed consent, the dataset generated and analysed for the study is not available publicly. However, data can be obtained from the corresponding author (kenkipton@gmail.com) upon reasonable request.

Author's Contributions

The author's responsibilities were: ROO developed the research protocol, KKT reviewed/revised the study protocol, and data collection approaches. KKT performed data entry, cleaning, and analysis and developed the manuscript.

Ethics Approval and Consent to Participate in the Study

A research permit was sought from the National Commission for Science, Technology, and Innovation. Ethical clearance was obtained from Maseno University Scientific and Ethical Review Committee for ethical clearance Approval Number: MSU/DRPI/MUERC/01046/2022. Informed written and voluntary consent was obtained from all the participants, and data was anonymised to ensure confidentiality.

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