

DETERMINANTS OF PRE-EXPOSURE PROPHYLAXIS (PREP) ADHERENCE AMONG MEN WHO HAVE SEX WITH MEN AT JUMPANDANG BARU PRIMARY HEALTHCARE CENTER: A CROSS-SECTIONAL STUDY

Determinan Kepatuhan Penggunaan Pre-Exposure Prophylaxis (PrEP) pada Lelaki Seks Lelaki di Puskesmas Jumpandang Baru: Studi Cross-Sectional

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Article History: Received: 20 October 2026 Revised: 21 October 2026 Accepted: 21 October 2026 Publish: 22 October 2026	ABSTRACT
Keywords: HIV; adherence; MSM; PrEP Kata Kunci: HIV; kepatuhan; LSL; PrEP;	Background: Globally, HIV transmission occurs predominantly through heterosexual contact, particularly in sub-Saharan Africa. However, men who have sex with men (MSM) remain a key population with a high burden of HIV infection, including in Indonesia. Pre-exposure prophylaxis (PrEP) has been introduced as an effective strategy for preventing sexually acquired HIV. Its effectiveness depends largely on adherence to the prescribed regimen. Purpose: This study aimed to analyze factors associated with PrEP adherence among MSM at Jumpandang Baru Primary Healthcare Center (Puskesmas Jumpandang Baru). Methods: This quantitative study employed a cross-sectional design. The variables examined included age, educational level, occupation, knowledge, attitude, stigma, social support, and self-efficacy. A total of 130 participants were recruited using accidental sampling, and data were collected through questionnaires. Data were analyzed using Stata, with Pearson's chi-square test and Fisher's exact test, as appropriate. Results: Of the 130 respondents, 79 (60.8%) were adherent to PrEP. Occupation ($p = 0.008$), knowledge ($p = 0.008$), stigma ($p = 0.001$), social support ($p = 0.001$), and self-efficacy ($p < 0.001$) were significantly associated with PrEP adherence among MSM. Conclusion: Occupation, knowledge, stigma, social support, and self-efficacy were significantly associated with PrEP adherence among MSM at Puskesmas Jumpandang Baru. MSM are encouraged to maintain adherence and communicate regularly with healthcare providers regarding PrEP use. Community health centers should strengthen educational interventions to improve understanding of PrEP and support adherence.

ABSTRAK

Latar Belakang: Secara global, penularan HIV banyak terjadi melalui hubungan heteroseksual, terutama di Afrika Sub-Sahara. Namun, laki-laki yang berhubungan seks dengan laki-laki (LSL) merupakan populasi kunci dengan beban infeksi HIV yang tinggi, termasuk di Indonesia. Oleh karena itu, hadirilah program Pre-exposure Prophylaxis (PrEP) sebagai upaya untuk melakukan pencegahan penularan HIV secara seksual. Efektifitas PrEP bergantung pada kepatuhan pasien dalam mengonsumsi obat tersebut. **Tujuan:** Penelitian ini bertujuan untuk menganalisis faktor yang menentukan kepatuhan mengonsumsi obat PrEP pada LSL di Puskesmas Jumpandang Baru. **Metode:** Penelitian ini menggunakan jenis penelitian kuantitatif dengan desain penelitian cross-sectional. Adapun variabel yang diteliti adalah usia, tingkat pendidikan, pekerjaan, pengetahuan, sikap, stigma, dukungan sosial, dan efikasi diri. Jumlah sampel pada penelitian ini adalah 130 sampel yang dikumpulkan dengan menggunakan kuesioner. Teknik pengambilan sampel yang digunakan accidental sampling. Data penelitian ini dianalisis menggunakan STATA dengan uji chi-square dan fisher's exact. **Hasil:** Hasil penelitian menunjukkan bahwa 79 responden (60,8%) patuh dalam mengonsumsi PrEP. Hasil penelitian diperoleh pekerjaan ($p=0.008$), pengetahuan ($p=0.008$), stigma ($p=0.001$), dukungan sosial ($p=0.001$), dan efikasi diri ($p<0,001$) merupakan faktor yang secara signifikan berhubungan dengan kepatuhan LSL mengonsumsi PrEP. **Kesimpulan:** Faktor-faktor seperti pekerjaan, pengetahuan, stigma, dukungan sosial, dan efikasi diri berhubungan dengan kepatuhan LSL mengonsumsi PrEP di Puskesmas Jumpandang Baru. Diharapkan agar LSL meningkatkan kepatuhan dan komunikasi dengan tenaga kesehatan terkait PrEP, puskesmas perlu memperkuat edukasi dalam meningkatkan pemahaman terkait PrEP.

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Human Immunodeficiency Virus (HIV) is an infection that is still a serious concern and a major public health threat to human life.¹ HIV attacks the immune system, weakening the body's defense against infection by destroying cluster of differentiation 4 (CD4) cells.² Globally, HIV has claimed 42.3 million lives, with transmission continuing. Approximately 39.9 million people were living with HIV by the end of 2023, with the highest disease burden in Africa. In 2023 alone, an estimated 630,000 died from HIV-related causes, and an estimated 1.3 million were newly infected with HIV.³

Nationally, the cumulative number of HIV-AIDS cases in 2023 was 566,707. Kasus HIV di Indonesia cenderung mengalami peningkatan pada tahun 2023 menjadi 57.299 ODHIV. In 2023 alone, an estimated 57,299 new cases were reported among People Living with HIV (PLHIV). Men accounted

for 71% of these cases. Based on risk factors, men who have sex with men (MSM) constituted the population group with the highest HIV prevalence at 31%, while Injecting Drug Users (IDUs) exhibited the lowest prevalence at 1%.⁴ This indicates a shift in HIV transmission patterns, from shared needles to sexual intercourse. Consequently, key populations of sexually active men and low-risk women (partners of key populations) demonstrate increasing rates of new HIV infections.²

The MSM group is a hidden population that remains difficult to reach in HIV-AIDS prevention and treatment programs, despite exhibiting risky sexual behavior that accelerates HIV-AIDS transmission.⁵ South Sulawesi Province is among the 10 provinces with the highest number of HIV cases in Indonesia. According to data from the South Sulawesi Provincial Health Office, HIV cases increased to 2,098 in 2023. Men who are sexually active constitute the highest-risk group, accounting for 1,032 cases.⁶ In 2023, a total of 1,015 confirmed HIV cases were reported in Makassar City, of which 82% occurred among males. Among the reported cases, 454 were identified among men who have sex with men (MSM).⁷

In response to these challenges, the National Program for Prevention and Control of HIV, AIDS, and STIs in Indonesia has implemented various efforts to prevent the sexual transmission of HIV. One key component of this program is Pre-exposure Prophylaxis (PrEP), which has been available since 2021 targeting men who have sex with men (MSM), Transgender Women (TGW), and female/male sex workers (FSW/MSW).² PrEP involves the administration of antiretroviral (ARV) drugs to at-risk HIV-negative individuals to prevent viral acquisition.⁸ The effectiveness of PrEP depends heavily on patient medication adherence.⁹ High adherence to PrEP is essential for ensuring effective protection against HIV transmission, improving overall quality of life, and reducing the risk of drug resistance, particularly when PrEP is inadvertently used by individuals with undiagnosed HIV infection.¹⁰ Consistent daily oral PrEP use with high adherence is effective in reducing the risk of sexually acquired HIV, making it an important strategy for HIV prevention among men who have sex with men (MSM). The Information–Motivation–Behavioral Skills (IMB) model developed by Fisher and Fisher (1992) provides a theoretical framework for understanding health-related behaviors through three core constructs: information, motivation, and behavioral skills. In the present study, PrEP-related knowledge represents the information construct, attitudes toward PrEP and social support reflect personal and social motivation, respectively, and self-efficacy represents the perceived ability to perform the behaviors necessary to maintain PrEP adherence. PrEP-related stigma is incorporated as an additional psychosocial variable that may undermine motivation and self-efficacy and potentially hinder adherence. Accordingly, this study applies an adapted IMB framework to examine the associations of PrEP knowledge, attitudes, stigma, social support, and self-efficacy with PrEP adherence as the primary behavioral outcome. This adaptation retains the central principles of the original IMB model while extending its application to the context of PrEP adherence.¹¹

Jumpandang Baru Primary Health Center (*Puskesmas Jumpandang Baru*) records the highest uptake of Pre-exposure Prophylaxis (PrEP) services among men who have sex with men (MSM) in

Makassar City. This high volume provides an ideal setting to identify the determinant factors influencing PrEP medication adherence among MSM within a primary healthcare facility. Therefore, this study aims to examine the factors associated with PrEP adherence among MSM for HIV prevention at Jumpandang Baru Primary Health Center.

METHODS

This research employed a quantitative analytical approach with a cross-sectional study design to examine the relationship between age, education level, occupation, knowledge, attitude, stigma, social support, and self efficacy and adherence to Pre-exposure Prophylaxis (PrEP) among men who have sex with men (MSM). The study was conducted at Jumpandang Baru Primary Health Center (Puskesmas Jumpandang Baru) from January 10 to March 10, 2025. The population comprised all MSM enrolled in PrEP therapy at the facility (n = 218). The sample size was determined using the Lemeshow formula, yielding a total of 130 participants. Participants were selected through accidental sampling. This study used questionnaires to assess PrEP adherence (adapted from Sousa et al., 2023),¹² and PrEP-related factors (adapted from Walsh, 2018).¹³ Univariate and bivariate data analyses were performed using STATA version 14.0, and the results are presented in tabular and narrative formats.

RESULTS

Table 1 shows that the majority of respondents in this study were in the 26-35 age group (54.6%), while the 36-40 age group had a very low representation of 6.2%. The majority of respondents highest education was high school (62.3%). Meanwhile, 31.5% of respondents had a bachelor's degree, and 6.2% answered junior high school. The most common occupations of respondents were private sector employees, entrepreneurs, or self-employed (60%), followed by 22.3% who were unemployed, and 10% who were students.

Table 2 shows that a majority of respondents (79, 60.8%) were adherent to PrEP, whereas 51 respondents (39.2%) were non-adherent.

Table 1

Distribution of Respondents Based on Respondent Characteristics at the Jumpandang Baru Community Health Center			
Respondent Characteristics		Frequency (n)	Percentage (%)
Age			
18 - 25 Years		51	39.2
26 - 35 Years		71	54.6
36 - 40 Years		8	6.2
Education			
Junior High School		8	6.2
Senior High School		81	62.3
Diploma/ Bachelor's Degree		41	31.5
Occupational Status			
Unemployed		29	22.3
Students		13	10
Private sector employees/ Entrepreneurs/ Self-employed		78	60
Freelance/ Non-permanent staff/ Supervisory		4	3.1
Manual laborers / Ride-hailing drivers/Service sector workers		6	4.6
Total		130	100

Source: Primary Data, 2025

Table 2

Distribution of Respondents Based on Compliance Variables in MSM at Jumpandang Baru Community Health Center

PrEP Adherence	Frequency (n)	Percentage (%)
Adherent	79	60.8
Non-adherent	51	39.2
Total	130	100

Source: Primary Data, 2025

Based on Table 3, most respondents aged ≥ 25 years were adherent to PrEP (64.6%), whereas 51.6% of respondents aged < 25 years were non-adherent. The chi-square test yielded a p-value of 0.106 ($p > 0.05$), indicating no significant relationship between age and PrEP adherence among MSM at this facility. Table 3 also shows that 63.1% of respondents with higher education were adherent, while 75% of respondents with lower education were non-compliant. Based on Fisher's exact test ($p = 0.056$), there was no significant relation between education level and PrEP adherence.

Table 3 indicates that most employed respondents (68.5%) were adherent to PrEP, whereas 56.1% of unemployed respondents were non-adherent. The chi-square test yielded a p-value of 0.008 ($p < 0.05$), demonstrating a statistically significant relationship between occupational status and PrEP adherence among MSM. Table 3 further shows that 63.2% of respondents with good knowledge were adherent, while 100% of respondents with poor knowledge were non-adherent. Based on Fisher's exact test ($p = 0.008$), a significant relationship was identified between knowledge level and PrEP adherence.

Table 3 shows that 60.6% of respondents with a positive attitude were adherent to PrEP, whereas one of the three respondents with a negative attitude (1/3; 33.3%) was non-adherent. Fisher's exact test indicating no significant relationship between attitudes and PrEP adherence among MSM. ($p = 1.000$) ($p > 0.05$). Table 3 further shows that the majority of respondents with low stigma (70.9%) were adherent, while 59.1% of respondents with high stigma were non-adherent. The chi-square test yielded a p-value of 0.001 ($p < 0.05$), demonstrating a significant relationship between perceived stigma and PrEP adherence.

Furthermore, Table 3 shows that 68.3% of respondents with high social support were adherent to PrEP, whereas 65.5% of respondents with low social support were non-adherent. The chi-square test yielded a p-value of 0.001 ($p < 0.05$), indicating a statistically significant relationship between social support and PrEP adherence among MSM. Additionally, 67.3% of respondents with high self efficacy were adherent to PrEP, while 82.4% of respondents with low self efficacy were non-adherent. The chi-square test resulted in a p-value of < 0.001 ($p < 0.001$), demonstrating a statistically significant relationship between self efficacy and PrEP adherence.

Table 3

The Relationship between Research Variables and Compliance with Pre-Exposure Prophylaxis among Men who have Sex with Men (MSM) at the Jumpandang Baru Community Health Center

Variabel Penelitian	PrEP Adherence				Total		<i>p-value</i>
	Adherent		Non-adherent				
	n	%	n	%	n	%	
Age							
≥25 years	64	64.6	35	35.4	99	100	0.106
<25 years	15	48.4	16	51.6	31	100	
Educational Attainment							
Higher Education (senior high school or above)	77	63.1	45	36.9	112	100	0.056
Lower (junior high school)	2	25.0	6	75.0	8	100	
Occupational Status							
Employed	61	68.5	28	31.5	89	100	0.008
Unemployed	18	43.9	23	56.1	41	100	
Knowledge Level							
Good	79	63.2	46	36.8	125	100	0.008
Poor	0	0.0	5	100	5	100	
Attitude							
Positive	77	60.6	50	39.4	127	100	1.000
Negative	2	66.7	1	33.3	3	100	
Perceived Stigma							
Low	61	70.9	25	29.1	86	100	0.001
High	18	40.9	26	59.1	44	100	
Social Support							
High	69	68.3	32	31.7	101	100	0.001
Low	10	34.5	19	65.5	29	100	
Self Efficacy							
High	76	67.3	37	32.7	113	100	0.000
Low	3	17.6	14	82.4	17	100	
Total	79	100	51	100	130	100	

Source: Primary Data, 2025

DISCUSSION

PrEP adherence refers to an individual's consistency in taking medication as prescribed by healthcare professionals. The degree of preventive efficacy conferred by PrEP against HIV acquisition is closely linked to regimen adherence. Higher adherence directly correlates with maximized biological protection and optimal viral suppression.⁴

The study results showed that 79 out of 130 respondents (60.8%) were adherent to PrEP. This figure is consistent with a study conducted among men in the United States, which found that 65% of participants had antiretroviral drug concentrations reflecting daily adherence.¹⁴ However, research conducted among MSM in Brazil and Portugal reported substantially lower figures, where overall adherence to PrEP was only 19.5% (n = 1,682) (18.3%, n = 970 in Brazil and 21.5%, n = 712 in Portugal).¹²

PrEP adherence among MSM at Jumpandang Baru Primary Health Center is high. This is likely because the subjects represent a key population at high risk of HIV acquisition. Same-sex sexual behavior among MSM contributes to elevated HIV/AIDS transmission risks.⁵ Therefore, PrEP serves as an effective strategy to reduce HIV transmission, achieving up to a 99% reduction in HIV incidence with optimal daily adherence.¹⁵ In addition, support from non-governmental organizations (NGOs) plays

a crucial role in encouraging this key population to maintain daily PrEP use. They also conduct routine follow-up monitoring to support continued PrEP retention. High adherence is thereby crucial to maximizing PrEP's overall preventive effectiveness.

Furthermore, this study examined factors influencing PrEP adherence at Jumandang Baru Primary Health Center. Bivariate analysis revealed no statistically significant association between age and PrEP adherence among MSM. This finding aligns with a study by Hudrudchai et al. (2024), which similarly reported no significant relationship between age and PrEP adherence.¹⁶ Conversely, this result contrasts with research by Wheeler et al. (2019), which demonstrated a significant association between age and PrEP adherence, where older respondents (≥ 25 years) exhibited higher adherence levels.¹⁷

The findings of this study revealed that 64.6% of older respondents (≥ 25 years) were adherent to PrEP. This higher adherence among older MSM may be attributed to more established daily routines, which facilitate the seamless integration of medication dosing schedules. Furthermore, health awareness typically increases with age, prompting individuals to become more proactive in maintaining health and adhering to medical recommendations. Additionally, higher measured PrEP exposure in older individuals can be influenced by age-related declines in renal function, which lead to higher drug concentrations.¹⁸

In contrast, 51.6% of younger respondents (< 25 years) in this study were non-adherent to PrEP. This disparity may be attributed to the dynamic and highly variable lifestyles typical of young adults and adolescents. Younger respondents tend to exhibit high mobility and erratic sleep schedules, which can disrupt routine medication intake. Maintaining consistency in PrEP use is critical to ensuring optimal prophylactic efficacy against HIV acquisition.

According to the CDC (2020), HIV prevention among adolescents is critical, as this age group faces a heightened risk of medication non-adherence, viral suppression failure, and challenges in retention in care compared to adults. Furthermore, non-adherence risks during adolescence are amplified by concurrent biological and behavioral transitions, including identity formation, peer influence, vulnerability to stigma, and immature cognitive development regarding long term planning.¹⁹

In addition to age, this study analyzed the relationship between educational attainment and PrEP adherence. Bivariate analysis revealed no statistically significant association between education level and PrEP adherence among MSM at Jumandang Baru Primary Health Center. This finding is consistent with a study by Peng et al. (2019) among Chinese MSM, which reported no statistically significant relationship between education level and PrEP adherence, as evidenced by a confidence interval crossing 1.²⁰ In contrast, a study by Hudrudchai et al. (2023) demonstrated a significant association between education level and PrEP adherence ($p = 0.012$), indicating that MSM with higher educational attainment exhibited superior adherence levels.¹⁶

The analysis revealed that 75.0% of respondents with lower educational attainment (junior high school level) were non-adherent to PrEP. This suggests that education level influences health literacy regarding the benefits and critical necessity of PrEP adherence. A lack of comprehensive health

information can foster misconceptions and unfounded fears regarding medication use. Consequently, educational attainment plays a crucial role in shaping health behaviors, highlighting the importance of considering individuals' educational background and baseline HIV knowledge when evaluating adherence patterns. Furthermore, education serves as a fundamental determinant in molding attitudes and practices toward PrEP among MSM.

Therefore, educational contexts must be considered when designing interventions to address specific knowledge gaps and improve adherence outcomes across diverse populations. Individuals with higher educational attainment typically demonstrate superior comprehension and retention of health information, particularly regarding HIV prevention strategies.²¹ Paradoxically, highly educated individuals may exhibit greater apprehension concerning the long-term side effects or toxicity of PrEP, which can inadvertently diminish their motivation to maintain adherence.²²

Transitioning to socioeconomic determinants, this study revealed a statistically significant association between occupational status and PrEP adherence among MSM at Jumpandang Baru Primary Health Center. This finding aligns with a study conducted by Mannheimer et al. (2019) among MSM in New York, which reported a significant association between employment status and PrEP adherence ($p = 0.001$). Specifically, employed respondents exhibited higher adherence levels compared to their unemployed counterparts.²³

The findings of this study revealed that 56.1% of unemployed respondents were non-adherent to PrEP. This indicates that employment stability and structured daily routines play a crucial role in maintaining medication adherence. Conversely, unemployment serves as a significant contributing factor to PrEP non-adherence. Unemployed individuals often face heightened psychosocial stress and psychological pressure resulting from financial instability, which can undermine adherence behaviors among MSM and ultimately compromise PrEP efficacy in preventing HIV acquisition. Therefore, targeted interventions that strengthen social support networks and promote productive daily routines are essential to mitigate adherence barriers among unemployed MSM.

Financial stability plays a critical role in PrEP adherence, as MSM with steady incomes tend to exhibit higher adherence levels. Nevertheless, it is important to consider that high-stress or demanding occupations can potentially disrupt daily medication routines.¹⁷ Therefore, intervention strategies aimed at improving PrEP adherence among MSM must account for both employment status and specific job characteristics.

Furthermore, bivariate analysis revealed a statistically significant association between knowledge level and PrEP adherence among MSM at Jumpandang Baru Primary Health Center. This finding aligns with a study by Serrano et al. (2023), which identified HIV knowledge as a significant predictor of PrEP adherence, where higher knowledge levels were associated with superior adherence ($p = 0.020$).²⁴

Sufficient knowledge regarding PrEP is critical to enabling successful regimen adoption and maintenance.²⁵ Knowledge serves as the foundation for health awareness and cognitive processing,

motivating individuals to maintain treatment adherence.²⁶ Furthermore, heightened awareness and understanding of PrEP efficacy can lead to sustained adherence improvements over time.²⁷

The findings of this study revealed that 63.2% of respondents with good knowledge were adherent to PrEP, whereas all respondents with poor knowledge (100.0%) were non-adherent. Accurate knowledge regarding PrEP serves as a crucial initial step in its adoption, making knowledge enhancement among candidates vital to facilitating PrEP implementation. Notably, all respondents (100.0%) demonstrated a solid foundational understanding of PrEP, correctly identifying it as a daily oral medication for HIV prevention and recognizing the requirement for mandatory quarterly HIV testing every three months.

Although respondents generally demonstrated good baseline comprehension of PrEP definitions, specific misconceptions regarding its application persisted. The most prominent misconception involved the perceived efficacy of PrEP in preventing non-HIV sexually transmitted infections (STIs). Specifically, 42.3% of respondents incorrectly believed that PrEP offers protection against other STIs. Furthermore, 33.8% harbored misunderstandings regarding the pharmacological composition of PrEP. Several respondents were unaware that PrEP consists of a combination of antiretroviral drugs designed to prevent HIV acquisition. These misconceptions can negatively influence respondents' perceptions of safety, efficacy, and subsequent treatment adherence.

Therefore, knowledge enhancement is essential to improving PrEP adherence. Raising awareness and knowledge can be achieved through tailored educational campaigns and targeted health communications focusing on PrEP benefits, pharmacological composition, and correct dosing regimens. A comprehensive understanding that non-adherence attenuates protective efficacy is critical, as sub-optimal adherence creates vulnerabilities to HIV acquisition.

Furthermore, this study analyzed the relationship between attitudes and adherence, revealing no statistically significant association between attitudinal factors and PrEP adherence among MSM at Jumpandang Baru Primary Health Center. This finding is consistent with a study by Qu et al. (2018) among MSM in Western China, which reported no significant relationship between PrEP adherence and attitudes or behaviors. In that study, the primary reasons cited for non-adherence included forgetfulness, busy schedules, concerns regarding side effects, and personal stressors.²⁸ In contrast, a study by Mannheimer et al. (2019) demonstrated a significant association between attitudes toward PrEP and adherence among MSM in New York City ($p = 0.006$). Specifically, individuals exhibiting positive attitudes demonstrated superior adherence levels.²³

The findings of this study revealed that the majority of respondents generally exhibited positive attitudes toward PrEP. Positive attitudes foster internal motivation and help individuals cope with stress or anxiety associated with PrEP utilization. Specifically, 60.6% of respondents with positive attitudes were adherent to PrEP. Conversely, 33.3% of respondents holding negative attitudes were non-adherent. Furthermore, perceived barriers regarding daily pill consumption persisted, with 19.2% of respondents finding the daily PrEP regimen difficult and 1.5% reporting it to be extremely difficult.

However, this study revealed a paradoxical finding, as 66.7% of respondents with negative attitudes were nevertheless adherent to PrEP. Cross-tabulation analysis indicated that these individuals possessed high baseline knowledge regarding PrEP. High knowledge levels provide a profound understanding of HIV transmission risks, leading individuals to recognize that the protective benefits of PrEP far outweigh the perceived discomforts or concerns that drive negative attitudes. Such knowledge heightens self-perceived risk, prompting individuals in high-risk groups to adopt adherence as an essential self-protection strategy. Furthermore, cross-tabulation demonstrated that 66.7% of adherent respondents with negative attitudes received strong social support. Social support fosters an enabling, safe, and positive environment. Emotional and instrumental support helps individuals feel accepted, encouraged, and assisted in their health management. Consequently, strong social support buffers negative individual attitudes, sustaining motivation and reinforcing PrEP use as a socially valued and normative practice.

Therefore, gaining a comprehensive understanding of respondents' concerns and fostering open health communication are essential to building trust and shifting individual perspectives toward enhanced PrEP adherence. Complex interplay among social, behavioral, and psychological factors significantly influences PrEP adherence patterns. Specifically, perceived medication side effects serve as major barriers to optimal adherence, whereas adequate HIV knowledge and strong social support act as key facilitators of sustained regimen adherence.²⁹

In contrary, this study demonstrated a statistically significant association between PrEP adherence and perceived stigma among MSM at Jumpandang Baru Primary Health Center. This finding aligns with a study by Ching et al. (2020), which reported a significant relationship between perceived stigma and PrEP adherence.³⁰

A study by Protiere et al. (2023) demonstrated that a majority of MSM believed taking PrEP could invite negative public perceptions and stereotyping from others.³¹ Similarly, a major obstacle to PrEP adherence among MSM in Thailand was the fear of being mistakenly presumed HIV-positive, particularly among those on daily PrEP regimens. PrEP users encounter multiple barriers to sustaining consistent adherence, including pervasive stigma and the perceived necessity of medication concealment from peers and family members.³²

The findings of this study revealed that 59.1% of respondents experiencing high perceived stigma were non-adherent to PrEP, indicating that elevated stigma serves as a substantial barrier to medication adherence. This pattern may stem from heightened anxiety among respondents regarding the potential disclosure of their PrEP use to family members. Specifically, 44.6% of respondents agreed and 20.8% strongly agreed that they were concerned about their families discovering their PrEP regimen. These data highlight profound concerns surrounding social stigma and fear of negative familial reactions toward PrEP utilization.

Because PrEP utilization is frequently associated with high-risk sexual activity, users face significant exposure to multifaceted stigma. Stigma imposes social disadvantages and operational

barriers to PrEP uptake, manifesting as stereotyping of sexual risk behaviors, relational conflicts, and HIV-positive status misconceptions originating from peers, sexual partners, and family members.³³ To mitigate these barriers, enhancing PrEP literacy through family-centered education can help reduce potential negative domestic reactions. However, because family outreach directly intersects with individual privacy rights, peer support networks are vital to providing emotional backing and helping MSM manage medication confidentiality within familial environments.

Social exclusion and marginalization create substantial barriers to healthcare access, ultimately dampening PrEP uptake and adherence. Consequently, stigma remains one of the most formidable obstacles in the global fight against HIV.³⁴ This underscores a critical imperative for health promotion initiatives to reshape public perceptions and eliminate structural barriers surrounding PrEP utilization.

Furthermore, this study demonstrated a statistically significant association between social support and PrEP adherence among MSM at Jumpandang Baru Primary Health Center. This finding aligns with a study by Protiere et al. (2023), which reported a significant relationship between social support and PrEP adherence. Specifically, respondents who received social support or encouragement to take PrEP from their primary partners and peers exhibited significantly higher medication adherence ($p = 0.012$).³¹

The findings of this study revealed that 68.3% of respondents with high social support were adherent to PrEP. Conversely, 65.5% of non-adherent respondents reported low levels of social support. A lack of social interaction and interpersonal support can heighten anxiety and feelings of social isolation. Subsequent psychological distress, such as stress and depression, can diminish the motivation required to maintain long-term treatment adherence. Social support from peers and partners plays a vital role in reinforcing PrEP adherence among MSM. Partner support emerged as the strongest facilitator, with 36.9% of respondents reporting exceptionally high support levels originating from their primary sexual partners.

A study by Wheeler et al. (2019) similarly demonstrated a significant relationship between adherence and awareness of a partner's PrEP use prior to sexual intercourse. Specifically, MSM who were aware of their partner's PrEP utilization exhibited higher adherence levels.¹⁷ Social support plays a critical role in PrEP continuum of care by reinforcing treatment adherence and bolstering psychological resilience against stress. This support emanates from diverse sources; partner support directly facilitates optimal regimen adherence, while peer networks offer essential mental health backing.³² Furthermore, peer support fosters emotional well-being and serves as a vital motivational driver for daily routine maintenance.³⁵

Social support serves as a critical buffer for individuals initiating PrEP therapy who experience profound anxiety regarding widespread misconceptions that equate PrEP use with an active HIV-positive status. Consequently, fear of inadvertent disclosure often forces users to resort to hiding their medication containers. Furthermore, anticipation of severe domestic reactions ranging from familial

rejection to relational dissolution underscores the necessity of strong support systems to sustain adherence.³⁴

Furthermore, the results of this study demonstrated a statistically significant association between self efficacy and PrEP adherence among MSM at Jumpandang Baru Primary Health Center. This finding aligns with a study by Whiteley et al. (2021) conducted among MSM in Jackson, Mississippi, which reported that higher self efficacy was significantly associated with PrEP adherence ($p = 0.03$). Specifically, respondents exhibiting elevated self efficacy demonstrated greater adherence to the PrEP regimen.³⁶

The findings of this study revealed that 67.3% of respondents with high self efficacy were adherent to PrEP. Elevated self efficacy enhances individual problem solving capacity, fosters skill acquisition, and strengthens intrinsic motivation to sustain health-promoting behaviors. However, individuals with low self efficacy experience profound self-doubt and perceived incapacity, making them more prone to surrender when facing obstacles and ultimately resulting in suboptimal adherence.³⁷

The findings of this study revealed that 82.4% of respondents with low self efficacy were non-adherent to PrEP. Notably, 27.7% of respondents experienced difficulty communicating openly and honestly with healthcare providers regarding their sexual behavior. This communication barrier hinders access to essential health information, emotional reassurance, and a safe environment required to address challenges in PrEP utilization. Furthermore, 17.7% of respondents reported difficulties adhering to the daily PrEP regimen. This reflects a critical gap in awareness regarding the necessity of daily dosing, presenting a major obstacle to optimal treatment adherence. Therefore, establishing effective, non-judgmental, and therapeutic communication channels between clients and healthcare providers will foster significantly improved PrEP adherence.

Self efficacy empowers individuals to take ownership of their health and actively engage in the continuum of care, including adhering to daily dosing schedules, maintaining regular clinical consultations, and undergoing routine quarterly HIV screening. Furthermore, elevated self efficacy enhances motivation to acquire health literacy, engage in proactive communication with healthcare providers, and participate in informed decision-making regarding PrEP management.

CONCLUSION AND RECOMMENDATIONS

This study demonstrated that employment status ($p = 0.008$), knowledge level ($p = 0.008$), perceived stigma ($p = 0.001$), social support ($p = 0.001$), and self efficacy ($p < 0.001$) were statistically significantly associated with PrEP adherence among MSM at Jumpandang Baru Primary Health Center. Therefore, MSM are encouraged to optimize regimen adherence and maintain proactive communication with healthcare providers. Concurrently, primary health centers should strengthen targeted educational strategies to enhance PrEP literacy, while broader community support and destigmatization initiatives are essential to reinforcing HIV prevention efforts.

AUTHOR CONTRIBUTIONS

NIDKA contributed to data collection and data analysis, and prepared the manuscript. R contributed to the study design and provided input on the manuscript. All authors have read and approved the final version of the manuscript. NIDKA = Nur Inayah DwiYull Kasbayl Arsyam; R = Rismayanti.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

STATEMENT ON THE USE OF AI

The authors used Grammarly solely to check grammatical errors in the manuscript.

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DATA AVAILABILITY

The data supporting the findings of this study are available from the corresponding author upon reasonable request. The authors will maintain the confidentiality of respondents in accordance with the informed consent provided.

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