



Barriers to the use of Pre-Exposure Prophylaxis (PREP) in HIV prevention: An exploratory study in the general population in Badung market, Denpasar city

Luh Gede Pradnyawati^{1,2*}, Made Indra Wijaya², Ni Ketut Sutiari³, Luh Seri Ani⁴, Pande Putu Januraga⁵

¹Doctoral Study Program, Faculty of Medicine, Universitas Udayana, Indonesia

²Department of Public Health and Preventive Medicine, Faculty of Medicine and Health Sciences, Universitas Warmadewa, Indonesia

³Department of Community and Preventive Medicine, Faculty of Medicine, Universitas Udayana, Indonesia

⁴Department of Community and Preventive Medicine, Faculty of Medicine, Universitas Udayana, Indonesia

⁵Center for Public Health Innovation, Universitas Udayana, Indonesia

Abstract

Human Immunodeficiency Virus (HIV) infection is still a global and national public health challenge. Effective HIV prevention requires a multi-sectoral approach and diverse interventions to reach both at-risk groups and the general population. This exploratory study aims to understand the barriers faced by the general population in Pasar Badung, Denpasar City, in using PrEP as an HIV prevention effort. This research is exploratory research using a mix-methods design and consisted of two stages. First was the qualitative stage involving 25 informants using a purposive sampling technique, followed by the second quantitative stage involving 250 respondents. This research refers to the behavioral theory of the Health Belief Model and the PRECEDE model, and showed that the biggest barriers to PrEP adoption among Badung Market traders are multidimensional, with the stigma of "HIV drugs" as the dominant barrier, which strengthens other barriers such as fear of side effects, long hours of work, and concerns about being seen by others while taking the drug. This is reinforced by quantitative results, which showed that the reasons why respondents did not receive PrEP were mostly worried about the side effects of PrEP of 78.5%, and distrust of the use of PrEP, 63.8%. There is a need to strengthen more comprehensive education to reposition PrEP as a preventative drug and not as a drug for people with HIV to reduce stigma through normalizing services and also increasing trust in the PrEP program in HIV prevention.

Keywords: Barriers, PREP use, HIV prevention, General population, Badung market

Introduction

Human Immunodeficiency Virus (HIV) infection is still a global and national public health challenge.¹ Despite developments in prevention and control strategies, new cases of HIV continue to be reported each year.^{2,3} In Indonesia, the spread of HIV is influenced by various demographic, social, cultural, and risk behavior factors that differ between populations.⁴ Effective HIV prevention requires a multisectoral approach and diverse interventions to reach both at-risk groups and the general population.⁵

The Ministry of Health of the Republic of Indonesia (Kemenkes RI) stated that the number of people living with HIV AIDS (ODHIV) in Indonesia in 2020 was 543.000 people.⁶ The highest number of HIV cases is in DKI Jakarta, followed by East Java, West Java, Central Java, Papua, and Bali. The highest percentage of HIV infection was reported in the 25-

49-year age group at 70.2% and in men at 61%. HIV cases in Indonesia were found to increase in 2023 compared to the previous year.⁷

One preventive intervention that has been clinically proven to be effective is Pre-Exposure Prophylaxis (PrEP), namely the consistent administration of antiretroviral drugs to individuals who have not been infected with HIV but have a high risk of infection.⁸ PrEP has been recognized as an additional strategy in HIV prevention by various international health agencies because it can reduce the risk of HIV infection by more than 90% when used correctly.⁹ However, PrEP implementation is not without challenges.¹⁰ Despite its effectiveness, the use of PrEP in many contexts, especially in developing countries such as Indonesia, remains low.¹¹ Barriers to the use of PrEP can be structural, socio-cultural, economic, or related to public knowledge and perceptions about HIV and PrEP itself.¹²

The city of Denpasar, as the center of economic and

social activities in Bali, has complex social dynamics. Badung Market, as one of the largest trade centers in Denpasar, is not only a space for economic transactions but also a place of intense social interaction.¹³ This market is inhabited by traders and informal sector workers who are characterized by long working hours, dependence on daily income, and limited time to access formal health services. These conditions create structural barriers to the use of HIV prevention services, including PrEP.¹⁴ On the other hand, low risk perception, stigma against HIV, and concerns about discrimination further weaken individual initiatives to access services at conventional health facilities. In Pradnyawati's research conducted, it was found that as many as 60% of respondents considered themselves to be a group at low risk of contracting STIs and HIV. As many as 22% of respondents admitted to having had sexual relations with more than one partner in the last year. Regarding preventive measures, only 41% of respondents used a condom during their last sexual intercourse with a partner.¹⁵

Therefore, it is necessary to conduct an exploratory study to understand the obstacles faced by the general population in Badung Market, Denpasar City, in using PrEP as an HIV prevention effort. It is hoped that the findings from this study will provide insights for more effective health promotion strategies and policies in increasing awareness and access to PrEP use in the general population.

Materials and Methods

Study design and data collection procedures

This research is exploratory research using a mix-methods design. This research consisted of two stages, namely the first qualitative stage involving 25 informants using a purposive sampling technique and followed by the second quantitative stage involving 250 respondents using a convenience sampling technique. Data collection was carried out from July to December 2025. The inclusion criteria in this study were trade owners, trade assistants, and trade workers who had been trading mobile for at least 3 months, and had had sexual intercourse in the productive age range, namely 18-45 years old.

Qualitative research was used to determine barriers

to PrEP acceptance in preventing HIV in the general population at risk in Badung Market, Denpasar City. In qualitative research, in-depth interviews were conducted with traders, market stakeholders, and trader coordinators using the Health Belief Model and PRECEDE behavioral theories.

Data analysis

In qualitative research, data were analyzed using thematic analysis to determine the acceptability of PrEP in preventing HIV in the general population. In contrast, quantitative data analysis was conducted using *Statistical Package for the Social Sciences* (SPSS) for the univariate analysis to obtain an overview of the frequency distribution of barriers to PrEP acceptance.

Ethics approval and Consent to participate

This study received ethical approval from the Medical and Health Ethics Commission, Faculty of Medicine, Udayana University, under the approval number 1967/UN14.2.2.VII.14/LT/2025. All expert respondents provided informed consent to participate in the research before the study commenced.

Results and Discussion

Qualitative study

This qualitative research uses a phenomenological design to understand market traders' lived experiences and perspectives on HIV and PrEP risks. Data was collected through in-depth semi-structured interviews with 25 informants selected purposively, consisting of: 18 trader informants, trade assistants, trade workers, and market staff, divided into 9 people with risky behavior, 5 people without risky behavior, and 4 trader coordinators, and 7 stakeholder informants, consisting of 3 market managers, 3 health center officers, and 1 Denpasar City Health Service officer.

Barriers to PrEP adoption: A mutually reinforcing layered system

Fear of side effects as a dominant barrier: More than just a medical concern: When traders were

asked about their concerns about PrEP, the most frequent and strongest response was fear of side effects. However, in-depth analysis reveals that these fears are not simply rational medical concerns, but rather reflect deeper psychological complexities about traders' relationships with drugs, bodies, and risk.

"I think I'm worried about the side effects. It must be strong medication, right? I'm afraid I'll get sick, and I won't be able to work." (NNA, Trader, 43 years old, female)

"I think I'm afraid of the side effects. "A trader is busy trading, if he gets nauseous while trading, he will lose money and he won't be able to sell." (IDGPA, Trader, 29 years old, male)

"In my opinion, the barrier might be fear of side effects... Then I don't believe in the medicine because it's still new... If you're still healthy, why take medicine..." (NDM, trader, 25 years old, male)

What makes fear of side effects such a powerful obstacle is that this fear cannot be overcome with information alone. Although researchers explain that PrEP's side effects are generally mild and temporary, traders remain skeptical. This skepticism is not because they do not believe the information provided, but because they do not believe that their body will react in a "typical" way. In this uncertainty, the precautionary principle (better safe than sorry) dominates decision-making.

From individual fears to social barriers: How stigma reinforces fear

Fear of side effects, although dominant, is not isolated. Analysis reveals that these fears are interrelated with stigma in mutually reinforcing ways. If a trader experiences side effects from PrEP and has to stop working or looks sick, the questions that will arise from other traders are: "Why is he sick? What medicine is he taking?" In a context where PrEP is associated with HIV, the answer to this question would immediately trigger stigma.

"The problem may be that he is embarrassed by his other friends at Badung Market. If he takes medication, he thinks he is HIV. Even though it's not necessarily..." (NWR, Trader, 45 years old, female)

"Then you too if you are caught taking the drug. Definitely people will think you have HIV. Then people keep away from us..." (IKYD, Trader, 22 years old, male)

Fear of side effects and social stigma interact to form a cycle that reinforces low PrEP adoption. Concerns about side effects discourage individuals from using PrEP, so the number of users remains low, and social evidence regarding the safety of PrEP is not established. This condition further strengthens existing fears.

Perceptions of "No Need": Manifestations of low perceived susceptibility

A third very significant barrier is the perception that PrEP is not personally necessary. While traders may acknowledge that PrEP may be beneficial for "people at risk," they do not see themselves as people who need it.

"Because I'm loyal to my partner, I feel freer... I don't feel like I'm at risk of getting HIV... So I don't need to take PrEP medication..." (F, trader, 32 years old, female)

"I don't need it, doc. It's better if I'm sick, I go straight to the hospital. Besides, the traders here are really busy trading. I don't think I have time to get treatment..." (DP, Trader, 26 years old, male)

What makes the perception of "no need" such a difficult barrier to overcome is that it is consistent with the self-image of vendors as responsible, conscientious, and distinct from "at-risk individuals." Adopting PrEP would require vendors to revise their self-image and admit that they are, in fact, at risk—something that is psychologically very difficult to do.

Practical barriers: Compliance as an anticipatory challenge: Although most traders had never used PrEP, many anticipated compliance difficulties as a potential barrier. Barriers to compliance were also identified by health workers, as shown in the following quotes:

"Compliance, because PrEP is taken every day and according to the time of day..." (YA, Field Officer, 29 years old, female)

"In this market, the traders are all busy, doc... It seems

like they don't have time to take the medicine... Unless they are already HIV positive..." (DP, trader, 26 years old, male)

Analysis of various barriers reveals that these barriers do not stand alone, but form an interrelated and mutually reinforcing system. Fear of side effects is reinforced by stigma; stigma is reinforced by the lack of PrEP users; lack of users causes the perception of no need; perception does not need to be strengthened by low perceived susceptibility; low perceived susceptibility prevents traders from seeking information; lack of information amplifies fears of side effects. This system creates very strong resistance to PrEP adoption.

Quantitative study: Table 1 shows the sociodemographic characteristics of respondents who took part in the examination at the Mobile Clinic Pasar Badung (n = 250). Based on the location of the trading block, most respondents came from the middle block (55.20%), followed by the west block

(31.60%) and the east block (13.20%). The majority of respondents trade in the morning (79.20%), while 12.40% trade in the afternoon and 8.40% in the evening. In terms of job position, most were trade owners (50.40%), followed by trade assistants (20.80%), trade workers (15.20%), and market managers (13.60%). Most respondents came from Bali (76.00%), with 24.00% coming from outside Bali. The gender composition is dominated by women (58.00%), while men are 42.00%.

Most of the respondents were in the adult age group (82.80%), and the rest were teenagers (17.20%). The highest level of education was senior high school (41.20%), followed by junior high school (26.40%), elementary school (18.40%), diploma/graduate (10.40%), and no school (3.60%). Based on the length of trading, 52.80% have been trading for more than five years. The majority of respondents were married (72.80%), and the majority had an income \leq Bali UMP (58.00%).

Table 1. Respondents' socioeconomic status (n=250)

Characteristics	n	%
Trade Block		
West	79	31.60
Middle	138	55.20
East	33	13.20
Shift		
Night	21	8.40
Morning	198	79.20
Afternoon/Evening	31	12.40
Position		
Trading Assistant	52	20.80
Trade Workers	38	15.20
Trade Owner	126	50.40
Market Manager	34	13.60
Origin		
Bali	190	76.00
Non-Bali	60	24.00
Gender		
Male	105	42.00
Female	145	58.00
Age		
Teenager	43	17.20
Adult	207	82.80
Education		
No School	9	3.60
Elementary School	46	18.40
Middle School	66	26.40

High School	103	41.20
Diploma/Bachelor	26	10.40
Trading Time		
≤ 5 years	118	47.20
>5 years	132	52.80
Religion		
Buddha	2	0.80
Hinduism	178	71.20
Islam	49	19.60
Catholic	12	4.80
Christian	9	3.60
Ethnic		
Bali	188	75.20
Java	35	14.00
Others	17	6.80
Madurese	10	4.00
Income		
≤ UMP Bali	145	58.00
> UMP Bali	105	42.00
Status		
Not Married	68	27.20
Married	182	72.80
Married Age		
Not Married	68	27.20
<26 years	144	57.60
≥26 years	38	15.20
Risky Sexual Behavior		
Multipartner sex	66	26.40
Not using condoms with casual partners	66	26.40
Sexual History (Partner Type)		
Husband/wife	182	72.80
Transactional sexual partner	11	4.40
Non-transactional sexual partner	55	22.00

Based on Table 2, most respondents had their first sexual intercourse at the age of less than 26 years, namely 235 people (94.00%), while only 15 people had their first sexual intercourse at the age of ≥26 years (6.00%).

Judging from the type of sexual partner, most respondents had a sexual partner in the form of husband/wife, 182 people (72.80%). Meanwhile, 55 respondents (22.00%) had non-transactional sexual partners, and 11 respondents (4.40%) reported having transactional sexual partners. These findings indicate that most respondents' sexual activities occur within a marital relationship, although there is still a proportion of respondents who have sexual partners outside of a marital relationship or in a transactional context.

Table 2. Sexual and marital history (n=250)

Sexual Characteristics and Marriage	n	%
First Sexual Intercourse		
< 26 years	235	94
≥26 years	15	6
Sexual History (Partner Type)		
Husband/wife	182	72.8
Transactional sexual partner	11	4.4
Non-transactional sexual partner	70	28
Living with partner (cohabiting)		
Married and living with a non-spousal sexual partner	10	4
Married and living with spouse	146	58.4
Married but not living with a sexual partner	26	10.4
Unmarried and not living with a sexual partner	63	25.2
Unmarried and living with a sexual partner	5	2

Note: For sexual history (partner type), some informants had multiple sexual histories (e.g., husband/wife and multi-partner sex)

Table 3 shows the results of syphilis and HIV examinations for research respondents. Of the total 250 respondents examined, 44 people (17.60%) were diagnosed with syphilis, while most respondents, namely 206 people (82.40%), had no syphilis detected.

During the HIV examination, 2 respondents (0.8%) were found to be HIV positive, while most respondents, namely 248 people (99.20%), had HIV negative results. These findings indicate that the prevalence of syphilis in the study population is relatively higher compared to the prevalence of HIV.

Table 3. STI and HIV Test results for respondents at badung market, Denpasar City (n=250)

STI and HIV testing	n	%
Syphilis	44	17.6
No Syphilis	206	82.4
HIV	2	0.8
No HIV	248	99.2

Table 4 shows the level of acceptance of the use of PrEP among respondents. Of the 248 respondents who were offered PrEP, 85 people (34.27%) said they were willing to accept PrEP, while most respondents, namely 163 people (65.73%), refused to use PrEP.

These results indicate that the level of acceptance of PrEP in the study population is still relatively low, even though this HIV prevention intervention has been offered to respondents who meet the criteria.

Table 4. PrEP acceptance at badung market, Denpasar City (n=248)

PrEP Acceptance	n	%
Accept	85	34.27
Did not accept	163	65.73

Table 5 illustrates the various reasons reported by respondents for refusing PrEP use (n=163). The most frequently reported reason was concern about the side effects of PrEP, 128 respondents (78.50%). In addition, 104 respondents (63.80%) expressed distrust regarding the use of PrEP. Some respondents also mentioned the stigma associated with using PrEP (27.60%), feeling healthy and therefore not feeling the need for PrEP (24.5%), and the lack of socialization or educational activities regarding PrEP

(19.00%). Other reasons reported but in smaller proportions included the cost of using PrEP (4.90%), loyalty to partners (2.50%), forgetting to take daily medication (1.20%), lack of awareness of the risk of infection (1.20%), low knowledge about PrEP (1.20%), and misinformation about PrEP (0.60%). No respondents stated that the reason for refusal was due to being often away from home when they had to take PrEP.

Table 5. Reasons respondents did not accept PrEP (n=163)

Reasoning	Yes		No	
	n	%	n	%
Awareness of PrEP use is still low	2	1.20	161	98.80
Worried about PrEP side effects	128	78.50	35	21.50
Stigma about taking PrEP	45	27.60	118	72.40
Misinformation is circulating about PrEP	1	0.60	162	99.40
Distrust of PrEP use	104	63.80	59	36.20
Cost of using PrEP	8	4.90	155	95.10
Forgetting to take PrEP every day	2	1.20	161	98.80
Being away from home when PrEP must be taken	0	0	163	100.00
Lack of outreach about PrEP	31	19.00	132	81.00
Feel healthy	40	24.50	123	75.50
Feel loyal to your partner	4	2.50	159	97.50
Feeling no risk	2	1.20	161	98.80

Qualitative results show that the biggest barriers to PrEP adoption among Badung Market traders are multidimensional, with the stigma of “HIV drugs” as the dominant barrier, which reinforces other barriers such as fear of side effects, long hours of work, and concerns about being seen by others while taking the drug. In a market context with high social closeness and rapid dissemination of information, the risk of social stigma is perceived as more real and more immediate than the risk of contracting HIV. Other studies have identified a similar phenomenon, namely that PrEP stigma often arises due to the association of PrEP with HIV and moral stereotypes such as risky sexual behavior, deviant sexual

orientation, and evil people.¹⁶

Fear of side effects emerged as the most frequently expressed barrier, but the analysis showed that this fear goes beyond purely medical concerns. Side effects are perceived as a direct threat to work ability and economic sustainability. This fear is further reinforced by the association of PrEP with “hard drugs” and distrust of medications taken long-term while still feeling well. A study exploring perceived barriers to PrEP uptake in Uganda, Zimbabwe, and South Africa stated that fear of side effects was categorized as the main barrier at the individual level. This means that fear of side effects is not just a matter of simple medical inconvenience, but is also part of the psychosocial context of the decision to use PrEP.¹⁷

Traders consider leaving the stall to access health services as an economic loss, so preventive services such as PrEP are not a priority. It was also reported in a study in South Africa, which showed that most workers had a poor working environment, namely, working long shifts, only resting when on leave, and not having access to paid leave. The lack of sick leave and minimal support from the workplace can significantly limit workers' access to HIV services.¹⁸ Interestingly, from the perspective of health workers, this busyness is actually perceived as a protective factor against risky behavior, because their time and energy are spent on work, so there is no opportunity to engage in risky sexual activities.

Health belief model

Analysis of the findings of this research shows that the behavior of respondents in Badung Market regarding PrEP can be comprehensively understood through the Health Belief Model (HBM). Cross-theme synthesis based on six HBM constructs, including perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy.¹⁹

The perceived susceptibility of market traders is very low. Despite engaging in risky behavior such as multipartnering, traffickers place HIV risk as a problem for “others,” especially commercial sex workers or MSM groups. This psychological distancing strategy reflects the paradox between awareness of HIV and personal perception of risk. This poses a major challenge because the HBM

literature confirms that perceived susceptibility is a stronger predictor of prevention behavior than perceived severity.²⁰ The recommended intervention is to strengthen risk awareness through personal risk assessments, individual counseling, and reframing that every individual with an unfaithful partner remains at risk of contracting HIV.

Perceived severity is relatively high because respondents understand that HIV has serious health and social consequences, including significant stigma. However, a paradox arises when this high severity does not translate into preventive measures, because susceptibility is low. Education needs to emphasize that although HIV is serious, protection through PrEP is effective and allows traders to remain productive and protected.

Perceived benefits appear ambivalent. The benefits of PrEP are acknowledged for “others,” but are not yet fully personalized; only understood after educational intervention. Reinforcement of personal benefits through testimonial stories, peer support, and clinical demonstrations may increase respondents' motivation to adopt PrEP. However, interactions with perceived barriers show that barriers still dominate. Key barriers include fear of side effects, social stigma, perception of not needing PrEP because of feeling healthy, and hesitation about new medications.

Cues to action are almost non-existent in this population, characterized by minimal exposure to PrEP information, absence of proactive HIV testing programs, and absence of personal triggers. HBM states that cues to action function as triggers for preventive behavior, but without increasing perceived susceptibility, single triggers are likely to be ineffective. The right strategy includes visual campaigns, mobile services close to merchants' daily activities, regular outreach, and authority support as convincing external triggers.

Precede model

The PRECEDE model provides a comprehensive analytical framework to understand the reasons why HIV prevention behavior through PrEP has not been optimally adopted among respondents in Badung Market. In contrast to the individualistic approach, PRECEDE places health behavior as the result of interactions between predisposing factors, enabling

factors, and reinforcing factors that work simultaneously and influence each other.²¹ The findings of this study indicate that these three domains are in imbalance, creating multilevel barriers to PrEP adoption.

The main obstacle lies in the lack of health education and knowledge about HIV and PrEP. Most respondents had never been exposed to information about PrEP and had a limited understanding of HIV and were full of misconceptions. HIV is perceived as a serious and deadly disease, but paradoxically, it is not considered relevant to them. This attitude reflects a combination of fatalism towards HIV and psychological distancing mechanisms, where the risk is projected onto "other groups" who are considered more at risk. In the PRECEDE framework, this condition shows that the predisposing factors are not strong enough to form stable prevention intentions. Lack of knowledge not only limits understanding of the benefits of PrEP but also weakens the individual's capacity to realistically assess risks, so that preventive behavior is not perceived as a personal need.

These limitations in the predisposition domain are exacerbated by weak enabling factors, especially access to PrEP services that are appropriate to the respondent's life context in the market. Structurally, PrEP is still positioned as an intervention for key populations, while respondents in the market, although at epidemiological risk, are not included in the routine service targets. Long working hours, economic dependence on shanties, and the perception that leaving one's trading place means losing one's income make access to conventional health facilities unrealistic. In this context, mobile clinic services emerge as a crucial enabling factor because they directly overcome these structural obstacles. Thus, these findings confirm that limitations in PrEP adoption are not solely caused by low individual motivation, but also by service system designs that are unresponsive to users' needs and limitations.

Thus, the integration of these findings into the PRECEDE model confirms that increasing PrEP adoption among respondents in the market requires a coordinated multi-level strategy starting from strengthening predisposing factors through

contextual education, optimizing enabling factors through flexible and inclusive mobile services, and activating reinforcing factors through authoritative legitimacy and structured social support. This comprehensive approach provides a conceptual basis for the formulation of policy recommendations and design of HIV prevention programs that are more responsive to the general population at risk.

Conclusion

The biggest barriers to PrEP adoption are multidimensional, with the stigma of "HIV drugs" as the dominant barrier, which reinforces other barriers such as fear of side effects, long hours of work, and concerns about being seen by others while taking the drug. This is reinforced by quantitative results, which show that the reasons why respondents did not receive PrEP were mostly worried about the side effects of PrEP, and distrust of the use of PrEP. In addition, there is a need for stigma reduction strategies through the normalization of services and increasing trust in the PrEP program in HIV prevention.

References

1. UNAIDS. UNAIDS Global AIDS Update 2024 [Internet]. United Nations; 2024. Available from: <http://dx.doi.org/10.18356/9789211066135>
2. Centers for Disease Control and Prevention. Division of HIV Prevention Strategic Plan Supplement An Overview of Refreshed Priorities for 2022 - 2025. 2022. 1-22 p.
3. World Health Organization. HIV and AIDS [Internet]. 2025 [cited 2026 Feb 22]. Available from: <https://www.who.int/news-room/fact-sheets/detail/hiv-aids>
4. Pradnyawati LG, Prabandari AASM, Wijaya MI, Januraga PP. Analysis of Pre-Exposure Prophylaxis (PrEP) Program in Preventing HIV/AIDS Based on the Health Policy Triangle. *J Kedokt Media Inf Ilmu Kedokt dan Kesehat* [Internet]. 2024;10(1):47-56. Available from: <http://dx.doi.org/10.36679/kedokteran.v10i1.104>
5. Wisaksana R, Hanum N, Handayani M, Pohan MN,

- Putri TA, Rakhmat FF, et al. HIV Pre-Exposure Prophylaxis Service Cascade and Risk Factors Associated with Loss to Follow-Up Among Key Populations in Indonesia: Data from a Real-World Pilot Implementation 2021–2023. *AIDS Behav* [Internet]. 2025; Available from: <http://dx.doi.org/10.1007/s10461-025-04890-w>
6. Kementerian Kesehatan Republik Indonesia. Laporan Tahunan HIV AIDS 2022. 2023.
 7. Kementerian Kesehatan Republik Indonesia. Kasus HIV dan Sifilis Meningkat, Penularan Didominasi Ibu Rumah Tangga [Internet]. 2023 [cited 2026 Feb 22]. Available from: <https://kemkes.go.id/id/kasus-hiv-dan-sifilis-meningkat-penularan-didominasi-ibu-rumah-tangga>
 8. Kementerian Kesehatan Republik Indonesia. Berani Tes, Berani Lindungi Diri, Kemenkes Targetkan Eliminasi HIV dan IMS Tahun 2030 [Internet]. 2025 [cited 2026 Jan 24]. Available from: <https://kemkes.go.id/id/berani-tes-berani-lindungi-diri-kemenkes-targetkan-eliminasi-hiv-dan-ims-tahun-2030>
 9. Eisingerich AB, Wheelock A, Gomez GB, Garnett GP, Dybul MR, Piot PK. Attitudes and Acceptance of Oral and Parenteral HIV Preexposure Prophylaxis among Potential User Groups: A Multinational Study. *PLoS One* [Internet]. 2012;7(1):e28238. Available from: <http://dx.doi.org/10.1371/journal.pone.0028238>
 10. Felsher M, Szep Z, Krakower D, Martinez-Donate A, Tran N, Roth AM. “I Don’t Need PrEP Right Now”: A Qualitative Exploration of the Barriers to PrEP Care Engagement Through the Application of the Health Belief Model. *AIDS Educ Prev* [Internet]. 2018;30(5):369–81. Available from: <http://dx.doi.org/10.1521/aeap.2018.30.5.369>
 11. Dwi Nuraeni Putu Cintya Denny NMRY. Faktor-Faktor yang Berhubungan dengan Perilaku Memulai Penggunaan Pre-Exposure Prophylaxis pada Lelaki Seks Lelaki di Kota Denpasar. *Arch Community Heal* [Internet]. 2023;(Vol 10 No 3 (2023): Desember 2023):605–21. Available from: <https://ojs.unud.ac.id/index.php/ach/article/view/111057/52920>
 12. Martin CE, Blaauw D, Nongena P, Chidumwa G, Dada S, Jack S, et al. Preferences for Delivery of HIV Prevention Services Among Healthcare Users in South Africa: A Discrete Choice Experiment. *AIDS Behav* [Internet]. 2024;29(1):331–41. Available from: <http://dx.doi.org/10.1007/s10461-024-04519-4>
 13. Pradnyawati LG, Wirawan A, Januraga PP. Challenges and opportunities in HIV pre-exposure prophylaxis use among women globally: A systematic review. *Sci Midwifery* [Internet]. 2025 Feb 8;12(6):1986–97. Available from: <https://midwifery.iocspublisher.org/index.php/midwifery/article/view/1832>
 14. Pradnyawati LG, Juwita DAPR, Pratiwi AE, Sukmawati NMH. Risky sexual behavior and prevention of STIs in female merchants based on behavioral theory of health belief model: an exploratory study in Denpasar city, Bali. *J Int Surg Clin Med* [Internet]. 2022;2(1):26–30. Available from: <http://dx.doi.org/10.51559/jiscm.v2i1.25>
 15. Pradnyawati LG, Ani LS, Januraga PP. Sexual Behaviours for Contracting Sexually Transmitted Infections and HIV at Badung Traditional Market, Bali. *J Kesehat Masy* [Internet]. 2019;14(3):340–6. Available from: <http://dx.doi.org/10.15294/kemas.v14i3.13733>
 16. Calabrese SK, Dovidio JF, Tekeste M, Taggart T, Galvao RW, Safon CB, et al. HIV Pre-Exposure Prophylaxis Stigma as a Multidimensional Barrier to Uptake Among Women Who Attend Planned Parenthood. *JAIDS J Acquir Immune Defic Syndr* [Internet]. 2018;79(1):46–53. Available from: <http://dx.doi.org/10.1097/qai.00000000000001762>
 17. Muhumuza R, Ssemata AS, Kakande A, Ahmed N, Atujuna M, Nomvuyo M, et al. Exploring Perceived Barriers and Facilitators of PrEP Uptake among Young People in Uganda, Zimbabwe, and South Africa. *Arch Sex Behav* [Internet]. 2021;50(4):1729–42. Available from: <http://dx.doi.org/10.1007/s10508-020-01880-y>
 18. Mlangeni N, Lembani M, Adetokunboh O, Nyasulu PS. Structural barriers and facilitators to

- accessing HIV services for marginalized working populations: insights from farm workers in South Africa. *Health Policy Plan* [Internet]. 2024;40(1):75–84. Available from: <http://dx.doi.org/10.1093/heapol/czae098>
19. Alyafei A, Easton-Carr R. The Health Belief Model of Behavior Change. *StatPearls* [Internet]. 2024 May 19 [cited 2026 Mar 4]; Available from: <https://www.ncbi.nlm.nih.gov/books/NBK606120/>
20. Jones CL, Jensen JD, Scherr CL, Brown NR, Christy K, Weaver J. The Health Belief Model as an Explanatory Framework in Communication Research: Exploring Parallel, Serial, and Moderated Mediation. *Health Commun* [Internet]. 2014;30(6):566–76. Available from: <http://dx.doi.org/10.1080/10410236.2013.873363>
21. Kim J, Jang J, Kim B, Lee KH. Effect of the PRECEDE-PROCEED model on health programs: a systematic review and meta-analysis. *Syst Rev* [Internet]. 2022;11(1). Available from: <http://dx.doi.org/10.1186/s13643-022-02092-2>