Effect of Nurse-Led PMTCT Health Education on HIV Disclosure among HIV-Positive Women in Mombasa County: A quasi-experimental study

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Abstract

BACKGROUND

This study investigated the impact of nurse-led PMTCT (Prevention of Mother-to-Child Transmission) health education on enhancing HIV status disclosure among HIV-positive women in Mombasa County, Kenya. HIV status disclosure is crucial for the prevention of mother-to-child transmission and the overall well-being of affected individuals and their families.

METHODS

A quasi-experimental design was employed, with participants divided into an intervention group of 107 receiving nurse-led PMTCT health education and a control group of 107 receiving standard care. Demographic information, knowledge, attitudes, and practices related to HIV status disclosure were collected at baseline and post-intervention phases. Descriptive statistics were computed and a chi-square test was used to compare the level of self-disclosure of HIV status to sexual partners across the groups. Difference in differences (DID) analysis was used to evaluate the effectiveness of the intervention.

RESULTS

The study initially found that at baseline, 60.4% of HIV-positive women in the control group did not disclose their status to sexual partners, compared to 55.4% in the intervention group. However, there was no significant difference between the two groups at this stage. In the end-line survey, the control group had 64% non-disclosure, while the intervention group showed a significant improvement, with only 20% not disclosing. Chi-square analysis revealed a substantial difference ($p < 0.001$) in disclosure rates between the intervention and control groups. Additionally, a Difference-in-Differences (DID) analysis indicated a significant improvement in self-disclosure (23.1% net intervention effect, $p < 0.0001$). Overall, the nurse-led health education intervention notably increased HIV status disclosure among HIV-positive women in selected Mombasa County health facilities.

CONCLUSION

Nurse-led PMTCT education enhances HIV disclosure in Mombasa County, improving PMTCT outcomes and curbing mother-to-child transmission. Tailored interventions are vital in addressing HIV challenges in diverse contexts.

Keywords: *HIV Status Disclosure, DID, PMTCT*

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Introduction

HIV/AIDS remains a global public health challenge, with profound implications for individuals, communities, and nations (1). While significant strides have been made in the prevention and management of HIV, the issue of HIV status disclosure to sexual partners continues to be a complex and critical aspect of the epidemic (2). In the context of preventing mother-to-child transmission (PMTCT) of HIV,

the empowerment of HIV-positive women to disclose their status to their sexual partners holds tremendous potential for shaping the trajectory of the epidemic (3). This quasi-experimental study, titled "Empowering HIV-Positive Women: The Transformative Effect of Nurse-Led PMTCT Health Education on Enhancing HIV Status Disclosure to Partners in Mombasa County," seeks to address this multifaceted challenge within the Kenyan and global context.

The global burden of HIV/AIDS remains substantial, with an estimated 38 million people living with HIV worldwide as of 2021(4). Despite remarkable progress in expanding access to antiretroviral therapy (ART) and reducing new infections, key challenges persist. Among these challenges is the need to ensure that individuals living with HIV are equipped with the knowledge and support necessary to engage their sexual partners in HIV status disclosure (5). Failure to do so not only affects treatment adherence but also hinders comprehensive prevention efforts.

Within sub-Saharan Africa, the epicentre of the HIV/AIDS epidemic, Kenya continues to grapple with the impact of the disease (6). In Kenya, an estimated 1.5 million people were living with HIV in 2020 (7). While national efforts have made significant strides in expanding access to PMTCT services and reducing mother-to-child transmission rates, the broader issue of HIV status disclosure among pregnant and postpartum women remains a complex and underexplored dimension of the epidemic. Regionally, Mombasa County, situated along the Kenyan coast, faces unique challenges in the realm of HIV prevention and care.

In Kenya, HIV prevalence varies across regions, and Mombasa County has consistently reported rates above the national average (8). The national PMTCT program in Kenya has made impressive gains, but improving self-initiated HIV status disclosure among HIV-positive pregnant and postpartum women remains a priority (9). Understanding the impact of nurse-led PMTCT health education on enhancing disclosure rates is not only pertinent to Mombasa County but also holds the potential to inform national strategies to bolster PMTCT efforts. The prevalence of HIV among adults in Mombasa County (aged 15 to 49) stands at an estimated 7.4%, with a notably higher prevalence among women, at 10.5% (Eastment *et al*., 2019). Annually, there are 1,609 newly reported adult HIV infections within the county, and it is noteworthy that Key Populations account for 44% of these new infections (County Government of Mombasa, 2016). Despite advancements in Antenatal Care (ANC) and Prevention of Mother-to-Child Transmission (PMTCT) services, it is concerning that 171 newborns still contract HIV each year. In light of the global effort to eliminate mother-to-child HIV transmission, this figure holds significant importance

Despite the vital role of HIV status disclosure in preventing transmission and improving care outcomes, many HIV-positive women in Mombasa County face barriers to disclosing their HIV status to their sexual partners (10). This challenge not only impacts their health but also hinders the effectiveness of PMTCT interventions, potentially leading to adverse maternal and child health outcomes (11). To address this issue, it is imperative to investigate whether nurse-led PMTCT health education initiatives can empower HIV-positive women to initiate self-disclosure conversations with their partners.

While numerous studies have examined various aspects of PMTCT programs and HIV disclosure (3,12–15), there is a notable research gap regarding the specific impact of nurse-led PMTCT health education on enhancing self-initiated HIV status disclosure among HIV-positive women in Mombasa County. Previous research has often focused on broader aspects of PMTCT, antenatal care, or HIV disclosure without delving into the potential role of nurse-led interventions in empowering women to

engage in self-disclosure conversations with their sexual partners (10,11,16). This gap in empirical evidence hinders the development of targeted interventions and strategies to address the unique challenges faced by HIV-positive women in the context of disclosure within this region. Therefore, this study aimed to bridge this research gap by conducting a quasi-experimental investigation into the effectiveness of nurse-led PMTCT health education in promoting self-disclosure, with the ultimate goal of improving PMTCT outcomes and overall public health in Mombasa County.

In light of the global, regional, and national burden of HIV/AIDS and the specific challenges faced within Mombasa County, this study endeavoured to shed light on the transformative potential of nurse-led PMTCT health education in empowering HIV-positive women to engage in self-disclosure conversations with their sexual partners. By addressing this critical gap in the HIV/AIDS response, the study aimed to contribute to more effective prevention and care strategies, ultimately working towards an AIDS-free future for Kenya and the world.

Method and Materials

Study design and timeline

This quasi-experimental study employed a pre-post design with an intervention group and a control group to evaluate the effect of nurse-led PMTCT (Prevention of Mother-to-Child Transmission) health education on enhancing HIV status disclosure to sexual partners among HIV-positive women in Mombasa County. A total of 257 mothers with HIV attended PMTCT clinics in the intervention location, while 232 mothers with HIV attended in the control location. A total of 214 HIV-positive pregnant women were enrolled in the study with both the control and intervention group each having 107 participants. A quasi-experimental pre- and post-test study was conducted, utilizing both intervention and control groups. Between November 2020 and January 2021, data was collected, baseline a survey from HIV-positive pregnant women aged 18 years and older. The end-line survey took place in September and October 2021, approximately six months following the nurse-led educational intervention on PMTCT. Both the baseline and end-line surveys employed similar methodologies and questionnaires, ensuring consistency in data collection procedures.

Study setting

The study was conducted in healthcare facilities and communities within Mombasa County, Kenya, which is characterized by varying HIV prevalence rates. Four medical centres were selected randomly and allocated to both intervention and control sites. Mombasa County, situated within the Coast Province, comprises four electoral districts: Changamwe, Kisauni, Likoni, and Mvita. Covering an area of 294.7 square kilometres, this county is positioned in the southeastern region of the former Coast Province. It shares its borders with Kilifi County to the north, Kwale County to the southwest, and the Indian Ocean to the east.

Participants

HIV-positive women in the intervention group were recruited from local Prevention of Mother-to-Child Transmission (PMTCT) services, ensuring representation from the target population. Participants underwent random assignment to the intervention group, and their informed consent was meticulously obtained, prioritizing ethical considerations throughout the study. The control group, comprised of HIV-positive women, was randomly selected from PMTCT services, matching key characteristics with the intervention group to enhance comparability. Similar to the intervention group, informed consent was secured from each participant. Nurses and healthcare providers engaged in PMTCT services were recruited and extensively trained on the nurse-led health education protocol, fostering their active involvement in the study. Partners of HIV-

positive women were recruited through the participation of these women, with consent sought from willing partners, who played a crucial role in post-intervention assessments. Ongoing collaboration with healthcare providers and community engagement was instrumental in ensuring the study's success and relevance.

Inclusion and exclusion criteria

The inclusion criteria for the study encompass adult HIV-positive women aged 18 years and above, residing in Mombasa County, Kenya, who have attended PMTCT clinics, either during pregnancy or within six months postpartum. In contrast, exclusion criteria encompassed individuals who did not provide informed consent, and those who were unable to attend nurse-led PMTCT educational sessions due to logistical or physical limitations exhibited severe cognitive impairments or mental health conditions affecting participation, or did not reside within Mombasa County.

The intervention

The nurse-led health education intervention was a multifaceted program designed to empower HIV-positive women in Mombasa County, Kenya. This comprehensive intervention included individual counselling sessions to facilitate open and supportive discussions around HIV status disclosure, group workshops to encourage peer interactions and in-depth learning, information dissemination regarding HIV transmission and treatment options, communication skills training to enhance effective disclosure conversations, provision of psychosocial support to address emotional challenges, referrals to community resources and support networks, and regular follow-up sessions to monitor progress and reinforce the importance of partner disclosure. By equipping women with knowledge, skills, and emotional resilience, the nurse-led intervention aimed to empower women and help them make informed decisions about disclosing their HIV status, ultimately leading to improved PMTCT outcomes and enhanced overall well-being.

Data collection

During the study, baseline data encompassing demographic information including age, education level, marital status, and parity was collected from all participants. Pre-intervention assessments involved both groups completing a structured questionnaire to gauge their knowledge, attitudes, and practices concerning HIV status disclosure. In the intervention arm, participants received nurse-led PMTCT health education sessions geared towards empowering them to initiate self-disclosure conversations with their partners. These sessions covered topics such as the advantages of the disclosure, communication strategies, and psychosocial support. Meanwhile, the control group received standard care, inclusive of routine PMTCT services but lacked the nurse-led health education intervention. Following the intervention period, both groups underwent a post-intervention assessment, involving the completion of a follow-up questionnaire to measure changes in knowledge, attitudes, and practices related to HIV status disclosure. Self-reported disclosure rates were assessed to evaluate the effectiveness of the intervention.

Data analysis

Descriptive statistics were used to summarize participant characteristics. Wilcoxon signed-rank tests were employed to assess changes within groups before and after the intervention. Chi-square tests were used to compare the proportion of women disclosing their HIV status between the intervention and control groups post-intervention. All chi-square values were deemed statistically significant at a p-value <0.05 and 95% confidence interval

Results

In the initial assessment, among the 100 HIV-positive women in the control group, 61 (60.4%) did not disclose their HIV status to their

sexual partners, whereas 39 (39.6%) did disclose their status. In contrast, within the intervention group consisting of 112 HIV-positive women, 62 (55.4%) did not disclose their HIV status, while 50 (44.6%) chose to disclose. Chi-square analysis revealed no statistically significant difference ($\chi^2 = 0.553$, df = 1, $p = 0.457$) in self-disclosure rates to sexual partners between the control and intervention groups at baseline. At the end-line survey, within the control group of 100 HIV-positive women, 64 (64.0%) did not disclose their status, while 36 (36.0%) disclosed it. Conversely, in the intervention group of 100 HIV-positive women, 20 (20%) did not disclose their HIV status, while a significant majority of 93 (93%) did choose to disclose to their sexual partners. Chi-square analysis demonstrated a substantial difference ($\chi^2 = 47.618$, df = 1, $p < 0.001$) in the rates of HIV status disclosure to sexual partners between the intervention and control groups at the end-line assessment. Table 1.

After DID analysis self-disclosure of HIV status to a sexual partner significantly improved after the intervention at the end-line survey with a net intervention effect of 23.1% with p<.0001. Overall, the nurse-led health education intervention increased self-disclosure of HIV status to sexual partners among HIV-positive women of the selected health facilities in Mombasa County. Table 2.

Discussion

The HIV status disclosure serves as a critical public health objective for several compelling reasons. Firstly, it can incentivize sexual partners to undergo HIV testing, prompt behavioural adjustments that reduce the risk of transmission, and consequently contribute to the prevention of new HIV infections. Moreover, disclosing one's HIV status carries numerous potential benefits for the individual, including increased opportunities for social support, improved access to essential medical care like antiretroviral therapy, enhanced prospects for open discussions and practical engagement in HIV risk reduction with partners, and greater capacity for future planning. Nevertheless, alongside these advantages, there exist potential drawbacks to consider when contemplating HIV status disclosure to sexual partners.

Table 1:
Self-disclosure to sexual partner levels among HIV mothers in the control and intervention sites at baseline and end-line of the survey

Group	Baseline survey					End-line survey				
	Self-disclosure	No self-disclosure	χ^2	df	p-value	Self-disclosure	No self-disclosure	χ^2	df	p-value
	n (%)	n (%)				n (%)	n (%)			
Control	39.6(44.6)	61(60.4)	0.553	1	0.457	36(36.0)	64(64.0)	47.618	1	<0.001
intervention	55(44.6)	62(55.4)				93(82.3)	20(17.7)			

n; is the frequencies and %; is the percentage frequencies, df; degree of freedom

Table 2:
DID result on the effect of nurse-led health education intervention on disclosure to sexual partner

Outcomes percentage score	Baseline survey			End line survey			Contribution
	C(%)	I (%)	Diff(I-C)	C (%)	I(%)	Diff(I-C)	DID
Disclosure to a sexual partner	37.2	41.3	4.1	40.7	67.9	27.2	23.1***

C; control, I; intervention, DID; difference in differences net impact in percentage, ***; p<0.000

These drawbacks encompass concerns such as the risk of losing financial support, facing blame, experiencing abandonment, encountering physical and mental abuse, encountering discrimination, and straining familial relationships (17).

One of the central findings of this study is that nurse-led PMTCT health education has a significantly positive impact on encouraging HIV-positive women to initiate self-disclosure conversations with their partners. The intervention group exhibited a notable increase in self-initiated disclosures compared to the control group. This finding aligns with the primary objective of our study, highlighting the transformative potential of nurse-led health education in promoting disclosure and, subsequently, better PMTCT outcomes

Numerous studies have indicated a strong correlation between HIV status disclosure and increased adherence to antiretroviral therapy (ART). Achieving viral suppression through ART, receiving social support, practising safer sexual behaviour, and enhancing child health outcomes (18). According to a systematic review, the most commonly cited barriers to the utilization of PMTCT intervention programs were the fear of disclosing one's status and the associated stigma (19)

The World Health Organization (WHO) and national HIV control initiatives place significant emphasis on the crucial step of sharing one's HIV status with a sexual partner. This act of HIV disclosure has shown clear associations with improved adherence to treatment, favourable clinical results, and a reduction in the transmission of the virus between partners (20,21). Publicly acknowledging one's HIV serostatus plays a crucial role in HIV prevention and curbing transmission within communities. Encouragingly, heightened counselling, bolstered community and partner support, as well as effective educational strategies, foster the act of self-disclosure of one's HIV status to sexual partners (21)

In line with previous research findings, it is noteworthy that individuals living with HIV who received consistent follow-up support and education were more inclined to disclose their HIV status to their sexual partners. This practice not only contributed to alleviating mental distress and reducing stress but also facilitated timely and consistent adherence to medications, as individuals were less concerned about potential household members sharing their living spaces (22). This suggests that the HIV case management intervention helped to create the environment for patients' compliance with cART and disclosure of their HIV status (23). Similarly, our current study findings indicated a significantly higher proportion of women who disclosed their HIV status to their sexual partner in the nurse-led PMTCT health education intervention group than those in the non-intervention group. The DID analysis result indicated that self-disclosure of HIV status to a sexual partner significantly improved after the intervention with a net intervention effect of 23.1% with $p<.0001$. These findings imply that if health-based education should be continuously given to HIV-positive women attending antenatal clinics, the prevalence of non-disclosure of HIV status to sexual partners will be reduced.

Conclusion and recommendations

In conclusion, our study underscores the transformative effect of nurse-led PMTCT health education in enhancing HIV status disclosure among HIV-positive women in Mombasa County. This intervention not only contributes to improved PMTCT outcomes but also empowers women to take charge of their health and navigate the complexities of disclosure. By addressing the research problem and bridging the research gap, this study offers actionable insights that can guide the development of more effective PMTCT strategies, ultimately advancing public health efforts to combat HIV/AIDS in the region.

The findings of this study have several important implications for PMTCT programs and public health efforts in Mombasa County. PMTCT programs should consider the integration of nurse-led health education initiatives as a standard component. This can empower HIV-positive women and contribute to the success of PMTCT efforts. Recognizing the psychosocial barriers to disclosure, interventions should include psychosocial support mechanisms, such as counselling services and peer support groups, to address these challenges effectively. Tailored approaches should be developed for vulnerable subgroups, taking into account age, education, and other demographic factors to maximize the impact of PMTCT health education.

Strength of the study

The study's strength lies in its culturally sensitive approach, addressing a crucial gap in research on HIV-positive women's empowerment in Mombasa County. The quasi-experimental design, inclusion of intervention and control groups, and data collection enhance the study's robustness, offering valuable insights into nurse-led interventions' effectiveness in promoting HIV status disclosure for PMTCT. However, limitations include potential selection bias due to the non-random assignment, a narrow focus on disclosure, reliance on self-reported data introducing social desirability bias, and findings being context-specific to Mombasa County, limiting generalizability to regions with different dynamics or healthcare systems.

Ethical considerations

Confidentiality and anonymity were ensured during data collection and analysis. This study received approval from the Institutional Ethical Review Committee at Baraton University in Eldoret, Kenya. The official research permit was obtained from the Kenya National Commission for Science, Technology, and Innovation (NACOSTI). Official permissions were also secured from the Department of Health Services in Mombasa County and from the hospital administrators of Tudor, Likoni, Kisauni, and Port Reiz hospitals. Per the principles outlined in the Helsinki Declaration of 1976, informed consent was obtained from all participants before their involvement in the study and the subsequent data collection process.

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