

## PrEP Uptake Among Pregnant and Breastfeeding Women at Kapiri Urban Clinic

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### Abstract

**Introduction:** HIV globally is a public health challenge especially among P/BFW who are a priority population as they put at risk unborn or breastfeeding babies of HIV. Use of PREP has proven significant. However, little research literature exists which shows the uptake of PrEP among P/BFW in a low resourced country like Zambia. The purpose of this study was therefore to explore factors influencing PrEP uptake among P/BFW at Kapiri Urban Clinic in Kapiri district of the Republic of Zambia.

**Methods:** The study approach was quantitative, a sample size of 348 participants were selected randomly. A questionnaire was applied to collect data; and STATA version 15 was used for the analysis.

**Results:** Linear regression results show factors associated to PrEP among the study population were marital status with results suggesting a status closer to marriage reduced PrEP uptake by -.233, higher level of education of participants reduced PrEP uptake by -.241, and misinformation on risk Factors for PrEP reduced uptake by -.229. Higher Partner's Education increased PrEP uptake by 0.359.

**Conclusion:** This study was successful in establishing the factors associated with PrEP among pregnant and breastfeeding women at Kapiri Urban Clinic. These were age, marital status, level of education, partner education and misinformation on risk factors and the cultural factors included perception of being HIV positive, having multiple sexual partners and being an adulterer.

**Keywords:** PrEP, Socio-Demographic Factors, Kapiri Urban Clinic, Breastfeeding and Pregnant Women

### 1. Introduction

Antiretroviral medication is used by HIV-uninfected people as part of HIV Pre-Exposure Prophylaxis (PrEP), which aims to prevent

HIV infection, taken orally as a daily pill (usually containing tenofovir plus emtricitabine, or TDF/FTC). New data indicate that long-acting injectable PrEP may soon be an alternative option.

Only daily oral PrEP is available in the majority of low-income nations; however, not all kinds of PrEP are available everywhere in the world. Global statistics on PrEP uptake among pregnant and breastfeeding women are limited, with significant variations across regions. The World Health Organization has recommended PrEP for pregnant and breastfeeding women at substantial risk of HIV, but implementation remains inconsistent globally [1]. In sub-Saharan Africa, studies highlight moderate uptake in some contexts. For instance, a demonstration project in Kenya found that 14% of women attending antenatal clinics were initiated on PrEP after receiving counseling, indicating both interest and barriers such as stigma and knowledge gaps [2].

Efforts to increase PrEP uptake have focused on integrating PrEP services into maternal and child health programs. Studies suggest that embedding PrEP delivery within antenatal and postnatal care services improves accessibility and uptake among PBW [3]. Additionally, interventions that address healthcare provider attitudes and build capacity for PrEP delivery have shown promise in enhancing service delivery [4]. In 2016, the Zambian Ministry of Health adopted the 2015 WHO guidelines recommending daily oral PrEP for people at substantial risk of HIV infection, defined as HIV incidence greater than 3 per 100 person-years. This research aimed to determine the barriers and enabling factors of PrEP uptake during pregnancy and breastfeeding, at Kapiri urban clinic in Zambia.

### 1.1. Statement of the Problem

Pregnant and Breastfeeding Women (PBFW) at high risk of HIV are recommended to use Pre-Exposure Prophylaxis (PrEP) by the World Health Organization, yet global scale-up is still far below targets. Only 28% of the 3 million people projected to be on PrEP in 2020 in low- and middle-income countries had started using it, with uptake concentrated in a handful of countries, including Kenya and South Africa [5]. Research from sub-Saharan Africa suggests poor initiation and retention in PrEP among this population, with barriers related to stigma, misinformation, partner dynamics, and health system constraints [3]. At Kapiri Urban Clinic, routine data for January–March 2024 showed that of 69 clients who continued PrEP, only 9 were pregnant or breastfeeding women, indicating very low uptake among this priority population. This gap highlights a pressing need to examine socio-demographic, cultural, and structural factors affecting PrEP uptake in PBFW at this site.

### 1.2. Justification of the Study

The Pregnant and breastfeeding women population is a very vital and highly vulnerable population with regard to HIV. This study will expand the body of knowledge and will help inform policy development.

### 1.3. Main Objective

To establish the association between PrEP uptake and being pregnant and breastfeeding among women at Kapiri Urban Clinic.

### 1.4. Study Setting

The study was designed to determine the factors influencing PrEP uptake among pregnant and breastfeeding women at Kapiri Urban Clinic in Kapiri Mposhi district, Zambia, which is centred on coordinates (13.9779° S, 28.6848° E). It is located 60 km from Kabwe and 140 km away from the Ndola district. It shares its eastern district borders with Mkushi, western borders with Mpongwe, Masaiti, and Ngabwe district, while the northwestern borders with Ngabwe [6]. The clinic itself has an outpatient department, but it does not have an inpatient department, with only one doctor, and on a weekly ante-natal day, the average initial ANC attendance is 37.

## 2. Methods

### 2.1. Research Approach

A quantitative approach was applied

### 2.2. Research Setting

The study was conducted at Kapiri Urban Clinic in Kapiri Mposhi, this is because Kapiri Urban Clinic is a high-volume site with a large catchment area and population, and thus has a high number of women accessing antenatal services.

### 2.3. Study Population

The study targeted pregnant and breastfeeding women accessing ante-natal and postpartum services at Kapiri Urban Clinic in Kapiri Mposhi District. This is because these women are exposed to acquiring HIV through their partners and thus also risk transmitting the virus to the unborn child and/or breastfeeding baby.

### 2.4. Sampling Techniques

A sample of 348 P/BFW was selected randomly. Slovinc's sample size formula was applied as outlined below.

$$\text{Sample size, } n = N * \frac{Z^2 * p * (1 - p)}{[N - 1 + \frac{e^2}{Z^2 * p * (1 - p)}]}$$

N is the Population size,

Z is the Critical value of the normal distribution at the required confidence level,

p is the Sample proportion,

e is the Margin of error

The population size was 2662, which was the number of women in our target population at Kapiri Urban Clinic, at a 95% confidence level or critical value of 1.96, sample proportion was at 50% and the margin of error was at 5%. The determined sample size was 348 after substituting the values in Slovinc's formula.

### 2.5. Data Collection Techniques

A questionnaire was used to collect data.

### 2.6. Data Analysis

STATA version 15 was applied, and the test statistics used were the mean, frequency distribution tables and multivariable analysis

using multiple linear regression.

## 2.7. Ethical Considerations

The University of Lusaka Research Ethics Committee and National Health Research Authority approved the study. Informed consent was obtained from the participants by way of signing. Anonymity and confidentiality of participants were observed. And the subjects were informed that their participation did not entail an individual economic benefit. And that they could terminate their participation in the survey at any time they felt like.

## 2.8. Presentation of Results

### 2.8.1. Demographic Characteristics

The mean age of the clients was 29, and the minimum age was 19,

and the maximum age was 42. This describes that the age range was inclusive and not biased towards either the higher or lower percentile. The distribution of the marital status was such that the highest proportion of our target population was married, which constituted 180 pregnant and breastfeeding women, which was 52 per cent of the sample size, while the least category of these women was that of the widowed, which constituted only 29 women, translating to 8 per cent of the sample size. Furthermore, most of the participants enrolled in the study had attained tertiary education, with the absolute number of them being 207, which translated to 59 per cent of the sample size, with the least being those who had no formal education, and those who ended up having primary education constituting 14 per cent and 9 per cent of the sample size, respectively.

	Coefficient	P Value	{95% Confidence interval}
Age	0.0059638	0.214	-0.03643,0.0153919
Marital Status	-0.2332826	0.0000000	0.03021672, -0.164398
Level of Education	-0.2405675	0.0010000	-0.3866331, -0.0945019
Heard of PrEP	-0.0336186	0.7390000	-0.2322162, 0.164979
Partner Education	0.3599560	0.0000000	0.03021672, -0.164401
Partner HIV Status	-0.1812545	0.0000000	-0.2733718, -0.00891373
Risk-Factors	-0.2287781	0.0060000	-0.3915037, 0.0660525

**Table: Multiple Linear Regression of Factors Associated with PrEP Uptake and Being Pregnant and Breastfeeding Women at Kapiri Urban Clinic**

The research question investigated how PrEP uptake relates to pregnant and breastfeeding women at Kapiri Urban Clinic, and the results indicated that the statistically significant variables are

(i) Marital status; being married or being under a certain marital status has a negative relationship with the uptake of PrEP (-0.2333). Because it acts on 0.000, its p-value indicator shows that this effect is statistically significant.

(ii) The other significant factor was the level of education, as the result shows that as the level of education increases among the target population, PrEP uptake decreases by 0.2406. This effect is statistically significant (p-value = 0.001).

(iii) The third factor of significance was Partner's education, as the coefficient showed that higher partner education was positively associated with PrEP uptake of 0.36. This effect is statistically significant (p-value = 0.000)

(iv) Another significant factor was the Partner's HIV status, results showing that the partner's HIV status varied negatively with PrEP uptake; partners being HIV positive, or with partners who are HIV positive, reduced uptake by 0.1813. This effect is statistically significant (p-value = 0.000)

(v) Another significant factor is (v) risk factors for PrEP. A coefficient showed that, with an individual in the target population having to know some of the risks that are a consideration for PrEP, they lose 0.2288 in terms of PrEP uptake. This effect is statistically significant at (p-value = 0.006).

The model suggests that factors such as marital status, education level, partner's education, partner's HIV status, and risk factors for PrEP are significantly related to PrEP uptake. However, age and having heard about PrEP do not have a statistically significant impact on uptake based on this model.

## 3. Discussion

### 3.1. Marital Status and PrEP Uptake

This study found that marital status had a significant negative effect on PrEP uptake, with being married or having a particular marital status associated with a decrease in uptake by 0.2333. The p-value of 0.000 indicates that this result is statistically significant. This finding aligns with previous research conducted in Zambia, which indicated that marital status influences the decisions to adopt preventive measures such as PrEP. For instance, a study by Tembo et al [7]. found that married women were less likely to access PrEP, possibly due to cultural norms surrounding marriage and sexual activity, as well as the perception of a lower risk of HIV transmission within marriage.

### 3.2. Education and PrEP Uptake

The results of this study indicate that higher levels of education are inversely related to PrEP uptake, with the coefficient showing a decrease of 0.2406 in uptake as education increases. This association was statistically significant with a p-value of 0.001. Similar findings have been observed in other studies conducted in Zambia. For example, the study by Phiri et al., highlighted that

individuals with higher education levels tended to be more aware of HIV risks, but paradoxically, they were less likely to perceive the need for PrEP due to their perceived lower HIV vulnerability. This finding could be explained by a more general understanding of HIV prevention among educated individuals, which might reduce the urgency of using PrEP.

### 3.3. Partner's Education and PrEP Uptake

The study found that a higher level of education in a partner was positively associated with increased PrEP uptake by 0.36. This result is consistent with findings from other research conducted in Zambia, such as by Chabala et al., where a partner's education was found to influence health decisions, including the adoption of PrEP [8]. Educated partners may be more likely to understand the benefits of PrEP, discuss it openly, and encourage their partners to initiate or continue using the medication.

### 3.4. Partner's HIV Status and PrEP Uptake

This study also found that having an HIV-positive partner (or an HIV-positive partner) was negatively associated with PrEP uptake, with a coefficient of -0.1813. This effect was statistically significant ( $p$ -value = 0.000). This finding reflects the broader context of HIV-related stigma and fear of disclosure, which has been highlighted in other Zambian studies. According to Mweemba et al., women with HIV-positive partners often face challenges in accessing HIV prevention services like PrEP due to the stigma attached to HIV-positive status and concerns about their partner's reaction [9]. This negative association may be compounded by the belief that if a partner is HIV-positive, PrEP may not be seen as necessary, or it may be more difficult for women to negotiate its use.

### 3.5. Knowledge of Risk Factors and PrEP Uptake

Finally, the study showed that knowing a risk factor for PrEP was negatively associated with uptake, with a decrease of 0.2288 in uptake when participants were aware of risk factors. This finding, with a statistically significant  $p$ -value of 0.006, is somewhat counterintuitive. In contrast to other studies where knowledge of risk factors for HIV was associated with higher rates of PrEP uptake, such as in the work by Lungu et al., this study suggests that awareness of risk factors may actually reduce the perceived need for PrEP [10]. This could be due to a variety of factors, including misinformation or the perception that PrEP is only necessary for those with certain high-risk behaviors, rather than for all individuals at risk, stigma, and a health communication gap among the individuals enrolled in the study.

## 4. Conclusion

The research sheds light on the reasoning that led to the low uptake of PrEP by breastfeeding and pregnant women. In order to achieve the objective of the study, analyzing the prevalence of PrEP use, cultural and socio-demographic factors, and the link between such factors and the use of PrEP, this research exposes important determinants in the barriers and facilitators to the use of this HIV prevention method. The implementation of this research will help the correct barriers to motivate appropriate use of PrEP by these women. Concerning the findings of this study,

among the mentioned factors that are associated with PrEP uptake in our target population, marital status, education, and partner's education, HIV status of either partner, or risk factor awareness showed significant influence on uptake. When correlating age and unearned knowledge on PrEP to PrEP's uptake, there is nothing to enjoy that they proved to be statistically insignificant with PrEP use. It shows that people have thresholds beyond which their individual and relational factors do not consider PrEP use, or more clearly said, one-dimensional PrEP adoption.

### 4.1. Recommendations

Recommendation for future research with a qualitative approach to bring forth the richness of the survey, feelings, and beliefs of this sample. Outreach campaigns should be conducted to correct misconceptions and educate people that PrEP is a form of prevention and not a sign of having HIV. Inviting male partners to such activities could also be helpful in solving partner consent and support issues. Moreover, sensitivity training should be conducted at the community level, as that could counteract shyness by working to highlight such problems as cultural factors that also contribute to stigma. Finally, to overcome PrEP uptake gaps in Zambia, targeted efforts to combat socio-demographic determinants, cultural patterns, and systemic problems in the healthcare system are all required.

### Declarations

Ethics Approval and Consent to Participate: The study was approved by the University of Lusaka Research Ethics Committee and the Zambia National Health Research Authority (NHRA). All participants provided written informed consent before participation, as you will see attached the informed consent form in the appendices section right after the references.

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## Appendix

### Information Sheet

Title of Study: Factors affecting PrEP uptake Pregnant or Breastfeeding women at Kapiri urban clinic in Kapiri Mposhi District in Zambia.

Good day, participant

I am a student at the University of Lusaka as a researcher. We appreciate your consent to participate in this study, whose objective is to ascertain Factors affecting PrEP uptake Pregnant or Breastfeeding women at Kapiri urban clinic in Kapiri Mposhi District in Zambia

The purpose of the study

Despite having low uptake, PrEP uptake will substantially reduce the risk and incidence of HIV infection, I am conducting this study to evaluate the priority populations understanding and perceptions of PrEP in order to inform policy on how to best improve programs to implement it.

Procedures and processes involved in participating

I'm seeking to speak to women in the aforementioned desired priority group as a matter of procedure. I have some inquiries for you on PrEP, that will help determine factors that tend to influence the low uptake of PrEP. There will be 10 minutes total for these

questions.

Confidentiality

We will carefully maintain the confidentiality of all the information you supply. Without any direct reference to you, the study data will be provided to the appropriate authorities; anonymity will always be protected.

Discomfort that you might experience as a participant

I recognize that certain questions might make you feel uneasy. If this occurs, we want you to know that you are under no obligation to answer any questions or participate in the interview if doing so will make you feel uncomfortable. It is entirely up to you to make this decision and to inform me, the interviewer that you want to halt or end the interview process at any moment throughout the interview if you begin to feel uncomfortable.

Potential benefits for you and the community in relation to your participation

It is hoped that your participation in this study will enable me to gather rich and beneficial information that will aid in addressing challenges related to low PrEP uptake. You won't receive payment for taking part in this study. Where you are unsure, please ask for explanation.

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