


Knowledge of academics regarding human immunodeficiency virus prevention technologies: Pre-Exposure Prophylaxis and Post-Exposure Prophylaxis

Conhecimento de acadêmicos em relação às tecnologias de prevenção ao vírus da imunodeficiência humana: Profilaxia Pré-Exposição e Profilaxia Pós-Exposição

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ABSTRACT | OBJECTIVE: to analyze the knowledge of students of the Nursing and Medicine courses of a public university about technologies of prevention of acquired immunodeficiency virus (HIV) - Pre-Exposure Prophylaxis (Prep) and Post-Exposure Prophylaxis (PEP). **METHOD:** this is a descriptive, cross-sectional study with a quantitative approach, and its population consists of 63 students of health courses of a public educational institution. **RESULTS:** 57.1% of participants attended Medicine, 42.9% attended Nursing, 96.8% answered correctly what means Prep and PEP, 63.5% knew how to use Prep, 66.7% corrected which sexually transmitted infections PEP prevents, 100% of the students answered correctly about the exclusion of condom use in Prep or PEP. **FINAL CONSIDERATIONS:** In this study, students have knowledge about preventive prophylaxis to HIV (Prep and PEP). There may still be gaps in knowledge on the subject, which may influence the management of Prep and PEP and thus end up not fully taking advantage of the benefits that these technologies offer.

KEYWORDS: Pre-Exposure Prophylaxis. Post-Exposure Prophylaxis. Acquired Immunodeficiency Syndrome. Nursing Students. Medical students.

RESUMO | OBJETIVO: analisar o conhecimento de alunos dos cursos de Enfermagem e Medicina de uma universidade pública a respeito de tecnologias de prevenção ao vírus da imunodeficiência adquirida (HIV) - Profilaxia Pré-Exposição (PrEP) e Profilaxia Pós-Exposição (PEP). **MÉTODO:** trata-se de um estudo descritivo, transversal, com abordagem quantitativa, sendo sua população composta por 63 estudantes de cursos da saúde de uma instituição pública de ensino. **RESULTADOS:** 57,1% dos participantes cursavam Medicina, 42,9% cursavam Enfermagem, 96,8% responderam corretamente o que significa PrEP e PEP, 63,5% souberam como utilizar a PrEP, 66,7% acertaram quais as infecções sexualmente transmissíveis a PEP previne, 100% dos estudantes responderam corretamente sobre a exclusão do uso do preservativo em uso da PrEP ou PEP. **CONSIDERAÇÕES FINAIS:** Neste estudo, pode-se constatar que os estudantes possuem um conhecimento sobre as profilaxias preventivas ao HIV (PrEP e PEP). Ainda podem existir lacunas de conhecimento sobre a temática, o que pode influenciar no manejo da PrEP e da PEP e, assim, acabar não aproveitando integralmente os benefícios que essas tecnologias oferecem.

PALAVRAS-CHAVE: Profilaxia Pré-Exposição. Profilaxia Pós-Exposição. Síndrome de Imunodeficiência Adquirida. Estudantes de Enfermagem. Estudantes de Medicina.

Introduction

Human Immunodeficiency Virus (HIV) infection is transmitted by unprotected sex, blood transfusion, breastfeeding and vertically during pregnancy. This infection can lead to a condition called acquired immunodeficiency syndrome (AIDS), described as an intense attack on the immune system, which allows the occurrence of opportunistic diseases, such as pneumonia and tuberculosis. When the patient gets infected, there is an impact in both physical health and social life, due to the prejudgement – which can directly impair in the treatment of whom is already in a vulnerability state.¹

Since the emergence of the AIDS epidemic until the today, about 36.7 million people have been infected worldwide and are living with HIV.² Therefore, due to the efforts of preventive programs, there is a reduction of new infections globally.

In Brazil, since the discovery of the first case (early 1980s) until 2017, 882.810 cases of AIDS have already been registered and, to face this problem, this country offers access to free treatment (STI).³ Data from the United Nations Program on HIV/AIDS (UNAIDS) indicate that since 2010 the infection rate has decreased by 23%, since in 2019 a total of 1.7 million people were infected with the HIV virus.⁴ Despite the reduction in these rates, HIV infection remains an important public health issue.

According to the Ministério da Saúde (Ministry of Health)⁵, the major responsible for combating the existent paradigms in previous models of prevention and reducing transmission rates were the elaboration of “Combined Prevention” strategy. This alternative compile the different essential components of an HIV prevention strategy, namely: actions focused on individuals, their social group and social environment in which they live in.

Combined HIV Prevention starts with combining three strategies: biomedical, behavioral and structural – which address different prevention actions that are pointing to HIV combat.³

Behavioral strategies are those that aim to provide to the individual and their social group information so that they recognize risk factors to which they are exposed and minimize them, being able to change their behavior, attitudes and practices. Structural strategies, on the other hand, are those that refer to cultural, social, political and economic issues that somehow enhance or designate vulnerabilities for individuals and social groups, focusing on combating stigmas, prejudices and any other way to alienate rights and guarantees established by law.⁵

Biomedical strategies, in turn, are intended to reduce the chances of infection if a person comes to be exposed to the virus, when there is interaction between people who already have the virus in their bodies and others who do not. They are divided into two groups, physical barriers, such as condom use; and the second, related to the use of antiretroviral drugs, Post-Exposure Prophylaxis (PEP), Pre-Exposure Prophylaxis (PrEP) and treatment for all people (TTP) even if asymptomatic.⁵

PEP, offered by the Sistema Único de Saúde -SUS (Unified Health System) since 1999, reduces the risk of HIV infection, being indicated mainly in exposures due to accidents with biological material, sexual violence and consensual sexual intercourse with risk of infection. This strategy is carried out through the administration of oral medications for 28 days, being necessary that the medical contact happens within the first 72 hours after exposure, and in the best scenario, within the first 2 hours after the event.⁶

PrEP, on the other hand, is used especially to reduce the risk of HIV infection, through the daily intake by mouth of two pills (tenofovir + emtricitabine), being offered free of charge to key populations (gays and other MSM; people who drink alcohol and are on drug use, trans people; sex workers; people deprived of liberty). It should be emphasized that, in order to achieve proper protection against the virus, once prophylaxis is started, is required a period of 7 days on medication use for anal intercourse and 20 days for vaginal intercourse, always using it daily as long as there is any chance of exposure.⁷

Facing HIV/AIDS is still a challenge. Therefore, health services need to provide trained and updated professionals so that the management and prevention of the problem can be carried out in the most effective way possible, considering all the biopsychosocial aspects of each individual.⁸ In order to have trained professionals, it is necessary that the improvement of quality starts since the educational institutions during the training of these professionals, emphasizing on nurses and doctors perform, once they are important precursors of the integrated work and are always in direct contact with the patient.⁸

Despite all the access that these students have to materials that deal with the HIV/AIDS theme, there can be no guarantee that the knowledge that the academic has developed is enough to deal, in practical world, with the management of HIV/AIDS, causing the disruption of the transmission lines of the virus, since this will only be achieved when effective prevention measures are applied.⁹

The objective of this study was, then, to analyze the knowledge of students of nursing and medical courses at a public university regarding PrEP and PEP, given the need to investigate, improve and increase the knowledge of students in the health area.

Method

This is a cross-sectional, descriptive study, with an eligible population of undergraduate nursing (N=117) and medical (N=118) students from a public educational institution. Inclusion criteria were students fully enrolled at the university during data collection; in the nursing course, having attended or currently studying the Communicable Diseases; in the course of medicine, have studied or currently studying the discipline of Infectious Diseases and Tropical Medicine. Students who had locked up their semester or those under sick note during the research period were excluded from the study.

Initially, the study was submitted and approved by the Research Ethics Committee (CEP) of the Universidade do Estado de Minas Gerais – UEMG

(State University of Minas Gerais) - Passos Unit, under opinion No. 4.997.851, in accordance with Resolution 466/2012. Regarding data collection and storage in a virtual environment, we reiterate that all steps were followed in accordance with the rules of the National Research Ethics Committee (CONEP). Such guidance is described in Circular Letter No. 2/2021/CONEP/SECNS/MS of February 24, 2021.

In data collection, a questionnaire with multiple choice questions was used, which was prepared by the researchers specifically for this study, after an exhaustive literature review. During construction, the questionnaire was also submitted to a refinement process by researchers who are experts in the subject, who are professors and researchers working at the educational institution.

To attend in the research, participants had to read and agree with the online Free and Informed Consent Term, indicating that they were aware of the proposed objectives and participation in the study. This consent was applied and obtained via Internet. It should be noted that both were invited to participate in the study through social networks and institutional e-mail, and such contact was made using a video of guidelines about all stages of the research and instructions to answer the questions without consulting any other supportive material.

It should be mentioned that the data were collected through the digital platform Google Forms®, between the months of October and November 2021, and during this period of data collection, the COVID-19 pandemic period was still an issue in Brazil, which constituted an impediment to carrying out the face-to-face survey, justifying the option for online data collection.

During the data collection process, the current scenario had a total of 219 students enrolled in the medical course, and according to the inclusion criteria, 118 (53.8%) students were eligible to participate in the research. In the nursing course, there were 466 students enrolled in the course, of which 117 (25.1%) were eligible to participate in the research. After completing the collection, 63 students participated in the survey, which represented 26.8% of the eligible population for the study.

The non-probabilistic sampling for convenience was based on the inclusion criteria, with which data collection was carried out within a pre-defined period. Nonprobabilistic sampling is the one in which the selection of elements from the population to compose the sample depends at least in part on the judgment of the researcher or interviewer in the field.¹⁰

The choice of these courses was based on students being enrolled in health education, which are responsible for planning, executing and evaluating health programming and health care plans, and mainly for acting in the prescription and supervision of medication treatment antiretrovirals established in public health programs in the Unified Health System in Brazil; within the multidisciplinary team, being more focused on caring for people living with HIV.¹¹

Results

Through all the efforts and given the selection criteria of the participants, it was possible to obtain a valid return from a sample composed of a total of 63 participants, of which 57.1% were medical students and 42.9% were nursing students. Most students were women (73%), aged between 20 and 25 years (77.7%), single (93.7%), self-declared heterosexual (77.8%), with no individual income (62.3%) and with some religious belief (60.3%) (Table 1).

Table 1. Sociodemographic and academic characteristics of participating students (N=63)

Variable	N	%	
Age	20-25	49	77,7%
	26-30	8	12,7%
	31-35	4	6,4%
	36-40	1	1,6%
	41-45	1	1,6%
Marital status	Single	59	93,7%
	Married	4	6,3%
Gender	Cis woman	46	73%
	Cis man	17	27%
Sexual orientation	Heterosexual	49	77,8%
	Homosexual	6	9,5%
	Bisexual	7	11,1%
	Other	1	1,6%
Course	Medicine	36	57,1%
	Nursing	27	42,9%
Period	7º	7	11,1%
	8º	16	25,4%
	9º	13	20,7%
	10º	20	31,7%
	11º	7	11,1%
Individual income*	Yes	23	37,7%
	No	38	62,3%
Religious belief	Yes	38	60,3%
	No	25	39,7%
Belief**	Candomblé	1	2,7%
	Spiritist	7	18,4%
	Catholic	23	60,5%
	Protestant	4	10,5%
	Umbanda	2	5,2%
	Evangelical	1	2,7%

Source: the authors (2023). * N=61; **N=38

When asked about what PrEP means, 96.8% were able to answer correctly, and 36.5% were unable to say how PrEP was used. Knowledge about the details of this action, however, had heterogeneous results, since when asked how long it took for PrEP to start to take effect for anal and vaginal intercourse, only 47.6% were able to answer correctly, with the majority (84.1%) got the question about which STIs PrEP protects against. Regarding the key populations for the use of PrEP, 88.9% chose the right answer and also when asked about when to start taking the drug, the majority (88.9%) knew how to answer correctly (Table 2).

Table 2. Students' knowledge about Pre-Exposure Prophylaxis (PrEP) (N =63)

Variable		N	%
What does PrEP mean?	Post Exposure Prophylaxis to HIV	2	3,2%
	HIV Pre-Exposure Prophylaxis	61	96,8%
How is PrEP used?	1 time a week	2	3,2%
	every 2 days	0	0
	Daily	40	63,5%
	Only when there are relationships with the risk of infection	21	33,3%
How long does it take for PrEP available on the SUS to start working for anal and vaginal intercourse, respectively?	2 days and 7 days	8	12,7%
	20 days and 7 days	9	14,3%
	7 days and 14 days	16	25,4%
	7 days and 20 days	30	47,6%
Which STIs does PrEP protect against?	HIV, syphilis and chlamydia	0	0
	HIV, syphilis and gonorrhoea	3	4,8%
	HIV only	53	84,1%
	HIV and syphilis	7	11,1%
What are the key populations for PrEP use?	Gays, men who have sex with men (MSM), transgender people and sex workers	56	88,9%
	Gays and MSM only after unprotected intercourse	3	4,8%
	Only gays and trans people	0	0
	Only sex workers	4	6,3%
When should you start taking PrEP?	After exposure	2	3,2%
	Before the exhibition	56	88,9%
	2 to 72 hours after exposure	4	6,3%
	24 to 48 hours after exposure	1	1,6%

Source: the authors (2023).

Just like happened to PrEP, when asked about PEP meaning, 96.8% were able to answer, with more than half of the students (66.7%) also assertively answering the question about which STIs PEP prevents. Most (95.2%) were successful when asked about when PEP is indicated. Regarding the question about when it should start, 84.1% of the students answered correctly. When asked about how many days the PEP should be taken, 61.9% were right. And 66.7% also knew how to answer the testing period of a patient after using PEP. Finally, when asked whether the use of PrEP or PEP dispenses with the use of other prevention methods, the total sample (100%) was successful in answering (Table 3).

Table 3. Students' knowledge about Post-Exposure Prophylaxis (PEP) (N= 63)

Variable		N	%
What does PEP mean?	HIV Post Exposure Prophylaxis	61	96,8%
	HIV Pre-Exposure Prophylaxis	2	3,2%
Does PEP prevent which STIs?	HIV only	42	66,7%
	HIV, viral hepatitis and other STIs	17	27%
	HIV and viral hepatitis	0	0
	HIV and other STIs	4	6,3%
In which situations is PEP indicated?	Only in cases of sexual violence	0	0
	Only in cases of sexual violence and occupational accidents	2	3,2%
	Only in cases of sexual violence and unprotected sexual intercourse	1	1,6%
	In cases of sexual violence, unprotected sexual intercourse or occupational accidents	60	95,2%
When should PEP be started?	In the first 2 hours and up to a maximum of 72 hours after exposure	53	84,1%
	In the first 2 hours and up to a maximum of 96 hours after exposure	2	3,2%
	In the first 2 hours and up to a maximum of 24 hours after exposure	5	7,9%
	In the first 24 hours and up to a maximum of 96 hours after exposure	3	4,8%
For how many days should PEP be taken?	30 days	17	27%
	10 days	6	9,5%
	18 days	1	1,6%
	28 days	39	61,9%
How long does it take to test a patient again after using PEP?	30, 90 and 180 days after exposure	42	66,7%
	30, 60 and 90 days after exposure	16	25,4%
	15, 30 and 45 days after exposure	2	3,2%
	10, 15 and 28 days after exposure	3	4,8%
Does the use of PEP or PrEP dispense with the use of condoms or other HIV prevention methods?	Yes	0	0
	No	63	100%

Source: the authors (2023).

Discussion

The students' profile indicates that most were young individuals, a characteristic also related to the low percentage of people with their own income and the high rate of single participants. Regarding gender, as in most of the studies found, such as those by Aminde et al.¹² and Kumar and Ratnaprabha¹³, the majority of the sample was composed of women.

The results indicate that the sample had satisfactory knowledge of acronyms and was able to differentiate basic and operational aspects of PREP and PEP, such as, for example, what is post-prophylaxis and what is pre-exposure to HIV. Compared with similar studies carried out in Brazil and Ethiopia, it is possible to notice that the meaning of the acronyms is not a great difficulty for the students, since they also presented good results.^{9,14} It is important to emphasize that this is basic knowledge, which by itself is not enough for these professionals to make clinical decisions, a fact reinforced when we realize that a larger portion obtained errors in questions about the use, time and indication of prophylaxis.

In a study carried out with Nigerian students, the level of knowledge about PrEP was low, only 18.9% were aware of prophylaxis. In relation to PEP, the percentage was a little higher, but also low, only a quarter was aware. When comparing with this study, the discrepancy in knowledge was clear. However, it is necessary to observe that Nigeria is a country heavily burdened with HIV, where there is a great failure in the dissemination of information on the subject.¹⁵

Regarding the PEP indication, this study showed a high level of knowledge among students, as well as questions about the starting period and for how many days PEP should be taken. Making a comparison with a study carried out in India, it is evident that these people also had a high level of knowledge regarding the indication of PEP. On the other hand, in that same study, it was observed that when asked about how many hours PEP should be started and for how many days it should be ingested, the assertiveness index dropped considerably.¹³

Regarding the period of PEP ingestion, more than half of the participants in this study were able to answer correctly. However, it should be noted that a considerable number were still confused about this variable. Compared with the study by Matos et al.⁹, most (72%) were able to answer about how many days PEP intake lasts, with a lower error rate compared to this study.

As for the variables on key populations and how PrEP is used, the academics in this study obtained a high percentage of correct answers (88.9% and 63.5%, respectively), showing good knowledge of these aspects, unlike what was evidenced by the study by Matos et al.⁹, in which more than half of the students were unable to correctly answer the same questions.⁹ This fact may be related to the period of time between the two studies (about two years), since social discussions on the subject are gaining more and more space in the media.

Regarding the time for PrEP to start taking effect, it is observed that there is parity between the answers, since all options were marked with a considerable percentage. However, the correct alternative was the most marked (47.6%). In the study by Matos et al.⁹, this difficulty was also observed, since more than half of the participants (53%) were unable to answer the question.⁹

As one of the ways to increase the students' level of knowledge, another study carried out with medical residents showed that carrying out training on PrEP collaborated and promoted awareness, acceptance and even improved performance in prescribing HIV prevention prophylaxis¹⁶, highlighting the importance

of continuing education in the lives of health professionals who have already graduated.

It is of great relevance the observation that the participants of this study, in general, know about the importance of condom use and that it should not be discarded when the client is using PrEP or PEP, as well as other combined prevention methods. When comparing with the study by Matos et al.⁹, it is noted that the rate of correct answers was also positive in this question, however, some students (9%) still answered incorrectly or did not know how to answer the question in that research.

This result on the use of condoms is very significant, since when guiding a patient using PrEP, it is necessary that all health professionals are assertive in their considerations, since, according to Silva¹⁷, behavioral disinhibition happens to PrEP users who may see it as a substitute method for condoms, which is not true.

Other studies carried out in public universities with nursing students and medical professionals in specialization showed one of the main reasons for the lack of knowledge on the HIV/AIDS theme: the small contact with the subject during academic training, which consequently impairs the way of act in the face of a possible orientation or risk situation.^{8,18}

It is necessary to increase the level of knowledge of health professionals who work in the management of HIV/AIDS, as well as for the general population, since education will contribute positively to combating the spread of HIV. The low adherence of PrEP and PEP tools, in addition to other forms of prevention, is mainly due to the fact that the low level of knowledge ends up reducing the forms of prevention available.^{18,19}

Despite the research showing, in a general overview, a satisfactory result, it is clear that there are still difficulties for some students in understanding and handling PrEP and PEP technologies with regard to HIV prevention. Given the legality of these professionals to prescribe such prophylaxis, it is extremely necessary that they know and understand the particularities of each one of them, so that the guidelines and management happen in the most precise, ethical and resolute way.

Limitations of the study are likely to have occurred, depending on the type of cross-sectional study, the sample size and the fact that the information was self-reported and answered at a distance without the supervision of the researchers. However, the questionnaire was completed individually and anonymously, providing greater practicality and convenience to the study participants, and reflecting positively on the number of responses obtained. In this way, access to this population was facilitated, making it less expensive for researchers, as well as for participants.

Conclusion

In this study, it can be seen that students have knowledge about HIV preventive prophylaxis (PrEP and PEP). It should also be mentioned that even in the face of knowledge gaps when it comes to existing technologies, these future health professionals will be able to expand this knowledge transversally throughout their training, not only applied in disciplines focused on infectious diseases, but also in primary care/ community, women's health, men's health, the health of vulnerable populations and even in health management, following the goals proposed by government agencies such as the Ministry of Health, among others.

As a contribution of this study, the presentation of the panorama of knowledge of these students, especially those in nursing, stands out, guiding new teaching strategies and preparing changes based on this mapping, which will directly reverberate in practice, since currently professional nurses also participate in the prescription of preventive prophylaxis.

Finally, educational institutions need to develop these cognitive skills in students and thus promote preparation to guarantee the autonomy of professionals in this area of activity, contributing to meeting national and international demands and operating directly in the control of HIV infection.

Authors' contributions

Melo FH, Alexandre AR, Santos DO, Queiroz AAFLN, Fernandes APM and Silva PG participated in the design of the research question, methodological design, data collection, search and statistical analysis of research data, interpretation of results, writing of the scientific article. All authors reviewed and approved the final version and are in agreement with its publication.

Conflicts of interest

No financial, legal or political conflicts involving third parties (government, companies and private foundations, etc.) have been declared for any aspect of submitted work (including, but not limited to, grants and funding, advisory board participation, study design, preparation manuscript, statistical analysis, etc.).

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References

1. Guida CG, Guimarães ERO, Coutinho IM, Victor LS, Wirgues MD, Bernardes CT. A Profilaxia Pré-exposição (PrEP) Como Novo Tratamento Para Imunização Contra Infecções Pelo Vírus da Imunodeficiência Humana (HIV). Rev Educ Saúde [Internet]. 2019;7(suppl 2):114-18. Available from: <http://periodicos.unievangelica.edu.br/index.php/educacaoemsaude/article/view/4053>
2. Freitas JP, Sousa LR, Cruz MC, Caldeira NM, Gir E. Antiretroviral therapy: compliance level and the perception of HIV/Aids patients. Acta Paul Enferm. 2018;31(3):327-33. <https://doi.org/10.1590/1982-0194201800046>
3. Ministério da Saúde (Brasil), Secretaria de Vigilância em Saúde, Departamento de Vigilância, Prevenção e Controle das Infecções Sexualmente Transmissíveis, do HIV/Aids e das Hepatites Virais. Protocolo Clínico e Diretrizes Terapêuticas para Manejo da Infecção pelo HIV em Adultos [Internet]. Brasília: Ministério da Saúde; 2018. Available from: https://www.gov.br/aids/pt-br/centrais-de-conteudo/pcdts/2013/hiv-aids/pcdt_manejo_adulto_12_2018_web.pdf/view

4. Joint United Nations Programme on HIV/Aids. Seizing the moment: Tackling entrenched inequalities to end epidemics [Internet]. Geneva: UNAIDS; 2020. Available from: <https://www.unaids.org/en/resources/documents/2020/global-aids-report>
5. Ministério da Saúde (Brasil), Secretaria de Vigilância em Saúde, Departamento de Vigilância, Prevenção e Controle das Infecções Sexualmente Transmissíveis, do HIV/Aids e das Hepatites Virais. Prevenção Combinada do HIV - Bases conceituais para profissionais, trabalhadores(as) e gestores(as) de saúde [Internet]. Brasília: Ministério da Saúde; 2017. Available from: https://www.gov.br/aids/pt-br/centrais-de-conteudo/publicacoes/2017/prevencao_combinada_-_bases_conceituais_web.pdf/view
6. Ministério da Saúde (Brasil), Secretaria de Vigilância em Saúde. Departamento de DTS, Aids e das Hepatites Virais. Protocolo Clínico e Diretrizes Terapêuticas para Profilaxia Pós-Exposição (PEP) de Risco à Infecção pelo HIV, IST e Hepatites Virais [Internet]. Brasília: Ministério da Saúde; 2021. Available from: https://www.gov.br/aids/pt-br/centrais-de-conteudo/pcdts/2021/hiv-aids/prot_clinico_diretrizes_terap_peg_-_risco_infecao_hiv_ist_hv_2021.pdf/view
7. Ministério da Saúde (Brasil), Secretaria de Ciência, Tecnologia, Inovação e Insumos Estratégicos em Saúde, Secretaria de Vigilância em Saúde. Protocolo Clínico e Diretrizes Terapêuticas para Profilaxia Pré-Exposição (PrEP) de Risco à Infecção pelo HIV [Internet]. Brasília: Ministério da Saúde; 2022. Available from: https://www.gov.br/aids/pt-br/centrais-de-conteudo/pcdts/2017/hiv-aids/pcdt-prep-versao-eletronica-22_09_2022.pdf/view
8. Catoia EA, Mesquita TR, Mesquita ER, Lopes LM, Reis RK, Camargo RAA, et al. Teaching and learning processes of nursing students about HIV/aids management. Rev Eletr Enf. 2015;17(3): <http://dx.doi.org/10.5216/ree.v17i3.26914>
9. Matos MCB, Araújo TME, Queiroz AAFLN, Borges PTM. Knowledge of health students about prophylaxis pre and post exposure to HIV. Rev Gaúcha Enferm. 2021; 42:e20190445. <https://doi.org/10.1590/1983-1447.2021.20190445>
10. Mattar FN. Pesquisa de marketing: edição compacta. São Paulo: Atlas; 1996.
11. Parecer No 12/2020 Cofen/CTAS, de 8 de julho de 2020. Parecer Técnico sobre a Prescrição de Medicamentos para Profilaxia Pós Exposição ao HIV (PEP) e Profilaxia Pré Exposição ao HIV (PrEP) por Enfermeiros [Internet]. Brasília: Conselho Federal de Enfermagem; 2020. Available from: http://www.cofen.gov.br/81126_81126.html
12. Aminde LN, Takah NF, Dzudie A, Bonko NM, Awungafac G, Teno D, et al. Occupational Post-Exposure Prophylaxis (PEP) against Human Immunodeficiency Virus (HIV) Infection in a Health District in Cameroon: Assessment of the Knowledge and Practices of Nurses. PLoS One. 2015;10(4):e0124416. <https://doi.org/10.1371/journal.pone.0124416>
13. Kumar A, Ratnaprabha GK. Awareness about HIV and post exposure prophylaxis among students of a nursing college from central Karnataka: a cross sectional study. Int J Community Med Public Health. 2019;6(1):303-07. <https://doi.org/10.18203/2394-6040.ijcmph20185263>
14. Aschale B, Tamir Y, Alem G. Knowledge, attitude, practice and associated factors towards post exposure prophylaxis to HIV infection among health care professionals in Debre Markos town public health institutions, Northwest Ethiopia, 2017. Clin Pract. 2017;14(6):385-95. <https://dx.doi.org/10.4172/clinical-practice.1000385>
15. Ajayi AI, Ismail AO, Adeniyi OV, Akpan W. Awareness and use of pre-exposure and postexposure prophylaxes among Nigerian university students: Findings from a cross-sectional survey. Medicine. 2018;97(36):e12226. <https://doi.org/10.1097/md.00000000000012226>
16. Newman R, Katchi T, Karass M, Gennarelli M, Goutis J, Kifayat A, et al. Enhancing HIV Pre-exposure Prophylaxis Practices via an Educational Intervention. Am J Ther. 2019;26(4):e462-e468. <https://doi.org/10.1097/mjt.0000000000000773>
17. Silva PG. Assistência de enfermagem para prevenção e manejo da sífilis: validação de material educativo [dissertação]. Ribeirão Preto: Universidade de São Paulo; 2018. <https://doi.org/10.11606/D.22.2018.tde-21092018-140548>
18. Bones AANS, Costa MR, Cazella SC. The education for facing the HIV Epidemic. Interface. 2018;22(suppl 1):1457-69. <https://doi.org/10.1590/1807-57622017.0066>
19. Gomes RRFM, Ceccato MGB, Kerr LRFS, Guimarães MDC. Factors associated with low knowledge on HIV/AIDS among men who have sex with men in Brazil. Cad Saúde Pública. 2017;33(10):e00125515. <https://doi.org/10.1590/0102-311X00125515>