



Attitude and Practice towards Pre-exposure Prophylaxis (PrEP) for HIV Prevention among Female Sex Workers in Kicukiro District, Rwanda

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Abstract

This study aimed to assess the attitude, and Practice of female sex workers towards Pre-exposure Prophylaxis for HIV prevention in the Kicukiro district, Rwanda. The study used a descriptive cross-sectional design, using a probability sampling method, and the Yamane formula was used to calculate the sample size of 300 female sex workers including a 10% non-response rate. Primary data was collected using a structured questionnaire, at 10 health centers. Analysis was conducted using IBM SPSS software, with chi-square tests and logistic regression for inferential analysis. The ethical clearance was acquired from the Mount Kenya University ethics committee and the Young Women Christian Association Rwanda. The study findings showed that (60%) of female sex workers have a positive attitude towards PrEP, and 60.4% of respondents were using PrEP. Demographic factors like age group, marital

status, and Ubudehe category were significantly associated with practices. Female sex workers aged between 25 and 29 had 4 times more chance to have good practices. This study provides insights into improving PrEP education and interventions targeting female sex workers and other key populations. These findings highlighted the concerns about stigma and privacy, and the need for public health interventions that target it in the community.

Keywords: Attitude, Practice, HIV Pre-exposure Prophylaxis, Female sex workers, Kicukiro district

1. Introduction

Globally, HIV/AIDS remains a critical public health issue, with an estimated 38.4 million people living with HIV in 2022, including 53% women and girls, and 1.5 million children. In that year, there were 1.5 million new infections (ranging from 1.1 to 2.0 million) and 650,000 AIDS-related deaths (ranging from 510,000 to 860,000) in 2021. The global numbers are alarming, with Sub-Saharan Africa bearing the highest burden, accounting for more than two-thirds of the cases.¹

Pre-exposure prophylaxis, also known as PrEP, is a medication used by people who are susceptible to contracting the human immunodeficiency virus (HIV) to prevent it from spreading. Currently, two drugs known as Descovy and Truvada are being utilized per U.S Food and Drug Administration approval. PrEP prevents a person from getting HIV infection. However, if there is no adherence and retention to medication every day, it can lead to getting infected with HIV,² PrEP when taken consistently is effective by reducing the 99% risk of acquiring HIV through unprotected sex, and 74% risk reduction, through the use of drug injection.³

¹ Terefe, Lakew, A. M. (2024). Knowledge and attitude to HIV pre-exposure prophylaxis among women in five sub-Saharan African countries: 2021–2022. *BMC Public Health*, 24(1), 1253. <https://doi.org/10.1186/s12889-024-18717-1>

² Vail, R. M., Fine, S. M., McGowan, J. P., Merrick, S. T., Radix, A., Rodrigues, J., Hoffmann, C. J., Stevens, L. C., & Gonzalez, C. J. (2022). *PrEP to Prevent HIV and Promote Sexual Health*. Johns Hopkins University. <http://www.ncbi.nlm.nih.gov/books/NBK556471/>

³ CDC. (2022, July 5). Pre-Exposure Prophylaxis (PrEP) <https://www.cdc.gov/hiv/risk/prep/index.html>

PrEP offers protection to HIV-negative people, who engage in unprotected sex, as well as those who have HIV-positive sexual partners, who are not virally suppressed, persons diagnosed with sexually transmitted disease (STD), and those who inject drugs and share needles.⁴

Worldwide, according to the Global PrEP Network, oral PrEP usage has been increasing and across 76 countries, 600,000 people have initiated PrEP in 2019, with a 70% increase from 2018.⁵ WHO recommended PrEP use for people at substantial risk in 2015. PrEP use has been increasing worldwide. In 2019, 121 countries in all continents adopted WHO recommendations in national guidelines.⁶

Globally, 940,000 individuals from 83 countries have gotten oral PrEP at least once by 2020. In 2020, 52% of reported PrEP users, are from African countries, 30% American region, and 26% in the US. In 2020, 130 countries reported the adoption of the WHO recommendations on oral PrEP in national guidelines.⁷

In Sub-Saharan Africa (SSA), the number of PrEPs has expanded from 4,164 in 2016 to 517,000 in 2020, which is 56 percent globally. Among the 10 highest PrEP user countries, 7 are found in Sub-Saharan Africa. South Africa has 100,000 PrEP users, and Kenya, with 83,000 users followed by Zambia and Uganda in 2020.⁸

WHO has declared PrEP as an essential health service and recommended integration and usage. These methodologies have the prospective to streamline and increase PrEP users among key populations.⁹

Like many African countries, Rwanda adopted the WHO PrEP recommendations in the national guidelines, in 2019. On initiation of the program, the key population was discordant couples, which expanded to other

⁴ Sundareshan, Koirala, J. (2024). Preexposure Prophylaxis for HIV Prevention. Dalam StatPearls. StatPearls Publishing. <http://www.ncbi.nlm.nih.gov/books/NBK507789/>

⁵ WHO. (2021). Increasing-Prep-Use-and-Widespread-Adoption-of-Who-Prep-Recommendations.

⁶ WHO-CDS-HIV-18.10-eng.pdf February 2023, <https://apps.who.int/iris/bitstream/handle/10665/279834/WHO-CDS-HIV-18.10-eng.pdf>

⁷ WHO. (2021). Increasing-Prep-Use-and-Widespread-Adoption-of-Who-Prep-Recommendations.

⁸ Kate Segal. (2021). African nations lead the world in offering PrEP HIV prevention drug. AVAC. <https://www.newscientist.com/article/2266273-african-nations-lead-the-world-in-offering-prep-hiv-prevention-drug/>

⁹ Golin, Siberry, G. K. (2020). PEPFAR's response to the convergence of the HIV and COVID-19 pandemics in Sub-Saharan Africa. *Journal of the International AIDS Society*, 23(8), e25587. <https://doi.org/10.1002/jia2.25587>

key populations, mainly female sex workers (FSW) with low condom usage, MSMs (men who have sex with men), discordant couples, young girls and women at risk of HIV infection. In early, 2022, PrEP users have expanded between 13,000 to 14,000 cumulative PrEP users, exceeding the 7,452 PEPFAR PrEP target in COP 2021.¹⁰

According to the Rwanda Biomedical Board (RBC), HIV prevalence among adults is 3%, which relates to 210,200 adults in the Rwandan population who live with HIV.¹¹ HIV prevalence is generally higher in females compared to males. 4.3% of HIV prevalence in Kigali city, with 45.8% for female sex workers, and 55% of the female sex workers in the city of Kigali.¹²

Rwanda has set strategies to reach Key populations which are FSWs (female sex workers), discordant couples, MSM, young women, and sexually active adolescents. Following Rwandan culture, the stigma around high-risk groups limits the reach of HIV preventive methods which increases the number of HIV infections.¹³

Among the set strategies is the integrating WHO PrEP guidelines in national guidelines and health facilities. In 2019, the Government of Rwanda commissioned the Rwanda Biomedical Board (RBC) with a mandate to integrate PrEP services in health facilities, to reduce HIV incidence among key populations. The treatment used as PrEP is Truvada, which involves taking (FTC) Emetricitabine, and Tenofovir (TDF), taken once daily.¹⁴

Adherence and retention to PrEP reduces acquiring HIV infection through unprotected sexual intercourse by 99%. The government of Rwanda put in place different programs to improve service availability through screening from the community, mainly in the high-risk zones, and referral and linkage of key populations to health facilities.¹⁵

¹⁰ Golin, Siberry, G. K.

¹¹ Nsanzimana, S., Rwibasira, (2022a). HIV incidence and prevalence among adults aged 15-64 years in Rwanda: International Society for Infectious Diseases, 116, 245-254. <https://doi.org/10.1016/j.ijid.2022.01.032>

¹² The 2019-20 Rwanda Demographic and Health Survey (RDHS) | National Institute of Statistics Rwanda. (2019, 2020). <https://www.statistics.gov.rw/publication/1724>

¹³ Nsanzimana, S., Rwibasira, (2022b). HIV incidence and prevalence among adults aged 15-64 years in Rwanda: Results from the Rwanda Population-based HIV Impact Assessment, 2019. 116, 245-254. <https://doi.org/10.1016/j.ijid.2022.01.032>

¹⁴ Nsanzimana, S., Rwibasira.

¹⁵ Nsanzimana, S., Rwibasira.

Understanding the current use of PrEP among key populations mainly female sex workers, as well as the factors associated with its usage in this category group, helps in developing culturally sensitive programs and strategies that are friendly to key populations in Rwanda. Thus, this research was aimed at assessing the attitude, and practice of female sex workers toward PrEP, in the Kicukiro district, Rwanda.

2. Literature Review

Globally, HIV/AIDS remains a significant public health concern, with Rwanda being no option. In Rwanda, the annual incidence is 0.08% corresponding to 5400 new cases.¹⁶ In Rwanda, female sex workers have a high HIV prevalence of 35.5% compared to the general population.¹⁷

PrEP was approved by the FDA in 2012.¹⁸ The World Health Organization (WHO) in 2015, published new standards and recommendations that PrEP should be made available as a choice to people who are at high risk of HIV infection. They advised offering oral PrEP to those who are at high risk of contracting HIV.¹⁹

In 2019, the Government of Rwanda commissioned the Rwanda Biomedical Center (RBC) with a mandate to integrate PrEP services in health centers, to reduce HIV incidence in key populations, mainly HIV-negative female sex workers, HIV-negative men who do not continuously use condoms, and HIV negative person in a serodiscordant couple whose partners have not suppressed.²⁰

The Rwanda FDA has approved Descovy and Truvada, to be used as PrEP.²¹ Each tablet of Truvada includes 200 mg of emtricitabine and 300mg of tenofovir disoproxil furamate. In Rwanda, currently, 23,181 individuals have initiated

¹⁶ Mutagoma, Gasasira(2017). High HIV prevalence and associated risk factors among female sex workers in Rwanda. *International Journal of STD & AIDS*, 28(11), 1082-1089. <https://doi.org/10.1177/0956462416688137>

¹⁷ Nsanzimana (2020).

¹⁸ CDC. "Pre-Exposure Prophylaxis (PrEP) | HIV Risk and Prevention | HIV/AIDS | CDC." <https://www.cdc.gov/hiv/risk/prep/index.html>, July 5, 2022.

¹⁹ WHO. (2021). Global data shows increasing PrEP use and widespread adoption of WHO PrEP recommendations.

²⁰ RBC, 2020

²¹ Nsanzimana, S., Rwibasira.

PrEP, among the key population.²² PrEP is provided at the health centers by a trained healthcare provider.²³

In a qualitative study conducted in South Africa, research participants stated that PrEP use is associated with being HIV positive, due to medication resemblance, which enhances the stigma in the community. According to a female sex worker educator, female sex workers consider taking PrEP as a methodology for exposing their confidentiality. PrEP users are perceived as being at high risk of acquiring HIV, which raises the stigma for PrEP users.²⁴

In Rwanda, a study conducted among 201 community people and 51 healthcare professionals in the Huye district of Rwanda as well as at the Kigali University Teaching Hospital, showed perceived stigma, and system-level service delivery constraints. Other stigma include personal issues such as a lack of family support, unwillingness to take a daily prescription, and worry of being mistaken for having HIV.²⁵

Based on the studies conducted in Uganda Kenya, and Botswana, PrEP has shown efficacy in preventing HIV transmission, at 75%, enhanced by the adherence mechanism adopted by the users.²⁶ Effective PrEP usage among key populations mainly female sex workers, has led 27.46% to the incidence reduction. PrEP combined with condom use has resulted in more HIV incidence reduction.²⁷

Based on the study conducted by RBC, with the PrEP being introduced in 2019, the annual incidence has diminished to 1.06 per 1000 persons, in the 2027 target.²⁸

²² PrEPwatch. (2023, Mei). Rwanda PrEP initiation. PrEPWatch. <https://www.prepwatch.org/countries/rwanda/>

²³ Nsanzimana, S., Rwibasira, (2022b). HIV incidence and prevalence among adults aged 15-64 years in Rwanda: Results from the Rwanda Population-based HIV Impact Assessment, 2019. 116, 245-254. <https://doi.org/10.1016/j.ijid.2022.01.032>

²⁴ Makhakhe, Meyer, A. (2022). "Whatever is in the ARVs, is Also in the PrEP" 10. <https://www.frontiersin.org/articles/10.3389/fpubh.2022.691729>

²⁵ Kambutse, Ogbuagu, O. (2018). Perceptions of HIV transmission and pre-exposure prophylaxis among health care workers and community members in Rwanda. *PLoS ONE*, 13(11).

²⁶ Thomson, Heffron, R. (2020). Tenofovir-based Oral PrEP Prevents HIV Infection among Women. *Current Opinion in HIV and AIDS*, 11(1), 18. <https://doi.org/10.1097/COH.0000000000000207>

²⁷ Manguro, Temmerman, M. (2022). Increased condom use among key populations using oral PrEP in Kenya: *BMC Public Health*, 22. <https://doi.org/10.1186/s12889-022-12639-6>

²⁸ Kambutse, Ogbuagu, O. (2018). Perceptions of HIV transmission and pre-exposure prophylaxis among health care workers and community members in Rwanda. *PLoS ONE*, 13(11).

3. Method

This research employed a descriptive, cross-sectional design using quantitative methods. It targeted 1,071 female sex workers followed up by the Young Women Christian Association Rwanda (YWCA Rwanda) under the USAID Igire-Wiyubake/DREAMS project, in the Kicukiro district. The sample size was calculated using the Yamane formula with a 5% margin of error (e) and a 95% confidence level, N is the size of the population.

$$n = \frac{N}{1 + N(e)^2} \quad n = \frac{1071}{1 + 1071(0,05)^2} = 273$$

The non-respondent rate of 10% of the sample size is 27.3, therefore, a total number of 300 female sex workers were selected.

Sampling technique, data Collection Methods and Instruments

The researcher employed systematic sampling at each health center with 30 participants from each health center. Primary data was collected through questionnaires. Study participants were provided with structured questionnaires that had three parts: demographic data, attitude toward PrEP, and practices towards PrEP among female sex workers.

Selected respondents were invited to participate in the research by the female sex worker focal person at each health facility. Before data collection, participants were required to sign a consent form, The data collection took place during participants' scheduled appointments at the health facilities, within the female sex workers' network, and support group meetings.

Study variables

Figure 1 shows the conceptual framework of this study and outlines the relationships between independent, intervening, and dependent variables. The independent variables include attitude, and demographic factors, which influence the dependent variable-PrEP practices among female sex workers in Kicukiro District.

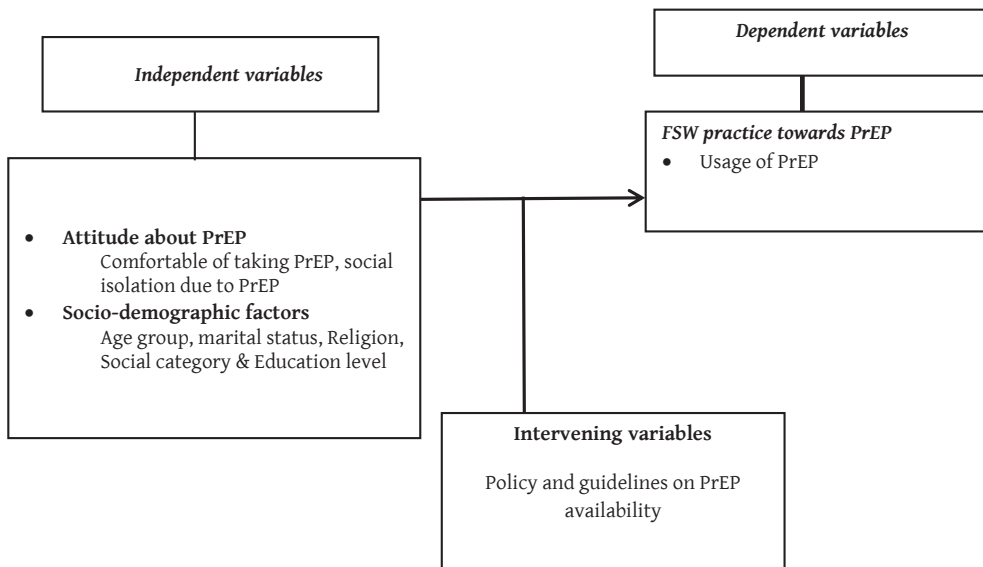


Figure 1. Conceptual framework

To test the reliability and validity of the questionnaire, a pilot study was conducted on 10 female sex workers who were not part of the main study. After the data collection, the completed questionnaires were reviewed by the study's supervisor and an expert to further validate the instrument.

Data analysis

The collected data was analyzed using IBM SPSS. Inferential statistics, including chi-square and logistic regression analysis, were employed to examine the relationships between independent and dependent variables.

The questionnaire had a total of 25 points. The attitude section had (10 points) awarded 1 point for positive responses, with a score of 6 or higher indicating a positive attitude, and 4 or lower indicating a negative attitude. The practice section (15 points) classified scores of 12 or higher as good practices, 7-11 as moderate practices, and 6 or lower as poor practices.

Ethical consideration

The researcher gained ethical approval from Mount Kenya University's ethical review committee and the Young Women Christian Association Rwanda.

The study adhered to fundamental research ethics principles, including respect for individuals, non-maleficence, beneficence, and justice.

4. Result and Discussion

Demographic characteristics of female sex workers in the Kicukiro district

Table 1: Demographic characteristics of female sex workers in Kicukiro district

| Variables | Frequency | Percentage (%) |
|---|-----------|----------------|
| The age group of the female sex worker | | |
| 15-19 | 26 | 9.5% |
| 20-24 | 201 | 73.6% |
| 25-29 | 41 | 15.1% |
| 30-34 | 5 | 1.8% |
| Marital status | | |
| Married | 12 | 4.4% |
| Single | 185 | 67.8% |
| Cohabiting | 51 | 18.7% |
| Widowed | 5 | 1.8 |
| Divorced | 20 | 7.3% |
| Religion | | |
| Catholic | 109 | 39.9% |
| Muslim | 27 | 9.9% |
| Protestant | 137 | 50.2% |
| Ubudehe category | | |
| Ubudehe 1 | 46 | 16.8% |
| Ubudehe 2 | 176 | 64.5% |
| Ubudehe 3 | 51 | 18.7% |
| Primary occupation | | |
| Agricultural labor | 10 | 3.7% |
| Daily wage | 65 | 23.8% |
| Salary's worker | 19 | 6.9% |

| Variables | Frequency | Percentage (%) |
|------------------------|-----------|----------------|
| Student | 45 | 16.5% |
| Self-employed | 15 | 5.5% |
| Unemployed | 119 | 43.6% |
| Education level | | |
| No education | 30 | 10.9% |
| Primary | 157 | 57.5% |
| Secondary | 85 | 31.2% |
| University | 1 | 0.4% |

Source: Primary data, 2023

The majority (73.3%) of the respondents were in the age group of age 20 to 24 years old, and 67.8% of them were single. The majority (64.5%) of participants were in category 2 of ubudehe, indicating lower to middle socio-economic status.

Level of Attitude of female sex workers towards PrEP

Table 2: Level of the attitude of female sex workers towards PrEP.

| Variables | Agree (%) | Disagree (%) | Neutral (%) |
|--|-------------|--------------|-------------|
| If you were taking PrEP, would you feel comfortable telling your family/partner? | 96 (35.2%) | 156 (57.1%) | 21 (7.7%) |
| Taking PrEP is against my religious beliefs? | 52 (19%) | 160 (58.6%) | 61 (22.4%) |
| If you were taking PrEP, others would think you have HIV? | 161 (59%) | 66 (24.2%) | 46 (16.8%) |
| If you were taking PrEP, others would avoid you and disrespect you? | 128 (46.9%) | 92 (33.7%) | 53 (19.4%) |
| If you were taking PrEP, would you increase the number of sexual partners? | 119 (43.6%) | 126 (46.2%) | 28 (10.2%) |

Source: primary data, 2023

Table 2 shows the respondents’ attitudes towards PrEP. The findings showed that 57.1% of participants would not feel comfortable telling their partner, friends, or family members about using PrEP. Regarding the stigma associated with PrEP use, (59%) believed that others would assume that they were HIV positive if they were taking PrEP. In addition, 46.9% felt that others would avoid them and think less of them if they were taking PrEP, and 43.6% of the respondents believed that they might increase the number of partners when taking PrEP.

The overall level of attitude toward PrEP

Figure 2 below shows the overall female sex worker attitude towards PrEP, where (60%) of female sex workers have a positive attitude while 40% of female sex workers have a negative attitude toward PrEP.

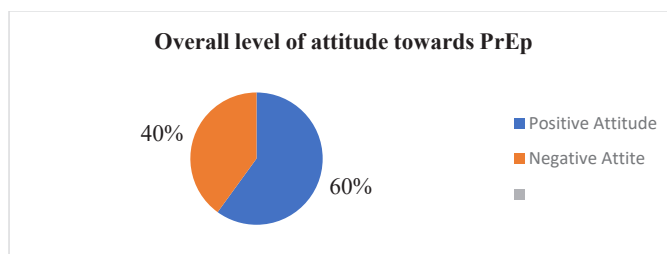


Figure 2: Overall level of female sex worker attitude towards PrEP.

The level of practice of female sex workers towards PrEP

Table 3 Level of female sex worker practices towards PrEP.

| Variables | Yes (%) | No (%) | Don't know (%) |
|---|-------------|-------------|----------------|
| Are you using PrEP? | 165 (60.4%) | 107 (39.6%) | 0 |
| Is PrEP too expensive? | 55 (20.1%) | 163 (59.8%) | 55 (20.1%) |
| Is PrEP difficult to purchase? | 57 (20.9%) | 163 (59.7%) | 53 (19.4%) |
| Do you think that PrEP has a lot of side effects? | 91 (33.3%) | 126 (46.2%) | 56 (20.5%) |
| Do you think PrEP is effective? | 133 (48.7%) | 89 (32.6%) | 51 (18.7%) |

| Variables | Yes (%) | No (%) | Don't know (%) |
|---|-------------|------------|----------------|
| If you were taking PrEP, would you take the PrEP medication every day? | 170 (62.3%) | 72 (26.4%) | 31 (11.3%) |
| Would you be more willing to use PrEP, if it is available in the pharmacy without a medical prescription? | 160 (58.6%) | 83 (30.4%) | 30 (11%) |
| If you were taking PrEP, would you come to the clinic monthly to get PrEP? | 189 (69.2%) | 52 (19.1%) | 32 (11.7%) |
| Would you recommend or advise a friend to use PrEP? | 193 (70.7%) | 53 (19.4%) | 27 (9.9%) |

Source: primary data, 2023

Table 3 demonstrates the level of practice of female sex workers towards PrEP. As indicated by the table, 60.4% of the respondents reported the use of PrEP as a measure of HIV prevention.

The findings show that 46.2% of respondents think that PrEP does not have a lot of side effects and 48.7% thought that PrEP was effective. The majority, 62.3%, would take PrEP daily, and 69.2% would visit the clinic monthly to get PrEP indicating a willingness for regular follow-up. Furthermore, a large majority (70.7%) of respondents would recommend a friend to use PrEP.

Factors associated with practices of female sex workers towards PrEP.

Table 4: Demography characteristics associated with practices of female sex workers towards PrEP.

| Variables | Good practices | Moderate practices | Poor practices | X ² -value | P-value |
|-----------|------------------|--------------------|----------------|-----------------------|-------------|
| | Age group | | | | |
| 15-19 | 6 (2.2%) | 17 (6.2%) | 3 (1.1%) | 3.42 | 0.02 |
| 20-24 | 107 (39.2%) | 74 (27.1%) | 20 (7.2%) | | |
| 25-29 | 23 (4.4%) | 12 (4.4%) | 6 (2.2%) | | |
| 30-34 | 0 (0%) | 3 (1.1%) | 2 (0.7%) | | |

| Variables | Good practices | Moderate practices | Poor practices | X ² -value | P-value |
|---------------------------|----------------|--------------------|----------------|-----------------------|-------------|
| Marital status | | | | | |
| Married | 7 (2.6%) | 3 (1.1%) | 2 (0.7%) | 1.93 | 0.01 |
| single | 89 (32.6%) | 64 (23.4%) | 32 (11.7%) | | |
| Cohabiting | 32 (11.7%) | 10 (3.7%) | 9 (3.3%) | | |
| Widowed | 1 (0.4%) | 4 (1.5%) | 0 (00%) | | |
| Divorced | 12 (4.4%) | 5 (1.8%) | 3 (1.1%) | | |
| Religion | | | | | |
| Catholic | 58 (21.2%) | 32 (11.7%) | 19 (6.9%) | 2.70 | 0.19 |
| Muslim | 13 (4.8%) | 8 (2.9%) | 6 (2.2%) | | |
| Christian | 79 (28.9%) | 40 (14.6%) | 18 (6.6%) | | |
| Ubudehe categories | | | | | |
| Ubudehe 1 | 22 (8.1%) | 16 (5.9%) | 8 (2.9%) | 4.23 | 0.03 |
| Ubudehe 2 | 86 (31.5%) | 52 (19%) | 38 (13.9%) | | |
| Ubudehe 3 | 29 (10.6%) | 15 (5.5%) | 7 (2.6%) | | |
| Primary occupation | | | | | |
| Agricultural labor | 6 (2.2%) | 3 (1.1%) | 1 (0.4%) | 8.45 | 0.24 |
| Daily wage | 34 (12.4%) | 22 (8.1%) | 9 (3.3%) | | |
| Salaried worker | 8 (2.9%) | 7 (2.5%) | 4 (1.5%) | | |
| Student | 40 (14.6%) | 4 (1.5%) | 1 (0.4%) | | |
| Self-employed | 8 (2.9%) | 5 (1.2%) | 2 (0.7%) | | |
| Unemployed | 56 (20.5%) | 38 (13.9%) | 25 (9.1%) | | |
| Education level | | | | | |
| No education | 2 (0.7%) | 21 (7.7%) | 7 (2.6%) | 3.01 | 0.01 |
| Primary | 18 (6.6%) | 90 (32.9%) | 49 (17.9%) | | |
| Secondary | 43 (15.7%) | 30 (10.9%) | 12 (4.4%) | | |
| University | 1 (0.4%) | 0 (0%) | 0 (0%) | | |

Source: primary data, 2023

The bivariate analysis was used and as a result, age group, marital status, and Ubudehe category were significantly associated with the practices of female sex workers towards PrEP. These variables were significant at $P=0.02$, $P=0.01$ and $P=0.03$ respectively.

Multivariate analysis of factors associated with practices of female sex workers towards PrEP.

Table 5: Multivariate analysis of demographic characteristics associated with female sex workers towards PrEP.

| Variables | AOR | 95%CI | | P-value |
|---------------------------|------------------|------------------|------------------|------------------|
| | | Lower | Upper | |
| Age group | | | | |
| 15-19 | 2.34 | 0.78 | 1.89 | 0.47 |
| 20-24 | 0.87 | 1.02 | 4.09 | 0.22 |
| 25-29 | 4.26 | 2.11 | 5.03 | 0.01 |
| 30-34 | Reference | Reference | Reference | Reference |
| Marital status | | | | |
| Married | 3.11 | 3.90 | 4.77 | 0.21 |
| Single | 5.01 | 2.34 | 4.89 | 0.54 |
| Cohabiting | 2.01 | 0.22 | 1.64 | 0.11 |
| Widowed | 3.22 | 4.01 | 6.26 | 0.32 |
| Divorced | Reference | Reference | Reference | Reference |
| Ubudehe categories | | | | |
| Ubudehe 1 | 0.42 | 5.76 | 8.22 | 0.98 |
| Ubudehe 2 | 2.01 | 0.12 | 1.88 | 0.44 |
| Ubudehe 3 | Reference | Reference | Reference | Reference |
| Education level | | | | |
| No education | 1.04 | 2.86 | 3.82 | 0.42 |
| Primary | 2.10 | 3.54 | 6.33 | 0.55 |
| Secondary | 3.45 | 0.28 | 5.06 | 0.001 |
| University | Reference | Reference | Reference | Reference |

Source: primary data, 2023

The variables that were significantly associated with the practices of female sex workers towards PrEP during binary analysis were analyzed using multivariate analysis to find out the influence of each single variable on the practice of female sex workers towards PrEP.

Table 5 above, multiple logistic regression analysis shows that female sex workers aged between 25 and 29 had 4 times more chance to have good practices towards PrEP (adherence and retention on PrEP) (AOR=4.26, 95%CI=2.11-5.03, P=0.01). Furthermore, female sex workers who have completed secondary school had 3 times the chances to have good practices towards PrEP (adherence and retention on PrEP) (AOR=3.45, 95%CI=0.28-5.06, P=0.001)

B. Discussion of the research findings

The attitude of female sex workers towards PrEP

In this study, the attitude of female sex workers towards PrEP highlighted the significant stigma associated with its use. Specifically, 57.1% of participants expressed discomfort with disclosing their PrEP usage to friends, family, or partners. This finding mirrors a study conducted in South Africa, where adolescent girls and young women similarly reported keeping their PrEP use a secret due to fears of parental judgment or pressure to stop using it.²⁹ In a similar study conducted in Kenya among adolescent girls, they were afraid of being perceived as HIV-positive, and as being perceived as prostitutes.³⁰

This study's findings showed the stigma where 59% of participants responded that if they were taking PrEP, others would think they have HIV. These findings are similar to the study conducted among female sex workers in Tanzania where PrEP is associated with having HIV or being promiscuous.³¹ In the same qualitative study conducted in Kenya where most respondents said that stigma against ARVs is transferred to PrEP due to their similarity in pill appearance, and promiscuity.

²⁹ Daniels, Arino, A. (2023). "I know why I am taking this pill" South Africa. *PLOS Global Public Health*, 3(1)

³⁰ Auerbach, Charles, V. (2015). Knowledge, Attitudes, and Likelihood of Pre-Exposure Prophylaxis (PrEP) Use Among US Women at Risk of Acquiring HIV. 102-110. <https://doi.org/10.1089/apc.2014.0142>

³¹ Faini, Bakari, M. (2023). Awareness, Willingness, and Use of HIV Pre-Exposure Prophylaxis Among Female Sex Workers Living in Dar-es-Salaam, Tanzania.

The practice of female sex workers towards PrEP

The findings from this study show that 60.4% of female sex workers were using PrEP. The study conducted in Tanzania among female sex workers showed that only 8.1% of female sex workers were using PrEP, which is associated with the high stigma associated with HIV and promiscuity in the country.

In this study, 48.7% are aware that PrEP is effective. In a similar qualitative study conducted among female sex workers in Malaysia, some participants said that they didn't want to wait to get the disease (HIV) showing a level of awareness of PrEP effectiveness.³² In this study, 62.3% of female sex workers would be willing to take the medication daily, with 26.4% who would not take PrEP daily. In a similar study conducted in Tanzania among female sex workers, participants said that they would like to use long-acting PrEP forms. In addition, 90% would be willing to take PrEP daily to prevent HIV.³³

5. Conclusion

The study on female sex workers in the Kicukiro district provides valuable insights into their attitudes, and practices regarding pre-exposure prophylaxis (PrEP). The findings reveal that although many female sex workers are willing to use and recommend PrEP, significant concerns about social stigma and privacy persist. Practically, 60.4% of participants are actively using PrEP, yet issues such as side effects, accessibility, and the need for easier access without a medical prescription remain prominent. Overall, the study suggests a pressing need for public health initiatives focused on reducing stigma, improving accessibility, and ensuring stigma-free access to PrEP. These measures could enhance its acceptance and effectiveness in HIV prevention among female sex workers.

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³² Foley, Wickersham, J. A. (2024). Exploring Attitudes Toward Pre-Exposure Prophylaxis for HIV Prevention among Female Sex Workers in Malaysia: Results from a Qualitative Study. *Volume 18*, 797–807.

³³ Faini, D., Munseri, P., Sandstrom, E., Hanson, C., & Bakari, M. (2023). Awareness, Willingness and Use of HIV Pre-Exposure Prophylaxis Among Female Sex Workers Living in Dar-es-Salaam, Tanzania. *AIDS and Behavior*, 27(1), 335–343. <https://doi.org/10.1007/s10461-022-03769-4>

Authors' Contributions

This work was carried out in collaboration between all authors. Alice Umulisa is the corresponding author, Dr Yves Urayeneza is the supervisor and Viateur participated in the data analysis. All authors read and approved the final manuscript.

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