

KNOWLEDGE, ATTITUDES AND PRACTICES OF PROFESSIONALS RELATED TO HIV PROPHYLAXIS: INTEGRATIVE REVIEW

CONHECIMENTO, ATITUDES E PRÁTICAS DOS PROFISSIONAIS RELACIONADOS ÀS PROFILAXIAS DO HIV: REVISÃO INTEGRATIVA

CONOCIMIENTO, ACTITUDES Y PRÁCTICAS DE LOS PROFESIONALES RELACIONADOS CON LAS PROFILAXIS DEL VIH: REVISIÓN INTEGRATIVA

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Objective: to identify the knowledge, attitudes and practices of health professionals about pre- and post-sexual HIV prophylaxis. **Method:** review carried out in the databases CINAHAL, LILACS, Pubmed, WoS, Scopus and Google Scholar, in the languages Portuguese, English, French and Spanish, without time cut. **Results:** 45 articles were included, published between 2004 and 2023, in which professionals declared to have unsatisfactory knowledge about the pre- and post-sexual exposure prophylaxis, although they expressed a desire to receive training on the subject. As for attitudes, the scenario was divided between those who said they were willing to prescribe and those who did not show themselves available. The practices demonstrated services with little prescription, fragile advice and poor testing, reflected by stigmatized attitudes. **Final considerations:** the findings reinforce the need for the inclusion of the theme in vocational training and in continuing education actions.

Descriptors: Health Personnel. HIV. Pre-Exposure Prophylaxis. Post-Exposure Prophylaxis. Review.

Objetivo: identificar o conhecimento, atitudes e práticas dos profissionais de saúde acerca das profilaxias pré e pós-exposição sexual ao HIV. Método: revisão realizada nas bases CINAHAL, LILACS, Pubmed, WoS, Scopus e Google Scholar, nos idiomas português, inglês, francês e espanhol, sem recorte temporal. Resultados: foram incluídos 45 artigos, publicados entre 2004 e 2023, em que os profissionais declararam ter conhecimento insatisfatório acerca das profilaxias pré e pós-exposição sexual, embora manifestassem vontade em receber preparo sobre o tema. Quanto às atitudes, o cenário foi dividido entre aqueles que se diziam dispostos a prescrever e aqueles que não se mostravam disponíveis. As práticas demonstraram serviços com pouca prescrição, aconselhamentos frágeis e escassa realização

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de testagem, refletidas por atitudes estigmatizadas. Considerações finais: os achados reforçam a necessidade da inclusão da temática na formação profissional e nas ações de educação permanente.

Descritores: Pessoal de Saúde. HIV. Profilaxia Pré-Exposição. Profilaxia Pós-Exposição. Revisão.

Objetivo: identificar el conocimiento, actitudes y prácticas de los profesionales de la salud sobre las profilaxis pre y post exposición sexual al VIH. Método: revisión realizada en las bases CINAHAL, LILACS, Pubmed, WoS, Scopus y Google Scholar, en los idiomas portugués, inglés, francés y español, sin recorte temporal. Resultados: se incluyeron 45 artículos, publicados entre 2004 y 2023, en los que los profesionales declararon tener conocimiento insatisfactorio sobre las profilaxis pre y post exposición sexual, aunque manifestaron voluntad de recibir preparación sobre el tema. En cuanto a las actitudes, el escenario se dividió entre aquellos que se decían dispuestos a prescribir y aquellos que no se mostraban disponibles. Las prácticas demostraron servicios con poca prescripción, consejos frágiles y escasa realización de pruebas, reflejadas por actitudes estigmatizadas. Consideraciones finales: los hallazgos refuerzan la necesidad de la inclusión de la temática en la formación profesional y en las acciones de educación permanente.

Descriptorios: Personal de Salud. VIH. Profilaxis Pre-Exposición. Profilaxis Posexposición. Revisión.

Introduction

The human immunodeficiency virus (HIV), most commonly known as a Sexually Transmitted Infection (STI), affects the immune system and causes Acquired Immunodeficiency Syndrome (AIDS). Treatment is performed with combinations of medications capable of inhibiting replication in the body, aiming at viral suppression⁽¹⁾.

Considering that the use of condoms has not been widely adopted for HIV/AIDS prevention, different efforts are made to break the transmission chain, such as the creation of combined prevention through biomedical, behavioral and structural interventions oriented to people considering the particularities and forms of transmission of STI/ HIV/AIDS⁽²⁻³⁾.

The achievement of combined prevention requires adequate embracement to understand users' needs and vulnerabilities and is composed by: regular testing for HIV and other STIs, pre-exposure prophylaxis (PrEP), post-exposure prophylaxis (PEP), prevention of vertical transmission, immunization for Human Papilloma Virus and Hepatitis B, damage reduction, diagnosis and treatment of STIs and Viral Hepatitis, use of condoms and lubricants, and treatment of all people with HIV/AIDS^(2,4).

PrEP requires prior HIV testing and consists of the use of antiretroviral drugs by oral or injectable route in non-infected people, before exposure to infection, on a continuous basis⁽⁵⁾. PEP consists of the intake of antiretroviral drugs that should

be initiated within 72 hours after exposure, for 28 days, with a recommendation for situations in which unprotected, non-consensual sexual relations occurred, such as in cases of sexual abuse or rape, condom rupture, among other vulnerabilities⁽²⁾. However, it is worth mentioning that there are other infections besides HIV, such as rabies, hepatitis B and C, among others, which also benefit from the combined prophylaxis method, each with specific strategies, treatments and indications.

It is known that the articulation of prevention with effective embracement is able to reduce STI⁽⁴⁾; however, professionals have reported difficulties in its execution, as well as lack of time for routine monitoring of patients and comfort in questioning about sexuality, besides adequate knowledge about the guidelines for HIV management, which corroborates the failure to break the chain of transmission of STI/HIV⁽⁶⁾.

Although the United States of America (USA) has a larger range of studies regarding HIV prevention, there is still a need for reinforcement in the education of professionals to improve health knowledge and practices regarding the management of patients with HIV, especially in the use of available prevention technologies such as PEP⁽⁵⁾.

Lack of preparation, manifested by the lack of knowledge and incoherence in the actions

and practices of several professionals, has led to inadequate approaches in combating HIV/AIDS and other STIs, in addition to perpetuating prejudice and stigma⁽⁷⁻⁸⁾.

In this sense, given the importance of these technologies for effective combined prevention, the objective is to identify the knowledge, attitudes and practices of health professionals about sexual PrEP and PEP to HIV.

Method

This study originated from a course completion work of the first author at the end of the Nursing graduate course at the Federal University of Brasília in 2022. This is an integrative review that allows a critical and comprehensive analysis of the literature, helping to foster discussions about existing studies and generate new reflections⁽⁹⁾. For its development, six steps are used: establishment of the research question, literature search, categorization of studies, evaluation of studies included in the review, interpretation of results and synthesis of knowledge or presentation of the review⁽⁹⁾.

Initially, the guiding question was built from the PCC strategy, which corresponds to Population, Concept and Context: *What are the available*

evidence in the literature about knowledge, attitudes and practices of health professionals on HIV/AIDS prevention, with a focus on PEP and sexual PrEP?⁽¹⁰⁾. The whole process of the review followed the premises of Prisma.

The search was updated on June 5, 2023, using the following information resources: Cumulative Index to Nursing and Allied Health Literature (CINAHL), Latin-American and Caribbean Health Sciences Literature (LILACS), National Library of Medicine National Institutes of Health (Pubmed), Web of Science (WoS), Scopus and Google Scholar. These resources were selected to carry out the search for this review by providing the best national and international journals in the health area.

The information was extracted and organized in a database using the bibliographic reference manager EndNote Web to help remove duplicates, and the Rayyan tool for reading of titles and abstracts. The Health Descriptors (DECS) were specifically used for searching in the LILACS database and terms of the Medical Subject Headings (MESH) in the other databases with the combination of the Boolean operator “OR” between similar descriptors and “AND” between different descriptors, as shown in Chart 1.

Chart 1 – Search strategies, according to the selected databases

(continued)

Databases	Search strategies
CINAHL	("health personnel" OR "nurses" OR "physicians" OR "doctor" OR "dentists" OR "dentist") AND ("HIV" OR "hiv infections") AND ("prevention" OR "prophylaxis") AND ("pre exposure prophylaxis" OR "post-exposure prophylaxis")
LILACS	("pessoal de saúde OR "personal de salud" OR "health personnel") AND ("hiv" OR "vih" OR "hiv infections" OR "infecciones por vih" OR "infecções por hiv") AND ("profilaxia pré-exposição" OR "pre-exposure prophylaxis" OR "profilaxis pre-exposición" AND ("profilaxia pós-exposição" OR "post-exposure prophylaxis" OR "profilaxis posexposición") AND (db:("LILACS"))
Pubmed	("health personnel" OR "nurses" OR "physicians" OR "doctor" OR "dentists" OR "dentist") AND ("HIV" OR "hiv infections") AND ("prevention" OR "prophylaxis") AND ("pre exposure prophylaxis" OR "pre exposure prophylaxis" OR "post-exposure prophylaxis" OR "post-exposure prophylaxis")
WoS	ALL=("health personnel" OR "nurses" OR "physicians" OR "doctor" OR "dentists" OR "dentist") AND ALL=("HIV" OR "hiv infections") AND ALL=("prevention" OR "prophylaxis") AND ALL=("pre exposure prophylaxis" OR "post-exposure prophylaxis")

Chart 1 – Search strategies, according to the selected databases

(conclusion)

Databases	Search strategies
Scopus	TITLE-ABS-KEY("health personnel" OR "nurses" OR "physicians" OR "doctor" OR "dentists" OR "dentist") AND TITLE-ABS-KEY("HIV" OR "hiv infections") AND TITLE-ABS-KEY("prevention" OR "prophylaxis") AND TITLE-ABS-KEY("pre exposure prophylaxis" OR "pre exposure prophylaxis" OR "post-exposure prophylaxis")
Google Scholar	HIV "pre exposure prophylaxis" OR "post exposure prophylaxis" "health personnel"

Source: created by the authors.

The second step included articles that addressed knowledge, attitudes and practices of health professionals at any level of care regarding Sexual PrEP and PEP, without timeframe, in Portuguese, English, French and Spanish. The exclusion criteria adopted were: ⁽¹⁾ not address knowledge, attitudes and practices of health professionals sexual about PEP and PrEP, ⁽²⁾ study population with pregnant women and/or adolescents and/or children, ⁽³⁾ not available for full reading, even after trying to contact the corresponding author, ⁽⁴⁾ present the types of publication as a letter to the editor, editorial, monographs, course completion works, theses, dissertations, abstracts, books, review articles, theoretical, experience report, case study and abstracts published in annals of scientific events.

It is noteworthy that for the selection and evaluation of studies in a paired way, there was the dedication of two reviewers, who worked independently, and in case of divergences, a third reviewer was consulted. Moreover, the timeframe was not considered with the intention of amplifying the results found, and for the articles not fully available, an e-mail to the corresponding author was sent, in order to obtain it.

In the third step, the identified studies were read in full and organized in an Excel spreadsheet, based on the information highlighted by the reference used for this review, with the following variables⁽⁹⁾: title; journal quality; year of publication; objective; country of origin of

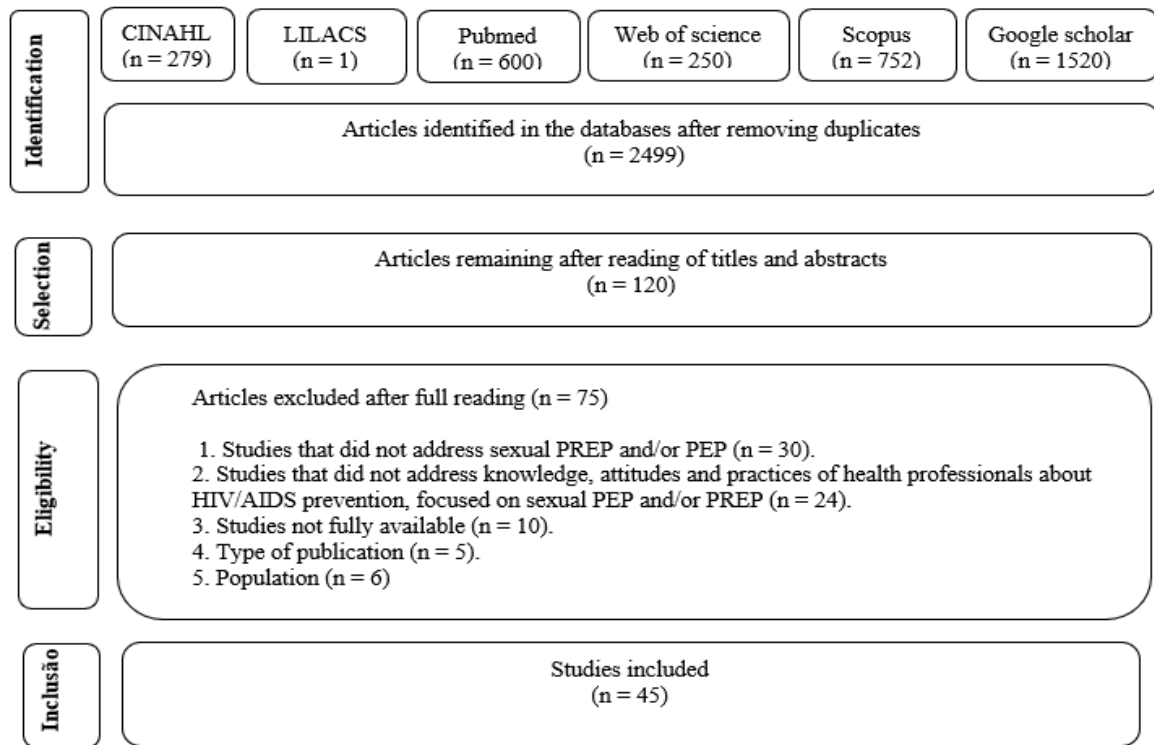
the research; nature of the research; type and level of evidence of the study; participants; sociodemographic data; level of care of the service; characteristics of patients; whether prophylaxis were free or paid; whether the professionals received training or continued education; knowledge, attitudes and practices of the professionals; barriers and facilitators in the care provided; final thoughts; limitations of the study; and finally if there are suggestions for other studies.

In the fourth step, articles were categorized according to the level of evidence, with consideration given to the classification of Evidence-Based Practice, from levels 1 to 7⁽¹¹⁾. The fifth and sixth steps, respectively, discussed the results with recommendations and suggestions for future research and the detail of the description of the steps taken by the reviewer and the main results evidenced from the analysis of the articles included. Since it is an integrative literature review, there was no need for approval from the Research Ethics Committee.

Results

This review included 45 articles⁽¹²⁻⁵⁸⁾ in the results according to Figure 1, with publications between 2004 and 2023 with a higher concentration in 2020 (11; 24.4%)^(19-21,23-26,33,35,36,39), impact factor ranging from 0,963 and 6, with seven studies that did not present such metric (15.6%)^(12,18,32,35,38,48,53).

Figure 1 – Flowchart of selected articles, published up to June 5, 2023, according to the inclusion and exclusion criteria



Source: created by the authors.

Table 2 summarizes the included studies, in addition to the publication journal, country, mainly regarding the particularities of the results, and level of evidence.

Chart 2 – Summary of articles included in the study, author, year, journal, country, results and level of evidence (continued)

Authors/year	Journal/country	Results	LE
Afe AJ, Adetula A, Peter O, Ebenezer O, Olonisakin O. 2018 ⁽¹²⁾	Journal of Clinical Research in HIV AIDS Prevention / Nigeria	Most qualified professionals were familiar with PrEP, but were unable to provide correct definitions of it. The units where they worked did not have PrEP, but the surrounding area did.	6
Ard KL, Uzoeghelu U, Bruno J, Lambert C, Mayer KH, Davis JA, et al. 2021 ⁽¹³⁾	Open Forum Infectious Diseases / United States of America	The study suggests that professionals' low knowledge is one of the main barriers to prescribing PrEP.	6
Bagchi AD, Holzemer W. 2018 ⁽¹⁴⁾	Journal of the Association Nurses in AIDS Care / United States of America	High levels of PrEP knowledge were reported by New Jersey health care workers. A need for education was also reported.	6

Chart 2 – Summary of articles included in the study, author, year, journal, country, results and level of evidence (continued)

Authors/year	Journal/country	Results	LE
Baptista-Gonçalves R, Marreiros A, Augusto GF. 2018 ⁽¹⁵⁾	HIV/AIDS Review / Portugal	Professionals are willing to prescribe PrEP. There is also a need for training to better assist patients seeking prophylaxis.	6
Bepouka BI, Situakibanza H, Kokusa Y, Nkodila A, Kizunga F, Kiazayawoko F. 2019 ⁽¹⁶⁾	Pan African Medical Journal / Democratic Republic of the Congo	Less than a quarter of the sample were aware of PrEP. Infectious disease specialists and HIV specialists were more willing to prescribe prophylaxis.	6
Bil JP, Hoornenborg E, Prins M, Hogewoning A, Lima FDG, Vries HJ, et al. 2018 ⁽¹⁷⁾	Front Public Health / Netherlands	Healthcare professionals in STI clinics had moderate acceptance of PrEP and suboptimal knowledge. The high cost of PrEP and the concern that prescribing it would contribute to a decrease in condom use were identified barriers.	6
Blackstock OJ, Moore BA, Berkenblit GV, Calabrese SK, Cunningham CO, Fiellin DA, et al. 2016 ⁽¹⁸⁾	Journal of General Internal Medicine / United States of America	Most physicians were aware of PrEP, but only a third reported its adoption in clinical practice.	6
Bunting SR, Miller KW, Chappell R, Goldstein RH, DeJean O. 2020 ⁽¹⁹⁾	Sexually Transmitted Diseases / United States of America	There were gaps in PrEP knowledge among attending physicians, regardless of specialty. However, attending physicians in primary care reported more accurate knowledge and greater confidence.	6
Cerqueira NB, Vasconcelos R, Hojilla JC, Kallás EG, Avelino-Silva VI. 2020 ⁽²⁰⁾	AIDS Research and Human Retroviruses / Brazil	Infectious disease physicians' knowledge and attitudes toward PrEP were positive, in contrast to frequent thoughts about adherence, adverse effects, risk compensation, and low willingness to prescribe PrEP by some physicians due to religion.	6
Cimen C, Emecen AN, Barber TJ. 2020 ⁽²¹⁾	International Journal of STD & AIDS / Turkey	Most infectious disease physicians reported having low knowledge about PrEP. The majority listed men who have sex with men as the most appropriate group to receive prophylaxis. One fifth recommended PrEP in their clinical practice.	6
Flössner C, Avetisyan M, Frese T. 2021 ⁽²²⁾	Journal of Family Medicine and Primary Care /Germany	Less than half of physicians in training for general practice had sufficient basic knowledge about PEP and PrEP.	6
Henny KD, Duke CC, Buchacz K, Brooks JT, Samandari T, Sutton MY. 2020 ⁽²³⁾	Preventive Medicine / United States of America	Familiarity is present among those who prescribe prophylaxis in all its applications (PrEP and PEP and occupational PEP). They are more likely to prescribe sexual prophylaxis when they already prescribe occupational PEP.	4

Chart 2 – Summary of articles included in the study, author, year, journal, country, results and level of evidence (continued)

Authors/year	Journal/country	Results	LE
John SA, Quinn KG, Pleuhs B, Walsh JL, Petroll AE. 2020 ⁽²⁴⁾	AIDS and Behavior / United States of America	Low rates of PEP prescription were observed. Although professionals are familiar with the method, interventions are needed to support practices.	4
John SA, Walsh JL, Pleuhs B, Wesche R, Quinn KG, Petroll AE. 2020 ⁽²⁵⁾	AIDS and Behaviour / United States of America	Physicians, from various specialties, with concerns related to PrEP were more likely to be classified as knowledgeable about PrEP compared to prescribers.	6
Jones JT, deCastro BR, August EM, Smith DK. 2020 ⁽²⁶⁾	AIDS Behaviour / United States of America	An increase in willingness to prescribe PrEP was observed among primary care providers; most knew who the risk groups were.	4
Karris MY, Beekmann SE, Mehta SR, Anderson CM, Polgreen PM. 2013 ⁽²⁷⁾	Clinical Infectious Disease / United States of America and Canada	Most infectious disease providers in the USA and Canada support PrEP, but they have wide differences in opinions and practices, despite health agency guidance documents.	4
Krakower DS, Beekmann SE, Polgreen PM, Mayer KH. 2015 ⁽²⁸⁾	Clinical Infectious Disease / United States of America	Most HIV infectious disease physicians recommend early ART. Many see a role for themselves in providing PrEP to the partners of their HIV-infected patients. However, only one in three physicians prescribe it.	6
Krakower DS, Maloney KM, Grasso C, Melbourne K, Mayer KH. 2016 ⁽²⁹⁾	Journal of the International AIDS Society / United States of America	Specialized primary care physicians have realized through their experiences that PrEP is feasible, safe and effective, however it is necessary to involve general practitioners in the provision of PrEP for the expansion of this intervention.	6
Krakower DS, Ware NC, Maloney KM, Wilson IB, Wong JB, Mayer KH. 2017 ⁽³⁰⁾	AIDS Patient Care STDs / United States of America	The LGBT specialists interviewed had good attitudes and practices in providing PrEP, while the generalists had limited experience but reported interest in seeking knowledge.	6
Kundu I, Martinez-Donate A, Karkada N, Roth A, Felsher M, Sandling M, et al. 2019 ⁽³¹⁾	PloS One / United States of America	There is a good level of knowledge about PrEP among non-prescribers involved in HIV prevention. However, only half reported screening for PrEP.	6
Lane W, Heal C, Banks J. 2019 ⁽³²⁾	Australian Journal General Practice / Australia	General practitioners lack knowledge about PrEP. There is a positive attitude towards PrEP, despite general practitioners' lack of confidence and comfort in prescribing.	6
Leech AA, Christiansen CL, Linas BP, Jacobsen DM, Morin I, Drainoni ML. 2020 ⁽³³⁾	PloS One / United States of America	Even among HIV-specialist practitioners, PrEP prescribing is not routine; other practitioners were more likely to prescribe PrEP than these practitioners, and practitioners' willingness varied across risk scenarios.	4

Chart 2 – Summary of articles included in the study, author, year, journal, country, results and level of evidence (continued)

Authors/year	Journal/country	Results	LE
Hayter M. 2004 ⁽³⁴⁾	Public Health Nursing / United Kingdom	PEP is offered to those with risk behaviors, but there are disparities in clinic prescribing policies. Nurses are uncertain about risk exposures.	6
Moore E, Kelly SG, Alexander L, Luther P, Cooper R, Rebeiro PF, et al. 2020 ⁽³⁵⁾	Journal of Primary Care and Community Health / Estados Unidos da América	PrEP prescribing is associated with many potentially modifiable factors, such as patient questions about PrEP.	6
O'Connell KA, Kisteneff AV, Gill SS, Edwards JF, Sherrerd-Smith WW, Moraczewski LA, et al. 2020 ⁽³⁶⁾	American Journal of Emergency Medicine / United States of America	Since the last study (2003), there has been no significant change in PrEP knowledge, attitudes, and practices. Barriers continue to include provider knowledge, lack of protocols, financial issues, and follow-up.	6
Okoro O, Hillman L. 2018 ⁽³⁷⁾	Journal of the American Pharmacists Association / United States of America	Most pharmacists agreed that PrEP may be beneficial in high-risk populations. Most respondents were not aware of the Centers for Disease Control and Prevention guidelines for PrEP.	6
Petroll AE, Walsh JL, Owczarzak JL, McAuliffe TL, Bogart LM, Kelly JA. 2016 ⁽³⁸⁾	AIDS Behaviour / United States of America	Most providers have heard about PrEP, but attitudes toward it vary among HIV care providers and primary care providers, such as discussing sexual activity and testing a person who may be positive.	6
Plomer AS, McCool-Myers M, Apfelbacher C. (2020) ⁽³⁹⁾	AIDS Care / Germany	Physicians demonstrated varying levels of knowledge about PrEP. Many primary care providers were not aware. Most preferred to refer the patient to a specialist.	6
Rodríguez AE, Castel AD, Parish CL, Willis S, Feaster DJ, Kharfen M. 2013 ⁽⁴⁰⁾	Journal of Acquire Immune Deficiency Syndromes / United States of America	Providers in the District of Columbia reported prescribing more PEP than in Miami. Most practices in both cities had no protocol. PEP was more likely to be prescribed when requested by the patient.	4
Sammons MK, Gaskins M, Kutscha F, Nast A, Werner RN. 2021 ⁽⁴¹⁾	PloS One / Germany	Self-reported knowledge among HIV specialists was higher than among non-specialists. Attitudes were more positive among specialists. The only independent predictor of PrEP counseling was knowledge score, not whether physicians were specialists or not.	6
Bagchi AD, Holzemer W. 2018 ⁽⁴²⁾	The Journal of Association Nurses in AIDS Care: JANAC / United States of America	Participants were health care professionals from a variety of backgrounds, in HIV and non-HIV care settings. Knowledge of PrEP was high. Occupation varied significantly, with 41% of specialists fully supporting PrEP, compared with 93% of nurses.	6
Humphries DL, Rhodes EC, Simon CL, Wang V, Spiegelman D, Ott C, et al. 2022 ⁽⁴³⁾	Journal of the International Association of Providers of AIDS Care / United States of America	Participants were multidisciplinary teams from two primary care clinics in underserved areas, who prescribed PrEP. All participants were committed to the practice and listed facilitators and barriers to offering PrEP to the population, such as cost, stigma, disclosure, and side effects.	6

Chart 2 – Summary of articles included in the study, author, year, journal, country, results and level of evidence (continued)

Authors/year	Journal/country	Results	LE
Shaer KM, Sherman EM, Shafiq S, Hardigan P. 2014 ⁽⁴⁴⁾	Journal of the American Pharmacists Association / United States of America	Pharmacists had limited knowledge of PrEP. These professionals are more widely accessible for counseling, especially when patients receive prescriptions from non-HIV specialists.	6
Lamônica JS, Magno L, Santos JEJDS, Dourado I, Santos AMD, Pereira M. 2023 ⁽⁴⁵⁾	Caderno de Saúde Pública / Brazil	Conducted with health care professionals from several states. Not prescribing PrEP was associated with not prescribing testing for key populations or PEP, a specialized service without offering PrEP; professionals who did not report the need to undertake training and courses were associated with a lower proportion of reluctance to prescribe PrEP.	4
Muwonge TR, Nsubuga R, Ware NC, Wyatt MA, Pisarski E, Kamusiime B, et al. 2022 ⁽⁴⁶⁾	Frontiers Public Health / Africa	After training, knowledge about PrEP generally increased, but significant gaps remained and knowledge declined over time. Services prepared to care for and provide PrEP increased in those who believed in the efficacy of PrEP and adopted it as a prevention method. Concerns included patient adherence and behavioral risk compensation.	4
Rayanakorn A, Chautrakarn S, Intawong K, Chariyalertsak C, Khemngern P, Olson D, et al. 2022 ⁽⁴⁷⁾	PLoS One / Thailand	It compared knowledge, attitudes and practices between hospital and key population-led service providers, which have very different characteristics. Overall, providers have positive attitudes, most report a high level of knowledge, especially those in key populations, and support provision to all high-risk groups.	4
Storholm ED, Ober AJ, Mizel ML, Matthews L, Sargent M, Todd I. 2021 ⁽⁴⁸⁾	AIDS Education and Prevention / United States of America	More than half of the low/high probability prescribers were nurses, while the majority of the high/low probability prescribers were physicians. Overall, professionals were aware of PrEP, but not all of them, had positive attitudes and practices, but reported barriers to prescribing, such as reporting that other professionals are resistant to prescribing and secrecy in the community.	6
Tang EC, Sobieszczyk ME, Shu E, Gonzales P, Sanchez J, Lama JR. 2014 ⁽⁴⁹⁾	AIDS Research and Humans Retroviruses / Peru	Physicians are interested in prescribing PrEP, but the lack of guidelines from the Ministry of Health, and even of antiretroviral drugs available in the country, are barriers that prevent prescribing. Caring for patients living with HIV and knowledge about antiretroviral therapy were seen as factors related to the likelihood of prescribing PrEP.	6
Tellalian D, Maznavi K, Bredeek UF, Hardy WD. 2013 ⁽⁵⁰⁾	AIDS Patient Care and STDS / United States of America	Most providers were aware of the prevention efficacy of PrEP, but there were concerns about resistance, non-adherence, risk compensation, and adverse effects.	6
Tendrup C, Streed CG, Tiberio P, Black M, Davis J, Apfel A, et al. 2019 ⁽⁵¹⁾	Journal of General Internal Medicine / United States of America	Prior training was associated with higher levels of PrEP knowledge, comfort, and prescribing behaviors.	6

Chart 2 – Summary of articles included in the study, author, year, journal, country, results and level of evidence (conclusion)

Authors/year	Journal/country	Results	LE
Razon N, Rodriguez A, Carlson K, Witt J, Logan R, Chambers B, et al. 2021 ⁽⁵²⁾	Womens Health Issues / United States of America	Most participants identified themselves as prescribers (advanced practice registered nurse, physician assistant, midwife, or physician). Participants raised several key themes around the challenges of implementing PrEP in family planning consultations, such as that prophylaxis requires more in-depth discussions than STIs or even HIV testing.	6
Walsh JL, Petroll AE. 2017 ⁽⁵³⁾	American Journal of Preventive Medicine / United States of America	A third of primary care physicians discussed and prescribed PrEP. Information and motivation predicted behavioral skills. Behavioral skills predicted prescribing. Furthermore, behavioral skills mediated the effects of information and motivation on prescribing.	4
Wilson K, Beckett CG, Blaylock JM, Okulicz JF, Scott PT, Hakre S. 2019 ⁽⁵⁴⁾	Military Medicine / United States of America	Navy providers were supportive of providing PrEP, with over half reporting knowledge of the topic; however, one-quarter had already prescribed PrEP. The more knowledge a provider had, the more likely they were to prescribe it.	6
Sell J, Chen R, Huber C, Parascando J, Nunez J. 2023 ⁽⁵⁵⁾	Journal of Primary Care & Community Health / United States of America	Primary care providers reported positive attitudes and high overall knowledge about PrEP, with low prescribing rates and less comfort with testing. Providers are more likely to be asked about PrEP by patients than to initiate conversations. Lack of education about PrEP was identified as the biggest barrier.	6
Smith AKJ, Newman CE, Haire B, Holt M. 2022 ⁽⁵⁶⁾	Sociology of Health and Illness / Australia	Physicians and nurses were interviewed about how they emotionally engaged with PrEP and put it into practice. They reported thinking and feeling about their work and the transformations in sexual health consultations. They characterized PrEP as an easy and pleasant intervention to prescribe. The majority indicated that providing PrEP made it easier for them to achieve HIV prevention.	4
Vega-Ramirez H, Torres TS, Guillen-Diaz C, Pimenta C, Diaz-Sosa D, Konda KA, et al. 2022 ⁽⁵⁷⁾	BMC Health Services Research / Brazil and Mexico	Knowledge about PrEP did not differ between Brazil and Mexico, while knowledge about other prevention strategies, including PEP and new PrEP technologies, was higher in Brazil. Willingness to prescribe PrEP was higher among Brazilians.	4
Wisutep P, Sirijatuphat R, Navanukroh O, Phatharodom P, Werarak P, Rattanasuwan W. 2021 ⁽⁵⁸⁾	Medicine (Baltimore) / Thailand	The health professionals interviewed reported positive practices regarding PrEP. Just over half had confidence in prescribing PrEP and presented knowledge about the topic.	4

Source: created by the authors.

LE: Level of Evidence; LGBT: Lesbians, Gays, Bisexuals and Transvestites and Transsexuals.

The included articles were developed on the African (3; 6.7%)^(12,16,46), American (31; 68.9%)^(13,14,18-21,23-31,33,35,37-39,42,43,45,49-55,57), European (6; 13.3%)^(15,17,22,34,40,41), Oceania (2; 4.4%)^(32,56) Asian continents (2; 4.4%)^(47,58), on more than one continent (2; 4.4%)^(21,48), with the USA being the country with the highest representation (29; 64.4%)^(13,14,18,19,23-31,33-39,42-44,50-55)

Regarding the design of the research, there were those with a qualitative nature (10; 22.2%)^(15,17-19,30,35,43,48,52,56) quantitative (12; 26.7%)^(13,14,22,23,24,26,36,45,47,55,57,58) and quantitative-qualitative (25; 55.6%)^(12,16,20,21,25,27-29,31-34,37-38,39,40-42,44,46,49-51,53,54) regarding temporality, only one article was cohort (1; 2.2%)⁽³³⁾ and the others were cross-sectional (44; 97.8%).

The study scenarios varied between clinics, offices, pharmacies, hospitals and emergency services, covering the different levels of care: primary (12; 26.7%)^(13,19,20,26,29,30,40,43,45,48,52,55) secondary (3; 6.7%)^(17,34,45) tertiary (4; 8.9%)^(36,42,47,58) and no specificity (28; 62.2%)^(12,14-16,18,21-25,27,28,31-33,35,37,39,42,44,46,49-51,53,54,56,57)

The professional categories most frequently represented among research participants were medicine (38; 84.4%)^(12-14,16-18,20-22,24,25,27-30,32,33,35-37,39-50,52,54-58) followed by medical assistants (11; 24.4%)^(14,19,23,30,33,35-37,47,52,54) nurses (25; 55.6%)^(12-17,23,24,29,30,33-35,37,42,43,45-49,52,54,56,58) pharmacists (8; 17.8%)^(12,13,35,38,42,47,53,58) psychologists (2; 4.4%)^(15,49) social workers (2; 4.4%)^(15,43) testers (people trained to carry out rapid tests) (4; 8.9%)^(12,14,15,31) midwives (2; 4.4%)^(49,52) and laboratory staff (1; 2.2%)⁽¹²⁾

Professionals reported advising and/or prescribing PEP and PrEP for patients with the following characterization: men who have sex with other men (MSM) (29; 64.4%)^(12,13,16,17,19-21,23,26-33,35,39,40,41,45,46,47,49-51,53,54,57) serodiscordant couples (16; 35.6%)^(16,17,20,26-28,32,35-39,40,46,50,51,53,54,57) sex workers (10; 22.2%)^(12,13,16,20,27,35,40,46,47,57) users of injectable drugs (19; 42.2%)^(12,13,16,19,20,26-28,31,33,35,39,40,43,45,47,50,51,53) trans people (11; 24.4%)^(13,16,19,20,27,31,35,41,46,49,57) and people deprived of liberty (2; 4.4%)^(20,31)

The results of the studies analyzed showed that professionals declared they knew about prophylaxis (41; 91.1%)^(12,13,15,17-26,30-51,53-58) although not all mentioned training (8; 17.8%)

^(22,23,33,41,45-47,51). Most participants were confused about which prophylaxis should be prescribed for each situation or did not know which individuals were eligible or even where to refer patients (27; 60.0%)^(14-16,19,21-23,25,26,30-32,34-40,41-44,48,49,52,54)

Regarding attitudes, the scenario was divided between those who were willing to prescribe any of the prophylaxis (28; 62.2%)^(12-15,18,22-24,26-29,31,33,35,37,39,41,42,45-47,50,54-58) and those who were not willing to prescribe (20; 44.4%)^(16,17,19,20,25,30,32,34,36,38,40,44-46,48,49,51-53). However, when associated with knowledge, the vast majority said they felt unable to prescribe because of the absence of institutional protocols and guidelines, but that they would do so if they were trained (33; 73.3%)^(12,14,15,18-21,23-40,41,42,44,48-51,54) Professionals generally do not discuss prophylaxis because it is linked to sexual behavior and are unwilling to assist individuals who use drugs by injection (31; 68.9%)^(12,14,15,18-21,23-28,30,32-36,38-42,44,48-51,53,54)

Not all countries guarantee free access to HIV prophylaxis through public policies, and most of the studies analyzed mentioned that users should pay for medications (27; 60.0%)^(14,16,21,23,25-42,44,48-50,54) In those countries where prophylaxis were paid, there was great concern among professionals related to adherence or even access to medications, especially PrEP that requires frequent visits to the health service for monitoring of possible adverse effects, testing, advice and has no time-specific use.

Whereas where the cost was the responsibility of health systems, there was some social measure for cost (3; 6.7%)^(20,22,44) or negative attitudes of professionals, who believed that funding for HIV prevention should be directed only to the distribution of condoms. There was also a strong concern of professionals about the compensation of infections by other STIs (24; 53.3%)^(14,17,18,20,25,27-29,31,32,35-42,44,46,49,50,56,58) because patients could confuse prophylaxis as a way to dispense with condoms in their sexual relations.

Thus, the practices demonstrated services with low prescription of PrEP or PEP (21; 46.7%)^(16,18,20,23,25-28,30-32,36-38,40,42,44,46,49,51,52) professionals with feeling of unpreparedness for prescription (7; 15.6%)^(13,22,43,46,55,57,58) fragile counselors (34;

75.6%)^(12,14-21,23-27,29-32,34,36,38-44,46,48-51,52,53) and few STI/HIV tests (3; 6.7%)^(23,25,47) even in clinics or sectors with high rates of service to patients with HIV or who sought information on prevention and counseling.

Discussion

The findings of this review bring as a synthesis that professionals present unsatisfactory knowledge and training regarding prophylaxis, reflecting attitudes that lead to a practice that makes it impossible to access prevention actions aimed at HIV/AIDS by insecurity, unavailability of medications and lack of institutional guidelines.

As part of this problem, there is the prejudice of professionals who blame individuals for sexual behaviors that led to HIV contamination^(8,59) or understand that prophylaxis is intended only for the occupational field⁽³⁸⁾ or even for a specific public, reinforcing stigma and prejudice, especially against gay men, MSM, trans people, sex workers and users of psychoactive substances.

The stigma associated with the approach to sexual and reproductive health is an important barrier to be overcome by professionals in the face of prejudice to sexual behaviors and practices, causing individuals to distance themselves from health services and return only when the infection has already occurred^(7,8). Thus, the lack of knowledge about prophylaxis represents an important obstacle to the improvement in the attitudes and practices of professionals regarding HIV infection^(6,14-16,19,20,21,23,25,26,30-32,34-40,42,44,48,49,51,53,60)

On the other hand, countries that invest in the dissemination of knowledge about combined prevention achieve promising results in breaking the transmission chain,^{37,46,55,61,62,63} as well as in reducing stigma and prejudice in the routine services.

In the studies analyzed, the holders of greater knowledge on the subject were HIV specialists or workers from places focused on the care of people with STI^(16,17) which calls attention, once the approach to the individual must be made in consideration of his/her health needs in the different services that make up a health

system. However, primary care services were among the scenarios of the studies in higher frequency^(13,19,20,26,29,30,40,43,48,56,57) reinforcing that PHC represents a privileged locus for combined prevention actions.

In this review, although professionals reported knowledge about PEP and PrEP^(12,15,17-21,23-26,30-40,41,42,44,45,48-51,53,54,58) no significant attitudinal changes were observed concerning the prescription, counseling, and care offered to patients. The lack of knowledge about which drugs make up PEP and PrEP, their indications and health monitoring show how much professionals are still unprepared for prescribing HIV prophylaxis^(6,14-16,19,21,23,25,26-32,34-40,41-44,48,49,53,54)

The lack of knowledge reflects on attitudes and practices of care, since professionals do not feel empowered to guide and prescribe^(12,14,15,18-21,23-42,44,48-51,53,54). In this sense, there are continuing and permanent education actions focused on the theme, aiming at the professionals' achievement of knowledge and behavioral changes in the process of health work^(21,27,41,46,52) as well as curricular reorientations of the technician courses, graduation and post-graduation in the health area. Finally, teamwork and shared work and the free dispensing of prophylaxis^(20,44) bring better adherence to the measures proposed by combined prevention and STI prevention^(7,45,59,61)

The non-availability of some content studies in open access format may have limited the findings. Nevertheless, the methodological path applied, especially in relation to the choice of databases, brought greater amplitude of the object under study.

As contributions, this review provides an overview of the knowledge, attitudes and practices of service professionals from different levels of care and health systems. It reveals how HIV prophylaxis, although safe and effective, are underutilized and how the beliefs of health professionals based on stereotypes and prejudices affect access to these medications. It brings elements that can guide the planning of health training actions and the elaboration of health public policies.

Final Considerations

Professionals have low knowledge about prophylaxis and negative attitudes, even in countries where prophylaxis has been available for a longer time; although most are willing to receive training on PrEP and PEP.

There should be new studies to evaluate patients' perspective on care in services and the contribution of these prophylaxis in containing HIV infection, especially in countries such as Brazil, where the dispensing is done for free.

Collaborations:

1 – conception and planning of the project: Maiker de Oliveira Guedes, Bárbara Guimarães do Nascimento, Lucas Cardoso dos Santos and Juliane Andrade;

2 – analysis and interpretation of data: Maiker de Oliveira Guedes, Bárbara Guimarães do Nascimento, Lucas Cardoso dos Santos and Juliane Andrade;

3 – writing and/or critical review: Maiker de Oliveira Guedes, Bárbara Guimarães do Nascimento, Lucas Cardoso dos Santos and Juliane Andrade;

4 – approval of the final version: Maiker de Oliveira Guedes, Bárbara Guimarães do Nascimento, Lucas Cardoso dos Santos and Juliane Andrade.

Competing interests

There are no competing interests.

References

- Coutinho MFC, O'Dwyer G, Frossard V. Tratamento antirretroviral: adesão e a influência da depressão em usuários com HIV/Aids atendidos na atenção primária. *Saúde debate*. 2018;42(116):148-61. DOI: <https://doi.org/10.1590/0103-1104201811612>
- Charpentier N, Quatremère G, Mabire X, Roduit S, Laguet V, Spittler D, et al. Freins et leviers de la prise en charge du traitement post-exposition au VIH. *Santé Publique*. 2016;28(6):791-9. DOI: <https://doi.org/10.3917/spub.166.0791>
- Kolling AF, Oliveira SB, Merchan-Hamann E. Fatores associados ao conhecimento e utilização de estratégias de prevenção do HIV entre mulheres trabalhadoras do sexo em 12 cidades brasileiras. *Ciênc saúde colet*. 2021;26(8):3053-64. DOI: <https://doi.org/10.1590/1413-81232021268.17502020>
- Sousa LRM, Elias HC, Fernandes NM, Gir E, Reis RK. Knowledge of PEP and PrEP among people living with HIV/aids in Brazil. *BMC Public Health*. 2021;21(1):64. DOI: <https://doi.org/10.1186/s12889-020-10135-3>
- Carter MR, Aaron E, Nassau T, Brady KA. Knowledge, attitudes, and PrEP prescribing practices of health care providers in Philadelphia, PA. *J Prim Care Community Health*. 2019;10. DOI: <https://doi.org/10.1177/2150132719878526>
- Queiroz AAFLN, Sousa AFL. *Fórum PrEP: um debate on-line sobre uso da profilaxia pré-exposição no Brasil*. *Cad Saúde Pública*. 2017;33(11):e00112516. DOI: <https://doi.org/10.1590/0102-311x00112516>
- Calabrese SK, Tekeste M, Mayer KH, Magnus M, Krakower DS, Kershaw TS, et al. Considering Stigma in the Provision of HIV Pre-Exposure Prophylaxis: Reflections from Current Prescribers. *AIDS Patient Care STDs*. 2019;33(2):79-88. DOI: <https://doi.org/10.1089/apc.2018.0166>
- Dourado I, Guimarães MDC, Damacena GN, Magno L, Souza Júnior PR, Szwarcwald CL. Sex work stigma and non-disclosure to health care providers: data from a large RDS study among FSW in Brazil. *BMC Int Health Hum Rights*. 2019;19(1):8. DOI: <https://doi.org/10.1186/s12914-019-0193-7>
- Mendes KDS, Silveira RCCP, Galvão CM. Revisão integrativa: método de pesquisa para a incorporação de evidências na saúde e na enfermagem. *Texto contexto - enferm*. 2008;17(4):758-64. DOI: <https://doi.org/10.1590/s0104-07072008000400018>
- Oliveira Araújo WC. Recuperação da informação em saúde. *ConCI*. 2020;3(2):100-34. DOI: <https://doi.org/10.33467/conci.v3i2.13447>
- Galvão CM. Níveis de evidência. *Acta paul enferm*. 2006;19(2):5. DOI: <https://doi.org/10.1590/s0103-21002006000200001>
- Afe AJ, Adetula A, Peter O, Ebenezer O, Olonisakin O. Knowledge, Attitude and Practice of Healthcare Workers Towards Availability of Antiretroviral Pre-Exposure Prophylaxis in Nigeria. *J Clin Res HIV AIDS Prev*. 2018;3(3):46-59. DOI: <https://doi.org/10.14302/issn.2324-7339.jcrhap-18-2333>

13. Ard KL, Uzoeghelu U, Bruno J, Lambert C, Mayer KH, Davis JA, et al. Readiness of US Federally Qualified Health Centers to Provide HIV Pre-exposure Prophylaxis. *Open Forum Infect Dis.* 2021;8(10):ofab447. DOI: <https://doi.org/10.1093/ofid/ofab447>
14. Bagchi AD, Holzemer W. Support for PrEP Among New Jersey Health Care Workers. *J Assoc Nurses AIDS Care.* 2018;29(6):849-57. DOI: <https://doi.org/10.1016/j.jana.2018.06.003>
15. Baptista-Gonçalves R, Marreiros A, Augusto GF. Portuguese health care providers' knowledge, attitudes, and acceptability of HIV pre-exposure prophylaxis. *HIV/AIDS Review.* 2018;17(4):249-58. DOI: <https://doi.org/10.5114/hivar.2018.80256>
16. Bepouka BI, Situakibanza H, Kokusa Y, Nkodila A, Kizunga F, Kiazayawoko F. Connaissance et volonté de prescrire la prophylaxie pré exposition (PrEP) par les prestataires des soins de santé à Kinshasa, République Démocratique du Congo (RDC). *Pan Afr Med J.* 2019;34:166. DOI: <https://doi.org/10.11604/pamj.2019.34.166.18025>
17. Bil JP, Hoornenborg E, Prins M, Hogewoning A, Lima FDG, Vries HJC, et al. The Acceptability of Pre-Exposure Prophylaxis: Beliefs of Health-Care Professionals Working in Sexually Transmitted Infections Clinics and HIV Treatment Centers. *Front Public Health.* 2018;6(5):1-14. DOI: <https://doi.org/10.3389/fpubh.2018.00005>
18. Blackstock OJ, Moore BA, Berkenblit GV, Calabrese SK, Cunningham CO, Fiellin DA, et al. A Cross-Sectional Online Survey of HIV Pre-Exposure Prophylaxis Adoption Among Primary Care Physicians. *J Gen Intern Med.* 2016;32(1):62-70. DOI: <https://doi.org/10.1007/s11606-016-3903-z>
19. Bunting SR, Miller KW, Chappell R, Goldstein RH, DeJean O. Physician Assistant's Knowledge and Confidence Regarding Prescribing Preexposure Prophylaxis for HIV Prevention. *Sex Transm Dis.* 2020;47(8):530-4. DOI: <https://doi.org/10.1097/qlq.0000000000001196>
20. Cerqueira NB, Vasconcelos R, Hojilla JC, Kallás EG, Avelino-Silva VI. Attitudes and Knowledge About Human Immunodeficiency Virus Pre-Exposure Prophylaxis Among Brazilian Infectious Disease Physicians. *AIDS Res Hum Retroviruses.* 2020;36(12):1047-53. DOI: <https://doi.org/10.1089/aid.2019.0281>
21. Cimen C, Emecen AN, Barber TJ. Attitude of infectious diseases physicians in Turkey about HIV pre-exposure prophylaxis: results of an online survey. *Int J STD AIDS.* 2020;31(7):665-70. DOI: <https://doi.org/10.1177/0956462420921080>
22. Flössner C, Avetisyan M, Frese T. Basic knowledge among GP trainees regarding HIV pre-and post-exposition-prophylaxis. *J Family Med Prim Care.* 2021;10(9):3283-7. DOI: https://doi.org/10.4103/2Fjfmpe.jfmpe_414_21
23. Henny KD, Duke CC, Buchacz K, Brooks JT, Samandari T, Sutton MY. HIV prescriptions on the frontlines: Primary care providers' use of antiretrovirals for prevention in the Southeast United States, 2017. *Prev Med.* 2020;130:105875. DOI: <https://doi.org/10.1016/j.yjmed.2019.105875>
24. John SA, Quinn KG, Pleuhs B, Walsh JL, Petroll AE. HIV Post-Exposure Prophylaxis (PEP) Awareness and Non-Occupational PEP (nPEP) Prescribing History Among U.S. Healthcare Providers. *AIDS Behav.* 2020;24(11):3124-31. DOI: <https://doi.org/10.1007/s10461-020-02866-6>
25. John SA, Walsh JL, Pleuhs B, Wesche R, Quinn KG, Petroll AE. Tailored HIV Pre-exposure Prophylaxis (PrEP) Intervention Needs from a Latent Class Analysis Among U.S. Healthcare Providers. *AIDS Behav.* 2021;25:1751-60. DOI: <https://doi.org/10.1007/s10461-020-03105-8>
26. Jones JT, deCastro BR, August EM, Smith DK. Pre-exposure Prophylaxis (PrEP) Awareness and Prescribing Behaviors Among Primary Care Providers: DocStyles Survey, 2016-2020, United States. *AIDS Behav.* 2020;25:1267-75. DOI: <https://doi.org/10.1007/s10461-020-03089-5>
27. Karris MY, Beekmann SE, Mehta SR, Anderson CM, Polgreen PM. Are We Prepped for Preexposure Prophylaxis (PrEP)? Provider Opinions on the Real-World Use of PrEP in the United States and Canada. *Clin Infect Dis.* 2013;58(5):704-12. DOI: <https://doi.org/10.1093/cid/cit796>
28. Krakower DS, Beekmann SE, Polgreen PM, Mayer KH. Diffusion of Newer HIV Prevention Innovations: Variable Practices of Frontline Infectious Diseases Physicians. *Clin Infect Dis.* 2015;62(1):99-105. DOI: <https://doi.org/10.1093/cid/civ736>
29. Krakower DS, Maloney KM, Grasso C, Melbourne K, Mayer KH. Primary care clinicians' experiences prescribing HIV pre-exposure prophylaxis at a specialized community health centre in Boston: lessons from early adopters. *J Int AIDS Soc.*

- 2016;19(1):21165. DOI: <https://doi.org/10.7448/ias.19.1.21165>
30. Krakower DS, Ware NC, Maloney KM, Wilson IB, Wong JB, Mayer KH. Differing Experiences with Pre-Exposure Prophylaxis in Boston Among Lesbian, Gay, Bisexual, and Transgender Specialists and Generalists in Primary Care: Implications for Scale-Up. *AIDS Patient Care STDS*. 2017;31(7):297-304. DOI: <https://doi.org/10.1089/apc.2017.0031>
 31. Kundu I, Martinez-Donate A, Karkada N, Roth A, Felsher M, Sandling M, et al. Attitudes and referral practices for pre-exposure prophylaxis (PrEP) among HIV rapid testers and case managers in Philadelphia: A mixed methods study. *PloS One*. 2019;14(10):e0223486. DOI: <https://doi.org/10.1371/journal.pone.0223486>
 32. Lane W, Heal C, Banks J. HIV pre-exposure prophylaxis: Knowledge and attitudes among general practitioners. *Aust J Gen Pract*. 2019;48(10):722-7. DOI: <https://doi.org/10.31128/ajgp-02-19-4860>
 33. Leech AA, Christiansen CL, Linas BP, Jacobsen DM, Morin I, Drainoni ML. Healthcare practitioner experiences and willingness to prescribe pre-exposure prophylaxis in the US. *PloS One*. 2020;15(9):e0238375. DOI: <https://doi.org/10.1371/journal.pone.0238375>
 34. Hayter M. Knowledge and Attitudes of Nurses Working in Sexual Health Clinics in the United Kingdom Toward Post-Sexual Exposure Prophylaxis for HIV Infection. *Public Health Nurs*. 2004;21(1):66-72. DOI: <https://doi.org/10.1111/j.1525-1446.2004.21109.x>
 35. Moore E, Kelly SG, Alexander L, Luther P, Cooper R, Rebeiro PF, et al. Tennessee Healthcare Provider Practices, Attitudes, and Knowledge Around HIV Pre-Exposure Prophylaxis. *J Prim Care Community Health*. 2020;11:215013272098441. DOI: <https://doi.org/10.1177/2150132720984416>
 36. O'Connell KA, Kisteneff AV, Gill SS, Edwards JF, Sherrerd-Smith WW, Moraczewski LA, et al. HIV post-exposure prophylaxis in the emergency department: An updated assessment and opportunities for HIV prevention identified. *Am J Emerg Med*. 2020;46:326-8. DOI: <https://doi.org/10.1016/j.ajem.2020.10.004>
 37. Okoro O, Hillman L. HIV pre-exposure prophylaxis: Exploring the potential for expanding the role of pharmacists in public health. *J Am Pharm Assoc*. 2018;58(4):412-20. DOI: <https://doi.org/10.1016/j.japh.2018.04.007>
 38. Petroll AE, Walsh JL, Owczarzak JL, McAuliffe TL, Bogart LM, Kelly JA. PrEP Awareness, Familiarity, Comfort, and Prescribing Experience Among US Primary Care Providers and HIV Specialists. *AIDS Behav*. 2016;21(5):1256-67. DOI: <https://doi.org/10.1007/s10461-016-1625-1>
 39. Plomer AS, McCool-Myers M, Apfelbacher C. Perspectives on HIV PrEP care in Germany: qualitative insights from primary care physicians and specialists. *AIDS Care*. 2020;32(8):994-1000. DOI: <https://doi.org/10.1080/09540121.2020.1778626>
 40. Rodríguez AE, Castel AD, Parish CL, Willis S, Feaster DJ, Kharfen M, et al. HIV medical providers' perceptions of the use of antiretroviral therapy as nonoccupational postexposure prophylaxis in 2 major metropolitan areas. *J Acquir Immune Defic Syndr*. 2013;64(Suppl 1):S68-79. DOI: <https://doi.org/10.1097/qai.0b013e3182a901a2>
 41. Sammons MK, Gaskins M, Kutscha F, Nast A, Werner RN. HIV Pre-exposure Prophylaxis (PrEP): Knowledge, attitudes and counseling practices among physicians in Germany: A cross-sectional survey. *PloS One*. 2021;16(4):e0250895. DOI: <https://doi.org/10.1371/journal.pone.0250895>
 42. Bagchi AD, Holzemer W. Support for PrEP among New Jersey health care workers. *J Assoc Nurses AIDS Care*. 2018;29(6):849-57. DOI: <https://doi.org/10.1016/j.jana.2018.06.003>
 43. Humphries DL, Rhodes EC, Simon CL, Wang V, Spiegelman D, Ott C, et al. Using Health Care Professionals' Perspectives to Refine a Clinical Decision Support Implementation Strategy for Increasing the Prescribing of HIV Preexposure Prophylaxis (PrEP) in Alabama. *J Int Assoc Provid AIDS Care*. 2022;21:23259582221144451. DOI: <https://doi.org/10.1177/23259582221144451>
 44. Shaeer KM, Sherman EM, Shafiq S, Hardigan P. Exploratory survey of Florida pharmacists' experience, knowledge, and perception of HIV pre-exposure prophylaxis. *J Am Pharm Assoc*. 2014;54(6):610-7. DOI: <https://doi.org/10.1331/japha.2014.14014>
 45. Lamônica JS, Magno L, Santos JEJS, Dourado I, Santos AMD, Pereira M. Unwillingness to prescribe PrEP by health care professionals of specialized HIV/AIDS services in Northeastern Brazil. *Cad*

- Saúde Pública. 2023;39(Suppl 1):e00121322. DOI: <https://doi.org/10.1590/0102-311XEN121322>
46. Muwonge TR, Nsubuga R, Ware NC, Wyatt MA, Pisarski E, Kamusiime B, et al. Health Care Worker Perspectives of HIV Pre-exposure Prophylaxis Service Delivery in Central Uganda. *Front Public Health*. 2022;10:658826. <https://doi.org/10.3389/fpubh.2022.658826>
 47. Rayanakorn A, Chautrakarn S, Intawong K, Chariyalertsak C, Khemngern P, Olson D, et al. A comparison of attitudes and knowledge of pre-exposure prophylaxis (PrEP) between hospital and Key Population Led Health Service providers: Lessons for Thailand's Universal Health Coverage implementation. *PLoS One*. 2022;17(5):e0268407. DOI: 10.1371/journal.pone.0268407
 48. Storholm ED, Ober AJ, Mizel ML, Matthews L, Sargent M, Todd I, et al. Primary Care Providers' Knowledge, Attitudes, and Beliefs About HIV Pre-Exposure Prophylaxis (PrEP): Informing Network-Based Interventions. *AIDS Educ Prev*. 2021;33(4):325-44. DOI: <https://doi.org/10.1521/aep.2021.33.4.325>
 49. Tang EC, Sobieszczyk ME, Shu E, Gonzales P, Sanchez J, Lama JR. Provider attitudes toward oral preexposure prophylaxis for HIV prevention among high-risk men who have sex with men in Lima, Peru. *AIDS Res Hum Retroviruses*. 2014;30(5):416-24. DOI: <https://doi.org/10.1089/aid.2013.0212>
 50. Tellalian D, Maznavi K, Bredeek UF, Hardy WD. Pre-exposure prophylaxis (PrEP) for HIV infection: results of a survey of HIV healthcare providers evaluating their knowledge, attitudes, and prescribing practices. *AIDS Patient Care STDS*. 2013;27(10):553-9. DOI: <https://doi.org/10.1089/apc.2013.0173>
 51. Terndrup C, Streed JR CG, Tiberio P, Black M, Davis J, Apfel A, et al. A Cross-sectional Survey of Internal Medicine Resident Knowledge, Attitudes, Behaviors, and Experiences Regarding Pre-Exposure Prophylaxis for HIV Infection. *J Gen Intern Med*. 2019;34(7):1258-78. DOI: <https://doi.org/10.1007/s11606-019-04947-2>
 52. Razon N, Rodriguez A, Carlson K, Witt J, Logan R, Chambers B, et al. "Far More than Just a Prescription": Focus Groups With U.S. Family Planning Providers and Staff About Integrating PrEP for HIV Prevention Into Their Work. *Womens Health Issues*. 2021;31(3):294-300. DOI: <https://doi.org/10.1016/j.whi.2021.02.006>
 53. Walsh JL, Petroll AE. Factors Related to Pre-exposure Prophylaxis Prescription by U.S. Primary Care Physicians. *Am J Prev Med*. 2017;52(6):e165-72. DOI: <https://doi.org/10.1016/j.amepre.2017.01.025>
 54. Wilson K, Beckett CG, Blaylock JM, Okulicz JF, Scott PT, Hakre S. Provider Knowledge Gaps in HIV PrEP Affect Practice Patterns in the US Navy. *Military Med*. 2019;185(1-2):e117-24. DOI: <https://doi.org/10.1093/milmed/usz131>
 55. Sell J, Chen R, Huber C, Parascando J, Nunez J. Primary Care Provider HIV PrEP Knowledge, Attitudes, and Prescribing Habits: A Cross-Sectional Survey of Late Adopters in Rural and Suburban Practice. *J Prim Care Community Health*. 2023;14:21501319221147254. DOI: <https://doi.org/10.1177/21501319221147254>
 56. Smith AKJ, Newman CE, Haire B, Holt M. Prescribing as affective clinical practice: Transformations in sexual health consultations through HIV pre-exposure prophylaxis. *Sociol Health Illn*. 2022;44(7):1182-200. DOI: <https://doi.org/10.1111/1467-9566.13502>
 57. Vega-Ramirez H, Torres TS, Guillen-Diaz C, Pimenta C, Diaz-Sosa D, Konda KA, et al. Awareness, knowledge, and attitudes related to HIV pre-exposure prophylaxis and other prevention strategies among physicians from Brazil and Mexico: cross-sectional web-based survey. *BMC Health Serv Res*. 2022;22(1):532. DOI: <https://doi.org/10.1186/s12913-022-07900-y>
 58. Wisutep P, Sirijatuphat R, Navanukroh O, Phatharodom P, Werarak P, Rattanasuwan W. Attitudes towards, knowledge about, and confidence to prescribe antiretroviral pre-exposure prophylaxis among healthcare providers in Thailand. *Medicine (Baltimore)*. 2021;100(49):e28120. DOI: <https://doi.org/10.1097/md.00000000000028120>
 59. Siegel K, Abel SN, Pereyra M, Liguori T, Pollack HA, Metsch LR. Rapid HIV testing in dental practices. *Am J Public Health*. 2012;102(4):625-32. DOI: <https://doi.org/10.2105/AJPH.2011.300509>
 60. Calazans GJ, Pinheiro TF, Ayres JRCM. Vulnerabilidade programática e cuidado público: Panorama das políticas de prevenção do HIV e da Aids voltadas para gays e outros HSH no Brasil. *Sex Salud Soc*. 2018;(29):263-93. DOI: <https://doi.org/10.1590/1984-6487.sess.2018.29.13.a>
 61. Hull M, Tan DHS. Setting the stage for expanding HIV pre-exposure prophylaxis use in Canada. *Can*

- Commun Dis Rep. 2017;43(12):272-8. DOI: <https://doi.org/10.14745/ccdr.v43i12a05>
62. O'Halloran C, Sun S, Nash S, Brown A, Croxford S, Connor N, et al. HIV in the United Kingdom: Towards Zero HIV transmissions by 2030. 2019 report. London: Public Health England; 2019.
63. Montes JN. Contextualização sobre a Profilaxia Pré-Exposição (PrEP) à infecção por HIV no âmbito da saúde pública [trabalho de conclusão de curso]. [Internet] São Paulo (SP): Faculdade de Ciências Farmacêuticas, Universidade de São Paulo; 2018 [cited 2022 Dec 13]. Available fom: <https://bdta.abcd.usp.br/directbitstream/2a8135f0-4290-4488-ae0f-dc48e2730b0c/2954727.pdf>

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