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The Effect of Being Faithful, Condom Use, no Drug Behavior on the Incidence of Sexually Transmitted Infections (STIs) in Unmarried Men Who Have Sex with Men (MSM) in Indonesia

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Abstract

Background: "BCD" habits can help homosexual people and men who have sex with men (MSM) prevent the transmission of sexually transmitted infections (STIs) and safeguard their partners. **Objective**: The purpose of this study was to investigate how BCD behaviour affects the prevalence of STIs among Indonesian MSM. **Methods:** a cross-sectional study was conducted in 24 provinces in Indonesia from April to May 2023. The study population comprised MSM who had ever engaged in sexual intercourse, either occasionally, once, or frequently, totaling 6,000 individuals. A sample of 3,515 participants was selected using the Respondent Driven Sampling (RDS) method. Integrated Biological and Behavior Survey (STBP) 2018-2019 data was utilized. The data was analyzed using multivariate analyses with STATA 14 software. **Results:** after controlling for the variables of pieces of information exposure and vaginal intercourse, the following behaviors were found to have a significant influence of the occurrence of STIs among MSM (p-value:0.050; AOR:1,62 with 95% CI:0.96-2.73), condom use (p-value:0.050; AOR:0.37 with 95% CI:0.14-1.00), no drug use (p-value:0.040; AOR:1,67 with 95% CI:1.02-2.75). **Conclusion:** promoting faithful behavior towards a steady partner, consistent condom use during sexual activity, and refraining from injections and drug use can effectively reduce the transmission of STIs among MSM.

INTRODUCTION

Sexually Transmitted Infections (STIs) are infections that can be transmitted either through sexual activity carried out by heterosexual and homosexual groups or through non-sexual behavior (use of unsterile syringes) (Larki, Manouchehri and Roudsari, 2022; Vasudeva *et al.*, 2022). Transmission-related factors are increasing (Schmidt and Marcus, 2023). STIs themselves are varied, but the STIs with the highest cases of transmission are chlamydia, gonorrhea, syphilis, and trichomoniasis (WHO, 2022c; 2022d). The spread of STIs is most prevalent in at-risk groups such as Women Sex Peddlers (WPS), Men Sex Men (MSM), Waria, Injection Drug Users (IDU), high-risk couples (Risti), and couples who are Sex Peddlers (PS) (Directorate general of disease prevention and control of the ministry of health, 2022; HIV and STD subdivisions dan PMS, 2022). This is due to unsafe sex behavior carried out by these risk groups, which results in the rapid transmission of STIs (Bastos *et al.*, 2018; Fatiah and Tambing, 2023a).

STIs have a direct impact on sexual and reproductive health for 1.2 million people worldwide (Vos and Allen, 2016; WHO, 2022d). By harming the organs that produce cells, STIs can lower fertility rates by causing tissue damage and

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blockage in women (Gimenes *et al.*, 2014; Hart, 2016). Furthermore, STIs may raise the chance of contracting the human immunodeficiency virus (HIV) (WHO, 2022d). People with STIs are susceptible to HIV variants with low survival (WHO, 2022d), such as what happened in Colombia in 2021, where about 8% of people who have chlamydia live with HIV (Goverment ot he District of Columbia, Health and HAHSTA, 2021). In Brazil, the prevalence of people having HIV infection and syphilis is about 10.6 (Andrade Simões *et al.*, 2021).

World Health Organization (WHO) data in 2021 found that the number of people infected with STIs at the age of 15–49 years was around 347 people (WHO, 2021; 2022b), where the cases increased by around 2.5 million cases per year (CDC, 2021). STIs vary in WHO intervention areas, including Southeast Asia (SEA), with an incidence of STIs of around 60 million per year (WHO, 2021). This figure puts SEA in the fourth highest position after the African Region (96 million), the Western Pacific Region (86 million), and the Region of the Americas (74 million) (WHO, 2022a). The high number of cases is still very far from the target set by the WHO, a decrease in STI cases of around 9.9 million per year (WHO 2022a). The prevalence of STIs is usually high in developing countries, including Indonesia (Adler *et al.*, 2015). This is due to the influence of sociocultural contexts and economic factors in a country (Aral *et al.*, 2016).

The number of STI cases based on laboratory tests in Indonesia fluctuated, where there was a decrease in cases of around 601 in the second quarter (13,295 cases) to the third quarter (12,694 cases) of 2022, then STI cases increased by around 2,004 cases from data from the third quarter (12,694 cases) of 2022 to the first quarter (14,698 cases) of 2023 (Directorate general of disease prevention and control of the ministry of health, 2022; The ministry of health, 2022, 2023). The increase in cases is primarily found in at-risk groups, one of which is Men Sex Men (MSM) (Adler *et al.*, 2015). MSM is a risk group for experiencing STIs (Ma, Chen, and Niu 2022); this is due to the risk of MSM not having a permanent partner and changing partners, often having anal sex without using a condom (Paz-Bailey *et al.*, 2016; Fatiah, 2023; Fatiah and Tambing, 2023b).

The proportion of STIs in gay and MSM groups in Indonesia decreased by around 0.9% from the second quarter data (16.5%) to the third quarter data (15.6%) in 2022, then decreased again by around 1.2% based on the third quarter data (15.6%) of 2022 to the first quarter data (14.4%) of 2023 (Directorate general of disease prevention and control of the ministry of health, 2022; The ministry of health, 2022, 2023). Although the prevalence has decreased, it is not a happy thing because the number of MSM cannot be ascertained because the population is covert, so the risk for transmission of STIs and HIV through sexual behavior and among key populations is considerable (Magno *et al.*, 2019).

MSM groups are more at risk of having one of the signs of STI. This is because MSM groups are more discriminated against, so they rarely want to use health services to check their health (Christian *et al.*, 2023). MSM aged between 15 and 24 years with unmarried status are at higher risk of being infected with STIs; this is due to the influence of biological, behavioral, and cultural factors (Haider *et al.*, 2020). STIs have a severe impact on adolescents with an age range of 15–24 years (CDC, 2018), this is because adolescents have immature genital tissue and are easily infected (Suligoi *et al.*, 2020). On average, MSM infected with STIs are MSM with unmarried status (Fatiah and Tambing, 2023b). In America, about 45% of MSM aged between 18 and 21 years old are unmarried and infected with STIs IMS (Haider *et al.*, 2020). In 2018, approximately 26 million people infected with STIs were young people aged 15–24 years with unmarried status (CDC, 2018).

To stop these STIs from spreading among at-risk groups, prevention measures are required. The requirement for behavior modification through "ABCDE" (Government of Tegal district, 2016; Shelton et al., 2016) in the form of abstinence or not having sex before marriage is the key to preventing the spread of STIs among homosexual people and MSM. Use sterilized syringes or equipment; avoid using drugs; be faithful or switch partners; condoms or use condoms each time you have sex; and avoid using drugs (USAID, 2013; Rukundo et al., 2015). Leaving this context, the researcher aims to provide a more thorough explanation of how condom use, Be-Fitfull, and No Drug (BCD) behavior contribute to the prevalence of STIs in MSM.

METHOD

The 2018–2019 Integrated Biological Behaviour Survey (IBBS) provided secondary data for this cross-sectional study. The study will be conducted in 24 Indonesian regions over around six months, from April to September 2023. The study's population consisted of 6,000 MSM who had intercourse with males once, occasionally, or intensely; the sample was unmarried. At MSM,

around 3,515 people met the criteria for inculcation, which were MSM who were not married, at least 15 years old, and had lived in the survey location for at least one month. In contrast, the exclusion criteria were districts or cities that were difficult to access due to unsecured conditions or conflict areas and too few MSM subjects. The sampling technique is carried out using the Respondent-Driven Sampling (RDS) technique. The variables in this study consist of STI incidence variables, with category: 0. At risk if you have any of the symptoms of STIs; and 1. not at risk if you do not have one STI symptom. Independent variables are the Be faithful variable, with categories 0—no and 1. Yes, Condom uses variable, with categories: 0. Do not use and 1. Use and the last of independent variables are Drug Use, with categories: 0. Do not use and 1. Use, while confounding variables are: exposure to information about HIV/STI prevention, sex intercourse vaginal, sex intercourse anal, sex-selling behavior, frequency of anal sex on the last customer, risk perception of contracting HIV and STIs, HIV test frequency, and STI test behavior. The study of the data included univariate analysis, bivariate analysis using the Chi-square test, and multivariate analysis using a logistic regression risk factor model. STATA 14 software was used to analyze the data. The following figures are from the ethical evaluation of this study: 035/KEPK-FKM-UC/2023 from the University of Cenderawasih's Faculty of Public Health.

RESULT AND DISCUSSION

Symptoms of pain or burning during urination owned by unmarried MSM were higher than other symptoms, which were 14.4%—then followed by the subsequent most common symptoms in the form of abnormal discharge from the penis, about 6.0%, which can be seen in Table 1.

The proportion of unmarried MSM who had symptoms of 1 in 8 symptoms of STIs in Indonesia was around 21.7% (Figure 1).

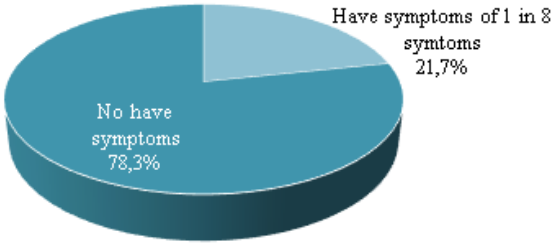

Figure 1. The proportion of Unmarried MSM Based on Symptoms of Sexually Transmitted Infections (STIs) in Indonesia 2018–2019 (n = 3,515)

Table 1. Symptoms of Sexually Transmitted Infections (STIs) in Men who have Sex with Men (MSM) in Indonesia 2018–2019 (n = 3,515)

STIs Symptoms	n	%
Very painful or burning when urinating		
Yes	507	14.4
No	3,008	85.6
Warts around the genitals		
Yes	94	2.7
No	3,421	97.3
Warts around the anus		
Yes	97	2.8
No	3,418	97.2
Sores or scabs around the genitals		
Yes	95	2.7
No	3,420	97.3
Sores or scabs around the anus		
Yes	67	1.9
No	3,448	98.1
Abnormal discharge from the penis		
Yes	209	6.0
No	3,306	94.0
Abnormal discharge from the anus		
Yes	43	1.2
No	3,472	98.8
Lump/swelling around the anus		
Yes	54	1.5
No	3,461	98.5

The variable faithfulness to the partner is related to the incidence of STIs (p-value: 0.001). The results of the analysis for variables using condoms obtained a p-value of around 0.029, which means that there is a relationship between condom use and the incidence of STIs in MSM. The variability of syringe drug use has an intermediate relationship with the incidence of STIs (p-value: 0.001). The results of the analysis of information exposure variables showed no relationship between exposure to information about HIV/STI prevention and the incidence of STIs (p-value of 0.984). The vaginal sex intercourse variable was associated with the incidence of STIs (p-value of 0.001). The anal sex intercourse variable was related to the incidence of STIs (p-value of 0.001) (Table 2).

There was no correlation found between the variable of sex-selling behavior and the frequency of STIs, according to the analytical test

findings, which yielded a p-value of approximately 0.344. There was no correlation between the incidence of STIs and the frequency of anal intercourse among recent clients (p-value: 0.179). A p-value of 0.016 was found, indicating that the incidence of STIs and the perceived risk of acquiring HIV were unrelated. With a p-value of 0.050, the HIV test examination was associated with the frequency of STIs; similarly, the analysis of the STI test behavior variable yielded a p-value of 0.001, indicating a relationship between STIs test behavior and the incidence of STIs (Table 2).

Table 2. Analysis Bivariate

Variabel	STIS				p-*value*
	No		Yes		
	n	n	n	n	
BCD Behaviours					
Being faithful					
No	292	25.6	847	74.4	0.001
Yes	472	19.9	1,904	80.1	
Condom use					
Don't use	83	17.8	382	82.2	0.029
Use	681	22.3	2,369	77.7	
Drug Use					
Don't use	458	24.0	1,449	76,0	0.001
Use	306	19.0	1,302	81.0	
Exposure to information on HIV/STI Prevention					
No	145	21.7	523	78.3	0.984
Yes	619	21.7	2,228	78.3	
Sex Intercouse Vaginal (in year)					
≤19	417	29.0	1,022	71.0	0.001
20 – 24	82	21.4	302	78.6	
25 – 49	26	22.2	91	77.8	
≥50	239	15.2	1,336	84.8	
Sex intercouse Anal (in year)					
≤19	457	24.2	1,443	75.8	0.001
20 – 24	178	21.5	648	78.5	
25 – 49	42	16.1	218	83.9	
≥50	87	16.1	452	83.9	
Sex-selling behavior					
Yes	112	25.0	338	75.0	0.344
No	128	27.7	335	72.4	
Frequency of anal sex on the last customer (times)					
≥3	42	22.5	145	77.5	0.179
<3	198	27.3	527	72.7	
Risk Perception of contracting HIV and STIs					
No and do't know	289	24.1	912	75.9	0.016
Know	475	20.5	1,839	79.5	
HIV Test Frequency (times)					
≤2	370	22.8	1,249	77.2	0.050
>2	132	27.0	357	73.0	
STIS test behaviour					
Never	428	16.5	2,165	83.5	0.001
Ever	336	36.4	586	63.6	

The results of multivariate analysis were obtained if there was a relationship between faithful behavior to a partner, using condoms and not using injecting drugs, and the incidence of STIs in MSM after being controlled for confounding variables in the form of exposure to information about HIV/STI prevention, vaginal sex intercourse, frequency of anal sex in customers last time, perception of risk of contracting HIV and STIs, HIV test behavior, and STI test behavior. The results of the analysis also obtained an AOR value for the variable loyal to the partner of around 1.62 (95% CI: 0.96-2.73), meaning that MSM who are faithful to the partner have a greater chance of not experiencing symptoms of STIs compared to MSM who are unfaithful to their partner. MSM who do not use condoms during sex are about 0.37 times more likely to have one of the symptoms of an STI (AOR: 0.37 with a value of 95% CI: 0.14-1.00). MSM who did not use syringe drugs were about 1.67 times more likely not to have any STI symptoms (aOR: 1.67 with a value of 95% CI: 1.02:2.75) seen in Table 3.

STIs are infections transmitted by direct contact between sufferers through both sexual and non-sexual intercourse, especially in groups at risk, one of which is MSM (Boothe *et al.*, 2020). MSM is the most infected group and one of the few symptoms of STIs (Swamiappan, Jagannathan and Abdulla, 2020; Fatiah and Purba, 2023). The results of this study found the same thing:

Table 3. Multivariate Modeling of BCD Behavior on the Incidence of STIs in Unmarried MSM in Indonesia in 2028–2019

Variables	p-value	AOR	95% CI
Being faitfull			
No		reff	
Yes	0.050	1.62	0.96-2.73
Condom use			
Don't use		reff	
Use	0.050	0.37	0.14-1.00
Drug use			
Don't use		reff	
Use	0.040	1.67	1.02-2.75
Exposure to information on HIV/STI Prevention			
No		reff	
Yes	0.068	0.43	0.18-1.06
Sex Intercouse Vaginal (in year)			
≤19		reff	
20 – 24	0.006	2.27	1.34-5.73
25 – 49	0.005	5.46	1.68-17.7
≥50	0.001	3.01	1.95-4.64
Sex intercouse Anal (in year)			
≤19	-	-	
20 – 24	-	-	
25 – 49	-	-	
≥50	-	-	
Frequency of anal sex on the last customer (times)			
≥3		reff	
<3	0.016	0.53	0.32-0.89
Risk Perception of contracting HIV and STIs			
No and do't know		reff	
Know	0.001	2.40	1.45-3.97
HIV Test Frequency (times)			
≤2		reff	
>2	0.457	1.19	0.75-1.89
STIS test behaviour			
Never		reff	
Ever	0.001	0.26	0.17-0.41

unmarried MSM in Indonesia in 2018–2019 had the most symptoms of pain or burning during urination. These results are consistent with an Indian study that found about 1.4% of MSM were infected with one of the STIs, namely syphilis (Swamiappan, Jagannathan and Abdulla, 2020). According to Mahmud et al. (2022), about 2.99% of MSM are infected with syphilis and HIV (Mahmud *et al.*, 2023). About 32.2% of MSM in Germany have STI symptoms due to unsafe anal sexual behavior (Jansen *et al.*, 2020). MSM are the most vulnerable group for the highest risk of transmitting and contracting HIV and STIs in Asia through unprotected anal behavior and

sexual partner-switching behaviors (Pham *et al.*, 2015; Ekouevi *et al.*, 2019). The behavior of selling sex can also cause a high proportion of MSM who have symptoms of STIs. As we know, those who sell sex are at risk of exposure to multiple partners and will have the opportunity not to use condoms during sexual contact. According to this study, about 75% of MSM who sell sex are infected with STIs. For this reason, it is necessary to prevent faithful efforts by permanent partners, use condoms, and not use syringe drugs.

The behavior of limiting sexual relations other than with permanent partners can certainly suppress the spread of STIs among unmarried MSM (Breunig 2017), considering the high number of adolescents who do not abstinence is the key to the spread of STIs through vaginal, anal penetration, or people with contaminated penises (Workowski and Berman 2006). This study explains that being faithful to your partner can still prevent the spread of STIs. Otu et al.'s research also found the same thing: MSM who are not faithful to their partners have gonorrhea infections (Otu et al., 2021). Suppose MSM is loyal to a sex partner. In that case, the chances of transmitting and contracting an STI to others will be smaller, the smaller the exchange of fluids and body duh with someone other than a permanent partner, and the decrease in STI and HIV infections in MSM and other key population groups can be suppressed.

Consistent condom use can effectively prevent sexually transmitted disease transmission in areas with a high proportion of HIV and STIs (Ahinkorah *et al.*, 2020; Fatiah and Tambing, 2023b). Condom use is a comprehensive effort in efforts to spread STIs from key populations to the general population. When condoms are used consistently, it can significantly reduce the spread of STIs and HIV (Ali *et al.*, 2019). The results of this study found that the more inconsistently MSM use condoms during sex, the greater the risk of infection with STIs. Abdilah et al.'s research is consistent with the results of this study, finding that condom use is consistently effective in preventing the spread of STIs among key populations (Ali *et al.*, 2019). The results of experiments conducted by Bom et al. show that consistent condom use in MSM can reduce gonorrhea, chlamydia, and syphilis (Bom *et al.*, 2019). This is proven if using condoms consistently can prevent disease transmission due to sexual behavior by around 90% (USAID, 2015), Besides that, condoms are also one of the contraceptives that can prevent pregnancy and the death and pain of mothers and children (Fatiah, 2022). In addition, condom availability and accessibility also play a role in the consistency of condom use (Vermeir and Verbeke, 2008; Paul, Modi and Patel, 2016; Fishbein and Ajzen, 2019).

The trigger for the high incidence of STIs and HIV among MSM is the free sex factor that occurs among MSM due to the influence of drug consumption and alcoholic beverages (Mengistu *et al.*, 2022; Hursepuny *et al.*, 2023). Drug use in the MSM group is higher than that in the heterosexual group; this occurs because of gay parties in which there are elements of cocaine abuse and methylenedioxy-methylamphetamine (MDMA); usually, this phenomenon is known as chemsex (Hunter *et al.*, 2014; Giorgetti *et al.*, 2017). The study found that MSMs who use drugs are at risk for STIs. Achterbergh et al.'s research also consistently found the same thing: 33.3% of MSM who used drugs were infected with STIs in the past year (Achterbergh *et al.*, 2020). MSM infected with STIs claim that they use drugs and alcohol consumption to have sex because they feel calm having sex after consuming these items (Heijman *et al.*, 2017). Drug consumption and alcohol with an alcohol content above 40% will make the perpetrator feel confident and brave enough to have risky sex, whereas, in the position of flying and drunk, a person will find it difficult to control himself and will be responsible for all the attitudes taken, so the superstition of drug consumption and alcohol among MSM will put them at risk of being infected with one of the symptoms of STIs that lead to contracting HIV through mutual partner behavior and use of Syringe.

This research has limitations. The data analysis still employed standard analysis without taking into account the sampling technique, specifically RDS, which is meant for sampling in MSM groups and syringe drug users (compilers), indicating bias in the data processing. Since the population is hidden or difficult to reach (hidden population), not all populations are equally likely to be chosen for the sample. This makes the RDS sampling approach, which operates on the same concept as snowball sampling, typically prone to bias. RDSA analysis should be employed to prevent this bias. Furthermore, there is a possibility that this study's sample is limited to single MSMs and not all MSMs were included, so it is not appropriate to describe the role of BCD behavior on the incidence of STIs.

The fact that this study's cross-sectional research approach examined exposure's prevalence, distribution, and relationship all at once precludes it from determining whether exposure causes an impact or the other way around. Furt-

hermore, the study has limits in the utilization of research variables, such as oral sex variables that are theoretically linked to the occurrence of STIs. In contrast, secondary data have limited changes in variables to be studied. Furthermore, there is a possibility that this study's sample is limited to single MSMs and not all MSMs were included. Still, in the secondary data used by researchers, these variables do not exist, so they cannot be explored as one of the causes contributing to STIs in the MSM group. Another limitation of this study is recall for variables such as education, where MSM is asked about having received information about HIV/STIs before the interview is conducted. As we know, if a person's memory has limitations that are 1–7 days before the activity is carried out (Nia Silvia, Marudut and Jus'at, 2011)

CONCLUSION

The application of BCD behavior in risky sex behavior in the MSM group are some behaviors that can prevent the spread of STIs after being controlled with confounding behavior in the form of variables exposed to information about HIV, vaginal sex intercourse, frequency of anal sex, perception of risk of contracting HIV/STIs, HIV testing behavior, and STI test behavior. It is suggested that comprehensive preventive efforts are needed to prevent STIs and HIV in MSM groups by continuing to socialize the impact of STIs and HIV on permanent partners by remaining faithful to the partner, consistently using condoms by ensuring access and availability of condoms.

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