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# Utilization of Pre-Exposure Prophylaxis (Prep) Among HIV Discordant Couples in Four Mongu Urban Health Facilities - Zambia

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## Abstract

**Purpose:** The study was conducted to establish the rate of utilization of PrEP among discordant couples and factors associated with utilization. Findings from the study will assist policy makers to understand what measures to put in place in order to improve the utilization rate of PrEP among discordant couples in the district.

**Methodology:** A cross section analytical study design was used. A sample of 68 respondents were interviewed using a semi-structured questionnaire. The four health facilities were purposively selected while convenience sampling was utilized to select respondents. SPSS software version 16 was used for analysis. Descriptive statistics was used to calculate frequencies and percentages presented in tables and figures. To compute associations between the dependent and independent variables, Spearman's Correlation Coefficient, Chi-Square Test and Fisher's exact test were used. All these were gauged at 95% confidence intervals (CI) with the p= value of 0.05.

**Findings:** Results of the study showed that the majority respondents (66%) n=45 were utilizing the service while (34%) n=23 were not. Spearman's correlation test result showed that it was only occupation which was positive and statistically significant at ($r_s$ =.284, p=.019). The study has established that the casual workers, self-employed and those not working are more unlikely to use PrEP. However, knowledge level was at ($r_s$=566, p=.071), waiting time was ($r_s$=.021, p=0.565) clients waited for >30 minutes. Education level attained was positive but not significant ($r_s$.071, p=.654). The higher the knowledge level and higher education attained are more likely to use PrEP

**Unique Contribution to Theory, Policy and Practice:** The study is also importance as it will add value to the body of existing literature on the utilization of PrEP among discordant couples. Policy makers in Western province and Mongu district will be able to make sound policies on HIV prevention by using the findings from this study.

**Keywords**: *Utilization, Discordant Couple, Prep, Knowledge of Prep, Waiting Time, Stigma and Discrimination.*

## INTRODUCTION

In sub-Saharan Africa where HIV/AIDS epidemic is predominantly generalized, majority of HIV infections occur among heterosexual couples (Balakrishna and Ravikumar, 2017). Tchakounté et al., (2020) defined a couple as concordant negative when both partners are HIV negative and concordant positive when both are HIV positive. On the other hand, a discordant couple is a couple where one partner is HIV positive and the other one is HIV negative. According to Balakrishna and Ravikumar, (2017), sero-discordant couples have attracted a substantial amount of attention for HIV prevention activities, so much so that they have been defined as a "special population" whose care is outlined in multiple sets of normative guidelines.

According to Central Statistical Office, (2018) the ZDHS Survey results showed that couples in which the man is HIV positive and the woman is HIV negative was at 3.1% and 4.5% of couples in which the woman is HIV positive and the man is HIV negative. PrEP is one intervention adopted by Zambia to prevent HIV transmission among discordant couples. According to Zambia Statistics Agency (ZSA), Ministry of Health (MOH) Zambia, and International Classification Functioning (ICF) (2019), western province has an HIV prevalence is at 10.6%. This demonstrates that the HIV rate is high in the province of which discordant couples are part of this population. Similarly, data from Mongu district health office show that there are a lot of discordant couples in the district.

In order to reduce new infections to the targeted 15,000 per year among the 15 to 49 age group, new investments in PrEP especially among the growing number of key populations will need to be carefully planned and implemented (Republic of Zambia, 2017). The National Health Strategic Plan (2017 to 2021) and the National AIDS Strategic Framework (NASF 2017 to 2021) both recognize the need for provision of PrEP to priority populations. Although the NASF (2017-2021) prescribes PrEP for all those at high risk of HIV infection, it specifically identifies discordant couples and sex workers as key populations that will need to be provided with PrEP. PrEP is also included in the comprehensive HIV Treatment National Guidelines.

Results of studies conducted in Zambia indicate that many Zambian discordant couples do not utilize pre-exposure prophylaxis. According to Mulenga, (2017), the reasons for not utilizing PrEP were reported to be stigmatization and discrimination. The stigma and discrimination, made discordant couples to shun use of PrEP. Despite the recorded high numbers of HIV positive discordant couples in Western Province, reviewed literature showed that no similar study has been conducted to assess the utilization of PrEP by discordant couples in the province, Mongu district reported a high number of discordant couples (MDHIMS, 2018/2019 reports). However, utilization is still low from the time the program was introduced in 2017 as shown in the tables below.

Table 1: Percentage of discordant couples utilizing PrEP in 4 Mongu urban Health facilities in 2018 and 2019.

| Year | | 2018 | | | 2019 | | |
|---|---|---|---|---|---|---|---|
| **SN** | **Name of HC** | **Discordant couples on record** | **Discordant couples accessing ART** | **Percent of discordant accessing ART** | **Discordant couples on record** | **Discordant couples accessing ART** | **Percent of discordant accessing ART** |
| 1 | Mulambwa | 145 | 31 | 20.1 | 190 | 45 | 23.7 |
| 2 | Mongu Urban | 145 | 43 | 29.6 | 162 | 52 | 32 |
| 3 | Prisons | 109 | 23 | 21.1 | 124 | 43 | 34.6 |
| 4 | Liyoyelo | 89 | 12 | 13.5 | 113 | 31 | 27.4 |
| **5** | **Totals** | **488** | **109** | **84.3 (21.1%)** | **589** | **171** | **117.7 (29.4%)** |

Source: (Mongu HMIS reports 2019)

The data from Mongu District Health Office (DHO) shows that percentage of discordant couples at Mongu district slightly increased from 21.1% to 29.4% from 2018 to 2019. The rate is far below the UNAIDS "95-95-95" target by 2030 which applies to Zambia in general and Mongu in particular. The low uptake of PrEP is reported despite awareness campaigns, training of health workers, and installation of equipment and supply of drugs in health facilities targeted by the study. This study therefore, aims at assessing the utilization of PrEP among HIV discordant couples in four urban health facilities of Mongu District and factors that influence utilization.

It is for the earlier discussed reasons that this study was conducted to assess utilization of PrEP among discordant couples in four urban health facilities of Mongu district.

## 1. METHODOLOGY

**Design:** This study utilized cross-sectional analytical study design which sought to gather data from a group of subjects at only one point in time (Schmidt and Brown, 2019). The method was selected because it is useful in investigating the association between two related or unrelated parameters within a defined population. The design assisted to measure the association of independent variable of the outcome which is utilization of PrEP by HIV discordant couples.

**Study site:** The study was conducted in four health facilities catchment areas in Mongu district namely: Mulambwa, Mongu Urban, Prisons and Liyoyelo health facilities. The health facilities were selected because they do offer PrEP to discordant couples. The other justification for this selection is that Mongu in general and the health facilities in particular are among the target areas in Western province with high prevalence rate of HIV/AIDS. The four health facilities catchment areas comprise of 1,140 discordant couples based on the Mongu District Health Information report for the first quarter of the year 2020.

A total of 68 (Mongu Urban 17, Liyoyelo 18, Mulambwa 22 and Prisons 11) respondents were interviewed.

**Data collection:** A semi-structured interview schedule was used to collect data in relation to the variables being measured. Section one of the questionnaires was done to capture unique social-demographic characteristics of individual respondents. The questions under section II, III and IV are adopted from Lopez to answer the main research questions as they relate to specific variables. The semi-structured questionnaire was translated into commonly spoken language in the area and back to English to ensure precision in the wording of the questions. For respondents who could read and write, the questions were read to them in the vernacular language they understood.

**Ethical considerations:** Ethical clearance was obtained from the University of Zambia Biomedical Research Ethics Committee and National Health Research Authority, (REF. NO. 1829-2021). Permission was also obtained from District Health Director's Office in Mongu District. In furtherance of observing ethics, the researcher did not force any person to participate in this study; all participants did so voluntarily. With regard to the interview, consent was obtained on all respondents. The researcher did not in any circumstance falsify data or make claims that are not adequately supported by the finding of the research study. All secondary data sources were properly cited and acknowledged as prescribed by the HARVARD guidelines.

The researcher assured the respondents that their participation in the study was voluntary. Protection of confidentiality was assured as their identity was not to be revealed in any publication resulting from this study. No linkage of data was provided to identify information supplied (e.g., address, email). No monetary benefits was given in exchange for information obtained by participating in this study.

## 2. RESULTS

During the study 68 respondents were sampled out of which 56% were females while 44% were males. The age range of respondents was that within 18 – 25 years were 16.2%, 67.6% within 25-35 years and above 35-50 years 16.2%. The table further indicate respondent's marital status thus married at 57.5% while the singles were at 28% however, only 8.8% were divorced.

The report shows that 62% of the interviewed attained secondary level while 30% attained tertiary level. From the total respondents interviewed, 44.1% were involved in formal employment, 17.6% were unemployed and 14.7% were casuals. The results further indicate that for income 30.4%, had

a monthly income of K500 to K1000, another 30.4% at K1001 to K2000 while 23.5% were earning K2001 to K5000. Only 14.5% were earning more than K5000.

On utilisation of PrEP by respondents, the study findings were that Sixty-six percent (n=45) were utilizing the service while 34% were not. The majority (58.8%) had been taking ARVs for over 2 years but less than 5 years while 27.5% had been taking the drugs for less than 2 years and the least (13.3%) had been taking for more than 5 years. Out of the total (n= 45), 96% were taking Truvada the rest 2% each were taking Lopninar and Atripla and the majority (58.8%) were getting their drugs from health facilities.

Table 2: Utilisation of PrEP by respondents (n=68)

| **Characteristic** | **Frequency (n)** | **Percentage (%)** |
|---|---|---|
| Utilisation of PrEP | | |
| Yes | 45 | 66 |
| No | 23 | 34 |
| Length of time respondents have been taking ARVs | | |
| < 2 years | 13 | 27.5 |
| >2 to <5 years | 26 | 58.8 |
| > 5 years Which drugs taken | 6 | 13.3 |
| Name of ARV drugs taken | | |
| Atripla | 1 | 2 |
| Truvada | 43 | 96 |
| Lopinar | 1 | 2 |
| Health facility where respondents are accessing ARV drugs | | |
| HF | 19 | 41.2 |
| Hospital | 26 | 58.8 |

Table 2 above show the utilisation of PrEP by respondents. Sixty-six percent (n=45) were utilizing the service while 34% were not. The majority (58.8%) had been taking ARVs for over 2 years but less than 5 years while 27.5% had been taking the drugs for less than 2 years and the least (13.3%) had been taking for more than 5 years. Out of the total (n= 45), 96% were taking Truvada the rest

2% each were taking Lopninar and Atripla and the majority (58.8%) were getting their drugs from health facilities.

Table 3: Waiting time during collection of PrEP drugs (n=45)

| **Variable** | **Category** | **Total** | **(%)** |
|---|---|---|---|
| Waiting time | <20minutes | 14 | 31 |
| Waiting time | >20minutes <30minutes | 27 | 60 |
| Waiting time | >30minutes | 4 | 9 |
| **Totals** | | **45** | **100** |

One of the service delivery variables under study was the waiting time by clients in accessing the drugs at health facility. Table 3 above shows that the majority (60%) were taking between 20 to 30 minutes while (31%) took less than 20 minutes lastly (9%) were taking more than 30 minutes to collect drugs. The accepted waiting time at health facilities is the minimum of 10 and the maximal of 30 minutes. This means that 93.3% were attended to within the accepted time. However, the individual facilities have different bench marks of waiting time due to the difference in the number of clients they attend to. Therefore, Mulambwa has a minimum waiting time of 30 minutes, Liyoyelo and Mongu urban 20 minutes while Prisons has a minimum of 15 minutes of waiting time.

Table 4: Summary association between socio-demographic characteristics of respondents and utilization of PrEP using the Chi-square and Pearson correlation tests and Fisher's exact test

| ***Variable*** | ***Fisher's test*** | ***P=value*** | $r_s$ | ***P=value*** |
|---|---|---|---|---|
| Utilization of PrEP | 7.118 | .008 | | |
| Age | .310 | .931 | .055 | .658 |
| Marital status | 2.998 | .581 | .133 | .280 |
| Education level | 3.678 | .270 | .071 | .564 |
| Occupation | 7.387 | .103 | .284 | .019 |
| Income level | 1.106 | .952 | -.076 | .529 |

The above table 4 shows the output from the Fisher's exact test and spearman's correlation test The Fisher's exact test was used because the values were less than 5. Findings using Spearman's rank correlation coefficient of age indicate a strong positive but not statistically significant ($r_s$ =

.055, *p* =.658). A positive but not significant ($r_s$ = 2.998, *p* = .581) correlation was reported in the aassociation between marital status and utilization of PrEP. Association between education attained and utilization of PrEP, was positive and not statistically significant ($r_s$ = .071, *p* = .564). Occupation and utilization of PrEP was positive and statistically significant at ($r_s$ =.284, p=.019). Association between income level and utilization of PrEP was reported not to be significant at p=.952. Correlation between PrEP utilisation and occupation showed a positive and significant ($r_s$ = .284, p= .019). Even though, correlation between PrEP utilisation and income level was negative it was not significant at ($r_s$ = -.076, p = .529). It has been determined that it is only occupation *(p= .019)* which have significant relationship between the PrEP utilisation since the p=values are above the cut-off point of 0.05.

## 3. DISCUSSION

SPSS software version 16 was used for analysis. Descriptive statistics was used to calculate frequencies and percentages presented in tables and figures. To compute associations between the dependent and independent variables, Spearman's correlation test. Chi-Square Test and Fisher's exact test were used. All these were gauged at 95% confidence intervals (CI) with the p= value of 0.05.

The study sample contained more females at 63.2% than the males at 36.8% (Table 4.7). This is in line with the fact sheet by UNAIDS, (2019) which states that since the start of the global HIV epidemic, women in many regions have been disproportionately affected by HIV. Today, women constitute more than half of all people living with HIV and AIDS. According to UNAIDS, (2017), HIV disproportionately affects women and girls because of their unequal cultural, social and economic status in society, intimate partner violence, inequitable laws and harmful traditional practices reinforce unequal power dynamics between men and women, with young women particularly disadvantaged.

The results on marital status is in line with the findings by Shisana, (2017) which indicated that those who were married living with their spouse had significantly reduced odds of being HIV positive compared to all other marital status groups. The report shows that most of the respondents 62% (n = 42) attained secondary level of education which is in line with WFP, (2018) that observed similar situation that education levels had an influence on utilization of HIV preventive intervention such as PrEP. In the early 1990s, evidence suggested that populations with higher education levels were likely to have higher HIV rates. More recent evidence in countries such as Zambia and Uganda suggest that now, more years of education are increasingly associated with safer sexual behaviour and lower HIV prevalence. Another study by Ibrahim, (2019) reported in the study aimed at finding the socio-demographic factors associated with HIV infection that in low HIV prevalence area, lack of education was the only predictor of HIV infection. This means then that high education attainment is positive predictor towards the use of PrEP. Education attained especially at the tertiary level enables the discordant couples comprehend the intricacies involved in navigating around HIV intervention. It helped them in making decision around accessing drugs, remove stigma and discrimination and avoid defaulting.

The result on gender and PrEP utilization association entails negative influence of gender towards PrEP utilization. This finding is in line with Daniel, et al., (2021) reported that participants interviewed 44.6% (men = 39.4% verses women = 49%, p = 0.001) were aware about PrEP, 49.0% were willing to use PrEP. Batte, et al., 2020 also indicated a similar finding where out of the 2985 HIV-negative individuals screened; 2750 (92.1 %) were eligible; of whom 2,536 (92.2%) accepted PrEP. females were more than males.

The majority of respondents were employed (44.1%) according to table 4.9, the result which is in tandem with finding by Ibrahim, (2019) reported in their study that being employed increased the likelihood of HIV infection. Employment becomes a risk factor to acquiring HIV/AIDS. However, the current results show a positive correlation between occupation and use of PrEP. This gives evidence enough to target our intervention to those in employment because they tend to move from one place to another and in doing so may engage in having multiple sexual partners hence, being at risk of acquiring HIV infection if they do not initiate the HIV preventive measures.

**Utilization of PrEP among HIV discordant couples:** The current study has come up with results that the majority of respondents (66%) were utilizing the service while 34% were not (Table 4.2). In support of this findings, reference is made to a study conducted by Arnold, et al., (2017) in Tanzania in which it was concluded that utilization rate of the newly introduced HIV PrEP ARVs among the discordant couples was high at 69%. Another study in support was by Ortblad, Chanda, Musoke, et al., (2018) that indicated that 70% of the discordant couples were utilizing and adhering to PrEP.

The Zambian Government through MoH encourages that all discordant couples must utilize PrEP. This is believed to be one among the key preventive measures of the spread of HIV among the discordant couples.

**Socio-demographic in utilization of PrEP:** The age was one of the social demographic variables investigated to find out whether they were correlation with use of PrEP. Majority of the respondents were in the age range of <25 to 35 years which is the age where they are in their mature time and actively involved in relationships. Among the respondents who were utilizing PrEP, the majority 62% (n=28) were in the age group <25-35 years, but not statistically significant (P-value 0.176). In support of the finding Olilo, (2019) reported from their study that one-third of older individuals at elevated risk of HIV expressed interest and willingly engaged in PrEP use as a preventive strategy against HIV infection. The study went on and indicated that increasing access through targeted interventions for persons aged 45 years and older is warranted and should include effort to reduce gender-specific barriers to access prevention services, including PrEP.

A study conducted in Nairobi, Kenya aimed at examining demographic characteristics associated with utilization of PrEP indicated that out of 1607 individuals who initiated PrEP within the reviewed period**,** 74% were 25 years or older, while 72% were female and 28% were males. Younger individuals (15-24 years) were more likely to commerce PrEP and high rate of continuation (Beer, et al., 2020). In addition to this finding, Dzenga, et al., (2023) the report showed significant associations between age. In a study of 588 cohort participants, 362 (62%) were

included in this analysis. Of these, 176 (49%) were female, 181 (50%) were aged ≤24 years. The commonest reasons for not starting PrEP were pill burden (38%) and needing more time to decide (Kusemererwa, et al., 2021). It is important that the younger clients are given more information about PrEP and more time to decide if uptake has to increase and continuation assured. However, it was further reported by other researchers that PrEP clients aged ≥ 50 years were less likely to discontinue PrEP compared to clients 15-19 years, (Heilmann, et al., 2022). There is need for PrEP intervention to be focused on the younger age group who might commerce but discontinue within a short period of time.

**Service related in utilization of PrEP regime among HIV discordant couples (Knowledge level, Waiting time and Stigma and discrimination)**

The investigation on knowledge levels indicated positive association but not significant. This tallies with the cut-off point which showed that respondents have medium knowledge about PrEP utilisation. In support of the above findings, the study on the use of PrEP among the sero discordant by Ishiekwene, et al., (2018) revealed that awareness of PrEP may be slowly increasing but the uptake of PrEP is low. This meant that awareness of PrEP does not translate to knowledge and use of PrEP.

Waiting time during accessing health services is a significant predictor of PrEP uptake and if not moderate by health care workers can discourage clients in coming to health facilities for refills. Findings from the study indicate that correlation of waiting time and use of PrEP show positive relationship and significant scientifically (p= 0.049) meaning waiting time did have influence among discordant couples on the use PrEP. To the contrary, a study by Mayer (2019) reported that distance to clinic and time spent have all been cited as factors affecting adherence and accessing PrEP at health facilities. In line with this report Vitals study, (2018) found out that there's a strong correlation between how long a patient wait and the star rating of the healthcare facility.

Concerning stigma and discrimination as an independent variable which was negative and not significant at ($r_s$ = -.099; p=.422), more studies were done, one of them was by UNAIDS, (2018) in United States of America. Contrary to the current findings the reveal show that stigmatized and discrimination were considered as a major barrier in their willingness or intention to adopt biomedical intervention and treatment. In line with the result, a study conducted by Bailey, et al., (2017) where the results revealed that the majority of discordant couples in Kenya were not utilizing PrEP due to stigmatization and discrimination. Copeland et al., (2017) also asserted that stigma, discrimination was among the factors that were contributing to low utilization of pre-exposure prophylaxis. This assertion is supported by Shrestha and Copenhaver (2018) when they reported that barriers to adherence included stigmatization and accessibility of PrEP services.

It has been concluded further that ART uptake, adherence, and subsequent viral suppression may be influenced by factors such as stigma, discrimination (Patel, 2016); Tiamiyu, 2019; Croome, 2017). Bajunirwe, (2018) asserted in their study that Stigma persistence does enhance retention in treatment and use of PrEP**.** Discordant couples can be reluctant to seek sexual and reproductive

health (SRH) services due to experienced or anticipated stigma and discrimination from healthcare providers, feeling socially marginalized (Musinguzi, Kidoguchi, Mugo, at al., 2020).

## 4. CONCLUSION

The study investigated a number of social demographic factors (Age, marital status, gender, occupation, and educational level, income level) to determine whether there is positive correlation with the use of PrEP among the discordant couples. From the study results it has been reported that only occupation is significantly correlated to the dependent variable. Casual workers, self-employed and those not working are more likely not to utilise PrEP. Under gender it has been established that more women were utilizing PrEP more than men. Women in many regions have been disproportionately affected by HIV. This entails more focus should be towards single and widows who going by the reports are not utilizing PrEP but they are within the highest risk. Majority of the respondents were in the age range of <25 to 35 years which is the prime one and actively involved in relationships. There is need to concentrate on this age group with well package messages on behavioural change and reduce all impediments towards access to this effective intervention. It has also been established that singles which include widows were more likely not to use PrEP. This entails more focus should be directed towards the single and widows who are not utilizing PrEP but they are within the highest risk.

High education attainment is positive predictor towards the use of PrEP. Education attained especially at the tertiary level enables the discordant couples comprehend the intricacies involved in navigating around HIV intervention. It should be a Government policy to offer education to all citizens in order to encourage the use of PrEP by discordant couples. Non-employment has shown to be a risk factor to acquiring HIV/AIDS and low use of PrEP. The report gives enough evidence to target intervention to those who are not in formal employment. Special attention should also be targeted to low income bracket since the report has highlighted that income is a negative predictor to use of PrEP. The last variable which was significant is the waiting time by discordant couples during refills. The report showed that the majority of respondents waited between 20 to 30 minutes. Waiting time during accessing health services is a significant predictor of PrEP uptake and if not moderate by health care workers can discourage clients in coming to health facilities for refills.

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