

Sexual behavior factors that influence the incidence of HIV/AIDS in men's groups' male sex

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Received: 12 September 2024 ◦ Revised: 20 November 2024 ◦ Accepted: 01 December 2024

ABSTRACT

Introduction: HIV/AIDS remains a significant public health problem in the world, including in Indonesia. The disease is spread through various pathways, but one of the groups most vulnerable to infection is Men Who Have Sex with Men (MSM). This study aims to analyze the influence of sexual behavior on the incidence of HIV/AIDS in the Men Having Sex with Men (MSM) group.

Research Methodology: This type of research is quantitative research with a case-control research design. The population in this study consisted of cases and a control population. The population of cases in this study were all groups of Men Who Have Sex with Men (MSM) who had undergone an HIV test with positive (+) HIV test results and had taken ARV treatment at the Kendari City Regional Hospital for the last 6 (six) months and were domiciled as many as 349 people.

Result: The results of the study showed that there was an influence of condom use (OR = 7.154), number of sexual partners (OR = 21,000), anal sex (OR = 7.042), and oral sex (OR = 3.367) on the incidence of HIV/AIDS in the Men Sex Men group.

Conclusion: The conclusion is that the sexual behavior of using condoms, number of sexual partners, anal sex, and oral sex are risk factors for the occurrence of HIV/AIDS in the group of men having sex with men. Therefore, individuals in this group need to receive education about the risks, as well as effective prevention methods, such as consistent condom use, routine HIV testing, and open communication with sexual partners.

Keywords: HIV/AIDS, men having sex with men, sexual behavior.



INTRODUCTION

HIV (Human Immunodeficiency Virus) is one of the global problems that is a health problem in Indonesian society. HIV is a virus that can disrupt the immune system that has been built in the human body by infecting and destroying CD4 cells. The spread of HIV tends to be rapid and widespread (Martinez, Galdino, and Zucoloto, [2024](#)). HIV transmission can occur through direct contact with bodily fluids from an infected person, such as blood, breast milk, semen, and vaginal fluids. HIV/AIDS remains a major global public health issue, and certain populations are at a disproportionately higher risk of acquiring and transmitting the virus. Among these, men who have sex with men (MSM) represent one of the most vulnerable groups, with a significantly higher incidence of HIV infection compared to the general population (Dutta and Murmu, [2024](#)). Sexual behavior factors play a crucial role in shaping the incidence and transmission of HIV/AIDS within this group. The higher prevalence of HIV in MSM populations can be attributed to a variety of interrelated sexual and behavioral factors, including unprotected anal intercourse, multiple sexual partners, and the presence of other sexually transmitted infections (STIs). Social and structural determinants, such as stigma, discrimination, and limited access to healthcare, also exacerbate these risks. Understanding sexual behaviors and related factors is essential for the development of targeted prevention strategies, HIV education, and healthcare interventions aimed at reducing the spread of the virus among MSM (Lin *et al.*, [2024](#)).

The prevalence of HIV in the world based on data from the Global Health Observatory shows that around 0.8% of adults aged 15-49 years worldwide are living with HIV. The African continent is the continent with the highest HIV prevalence in the world, which is around 4.5%, and the lowest HIV prevalence in the Western Pacific, which is around 0.1%. Meanwhile, the global prevalence of MSM in 2018 was 17% and increased in 2019 to 23%. Indonesia is part of Southeast Asia and the prevalence of HIV in Southeast Asia is around 0.3 - 0.4%. The highest HIV prevalence in Southeast Asia in adults aged 15-49 years is Thailand with a prevalence of around 1.1%, Myanmar at 0.6%, Indonesia is ranked third at 0.5%, Vietnam at 0.3%, and the Philippines at 0.2%. The estimated number of AIDS cases in Indonesia until 2022 in Indonesia reached 519,158 cases spread across all provinces. Based on the distribution of HIV-AIDS cases, it was reported that 5 (five) provinces, the highest prevalence of cases were Papua (1.03%), DKI Jakarta (0.85%), East Java (0.13%), West Java (0.13%), and Central Java (0.11%). In the estimated number of people suffering from AIDS to death, Indonesia is in second place after India with a total of 32,000 people. HIV infection in Indonesia is predominantly found in key populations with a prevalence of 18.9% in the MSM group, 12.7% in the injection drug user group, 11.9% in transgender people, 2.1% in sex workers, and 0.7% in prison inmates (Coelho *et al.*, [2023](#)).

Men Who Have Sex with Men (MSM) are one of the key and high-risk groups that are still a problem in the world, including in Indonesia. MSM is considered as a deviation of sexual orientation that tends to like the same sex (Torres Silva *et al.*, [2024](#)). This act is very contrary to social norms and religious norms that apply in Indonesia. The socio-cultural approach and knowledge about the concept of gender and sexual orientation in reality do not necessarily make the public perception of MSM more positive (Amboree *et al.*, [2024](#)). However, people who have MSM families have a more positive perspective and view that this community has the right to live in Indonesia which must be protected by the government. MSM will be susceptible to HIV due to unsafe sexual behavior, both anal and oral. Anal intercourse, which is widely practiced by MSM, is the sex technique that is most at risk of transmitting HIV/AIDS. Men with a receptive role have a greater risk of being infected with HIV than men with an insertive role, this is because the anus is not designed for sexual intercourse so it will be injured during anal sex and make it easier for HIV to enter the body. Risky sexual behavior is reported to increase the risk of HIV. Several studies have reported that unsafe anal sex in MSM is a risk factor for HIV infection. The higher the frequency of MSM engaging in unsafe anal sex, the higher the

risk of HIV. The high risk of HIV infection in MSM is often associated with roles in sexual relationships that are high risk of HIV infection, especially in couples who act as receptive partners (Cassels *et al.*, 2023).

The most dominant factor influencing adolescent sexual behavior is sexual drive. History of STIs and receptive and versatile sexual role behavior were found to be risk factors for HIV seroconversion in MSM. HIV seroconversion in MSM was found to be more risky in MSM who behaved sexually receptively and was predominantly found in young MSM. Homosexuals and bisexuals were more at risk of exposure to HIV compared to heterosexuals. Sexual techniques of homosexual groups that are at risk of HIV/AIDS are oral anal sex/rimming and anal sex with a frequency of more than 1 time a month without using a condom (Esber *et al.*, 2023). Consistent and correct condom use during sexual activity can greatly reduce the risk of HIV transmission. MSM needs to have access to and use condoms consistently. Lack of systematic condom use with male partners during sex is a high risk for HIV/AIDS among young people (Agunbiade and Gilbert, 2023).

Factors that influence the vulnerability of MSM to HIV infection that have been carried out in previous studies are having unprotected sex with several sex partners, engaging in transactional/commercial sex, using illegal drugs and excessive alcohol consumption, and finding casual sex partners through the internet to have sex. Lack of knowledge about how HIV is transmitted and prevented in the MSM group is also described as one of the factors that causes an increase in unprotected anal sex and the use of injecting drugs to increase HIV transmission. The increase in the number of cases of HIV/AIDS in the world tends to be caused by risky behavior that is increasingly carried out by various groups of people in the world. This study aims to analyze the influence of sexual behavior on the incidence of HIV/AIDS in the Men Who Have Sex with Men (MSM) group.

RESEARCH METHODOLOGY

This type of research is quantitative research with a case-control research design. The population in this study consists of cases and control populations. The case population in this study were all groups of Men Who Have Sex with Men (MSM) who had undergone HIV examination with positive (+) HIV test results and had undergone ARV treatment at Kendari City Hospital for the past 6 (six) months and were domiciled in Kendari City as many as 349 people. The control group study population was all groups of Men Who Have Sex with Men (MSM) who had undergone HIV examination with negative (-) HIV test results at Kendari City Hospital for the past 6 (six) months and were domiciled in Kendari City as many as 423 people. The minimum sample size is 75 case subjects and 75 control subjects. This study uses a 1:1 ratio, so the ratio of case subjects to controls is 75:75. The total number of possible subjects in this study is 150 people. Sampling used random sampling, where the LSL group that became the research sample was LSL at Kendari City Hospital who met the inclusion and exclusion criteria. Data analysis used odds ratio.

RESULT

Table 1. Analysis of risk factors for condom use, number of sexual partners, anal sex, and oral sex on the incidence of HIV/AIDS in the male sex group

Condom Use	Incident HIV/AIDS				Total		Statistical Analysis
	Case		Control				
	n	%	n	%	n	%	
High Risk	45	77,6	13	22,4	58	100,0	OR=7,154 L= 3,361 U= 15,229
Low Risk	30	32,6	62	67,4	92	100,0	
Number of Sexual Partners							
High Risk	60	83,3	12	16,7	72	100,0	OR=21,000 L=9,090
Low Risk	15	19,2	63	80,8	78	100,0	

								U=48,517
Anal Sex								
High Risk	39	79,6	10	20,4	49	100,0	OR=7,042	
Low Risk	36	35,6	65	64,4	101	100,0	L=3,147	
							U=15,754	
Oral Sex								
High Risk	51	64,6	28	35,4	79	100,0	OR=3,367	
Low Risk	24	33,8	47	66,2	71	100,0	L=1,818	
							U=6,999	

The results of the risk factor analysis obtained an Odds Ratio (OR) value of 7.154 (OR > 1), meaning that respondents who never or sometimes use condoms during sexual intercourse are 7.154 times more at risk of suffering from HIV/AIDS compared to respondents who always use condoms during sexual intercourse. Confidence Interval (CI) at a 95% confidence level with a lower limit value of 3.361 and an upper limit of 15.229. The OR value obtained shows that condom use is a risk factor with LL and UL values not covering the number 1 which means it is statistically significant. Based on the results of the analysis, condom use is a behavioral risk factor for HIV/AIDS in the Male Sex Male group.

The results of the risk factor analysis obtained an Odds Ratio (OR) value of 21,000 (OR > 1) meaning that respondents who have more than 1 sexual partner in sexual intercourse are 21 times more at risk of suffering from HIV/AIDS compared to respondents who have one sexual partner in sexual intercourse. Confidence Interval (CI) at a 95% confidence level with a lower limit value of 9.090 and an upper limit of 48.517. The OR value obtained shows that the number of sexual partners is a risk factor with LL and UL values not including the number 1 which means it is statistically significant. Based on the results of the analysis, the number of sexual partners is a behavioral risk factor for HIV/AIDS in the Male Sex Male group at the Kendari City Hospital.

The results of the risk factor analysis obtained an Odds Ratio (OR) value of 7.042 (OR > 1) meaning that respondents who have or sometimes have anal sex during sexual intercourse are 7.042 times more at risk of suffering from HIV/AIDS compared to respondents who have never had anal sex. Confidence Interval (CI) at a 95% confidence level with a lower limit value of 3.147 and an upper limit of 15.754. The OR value obtained shows that anal sex is a risk factor with LL and UL values not covering the number 1 which means it is statistically significant. Based on the results of the analysis, anal sex is a behavioral risk factor for HIV/AIDS in the Male Sex Male group at the Kendari City Hospital.

The results of the risk factor analysis obtained an Odds Ratio (OR) value of 3.267 (OR > 1), meaning that respondents who have or sometimes have oral sex during sexual intercourse are 3.267 times more at risk of suffering from HIV/AIDS compared to respondents who have never had oral sex. Confidence Interval (CI) at a 95% confidence level with a lower limit value of 1.818 and an upper limit of 6.999. The OR value obtained shows that oral sex is a risk factor with LL and UL values not covering the number 1 which means it is statistically significant. Based on the results of the analysis, oral sex is a behavioral risk factor for HIV/AIDS in the Male Sex Male group at the Kendari City Hospital.

This study highlights that unsafe sexual behavior, especially among MSM, plays a major role in HIV transmission. The importance of consistent condom use, education about the risks of unsafe sex, and strengthening access to health services are strategic steps that must be considered to reduce the incidence of HIV/AIDS in this group.

DISCUSSION

Researchers have revealed that certain sexual behaviors are major risk factors for HIV/AIDS, so interventions are needed to increase awareness, consistent condom use, and

reduce risky sexual behavior in this group. Unsafe sexual behavior, especially among Men Who Have Sex with Men (MSM), plays a significant role in increasing the risk of HIV/AIDS transmission. Activities such as unprotected anal sex, multiple partners, and low awareness of the risks of unprotected oral sex are major contributors to the high prevalence of HIV in this group. Consistent condom use is one of the most effective ways to reduce the risk of HIV transmission. However, low levels of consistent condom use among MSM are often due to myths, lack of comfort, or pressure from sexual partners. Awareness of the risks of unprotected sex, both anal and oral, must be raised. Anal sex has a very high risk of transmission due to the anatomical structure of the anus which is easily injured, while oral sex, although lower risk, still contributes to the spread of HIV. This education needs to be delivered with a sensitive and evidence-based approach, including information on prevention methods, medical consequences, and the importance of regular HIV testing. MSM groups often face barriers to accessing health services due to stigma and discrimination. Therefore, strengthening inclusive, MSM-friendly and community-based health services is very important. Healthcare providers must be trained to provide care without stigma and maintain patient confidentiality. In addition, antiretroviral (ARV) treatment programs must be more accessible to prevent disease progression in PLWHA (People Living with HIV/AIDS) (Hamilton *et al.*, [2023](#)).

Based on the results of the analysis, condom use is a behavioral risk factor for HIV/AIDS in the group of Men Who Have Sex with Men at the Kendari City Hospital. Of the 266 homosexuals who use condoms consistently, only 97 people, or 36% use condoms. Homosexual condom use is still relatively low, which is 50%. 43% of men who often have anal sex do not use condoms at all, this is because they think their sexual partners are healthy and free from disease. Homosexuals feel happy by expressing their sexual needs and desires to show their sexual partners that they are exceptional so that sexual intercourse is more enjoyable without a condom (Coulaud *et al.*, [2024](#)). The results of this study indicate that condom use in MSM against risky behavior for contracting HIV/AIDS because MSM have good knowledge about preventing HIV/AIDS transmission by using condoms during intercourse is one of the initial steps in preventing HIV/AIDS. Usually when having sex, MSM provide their condoms or bring their condoms. In addition, MSM usually remind their customers to use condoms. Based on this study, it is known that not all homosexual groups have used condoms in the last 1 month during sex (selected sexual activity) in the homosexual community, condoms are only used during anal sex, while condoms are not used during oral sex because oral sex is considered not as dangerous as anal sex (Hotton *et al.*, [2023](#)). During anal sex, there is a high probability that there will be abrasions that will facilitate the transmission of infection, whereas this is not the case with oral sex. Respondents often neglect the use of condoms or pelicans if they are with a permanent partner who is believed to be free from disease. Most gays have a multi-partnership relationship pattern and are not accompanied by consistent use of condoms and pelicans. One of the factors causing respondents to be inconsistent in using condoms is that they feel uncomfortable or cannot feel satisfaction in having sex when using condoms. In addition, another reason is because of a request from their sexual partner not to use condoms. One form of safe sex that can be done by homosexuals is to consistently use condoms every time they have sex with their partner (Jalil *et al.*, [2024](#)).

Results of the analysis that the number of sexual partners is a behavioral risk factor for HIV/AIDS in the group of Men Who Have Sex with Men at the Kendari City Hospital. Men Who Have Sex with Men (MSM) are men who admit to being bisexual/homosexual. MSM tend to have many sexual partners, both men and women, and many of them also buy and sell sex, they admit to having sex with many partners in the last 1 month, both women and men. An increase in the number of sexual partners is positively correlated with an increased risk of contracting HIV. Certain lifestyles in homosexuals can be risky for physical, mental, and emotional health such as changing partners in sexual relations (intercourse), having unsafe sex (not using condoms), having anal sex, and drinking alcohol and drugs. The more sexual partners there are, the more likely it is that random sexual acts will increase and result in infections such

as HIV and STIs. Having a permanent partner does not rule out the possibility for MSM to have other sexual partners. An MSM on average has several sexual partners and a relatively less than 1 year of dating, however, because the relationship contains intimacy, the partner is called a boyfriend or girlfriend. The case group, namely homosexuals with HIV (+) more often change partners compared to homosexuals with HIV (-). Respondents with a pattern of sexual habits with more than one partner have a 2.886 times greater risk of HIV and AIDS (Hart *et al.*, [2023](#)).

In this study, the homosexual group with HIV (+) had more than 1 sexual partner. The more sexual partners the respondents have, the more likely it is that random sexual intercourse will increase and result in infection with diseases such as HIV. Therefore, efforts to prevent HIV AIDS through being faithful to partners need to be more socialized and made more effective, especially in the homosexual community, considering that HIV AIDS transmission is more risky in this group (Cox *et al.*, [2023](#)). If they cannot be faithful, they are required to use condoms to avoid the risk of HIV transmission. Better monitoring and evaluation are needed so that this program can run effectively. Based on the behavior of changing partners, the case group tends to have many sexual partners. If one of the sexual partners is infected with HIV, the virus will be carried in vaginal fluid or semen and pre-cum/penis fluid. Moreover, if there are wounds on the sex organs (Prieto, Shires, and Xiong, [2024](#)). The data shows that the risk of contracting HIV from people who are already infected in cases is much higher than in controls. According to the researcher, the number of partners is substantially closely related to STI symptoms. MSM who always change partners will be at risk of increasing the occurrence of sexually transmitted diseases which can increase the occurrence of HIV (Ge *et al.*, [2024](#)).

Based on the results of the analysis, anal sex is a behavioral risk factor for HIV/AIDS in the Male Sex Group at Kendari City Hospital. Anal intercourse is a very high risk of HIV infection. The anus is not designed for sex but is a channel for human waste disposal. In addition, the anus is not like the female reproductive organs or vagina which can lubricate when aroused. Having anal sex carries the risk of injury or abrasion to the anal tissue because the structure of the anus is tighter than the vagina, making it easy for HIV to enter the blood (Pawan Kumar *et al.*, [2024](#)). The actors in anal intercourse (insertive and receptive) have different effects on HIV transmission. Receptive actors (receptive anal intercourse (RAI)) have a higher risk than insertive actors (insertive anal intercourse (IAI)). Therefore, RAI is 13 times more at risk of contracting HIV than IAI. Anal intercourse is the most risky sexual behavior in MSM. Failure to use condoms is also higher in anal sex compared to vaginal sex. Anal intercourse is a very high risk of HIV infection. The anus is not like the female reproductive organs (vagina) which can lubricate when aroused (Felipe da Cruz *et al.*, [2023](#)). Having anal sex carries the risk of injury or abrasion to the anal tissue because the structure of the anus is tighter than the vagina, making it easier for HIV to enter the blood. In the MSM community, preferences for differences in anal intercourse are determined by three labels, including: insertive, meaning MSM prefer the insertion position, resertive, meaning MSM prefer the receiving position, and versatile, meaning MSM are willing to do one of the positions. The concept of sexual roles in MSM can be a determinant in HIV prevention efforts in MSM. Choices in anal sex roles are an important component of sexual identity in MSM and are almost the same as sexual positions, which of course are very contrary to culture. Receptive unprotected anal sex has been shown to have a higher risk of HIV transmission than MSM who have versatile sex. The study also showed that MSM who have unprotected anal sex with seroconverted partners is a major risk factor for getting HIV positive with an increased risk of unprotected sex (Ogidan, Olowokere, and Olatunya, [2024](#)).

Based on the results of the analysis, oral sex is a behavioral risk factor for HIV/AIDS in the Male Sexual Health Group at Kendari City Hospital. Oral sex is a sexual activity in which a person uses their mouth to stimulate their sexual partner's genitals. In general, this involves giving or receiving stimulation using the tongue, lips, and mouth on the genital area, such as the penis or vulva. Oral sex can be part of safe sexual activity if it is done completely voluntarily,

mutually agreed upon, and with partners who trust each other. It is important to communicate openly with your partner about each other's preferences, boundaries, and comfort in terms of sexual activity. In addition, the use of protection such as dental condoms or other barriers can help reduce the risk of sexually transmitted infections. The decision to engage in certain sexual activities is the right of each individual and must be done responsibly and with mutual respect (Faisal, Azis, and Syafar, [2021](#)).

Oral sex without a condom among MSM does not protect against STIs, but there is a significant difference in HIV diagnosis, thus demonstrating the unique duality of oral sex as an HIV risk reduction strategy. A significant proportion of men engaged in oral sex with or without a condom only (n=106, 12%), and other men engaged in oral sex without a condom with 100% condom use for all other sex (n=156, 18%)—two sex behaviors promoted as reducing HIV risk. Men engaging in HIV-protective oral sex had higher rates of HIV negativity compared with men engaging in other sex behaviors, but there were no significant differences overall in STI outcomes (other than rectal STIs) (Hikmawati, Muhsina and Amandaty, [2023](#)). Public health professionals need to be aware of the potential impact on HIV prevention efforts to educate MSM that choosing oral sex alone does not protect against STI bacteria. Government agencies and the public need to be aware of these impacts when designing HIV prevention communications and consider promoting STI prevention in conjunction with HIV risk reduction. Additionally, addressing the ambiguous risks of ambiguous sex acts (e.g., oral sex) would benefit HIV/STI prevention education for MSM (Demeke *et al.*, [2024](#)).

CONCLUSION

It can be concluded that sexual behavior of condom use, number of sex partners, anal sex, and oral sex are risk factors for HIV/AIDS in the MSM group. These four behaviors show how important education and intervention are to reduce risky sexual practices in the MSM group. Consistent condom use, limiting the number of sexual partners, and increasing awareness of the risks of unprotected anal and oral sex should be the main focus in efforts to prevent HIV/AIDS transmission. Community-based campaigns are recommended to raise awareness about the importance of consistent condom use and the risks of unsafe sexual behavior. Recommendations are to integrate specialized health services for MSM into national HIV/AIDS programs. Increase training for health workers to provide services without stigma.

Conflict of Interest

The authors declare that they have no competing interests.

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