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Abstract

Sexual orientations, such as gay, lesbian, and bisexual, are prevalent among individuals at high risk of experiencing mental health problems, including drug use, depression, emotional distress, and suicide. Therefore, this study aimed to assess the compliance of men who have sex with men with protective equipment and determine the dominant influential factors. This cross-sectional study included 187 men who had sexual intercourse with men who were recruited from two foundations based in Palembang City, Indonesia, focusing on people living with HIV/AIDS. Data were analyzed using Chi-square and binomial logistic regression. In this context, 50.8% of men who have sexual intercourse with men did not comply with the use of sexual protective equipment, exceeding those in compliance. The multivariate logistic regression showed that knowledge was the dominant factor (PR = 15.733; 95% CI = 4.063-60.920), and most low-knowledge individuals were 15.733 times more at risk of non-compliance. Intensive education is needed regarding the potential risk of transmission, considering the ease of access to condoms.

Keywords: condom, knowledge, men who have sex with men, people living with HIV/AIDS

Introduction

Men who have sex with men (MSM) are key parts of populations in which the risk of human immunodeficiency virus (HIV) continues to increase.¹ In addition, the current trend is shifting towards a younger age group, enabling the persistence of the risk group for longer periods with various types of behavior.^{2,3} This trend shows the pressing issue of sexually transmitted infections (STIs), which affect reproductive health with a broad impact on public health, costs, and long-term care for the community.⁴ Therefore, the disease continues to increase among MSM with a high rate of reinfection with syphilis.⁵

Men who have sex with men (MSM) are at high risk of contracting HIV and STIs transmitted through unsafe sexual intercourse.⁶ MSM accounts for 93% of infections, particularly in the young age group.⁷ Young adults (15-24 years) with this sexual orientation experience various STIs, such as chlamydia, gonorrhea, and syphilis,⁴ necessitating effective health education.⁸ Unsafe sexual behavior by MSM is also influenced by opioid abuse, which has an impact on uncontrolled sexual activities, such as sexual intercourse without a condom, having sex with multiple sexual partners, group sex, sexual exchange, and inconsistent use of condoms.⁹ HIV-infected people are spread across the world. The highest HIV prevalence among MSM on the African continent is in the Central Africa at 19%, followed by the HIV prevalence in Latin America at 11%, and the Central Europe and North America at 8%.¹⁰ More than half of HIV cases in Indonesia occur in the MSM at 64.5%; while acquired immunodeficiency syndrome (AIDS) cases are by 68.6%.¹¹ South Sumatra Province was ranked 17th in 2019 based on the number of people living with HIV/AIDS (PLWHA) in Indonesia.¹¹

The estimated population of MSM in Palembang, the capital city of South Sumatra Province, is 6,802.¹² HIV screening is carried out on commercial sex workers, which in 2021 resulted in 281 people being screened, and an increase of 480 people in 2022. The aggregate for PLWHA found in Prabumulih City, Indonesia, was 187 people in December 2022, of

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which 122 have HIV and 65 are with AIDS.¹³ This data shows the urgency of addressing sexual risk behavior among HIV-positive MSM, particularly in the context of unprotected anal intercourse, which necessitates the need for protective equipment to prevent the STI transmission. Other risky behaviors spreading this disease include drug use and social stigma against sexual orientation.¹⁴ Furthermore, HIV is a prevalent STI among MSM, and the high increase requires the need for prevention. Therefore, it is important to identify determinants of compliance using sexual protective equipment in this group. This article is worthy of publication due to its contribution to finding solutions to the problems.

Method

This study used a quantitative method with a cross-sectional design to analyze determinants of compliance with sexual protective equipment used in preventing HIV risk in Palembang City, Indonesia. The population of this study was MSM, specifically members of two foundations based in Palembang City, Indonesia, focusing on PLWHA. The minimum sample calculation in this study used the hypothesis test formula for the difference between two proportions using a cross-sectional study with a sample size of 187 people.¹⁵ The sample used a non-random technique, which was purposive sampling. The independent variables included sexual orientation, access to condoms, MSM comfort, fear of infection, social support, and knowledge; while, the dependent variable was compliance using sexual protective equipment.

Sexual orientation refers to information on a person's attraction and desire for one or more genders having the potential to engage in HIV-risk behavior. The data were obtained through interviews using questions from a structured questionnaire, which was compiled and developed and then tested for validity and reliability. Interviews were conducted after respondents obtained approval through signed informed consent. The concept was categorized as "homosexual and bisexual" for further analysis. Access to condoms refers to how the respondent obtained condoms. Data on respondents' access to condoms were obtained through interviews using a structured questionnaire. The 10 questions with a total score of 10 were a modification of Winahyu (2016).¹⁶ In addition, the categorization was based on a natural cut-off point formula from the total. For example, a score of ≥ 5 represents "easy access" and "difficult access" if the score was < 5 for further analysis.

Meanwhile, fear of being infected refers to respondents' concerns about the vulnerability to STIs, using the median value of not normally distributed data. This variable was categorized into "afraid of being infected" for a score \geq median and "not afraid" for $<$ median in further analysis. Furthermore, social support is the assistance received from the environment, such as family, professional friends, and health workers, concerning the prevention and transmission of HIV or STIs. The determination used a median value based on normally distributed data, classifying respondents as "receive social support" for a score of \geq median and "do not receive social support" if the score was $<$ median for further analysis. Knowledge refers to respondents understanding of condoms and STIs, HIV, and AIDS, including the meaning, symptoms, transmission, function, and prevention. Categorization was determined for a total of 13 scores by applying a cut-off, where "high" was based on score ≥ 6.5 and "low" for < 6.5 for further analysis.

Compliance with the use of sexual protective equipment refers to sexual relations in the last month, such as using condoms based on personal awareness or taking medication when engaging with a partner. The categorization was based on the median value due to data that were not normally distributed, classifying compliance as "comply" when the score was \geq median or "not comply" if $<$ median for subsequent analysis. The instrument was modified, and the validity and reliability were assessed before data collection. The data were statistically analyzed in three stages: editing, coding, and entering. The refined data were further analyzed using univariate, bivariate, and multivariate methods.

Furthermore, the first analysis was conducted to describe the characteristics and distribution of each variable: age, education level, occupation, sexual orientation, fear of infection, social support, knowledge, and compliance with the use of sexual protective equipment. In this context, bivariate statistical analysis used the Chi-square test to explore the relationship between independent variables and compliance with the use of sexual protective equipment. To determine dominant factors, a multivariate analysis was conducted using a multiple logistic regression test. The significance level of 5% was considered in the multivariate analysis, and when the p-value was < 0.05 , the independent variables could significantly predict compliance with the use of sexual protective equipment.

Results

This study was conducted among the MSM with an average age of 28.75 years, ranging from aged 17 to 59 years. Most respondents were self-employed (42.2%) and had completed their education at high school (52%). The results showed that 50.8% did not comply with the use of sexual protective equipment, but most MSM reported easy access to condoms (69%), and 84.4% expressed comfort in not using condoms (Table 1).

The reliability test results of knowledge, access to condoms, social support, and compliance with the use of sexual protective equipment had Cronbach's Alpha values of 0.893, 0.847, 0.827, 0.803, and 0.942, respectively. Knowledge (p-value <0.001), access to condoms (p-value <0.001), and fear of being infected (p-value <0.001) reported a significant relationship with compliance with the use of sexual protective equipment in MSM. Meanwhile, age (p-value = 0.838), education level (p-value = 0.631), sexual orientation (p-value = 0.126), and sexual support (p-value = 0.069) showed no significant relationship, as shown in Table 2.

Table 3 shows a multivariate analysis with a predictive model, showing knowledge (p-value <0.001: OR 15.753 (95% CI: 4.063 – 60.920)) as access to condoms (p-value <0.001: OR 6.188 (95% CI: 2.717 – 14.090)), and fear of being infected (p-value = 0.001: OR 3.668 (95% CI: 1.739 – 7.737)). The results showed that knowledge was the dominant variable in predicting compliance when having sexual intercourse with the partners. The MSM with poor knowledge were 15.733 and would most likely not use protective equipment.

Table 1. Demographic Characteristics Among Men Who Have Sex with Men

Variable	Frequency	Percentage (%)
Age (years)		
17-30	100	53.5
31-59	87	46.5
Age (years): Mean-Median (Minimum-Maximum)	28.75 -27 (17-59)	
Education		
Uneducated	2	1.1
Primary education	12	6.4
Secondary education	62	33.1
Higher education	111	59.4
Occupation		
Civil servant	1	0.5
Laborer	41	21.9
Self-employed	79	42.2
Art worker	6	3.2
Makeup Artist	11	5.9
Workers in bar/café/restaurant/hotel	21	11.3
Unemployed	23	12.3
Other	5	2.7
Sexual orientation		
Homosexual	41	21.9
Bisexual	146	78.1
Access to condoms		
Easy	129	69
Difficult	58	31
Fear of being infected		
Yes	100	53.5
No	87	46.5
Social support		
Yes	99	52.9
No	88	47.1
Knowledge		
High	139	74.3
Low	48	25.7
Compliance with the use of sexual protective equipment		
Yes	92	50.8
No	95	49.2

Table 2. Predictors of Compliance with the Use of Sexual Protective Equipment

Variable	Compliance with the Use of Sexual Protective Equipment				p-value	PR (95% CI)
	Not comply		Comply			
	n	%	n	%		
Age (years)						
17-30	48	48	52	52	0.838	0.949 (0.709-1.270)
31-59	44	50.6	43	49.4		
Education level						
High	58	52.7	52	47.3	0.631	0.910 (0.680-1.218)
Low	37	48.1	40	51.9		
Sexual orientation						
Homosexual	25	61	16	39	0.126	1.329 (0.983-1.797)
Bisexual	67	45.9	79	54.1		
Knowledge						
Low	36	92.3	3	7.7	<0.001	2.440 (1.947-3.057)
High	56	37.8	92	62.2		
Access to condoms						
Difficult	44	75.9	14	24.1	<0.001	2.039 (1.561-2.663)
Easy	48	37.2	81	62.8		
Fear of being infected						
No	55	63.2	32	36.8	0.001	1.709 (1.263-2.311)
Yes	37	37	63	63		
Social support						
No	50	56.8	38	43.2	0.069	1.339 (0.999-1.795)
Yes	42	42.4	57	57.6		

Notes: PR = prevalence ratio, CI = confidence interval

Table 3. Multivariable Logistic Regression Modeling to Assess Compliance with the Use of Sexual Protective Equipment

Risk Factors	Category	β	p-value	Adjusted PR (95% CI)
Knowledge	low	2.756	<0.001	15.733 (4.063-60.920)
	high	Reff		
Access to condoms	difficult access	1.823	<0.001	6.188 (2.717-14.090)
	easy access	Reff		
Fear of being infected	no fear	1.300	0.001	3.668 (1.739-7.737)
	fear	Reff		

Notes: PR = prevalence ratio, CI = confidence interval

Discussion

The results showed that 50.8% of MSM did not use condoms due to convenience, and this group had a high risk of transmitting STIs. In this context, preventive measures such as using protective equipment must be ensured to protect people from being infected.¹⁷ Consistent use of condoms could enhance compliance with the use of sexual protective equipment, which was significantly related to knowledge. A study in the US also stated that the variable is related to condom skills during sexual relations.¹⁸ Additionally, intention, confidence, and knowledge of using condoms increase with age, and according to this study, the average age was 28 years.¹⁸ Strategies to increase condom use could be done with education-based interventions to elevate the knowledge of the target group, such as through radio campaigns and social media. Knowledge interventions could improve self-efficacy about the ability to use condoms, foster positive attitudes to condom use, and be able to overcome barriers to condom use.¹⁹

This study showed that more individuals aged under 30 years complied with using sexual protective equipment, unlike the ones above 30 years. The decline in condom use in both developing and developed countries occurred among the younger generation aged 15–24 years. The decline in condom use among younger generation is related to limited exposure to intense condom promotion, use of psychoactive substances, low perception of sexual satisfaction, low perception of risk of STIs, having a regular sexual partner, low perception of self-efficacy towards condoms and negotiation skills especially among women.^{20,21} Therefore, comprehensive behavioral interventions are crucial to eliminate HIV by 2050.²²

The fear of contracting HIV infection could significantly influence the MSM’s compliance with the use of sexual protective equipment. This study’s results showed that most MSM with fear of contracting HIV had a higher compliance than those with no fear. Risk perception has the potential to shape health behavior, necessitating the need for public health interventions.^{23,24} The findings was in line with Chautrakarn *et al.* stating that more people are afraid of being infected with HIV in the adult population by 54.4%.²⁵ The perceptions of health challenges increase compliance in

preventing risks such as implementing safe sexual behavior, other factors include knowledge, low risk perception, and young age.²⁶

MSM are a significant population group at risk of contracting STIs, which is supported by poor behaviors, such as the use of narcotics and unsafe protective equipment with partners of the same sex. Furthermore, the practice of using drugs before or during sex, known as “chemsex” or “party and play,” is common among bisexuals and other MSM.^{27–29} A study in the Netherlands showed that 64% of MSM had receptive anal sex without condoms, and 40% had one chemsex practice session lasting at least 12 hours.³⁰ In this context, the risk of HIV transmission includes a high number of sexual partners and unprotected sex with partners whose status is unknown or HIV-negative and have a detectable viral load.^{28,31} MSM are one of key populations who are vulnerable to contracting HIV; therefore, it is necessary to increase awareness of this group regarding sexual protective equipment, such as condoms, knowledge of HIV, and the dangers of being infected.

Conclusion

One of the effective interventions in preventing HIV transmission through sexual intercourse is to use condoms. The contraceptive method is still highly recommended to prevent new STIs in key population groups. Access to condoms is widely available in the community and is not difficult to obtain. The MSM group's awareness of using sexual protective equipment is still low, and individuals frequently show a sense of complacency in abstaining from the use of such precautions. Therefore, intense education is given the large potential risk of infection and easy access to condoms.

Abbreviations

MSM: Men having sexual intercourse with men; HIV: human immunodeficiency virus; STIs: sexually transmitted infections; AIDS: acquired immunodeficiency syndrome; PLWHA: people living with HIV/AIDS; PR: prevalence ratio; CI: confidence interval.

Ethics Approval and Consent to Participate

This study was approved by the ethical review committee of the Faculty of Public Health Sriwijaya University with reference number 280/UN9.FKM/TU.KKE/2023.

Competing Interest

The authors declared no significant competing financial, professional, or personal interests that can affect the performance or presentation of the work described in this manuscript.

Availability of Data and Materials

All data and related materials from this study are available and can be provided by the first author.

Authors' Contribution

RJS designed the study, developed a data instrument for data collection analysis, and drafted the manuscript. RVS contributed to proofreading and drafting the manuscript. MNP contributed to the interpretation of results, as well as the reviewing and editing of the manuscript. Furthermore, DA contributed to proofreading and editing the manuscript, while NO assisted in data collection and analysis. Y contributed to reviewing and editing the manuscript. All co-authors reviewed and approved the final manuscript before submission.

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