

# Knowledge and Attitudes of Nursing Students Regarding the Use of HIV Pre-Exposure Prophylaxis (PrEP) at Southern Campus, Keetmanshoop, Namibia

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## Abstract

**Background:** Despite the availability of PrEP to stop the spread of the HIV virus, 1.5 million people worldwide contracted the disease in 2020. Namibia has a target of enrolling 16, 017 individuals by the end of 2022, However, the country has only been able to enroll 4,702 individuals on PrEP until October 2022.

**Objectives:** The main objective of the study is to assess the knowledge and attitudes of the Southern campus nursing students regarding the use of Pre-Exposure Prophylaxis (PrEP).

**Method:** The study employed a quantitative descriptive cross-sectional study design. Sample size of 63 respondents was calculated using Rasoft® sample size calculator software. Respondents were randomly selected. To analyse the data, statistical software known as Epi info version 24 was used.

**Findings:** Based on the data collected, 63.5% of nursing students are knowledgeable regarding the use of PrEP, however 36.5% of nursing students have insufficient knowledge on PrEP. Furthermore, 82.5% of nursing students have positive attitudes towards the usage of PrEP, although 17.5% alluded that PrEP will make them susceptible to unwanted pregnancies.

**Conclusion:** University of Namibia, nursing students at southern campus have shown sufficient knowledge and positive attitudes towards the usage of PrEP. However, they do have some misconceptions. This study will have high use in facilitating the implanting of PrEP program at the campus.

**Keywords:** Attitudes • HIV • Knowledge • Nursing students • Pre-exposure prophylaxis

## Introduction

Pre-Exposure Prophylaxis (PrEP) is a treatment that HIV-negative people take to prevent themselves from acquiring the HIV infection. It further added that; PrEP reduces the risk of getting HIV through sex by 99.0% and injectable drug users by 74.0%. However, condoms must still be in use during the usage of pre-exposure

prophylaxis. The extraordinary advancements in the treatment of HIV infection have not been matched by equally spectacular advancements in the effectiveness of HIV prevention techniques; thus, additional effective approaches such as PrEP are urgently required. The world health organization released evidence-based guidelines in September 2015, advising that everyone at high risk of acquiring HIV must be administered oral Pre-Exposure Prophylaxis (PrEP) with Tenofovir Disoproxil Fumarate (TDF) as an alternative preventative option. Desai, et al. further emphasized that oral FTC-TDF is the safest, with little to no effect on the kidneys, bones, or pregnancy outcomes [1]. Therefore, TDF/FTC is the most widely recommended PrEP medicine in the guidelines that have been evaluated. Hampel, et al. indicated that the Centers for Disease Control (CDC) and prevention recommends the testing of patients to observe for changes in HIV negative status and adverse drug monitoring, including renal function, before starting PrEP and on a regular basis while on the drug. In the trial, only 22 women were among 334 women who became infected with HIV while on PrEP emphasized [2]. Namhindo, et al. alluded that the introduction of PrEP in Namibia was done by the Namibia Medicines Regulatory Council (NMRC) in May 2017 to minimize HIV infection in HIV-negative people who are sexually active and who have a history of high-risk sexual behaviors such as not using condoms or using them inconsistently [3].

A study conducted by Hakre, et al. to examine the 'knowledge, attitudes, and beliefs about HIV pre-exposure prophylaxis among US air force health care providers' shows that 55.0% of care providers were having a high knowledge on PrEP regarding the risks, adherence, and side effects than the community; thus, reducing the number of HIV infected people among the healthcare workers. Hakre, et al. further stated that most Primary Care Physicians (PCP) in America and Germany rated their knowledge of PrEP as poor and providers, irrespective of specialty. Lack of knowledge or training has been reported by primary care providers as the main barrier in prescribing PrEP and in providing PrEP education to patients.

In Rwanda, the study conducted by Kambutse, et al. at University Teaching Hospital of Kigali, reported that more health workers (86.4%) had knowledge on PrEP than community members, due to the lack of information given in the community therefore, 75.0% of the community members were not able to give correct information regarding the use of PrEP; hence they were unable to use PrEP [4]. Another study conducted in South Africa by Shamu, et al. showed that females had more knowledge on PrEP compared to male, it is not clear to why female have more knowledge compared to male although they got the same information and health education [5]. They further added that media users have more knowledge on PrEP than people who do not have access to social media since it is advertised on social media.

A study conducted by Vasco, on the lived experiences of young women regarding the use of HIV pre-exposure prophylaxis in Namibia, shows that several young women had knowledge that PrEP is administered when a person is at risk of contracting HIV [6]. Furthermore, the same author implied that young women were aware of the risk of contracting HIV if their partner was HIV positive or taking Antiretroviral (ARVs) therapy, and that they therefore needed to use PrEP to guard against this risk and remain safe. In Namibia a study conducted by Shikulo in secondary schools in

Oshana region, shows that 74.0% of male learners had knowledge about the HIV prevention measures; increasing the number of people that are knowledgeable about the preventative measures including PrEP and reducing the number of people to be infected by HIV. Auerbach, et al. conducted a study examining the knowledge, attitudes, and likelihood of Pre-Exposure Prophylaxis (PrEP) use among US women at risk of acquiring HIV and the results of the study indicated that, a lot of black women felt that they were not fully informed about PrEP use, thus leads to less black women (16.0%) using PrEP compared to white women (64.0%). Another study conducted by Hakre, et al. among the US air force health care providers, shows how the respondents expressed their attitudes by 85.0% of respondents indicating that PrEP should be offered in the Military Health System (MHS), 87.0% in infectious disease clinics and 68.0% in Sexually Transmitted Disease (STD) clinics; for people to access it easily Hakre, et al. further added that 59.0% disagreed that they would not have time for prevention counseling and PrEP monitoring. Another study conducted in Uganda, South Africa and Zimbabwe on the barriers and facilitators of PrEP uptake among young people indicated that young people would refrain from using PrEP due to its association with antiretroviral drugs and HIV related stigma. Finally, it will not be easy for most young people to take PrEP due to the work/job they do because some jobs will not give them time to go collect their PrEP emphasized. A study conducted by O'Malley, et al. shows that 41.0% of women were afraid of taking PrEP due to drugs effects and Intimate Partner Violence (IPV) that leads to physical harm and an increase of HIV infection and STIs [7]. Card, et al. said that 36.3% of people indicated that they are not ready to take PrEP due to stigma regarding the use of PrEP and afraid of the testing that is done before the initiation of PrEP [8]. A study done in Namibia by Vasco, further urged that some young women had negative attitudes towards PrEP due to condemned stigma directed to them when using PrEP, moreover they felt that the use of PrEP should be seen as a normal thing and communities should refrain from negative attitudes and behavior directed towards PrEP users

such as: laughing and teasing, as this could cause emotional harm and decrease in the number of people that want to use PrEP [6]. Therefore, the main purpose of this study was to assess the knowledge and attitudes of the Southern campus nursing students regarding the use of Pre-Exposure Prophylaxis (PrEP).

**Materials and Methods**

The study employed a quantitative descriptive cross-sectional study design. The sample size of 63 respondents was calculated using Rasoft® sample size calculator software. The population for this study consisted of 34 and 35 nursing students from third and fourth year, nursing students. At southern campus, Karas region, Namibia. Students were exposed to CDC clinic during their clinical placement. This study employed a probability sampling technique. This technique was chosen to minimize bias during selection. Sample size calculator software was used to calculate sample size which was 63. Data collection procedure is the Randomized Response (RR) technique that allows researchers to obtain sensitive information while guaranteeing privacy to respondents. The data were collected via a survey/Google questionnaire. Respondents were sent Google questionnaires to fill out via a WhatsApp link and students were reminded to answer the questionnaires. Each questionnaire had a consent form for the respondents and all the respondents consented. The questionnaire had three sections as follows, section A (demographic information), B (assessment of knowledge) and (assessment of attitudes). To validity and reliability, the questionnaire was evaluated, and a study was piloted. All ethical principles were adhered to throughout.

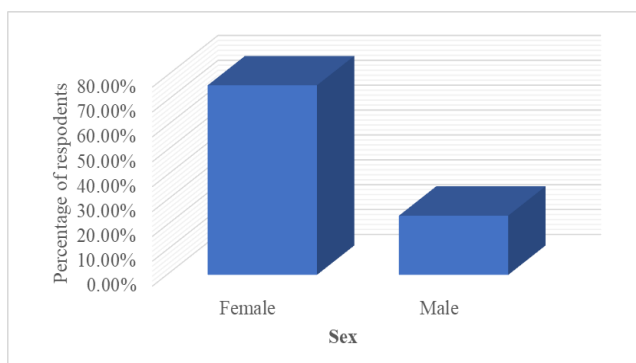
**Results**

The respondents who took part in this study were (n=63). This section consists of four subsections which are: respondents' age, respondents' sex, respondents' religion, and respondents' year of study. Table 1 shows that 77.8% of nursing students are at the age between 20-25 years.

**Table 1.** Age distribution.

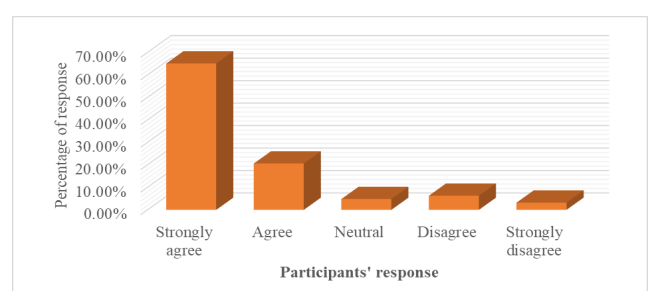
Age	Number of respondents	Frequency (%)
<19 years	0	0.00%
20-25 years	49	77.80%
26-30 years	8	12.70%
31-35 years	4	6.30%
36-40 years	1	1.60%
>40 years	1	1.60%
Total	63	100%

Figure 1 indicates that majority of the nursing students were females (76.2%) and males (23.8%).



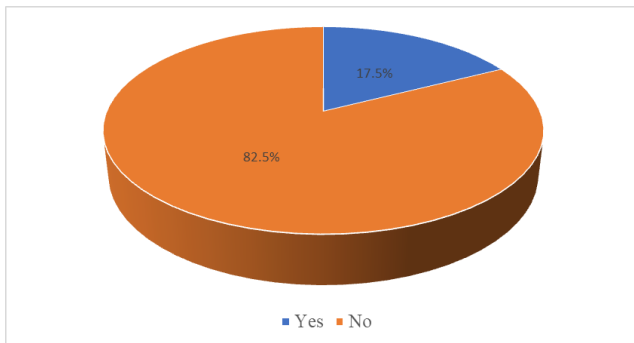
**Figure 1.** Distribution of students by sex.

Majority (62% of the nursing students indicate that they are strongly agree with HIV test before taking PrEP (Figure 2).



**Figure 2.** An HIV test is required before using the pre-exposure prophylaxis.

Figure 3 illustrates that 17.5% (n=11) respondents indicates that PrEP will allow them to have unwanted pregnancies, whilst most respondents 82.5% (n=52) indicated that PrEP will not allow them to have unwanted pregnancy.



**Figure 3:** Pre-exposure prophylaxis and unwanted pregnancy.

## Discussion

The assessment of knowledge and attitudes regarding the use of pre-exposure prophylaxis is one of the important ways to determine the gaps in knowledge related to the usage of pre-exposure prophylaxis. The findings of this study demonstrated that the highest number of respondents were aged 20-25 years with 77.8% (n=49) and followed by the respondents aged 26-30 years with 12.7% (n=8) and least respondents were between the age of 31 and above with 9.5% (n=6). The result revealed that most of the respondents were within the age range of the population that is sexually active making them susceptible to contracting HIV/AIDS. These findings are in correlation with the study conducted in rural Eastern Kentucky by Rudolph, et al. that showed that the age range of 20-30 years are more prone to contract HIV during the use of injectable drugs since peer pressure is high within this age ranges [9]. This study is beneficial to this age group because it is sensitizing them with the information regarding the usage of PrEP, so that they can prevent themselves from acquiring the infection. The findings of this study alluded that majority of the respondents were females with 76.2% (n=48) and followed by 23.8% (n=15) of male respondents. The study conducted in Eastern and Southern Africa by Risher, et al. stated that a high number of infected people by HIV infections occurred among female (women) with 50.0% and male (men) with 30.0% [10]. Although, majority of the study's population were female this will improve the chances of female being infected with HIV thus protecting many females from being infected because they got information regarding the use of PrEP. The study findings show that a high proportion of the respondents knew that an HIV test is required before the usage of pre-exposure prophylaxis with an average of 85.7% (n=54), with either "strongly agreed or agreed". These research findings are like the findings of the study that was conducted in Kenya by Ngure, et al. whereby 96.8% of the respondents agreed on the HIV testing before the initiation of PrEP [11]. Although there was generally high knowledge on the use of pre-exposure prophylaxis regarding the HIV test requirement before the usage of PrEP among the respondents, fewer respondents were unsure (neutral) with 4.8% (n=3) and 9.5% (n=6) of the respondents lack the knowledge since they indicated that HIV test is not required before the usage of PrEP. Another study findings showed that nursing students are more knowledgeable that PrEP can only be taken by HIV negative people to prevent themselves from getting HIV infection with 71.4% (n=45) respondents that indicated with "strongly agree". The research findings are in comparison with the findings of the study conducted in London by Adams and Balderson which stated that pre-exposure prophylaxis is only used by HIV people to protect themselves from acquiring HIV infection [12]. The study findings indicated that majority of the respondents 90.5% (n=57) knew that PrEP does not protect against sexually transmitted diseases. These research findings are corresponding with the findings of the study that was conducted in Berlin by Werner, et al. [13]. The study findings indicated that 95.0% of the respondents agreed that PrEP does not protect against STIs and

39.6% of the respondents indicated that they contracted STIs while using PrEP. Surprisingly, 4.8% (n=3) of the respondents have indicated not being sure that PrEP does not protect against STIs. Furthermore, 4.8% (n=3) responded that PrEP protects against STIs, and this proves that they lack knowledge towards the use of pre-exposure prophylaxis, this might increase the number of people that are infected with STIs while using PrEP. The study findings alluded that majority of respondents 92.1% (n=54) had knowledge that PrEP has side effects as they indicated with strongly disagree and disagree to PrEP not having side effects, showing that they have knowledge toward the usage of PrEP. These findings are similar to the findings of study conducted by Chou, et al. which indicated that 3.8% of the people who took PrEP experienced nausea, vomiting and other gastrointestinal problem, meanwhile 2.4% experienced kidney problems [14]. Another study findings showed a high proportion of respondents 79.4% (n=50) with knowledge that people should use condoms of abstain from sex during the first 7 days of taking pills until they are protected. These findings are like the findings of the study that was conducted in rural Kenya and Uganda by Camlin, et al. that showed that people on PrEP should abstain or use condoms to protect themselves from acquiring HIV infection during the first 7 days of using PrEP [15]. Although, a high proportion of respondents had knowledge regarding the usage of PrEP, the findings further showed that 11.1% (n=7) of respondents were unsure and 9.6% (n=6) of the respondents indicated that people should not use condoms or abstain from sex during the first 7 days of taking PrEP until they are protected. This suggests that some individuals lack knowledge in this area, which may leave many individuals vulnerable to contracting HIV while taking or using PrEP. The study findings show that 63.5% (n=40) of the respondents were knowledgeable that PrEP is safe for women to take during conception, pregnancy, and breastfeeding. These findings correspond with the technical brief that was conducted by world health organization, as reported that pregnant and breastfeeding mothers are at the high risk of acquiring HIV infection. The same study further reported that they should take PrEP to protect themselves from contracting HIV since their immune is suppressed and PrEP is safe for them world health organization. However, 20.6% (n=13) of the respondents were not sure if PrEP is safe for women to take during conception, pregnancy, and breastfeeding, furthermore 15.8% (n=10) of the respondents lack knowledge since they indicated that PrEP is not safe during conception, pregnancy, and breastfeeding. Another research finding showed that many of the respondents had knowledge that PrEP is free of charge in the government hospitals and clinics with 95.3% (n=60). These research findings are contradicting the findings of the study conducted in Victoria Australia by Ryan, et al. that indicated that PrEP is bought since is not part of the Pharmaceutical Benefits Scheme (PBS) that is free in Australia [16]. In countries where PrEP is not free in the government's hospitals and clinics this might upsurge the HIV acquisition since some people might not be able to afford paying for PrEP services.

The study findings alluded that majority of the respondents had knowledge that PrEP should be taken at the same time every day with a proportion of 92.1% (n=58). These study findings are corresponding with the findings of the study that was conducted in Mississippi by Arnold, et al. that suggested that the respondents indicated that they take their PrEP the same time every day to promote its effectiveness and reduce the chances of being infected by HIV [17]. The other finding from the study findings showed that 38.1% (n=24) of the respondents indicated that pre-exposure prophylaxis and ARVs are not the same medications. These study findings contradict the findings of the study conducted in Uganda by Ware, et al. were 91.0% of the respondents indicated that PrEP and ARVs are from the same family of antiretroviral but not the same medication [18]. Surprisingly, 25.4% (n=16) of the respondents indicated that they are not sure if PrEP and ARVs are the same medications, meanwhile 36.5% (n=23) of the respondents indicated that PrEP and ARVs are the same medication, meaning that a high number of respondents did not have the knowledge regarding the matter. This misunderstanding may lead to the prejudice and

mistreatment of PrEP users who are mistakenly believed to be HIV positive and on ARVs. The study findings on attitudes regarding the use of pre-exposure prophylaxis showed that the majority of the respondents would recommend other students to use PrEP with 95.2% (n=60). These findings cement with the study that was conducted among Thai University students by Khawcharoenporn, et al. that indicated that 94.0% of the respondents recommended other students to use PrEP to decrease the spread of HIV among the young generation and this will assist to improve the awareness of PrEP within the university students. Another study findings on the attitudes regarding the use of PrEP shows that 98.6% (n=61) of the respondents alluded that PrEP did not bring them infection. These findings disagree to the results of the study conducted in San Francisco, Miami, and a community health center in Washington by Cohen, et al. that expressed that 43.0% of the respondents self-reported giving a history of syphilis, rectal gonorrhoea and rectal chlamydia while using PrEP. The study was not clear if the respondents got the infections from using PrEP or from other practices. Meanwhile 87.3% (n=55) respondents indicated that they considered using PrEP to prevent themselves, their friends and loved ones from being infected by HIV infection. This proves that the nursing students have positive attitudes towards the usage of PrEP. This was supported by the findings of the study conducted in Kenya by Koechlin, et al. were 64.0% of 595 young women aged 20–29 reported that they would use PrEP to prevent themselves from acquiring HIV infection [19]. Another study findings on the attitudes regarding the use of pre-exposure prophylaxis shows that the majority 96.8% (n=61) of the respondents confirmed that they will take PrEP regardless of the stigmatization. This study findings contradicts the findings of the study conducted by Card, et al. that indicated 36.3% of the respondents were not ready to take PrEP due to stigma regarding the use of PrEP and they are afraid of the testing that is done before the initiation of PrEP as they might turn out to be HIV positive [8]. The study findings revealed that 82.5% (n=52) of the respondents detailed that PrEP will not allow them to have unwanted pregnancies. Moreover, these research results contradicted with the study findings conducted in London, England by Haberer, et al. which revealed that a lot of women got pregnant while using PrEP [20]. Meanwhile 17.5% (n=11) of the respondents specified that PrEP would allow them to have unwanted pregnancy. However, there is a misconception that PrEP prevents pregnancies as well, meanwhile PrEP only prevents the transmission of HIV infection. This might upsurge the number of unwanted pregnancies in the people who are using PrEP.

## Conclusion

These study findings show evidence that nursing students had good basic knowledge regarding the use of pre-exposure prophylaxis. However, misconceptions that PrEP and ARVs are the same medications were observed. Furthermore, some of the respondents lack knowledge as they indicated that PrEP is not safe for women to take during conception, pregnancy, and breastfeeding. The study findings on the attitudes regarding the use of pre-exposure prophylaxis, revealed that the respondents had positive attitudes towards the usage of pre-exposure prophylaxis, since the respondents could answer most of the questions related to attitudes correctly. Although a high number of respondents showed positive attitudes towards the usage of PrEP, fewer respondents had negative attitudes towards its usage the recommendation from the findings is that the University of Namibia implement a program to instruct students on the use of pre-exposure prophylaxis and to explain the distinction between PrEP and ARVs as well as how they function. This program should be offered at least monthly at each campus for the next five years so that students are well-equipped to protect themselves from contracting HIV/AIDS.

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