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Willingness to Use HIV Self-Testing and Its Association with Sexual Behavior Stigma Among Men Who Have Sex with Men in Padang, Indonesia: A Cross-sectional Study

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Abstract

The provision of HIV prevention programs targeting key populations, particularly men who have sex with men (MSM), has been expanding rapidly. HIV self-testing (HIVST) has emerged as an accessible and convenient method for individuals to determine their HIV status independently. However, its utilization remains suboptimal, one potential barrier is the fear of stigma related to sexual behavior experienced by MSM. This study aimed to examine the association between sexual behavior stigma and willingness to undertake HIV self-testing among MSM. A quantitative study with a cross-sectional design was conducted using a non-probability (accidental) sampling technique. The study included 83 MSM participants affiliated with non-profit organization in Padang City. Data collection was carried out from February to May 2025.Two instruments were employed: The Sexual Behavior Stigma (SBS) Scale to assess sexual behavior stigma and a structured questionnaire to measure willingness to perform HIV self-testing. Data were analyzed using Spearman's rank correlation test. The results showed that the mean score of sexual behavior stigma was 4.15, while the mean score for willingness to undertake HIV self-testing was 0.458, indicating that 45.8% of respondents expressed willingness to perform HIVST. Statistical analysis revealed a significant correlation between sexual behavior stigma and willingness to undertake HIV self-testing ($p = 0.000$; $r = 0.486$; $r^2 = 0.236$). These findings suggest that higher levels of sexual behavior stigma are associated with lower willingness to perform HIV self-testing. Sexual behavior stigma will lower the success of achieving HIV eradication. It is crucial to reactivate stigma elimination programs to create a safe and supportive environment for MSM as key populations, enabling them to protect themselves from the risk of HIV transmission.

Keywords: Fear, Male, Humans, HIV Infection, Self-testing

INTRODUCTION

Achieving HIV eradication targets requires sustained and adaptive efforts to maintain progress. Inappropriate prevention strategies may undermine existing achievements (UNAIDS, 2021). It is

therefore crucial to examine HIV within specific sociocultural contexts particularly in religiously conservative settings to develop effective, safe, and culturally sensitive prevention strategies (Sullivan et al., 2012). To date, UNAIDS has recognized men who have sex with men (MSM) as one of the key populations requiring comprehensive and effective HIV and AIDS interventions. It is therefore crucial to explore and collect data that may indicate potential increases in HIV transmission. Such data provide insight into the situation and specific needs of MSM as a key population most affected by HIV (UNAIDS, 2025). In Indonesia, prevailing cultural norms do not recognize MSM identities and may play a significant role in increasing their vulnerability to HIV infection. Being MSM is often perceived as a sexual deviation of Indonesian cultural values (Fauk et al., 2017). Individuals who deviate from the dominant heterosexual norm may be viewed not only as sick or sinful but also as unworthy citizens. Such societal perspectives often lead to stigma, discrimination, judgmental attitudes, rejection, and even threats of violence (Divon et al., 2025). These cultural and social pressures make MSM reluctant to discuss sexual health issues with family members or healthcare providers, resulting in limited information and restricted access to essential HIV-related services such as voluntary counseling, testing, and condom use (Bangar et al., 2023). The lack of open dialogue and limited access to preventive services perpetuate risky sexual behaviors and unprotected intercourse, further increasing HIV transmission risk (Jung, 2025).

According to the *Global AIDS Update 2024*, HIV continues to pose a serious threat to the health of people living with HIV (PLHIV), many of whom have yet to receive antiretroviral therapy thereby increasing the risk of both mortality and HIV transmission (UNAIDS, 2024). Moreover, the impact of HIV extends beyond biomedical concerns, contributing to persistent inequities in access to healthcare services, as well as ongoing stigma, discrimination, and weak protection of human rights among key populations such as young women, sex workers, MSM, and people who inject drugs (Langi et al., 2022). According to the *Country Factsheets Indonesia*, there were approximately 570,000 PLHIV in Indonesia in 2023, of whom 550,000 were aged 15 years and older. Furthermore, data from the Ministry of Health of the Republic of Indonesia show that MSM accounted for 30% of the total population of people living with HIV in Indonesia in 2023 (NASA, 2023). In contrast, in developed countries such as the United States, nearly 70% of new infections occur among MSM. In Indonesia, the prevalence of HIV infection among MSM has risen dramatically, from 5.3% in 2007 to 17.9% in 2019. In the first quarter of 2021 (January–March), 27.2% of new HIV infections were reported among MSM (Gedela et al., 2021). In Padang City, 287 HIV cases were recorded in 2019, the majority of which occurred among MSM. Similarly, in 2021, 145 new HIV cases were again dominated by marginalized MSM groups. According to data from the *Central Bureau of Statistics of West Sumatra Province*, the number of new HIV cases in Padang specifically, 225 new cases were reported in 2020, and 333 new cases in 2023, indicating a significant increase (Wilita et al., 2020)

HIV testing is a critical step in the continuum of HIV prevention and care for all key populations. Everyone living with and affected by HIV should have equitable access to prevention, testing, treatment, and care services, and should be supported to achieve viral load suppression (Eke & Eke, 2025). HIV self-testing (HIVST) offers convenience and helps reduce barriers commonly associated with facility-based testing, such as stigma (Mekonnen et al., 2024). HIVST is a strategy that enhances privacy and confidentiality, particularly among key populations who often experience stigma and discrimination. A qualitative study found that MSM and transgender individuals identified privacy protection as the main reason for choosing HIV self-testing (Wirtz et al., 2017). Similarly, HIV self-testing tools represent a critical health technology for improving HIV testing uptake among key populations across both low- and high-income countries. HIV self-testing is therefore an essential intervention to expand access to HIV testing among MSM, who often face limited-service availability and testing options (LeGrand et al., 2017). In a qualitative study most participants reported delaying HIV testing due to external factors such as limited healthcare access and stigma. Participants also expressed fear regarding potential consequences of test results; those who might test positive

anticipated discrimination and social rejection (Strauss et al., 2015). A study reported that 45% of key populations living with HIV in Uganda feared seeking healthcare services due to anticipated discrimination from healthcare providers and the community, and 41% chose not to access such services out of concern that their identities might be disclosed. These findings reflect widespread anxiety regarding stigma and discrimination (Stangl & Grossman, 2013).

Stigma is a common experience among MSM globally. Sexual stigma, in particular, is a form of stigma directed toward MSM and other individuals engaged in same-sex sexual practices, who are often labeled, degraded, persecuted, and marginalized due to their sexual identity. Sexual stigma as a major barrier to healthcare-seeking and service utilization (Feng et al., n.d.). Overall, 17.7% of respondents reported fear of accessing healthcare services, while 14.34% avoided care due to concerns that others might discover their sexual orientation. In the United States, sexual behavior stigma among MSM reached 60%, representing a significant barrier to HIV prevention and care access (Shangani et al., 2018). Stigma related to sexual behavior, sexual orientation, and gender identity has been linked to poor HIV-related outcomes among MSM, hindering efforts in HIV prevention, diagnosis, and treatment. At the individual level, such stigma is associated with unprotected sexual activity, fear and avoidance of seeking healthcare services, and a lower likelihood of undergoing HIV testing (Babel et al., 2021). MSM living in countries with higher levels of stigma are less likely to access testing services, disclose their sexual orientation during testing, or have their HIV infection diagnosed. They also tend to experience unmet prevention needs, possess limited knowledge about HIV transmission, and engage in higher levels of risky sexual behaviors (Alvey et al., 2024). Consequently, these factors are predicted to contribute to increased risky sexual practices and a heightened risk of HIV infection among MSM (Pazzini et al., 2021).

Strengthening the implementation and outreach of preventive programs is necessary to enhance participation in HIV prevention, care, and treatment. Interventions targeting MSM should adopt tailored approaches that enable individuals and communities to acquire the knowledge, resources, and capacity needed to prevent HIV infection and access appropriate healthcare services (He et al., 2020). Understanding the evolving cultural dynamics that shape social and sexual behavior is critical for addressing health issues, including HIV. Without culturally adaptive prevention strategies, shifting social norms may create gaps in intervention outcomes. Therefore, in the religiously conservative context of Padang, It is vital to conduct an in-depth examination of patterns of sexual behavior–related stigma that may hinder the achievement of established HIV testing targets. This study aims to assess the relationship between sexual behavior–related stigma and the willingness to perform HIV self-testing.

METHODS

Study Design

This study employed a quantitative research design with a cross-sectional correlational approach. a cross-sectional approach is conducted to estimate the existence of causal relationships and to generate specific hypotheses by observing study subjects at a single point in time. The aim of this study was to determine the relationship between the independent variable (sexual behavior stigma) and the dependent variable (willingness to undergo HIV self-testing) among MSM affiliated with the Non-profit organization in Padang City.

Inclusion criteria refer to characteristics that qualify individuals to participate in a study. The inclusion criteria for this study were as follows:

- Willing to participate as research respondents;
- Residing in Padang City;
- Identified as men who have sex with men (MSM).

Exclusion criteria refer to individuals who meet inclusion criteria but possess certain conditions that make them unsuitable as research participants (Irfanuddin, 2019). The exclusion criterion in this study was:

- refusal to complete the questionnaire.

Research Setting and Period

The study was conducted at one HIV non-profit organization and foundation in Padang City from February to June 2025. Data collection took place between April 28 and May 28, 2025, coinciding with four scheduled community activities involving mobile outreach sessions and focus group discussions (FGDs). Specifically, 10 respondents were recruited on April 28, 24 on May 8, 26 on May 22, and 23 on May 28, resulting in a total sample of 83 respondents. This study was reviewed by ethical committee Faculty of Nursing Universitas Andalas with ethical exemption number 496layaketik/KEPKFKEPUNAND

Sampling Technique and Sample Size

Because the total population size was unknown, the sampling technique used was non-probability accidental sampling. Respondents who met the inclusion criteria and were present during the data collection events were invited to participate. A total of 83 MSM participants were included in the study.

Research Instruments

The questionnaire consisted of three parts: respondent characteristics, sexual behavior stigma, and willingness to undergo HIV self-testing.

1. Respondent Characteristics

   This section included demographic and background information such as initials, age, gender, occupation, educational level, history of HIV testing, and population group classification.

2. Sexual Behavior Stigma

   Sexual behavior stigma was measured using a Guttman scale–based questionnaire adapted from Stahlman et al. (2016). The instrument consisted of 13 items with dichotomous ("yes/no") responses. Respondents answering "yes" to favorable items received a score of 1, while "no" responses to unfavorable items were scored as 0. Scores were summed and converted into percentages.

   The instrument demonstrated acceptable validity and reliability, assessed using Cronbach's Alpha:

   - Family and friend's stigma (3 items; α = 0.70)
   - Anticipated healthcare stigma (4 items; α = 0.83)
   - General social stigma (6 items; α = 0.70)

Respondents who answered “yes” to one or more stigma-related items were categorized as experiencing stigma, while those who answered “no” to all items were categorized as not experiencing stigma.

3. Willingness to Undergo HIV Self-Testing

HIV self-testing was defined as a self-administered process in which individuals collect their own specimen, perform the test, and interpret the results independently. Respondents were asked to indicate their willingness to use HIV self-testing services by answering “yes” or “no.” A “yes” response was scored as 1, and a “no” response as 0. The total scores were then summed and expressed as percentages.

Data Collection Procedures

Data were collected by distributing structured questionnaires during mobile outreach and FGD sessions organized by the non-profit organization. Respondents were first identified based on inclusion and exclusion criteria. Before participation, each respondent received an explanation regarding the study objectives and benefits and provided informed consent to participate voluntarily.

Data Analysis

Data were categorized into three components: respondent characteristics, sexual behavior stigma, and willingness to undergo HIV self-testing. Data analysis was conducted in two stages:

- Univariate analysis, to describe respondent characteristics and variable distributions in terms of frequency and percentage;
- Bivariate analysis, to examine the correlation between sexual behavior stigma and willingness to undergo HIV self-testing using Spearman’s Rank correlation test.

RESULTS

Univariate Analysis

The purpose of the univariate analysis was to determine the statistical values of each variable, including the mean, minimum and maximum values, standard deviation, and frequency or percentage distribution. The variables analyzed in this study were sexual behavior stigma and willingness to undergo HIV self-testing. The results of the univariate analysis for these variables are presented as follows:

Table 1. Mean Score of Sexual Behavior Stigma among Men Who Have Sex with Men (MSM) at one non-profit organization in Padang City (n = 83)

Variable	Mean	Median	Min-Maks	SD
Stigma Sexual Behavior (SBS)	4.15	4.00	0-11	2.73
Family-Relative Stigma	0.88	0.00	0-3	1.12
Healthcare stigma	1.74	2.00	0-4	1.26
Social stigma	1.53	1.00	0-6	1.45

Based on Table 1, the mean total score of sexual behavior stigma among men who have sex with men (MSM) at the one non-profit organization foundation, Padang, was 4.15 out of a maximum possible score of 11. Most respondents reported experiencing some form of stigma, with a relatively wide

distribution of responses (SD = 2.73). The domain with the highest mean score was healthcare-related stigma, which had an average score of 1.74 and a median of 2, indicating that many respondents experienced stigma when accessing healthcare services. Conversely, the family and friend stigma domain showed the lowest mean score (0.88 out of a maximum of 3) with a median of 0, suggesting that most respondents did not experience stigma from their family or friends, although a few reported higher levels of stigma in this domain.

Table 2. Mean Score of Willingness for HIV Self-Screening among Men Who Have Sex with Men (MSM) at one non-profit organization in Padang City (n = 83)

Variable	f	%
Willingness to HIVST	83	4.00
Willingly	38	0.00
Unwilling	45	2.00

Based on Table 2, the results of the univariate analysis for the variable *willingness to undergo HIV self-testing*showed that the majority of respondents, 45 individuals (54.2%), were not willing to perform HIV self-testing. Meanwhile, 38 respondents (45.8%) indicated their willingness to undergo HIV self-testing.

Bivariate Analysis

The bivariate analysis aimed to determine the existence, direction, and strength of the relationship between sexual behavior stigma and willingness to undergo HIV self-testing among men who have sex with men (MSM) at the Non-profit organization, Padang. The bivariate analysis began with a normality test to assess whether the research data were normally distributed or not. The results of the normality test, conducted using the Kolmogorov–Smirnov test, are presented as follows.

Table 3. The Relationship between Sexual Behavior Stigma and Willingness for HIV Self-Screening among Men Who Have Sex with Men (MSM) at one non-profit organization in Padang City (n = 83)

Variable	R	r^2	P value
Sexual behavior stigma HIVST willingness	4.15	4.00	0.000

Based on Table 3, the results of the Spearman correlation test showed a significance value of p = 0.000 (p < 0.05) for the variables sexual behavior stigma and willingness to undergo HIV self-testing. This indicates a significant relationship between sexual behavior stigma and willingness to undergo HIV self-testing among men who have sex with men (MSM) at the Non-profit organization, Padang. The obtained correlation coefficient (r) was –0.486, indicating a moderate negative correlation, meaning that the higher the level of sexual behavior stigma, the lower the willingness to perform HIV self-testing among MSM. The coefficient of determination (r^2) was 0.236, which means that sexual behavior stigma contributes 23.6% to the variation in willingness to undergo HIV self-testing at the Non-profit organization, Padang.

DISCUSSION

Based on the results of the Spearman correlation test presented above, the significance value was p = 0.000 (p < 0.05), indicating a significant relationship between sexual behavior stigma and willingness to undergo HIV self-testing among men MSM at one non-profit organization in Padang. Therefore, the alternative hypothesis (Ha) is accepted, confirming that there is a relationship between sexual behavior stigma and willingness to perform HIV self-testing among MSM. The analysis showed a correlation coefficient of –0.486, indicating a moderate negative correlation, meaning that the higher the level of sexual behavior stigma, the lower the willingness of MSM to perform HIV self-

testing. Conversely, lower levels of stigma were associated with greater willingness to participate in HIV self-testing. The coefficient of determination (r^2) was 0.236, suggesting that sexual behavior stigma contributes 23.6% to the variation in willingness to undergo HIV self-testing among MSM in Padang.

These findings are consistent with a study who reported that two-thirds of 4,147 participants had experienced at least one form of sexual behavior stigma in their lifetime. The types of stigma identified included stigma from family and friends, healthcare-related stigma, and general social stigma. Sexual behavior stigma was found to be negatively associated with HIV self-testing behavior. Specifically, stigma originating from healthcare settings and from family or friends was shown to decrease MSM's willingness to undergo HIV self-testing (Wawrzyniak et al., 2013). Anticipated stigma—defined as the fear or expectation of being treated negatively—and a lack of trust in healthcare providers have been identified as key barriers preventing MSM from using HIV self-testing. HIV self-testing provides privacy, confidentiality, and autonomy for individuals to know their HIV status without facing potentially uncomfortable or intimidating interactions with healthcare personnel (Stutterheim et al., 2014).

A study found that nearly 57% of respondents reported fear of being in public spaces and had experienced extortion due to their sexual orientation, leading to social exclusion from their families. Such sexual behavior stigma significantly reduces access to healthcare services. Similarly, stigma and discrimination against MSM are major factors that hinder participation in HIV self-testing (Leluțiu-Weinberger et al., 2020). In this context, sexual behavior stigma serves as a strong perceived barrier—individuals who fear social exclusion or negative judgment based on their sexual orientation are more likely to avoid HIV testing, even when such testing can be done privately Stigma related to HIV and sexual orientation also remains a major obstacle for MSM in Australia when accessing HIV testing and prevention services (Hooshyar et al., 2017). Although the Australian healthcare system is generally inclusive and non-discriminatory, many participants reported being reluctant to undergo HIV testing due to fears of stigma and potential breaches of privacy (Nguyen et al., 2019). The study identified both felt stigma (the perception of being judged) and internalized stigma (the acceptance of negative beliefs about oneself), both of which were negatively correlated with healthcare-seeking behavior, including HIV self-testing (Pines et al., 2020).

Stigma and discrimination that negatively affect key populations may stem from unequal access to social, economic, and political strata, which facilitates discrimination, labeling, and stereotyping of these groups. In social processes, HIV is often perceived as a preventable disease, with "immoral" behavior regarded as the cause of infection. Consequently, vulnerable groups are blamed for contracting HIV, which can generate unintended fear and hinder the progress of HIV activism (Stahlman Shaunaand Hargreaves, 2017). Numerous studies have documented the association between stigma, discrimination, delays in seeking care after receiving a positive HIV test result, and poor adherence to HIV treatment. One potential reason why individuals may struggle to accept their HIV test results is fear. This fear is not new, as there are tangible social consequences of being infected with HIV, such as rejection, isolation, and discrimination from close relations and healthcare providers (Golub & Gamarel, 2013).

CONCLUSION

Sexual behavior stigma contributes to the willingness to perform HIV self-testing, illustrating that stigma serves only as a barrier to achieving HIV eradication goals. Stigma in any form represents a negative variable that must be eliminated to optimize progress toward improved HIV outcomes. It is essential to continuously promote awareness and efforts to combat stigma among key populations. Strengthening and reactivating stigma elimination programs remain a major ongoing task that requires persistent commitment and action.

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