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Original Research Article

Determinants of human immuno-deficiency virus pre-exposure prophylaxis uptake and retention among sex workers in Nakuru town Kenya

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ABSTRACT

Background: The purpose of this study was to assess factors associated with human immunodeficiency virus (HIV) pre-exposure prophylaxis uptake and retention among sex workers in Nakuru town, Kenya. The theory of planned behavior and the acquired immunodeficiency syndrome (AIDS) risk reduction model served as the study's theoretical framework.
Methods: A cross-sectional research design was adopted for this study. The study targeted all the sex workers in Nakuru town who were 18 years old and above. A random sampling technique was used to get the hotspots where the sex workers were to be found. Snow balling sampling technique was then adopted to identify and recruit the study participants. Using primary sources. The quantitative data was obtained from the respondents using a questionnaire. Quantitative data was analyzed using descriptive and inferential statistics (regression analysis). The findings presented in table and graphical formats.
Results: The analysis using multiple linear regression indicated that there was a collective significant effect between the awareness, health system factors, socio economic individual factors and use of pre-exposure prophylaxis (PrEP) among sex workers. A further analysis showed that, put together, the four predictor variables explained 35.7% of variation on PrEP uptake and retention.
Conclusions: The study concluded that while use and none use PrEP can be explained by the four factors evaluated in this study, there are a lot of other factors that influence utilization of PrEP.

Keywords: HIV pre-exposure prophylaxis, Sex workers, Uptake and retention, Socio economic individual factors, Awareness, Health system factors, Nakuru town

INTRODUCTION

To reduce the spread of human immunodeficiency virus (HIV) among high-risk groups, several countries in sub-Saharan Africa (SSA) have begun pre-exposure prophylaxis (PrEP) programs. Unfortunately, there is lack of information on PrEP adoption and continuation in high-risk African areas.[1] Those at high risk for contracting HIV might benefit from PrEP. Studies of high-risk groups in SSA, such as steelworkers, fisherfolk, and discordant couples, found that 60–90% of them were willing to use PrEP.[2] However, subsequent demonstration projects found mixed results for PrEP uptake: HIV-discordant couples and men who have sex with men (MSMs) in Kenya had high uptake (about 97%), retention (>90% by three months), and adherence (over 80%).[3] For efforts to expand PrEP in sub-Saharan African countries through national health systems, it is important to keep track of how many people sign up for, use, and stay on PrEP

PrEP has shown promising results in clinical studies, but it has been adopted slowly by the public in Sub-Saharan

Africa.[4] According to the World Health Organization's 2020 report, 940,000 persons were using PrEP throughout the world. By comparison, in 2019, there were only 630 000 PrEP users.[5] Additionally, the data shows that Africans accounted for 52% of PrEP users. Begnel et al observed that as at January 2019 44,000 people were using PrEP in Kenya.[6]

Senegal, a country in West Africa, has successfully implemented an HIV prevention program, resulting in an extremely low HIV prevalence of less than 1% among the general population. In Senegal, sex work is legal and controlled following legislation passed in 1969. All female sex workers (FSWs) over the age of 21 are required by law to register with health clinics and visit these clinics monthly for exams, free condoms, instructions on STIs and contraception, and medicine prescriptions.[7] Also, every two months, sex workers are tested for gonorrhea, chlamydia, trichomoniasis, and any other vaginal bacterial illnesses that might potentially spread to clients.

Some of the most HIV-endemic areas in Uganda's central south that saw the introduction of the PrEP program include Rakai, Kyotera, Masaka, and Lyantonde.[3] The risk assessment tool asked questions about the following behaviors: having sex in the genital area with multiple partners who were not HIV positive in the previous six months; not using a condom while having sex in the genital area in the same time frame; having sex in the anogenital area in the same time frame; having sex in the genital area in exchange for money, goods, or services in the same time frame; and injecting drugs in the genital area. A person was deemed to be at high risk if they admitted to participating in more than one of the eight high-risk sexual activities. Men who have sex with men (MSM), adolescent girls, and young women were also targeted, in addition to sex workers, truck drivers, HIV-negative individuals in HIV-discordant relationships, and anybody under the age of 15 who posed a significant risk for HIV (15 to 24 years).[2]

An estimated 1.3 million persons in Kenya are living with HIV-1, making it the country with the fifth-highest HIV-1 prevalence worldwide. Nearly 40% of the 36,000 new HIV-1 infections in 2018 were in people aged 15 to 24. The incidence of new HIV-1 infections has dropped dramatically as a result of efforts to promote access to antiretroviral medication (ART) and improve health outcomes for those living with the virus.[8] Key populations (KP) such as MSM, FSW, and IV drug users continue to be disproportionately affected by HIV-1.

Due to the numerous risk factors, including having multiple sexual partners and inconsistent condom use, which increase their vulnerability to HIV infection, the implementation of PrEP as a part of comprehensive sexual health care has focused on the treatment of sexual workers as a focal population worldwide.[9] However, a lot of sex workers claim to encounter stigma and prejudice in medical settings, which may create barriers to their access to sexual health interventions like PrEP as a result, in order to significantly lower HIV incidence among the most at-risk populations, including sex workers, targeted combination HIV prevention programs that incorporate the tailored use of PrEP for prevention in healthcare facilities with non-judgmental and anti-discriminatory practices are crucial.[10]

Despite the fact that sex work is still prohibited, the Kenyan government, as well as its civil society and international partners, fund programs that aim to offer these populations sexual health services, including HIV prevention. Transactional sex is a sign that someone needs PrEP, according to Kenyan recommendations for PrEP.[11] Clinical trials and demonstration projects of daily oral PrEP in HIV-seropositive couples, adolescent and young women, MSM, and sex workers have taken place in Kenya. PrEP was approved for individuals at high risk of HIV infection by Kenya's Pharmacy and Poisons Board and MOH in December 2015, and it is included in the Kenyan National HIV Prevention Revolution Roadmap, which will direct HIV programming through 2030.[11] PrEP delivery and its integration with other HIV services have not yet been established, and it is questionable whether sustained financing will be available for PrEP scale-up.[13]

Despite the limited studies on this subject in Kenya and the promise of PrEP and PEP as a part of comprehensive HIV prevention for sex workers, significant questions remain regarding the knowledge of PrEP among men and women who sell sex, the extent to which biomedical prevention options are desired and used, and the reasons behind these choices.[14] In light of the difficulties sex workers encounter in obtaining sexual health care, previous research has not fully addressed ways to increase access and improve public health outcomes. In this research, the focus was to assess factors associated with HIV pre-exposure prophylaxis uptake and retention among sex workers in Nakuru town, Kenya.

Research problem

In Kenya, Women have a greater incidence of HIV infection (6.6%) than males (3.1%). The overall HIV prevalence rate in Kenyan adults is 4.9%.[11] The rate is 29.3 percent higher among FSWs than among MSWs.[15] Nakuru County has one of the highest HIV burdens in Kenya, with a prevalence incidence of 4.1%, according to the 2020 estimates. Nakuru County has a significant HIV/AIDS incidence, however just 4% of FSW and 2% of MSM are utilizing PrEP.[12] Due to the high disease burden in this area, the county of Nakuru was prioritized for PrEP rollout in collaboration with the Kenya Ministry of Health (MoH) to address the poor adoption of PrEP in Nakuru town. People at greater risk of HIV infection are increasingly interested in Prep, and it is cost-effective, but its scope and coverage are still small. Little research has been done on factors associated with HIV pre-exposure prophylaxis uptake and retention among sex workers in Nakuru town, Kenya.

While the advent of HIV PrEP has given sexually active people greater chance in reducing HIV transmission rates, sex workers continue to endure higher rates of HIV infections and carry the biggest disease burden. Having a better grasp on PrEP adoption rates among sex workers would aid in risk reduction for this at-risk group. Therefore, the purpose of this study was to look at the factors associated with HIV pre-exposure prophylaxis uptake and retention among sex workers in Nakuru town, Kenya. This study was critical since it created awareness on the importance of PrEP uptake among all sex workers. Hence, it can be used by medical facilities in rolling out PrEP to facilitate in the reduction new HIV cases among sex workers and their clients.

Research objective

The objective was to determine factors associated with HIV pre-exposure prophylaxis uptake and retention among sex workers in Nakuru town, Kenya.

Research question

What factors are associated with HIV pre-exposure prophylaxis uptake and retention among sex workers in Nakuru town, Kenya?

Theoretical framework

Theory of planned behavior

Ajzen came up with the theory of planned action (TPB), which is designed to predict a person's intention to engage in a certain activity at a certain time and place.[16] TPB details all those individuals are responsible for and must exert self-control over. The behavioral intent of the person is the most important aspect of this model. This intent is impacted by the individual's expectations about the outcome of the action, as well as the individual's subjective assessment of the potential drawbacks and benefits of the action's repercussions.[18] TPB was often utilized to predict and explain a variety of health behaviors, including but not limited to cigarette smoking, alcohol use, health-seeking behavior, breastfeeding practices, and drug use. According to the TPB, success in a given activity is dependent on a person's intrinsic desire (intention) and capacity (behavioral control). This categorizes three types of beliefs: behavioral, moral, and authoritative. Six guiding principles make up the TPB and together represent an individual's real behavioral control: one's behaviors and preferences, one's subjective norms, societal standards, perceptions of power, and perceptions of behavioral control. Although the TPB has seen more use in public health than the health belief model, it is still limiting since it presumes that people who want to change their behavior already have the means to do so.[16]

The theory contends that the intention of a person to take part in a specific behavior predicts the probability of its performance. Behaviour is dictated by attitudes, self-efficacy, and subjective norms; the three components are also the propellers of behaviour. The perception of control of an individual over a particular behaviour is a critical indicator in circumstances where there is a violation of behaviour.[17] It entails the perception of a person on the ease or difficulty of engaging in particular behaviours and is in most instances conceptualized to follow the ideology of perceived self-efficacy. In this regard, a key limitation of the theory is the lack of understanding of what to measure when evaluating self-efficacy. Specifically, Ajzen and Madden explained that the external (opportunities) and the internal (skills to engage in behaviour) components of self-efficacy influenced the intention to take part in a particular behaviour.[17]

The theory makes different assumptions, one of which posits that an individual has gained resources and opportunities to become successful in taking part in a desired behaviour, despite the intention. It does not cover other factors that contribute to motivational and behavioural goals including threat, fear, previous experience, and fear.[18] Despite perceiving normative effects (the influence of other people that leads one to conform to be liked and accepted by them), it does not consider the economic and environmental factors influencing the intention of an individual to undertake a behaviour. The assumption made by the theory is that an individual's behaviour emanates from a single decision-making process and does not put into consideration the variation over time.

The theory is used in forecasting and explaining different health behaviours and intentions including the utilization of PrEP. The theory is critical to sex workers since it reveals a connection between beliefs and individual behaviour.[19] The theory offers an understanding of the evaluation of behavioural and normative beliefs. In general, a person's intention to engage in a certain action improves if and only if their behavioral and subjective standard attitude toward it is positive, and if the perceived behavioral effect is also high. People are expected to act on their wants when the chance presents itself, so long as they have some degree of effective control over the actions. It is with this premise in mind that this study was conducted since it elucidates the primary considerations behind the choice of oral PrEP among sex workers in Nakuru town.

AIDS risk reduction model (ARRM)

Since 1990, when it was first used, the AIDS risk reduction model (ARRM) has provided a framework for analyzing and predicting the effectiveness of different interventions meant to lower the risk of HIV and AIDS being spread through sexual contact.[20] The three stages of the model were shaped by the health belief model, psychological factors, the idea of "efficacy," and how people interact with each other. These are the three frameworks: self-reflection and problem-framing based on the idea that a person's sexual activity is linked to their risk of getting HIV and that they are at risk of getting HIV; commitment to change in

the form of less risky sexual behavior and more low-risk behavior; and action-informed solutions.[21]

As this research shows, sex work raises serious concerns about the spread of HIV.[1] The policy recommendations for HIV prevention that define behavior transformation and adopting safer sexual practices and appropriate health-seeking behavior put this pledge into action. In light of this, the ARRM was used in this research to stress the need of using PrEP as a means of reducing the transmission of HIV among sex workers in Nakuru town.

METHODS

A cross-sectional design was adopted for this study conducted in April 2023. Under this research design, the study targeted 16,713 sex workers (male and female) operating in Nakuru town, Kenya. A sample size of 375 was computed using the Krejei and Morgan formula. Snowballing sampling technique was used in identifying the sex workers. Those who met the inclusion requirements were all male and female sex workers in Nakuru town who were 18 years or older. Male and female sex workers who have worked in Nakuru town during the last six months were included in the research. More importantly, the research only recruited sex workers who were willing to participate voluntarily. Sex workers (male and female) in Nakuru town aged below 18 years were not included in the study. Additionally, the respondents who have operated in Nakuru town for less than 6 months were not included in the study. The respondents who did not give consent were also not included in the study.

A questionnaire tool used to collect data from the respondents. The quantifiable data from was coded and entered into statistical package for the social sciences (SPSS) for analysis. Both descriptive and inferential statistical analysis were used. The descriptive statistics encompassed mean, frequencies and standard deviation. Multiple linear regression analysis was used to assess factors associated with HIV pre-exposure prophylaxis uptake and retention among the sex workers.

RESULTS

The objective of the study was to determine factors associated with HIV pre-exposure prophylaxis uptake and retention among sex workers in Nakuru town. To determine this a series of questions were asked to the respondents in a Likert scale of 1 to 5 where 1=strongly disagree, 2=disagree, 3=not sure, 4=agree and 5 strongly agree. The distribution of the responses was as indicated in the Table 1.

A further an analysis using multiple linear regression indicated that there was a collective significant effect between the awareness, health system factors, socio economic and individual factors and use of PrEP among sex workers, $F(1, 394) = 20.82$, $p<0.001$). Table 2 shows a step wise linear regression on factors influencing PrEP use among sex workers.

Table 1: Factors associated with HIV pre-exposure prophylaxis uptake and retention among sex workers in Nakuru town.

Individual factors	SD (%)	D (%)	U (%)	A (%)	SA (%)	M	SD
I can freely talk about my uptake of PrEP	10	17.9	7	15.5	50.	2.8	1.1
I don't think I need PrEP	11	27.7	13.3	29.3	18.7	1.3	1.2
I believe I am too young to take PrEP	28.3	33.7	21.5	10	7	2.2	1.3
I believe I am too old to take PrEP	0	29.6	19.7	0	37.1	3.5	1.3
I think PrEP is a good and ensures the protection against HIV	0	23.5	16.6	24.9	37.1	1.7	1.2
The uptake of PrEP is prevalent among female sex workers	3.5	14.5	4.3	9.1	42.6	3.6	1.3
The uptake of PrEP is prevalent among male sex workers	3.5	39.7	11.7	6.9	38.1	3.4	1.4
Married sex workers are more likely to take PrEP as compared to unmarried sex workers	13.5	24.5	4.3	9.1	41.6	3.6	2.3
Unmarried sex workers are more likely to take PrEP as compared to married sex workers	4.5	24.5	4.3	10.1	41.6	2.6	1.2
Health Care System Factors							
The healthcare professions in the Government medical institutions are receptive to offering PrEP education to sex workers	13.5	24.5	4.3	9.1	42.6	4.6	1.6
The healthcare professions in the non-government medical institutions are receptive to offering PrEP education to sex workers	2.5	21.5	4.2	6.1	41.6	2.1	1.7
Sex workers willing to take PrEP are usually looked down on by healthcare professions	3.8	22.5	4.3	2.1	33.5	1.6	1.4

Continued.

Individual factors	SD (%)	D (%)	U (%)	A (%)	SA (%)	M	SD
PrEP is easily accessible to sex workers in Nakuru town	23.5	21.5	4.3	19.1	44.6	2.5	1.2
Sex workers in Nakuru town often visit medical facilities	1.5	22.5	5.3	7.8	41.4	3.9	14
The sex workers in Nakuru town do not take up PrEP for fear of being stigmatized by the medical professionals	3.5	24.5	4.3	9.1	40.7	3.5	1.4
Socio-economic factors							
PrEP is offered for free in Nakuru County	3.5	21.5	3.3	9.7	51.6	3.6	1.2
Sex workers in Nakuru town face stigma from the community members	3.5	14.5	2.6	6.2	43.2	3.4	1.9
The sex workers in Nakuru town do not go for PrEP since they are sidelined by other patients	3.5	24.5	4.3	9.1	41.6	3.1	1.6

Table 2: Linear regression analysis results on factors affecting PrEP use among commercial sex workers.

Model	R	R square	Adjusted R square	SE of the estimate	Change Statistics				
					R square change	F change	df1	df2	Sig. F change
1	0.161[a]	0.026	0.021	0.470	0.026	5.263	1	197	0.023
2	0.293[b]	0.086	0.077	0.457	0.060	12.856	1	196	0.000
3	0.393[c]	0.154	0.141	0.441	0.068	15.699	1	195	0.000
4	0.598[d]	0.357	0.344	0.385	0.203	61.299	1	194	0.000

[a]Predictors: (constant), awareness; [b]predictors: (constant), awareness, health system factors; [c]predictors: (constant), awareness, health system factors, socio economic, and [d]predictors: (constant), awareness, health system factors, socio economic individual factors

In this analysis, awareness explained 2.6% of variation use of PrEP among sex workers. Awareness and health system factors collectively explained 8.6%, while awareness, health system factors and socio-economic factors accounted for 15.4%. From the results, individual related factor model contributed most to variation on use of PrEP among the respondents. Put together, the four predictor variables explained 35.7% of variation on PrEP retention factors that influences the respondents taking PrEP.

DISCUSSION

These results correspond with findings done elsewhere. For example, study by Lankowski.[22] Using a multivariable logistic regression to identify factors independently associated with six-month retention, the study found that retention was influenced by many factors including, individuals being heterosexual individuals, types of health care service, awareness among other factors. In this individual who received prescriptions from attending physicians were more likely to be retained in care.

Some problems arose while conducting the research. One potential drawback is that some respondents were reluctant to freely disclose whether or not they use PrEP to overcome this limitation, the researcher only used the data for research objectives and that no identifiers like names will be taken. Secondly, the researcher faced the challenge of locating the sex workers given their nature and time of work. Thus, the researcher adopted the snowballing technique to sample the sex workers, this ensured that the researcher would be referred to different sex workers in Nakuru Town.

CONCLUSION

The objective of the study was to determine factors associated with HIV pre-exposure prophylaxis uptake and retention among sex workers in Nakuru town. To achieve this, several factors including awareness, health system factors, socio economic individual factors, were evaluated through the use of a set of questions in a Likert scale touching on each of the factor. The data was presented in frequency distribution tables.

A further analysis using multiple linear regression indicated that there was a collective significant effect between the awareness, health system factors, socio economic individual factors and use of PrEP among sex workers. a further analysis showed that, put together, the four predictor variables explained 35.7% of variation on PrEP retention factors that influences the respondents taking PrEP. The study concluded that while use and none use PrEP can be explained by the four factors evaluated in this study, there are a lot of other factors that influence utilization of PrEP.

On uptake and retention of PrEP, the study recommends that an increase in promotion of usage since it is still low. This can be by increasing the level of awareness and

providing resources for consistent supply. Further, it is important to continue educating sex workers on the need to continue taking PrEP regularly.

While the rate of awareness is high among the respondents, there is need to continue promoting this as this is necessary to increase utilization. In regard to factors influencing the utilization of PrEP among sex workers, the study found that only a small percentage of utilization can be associated with the evaluated four factors. The study therefore recommends a more elaborate study that will take into account more factors.

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