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Consistency of condom use and HIV status among young men who have sex with men (MSM) in Indonesia

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Nadya HT. Sidabutar[1], Ella N. Hadi[1] and Sutanto P. Hastono[2]*

Department of Health Education and Behavioral Sciences, Faculty of Public Health, Universitas Indonesia[1]; Department of Biostatistics and Population Studies, Faculty of Public Health, Universitas Indonesia[2]

***For Correspondence:** Email: *ellanh@ui.ac.id*; Phone: +62 811 973 816

Abstract

Until now HIV has remained as a global health problem. The HIV epidemic in Indonesia focused on a key population, especially on Men who have Sex with Men (MSM). This study analyzed the relationship between the consistency of condom use and HIV status among 1,357 young MSM (15-24 years) of the 2018/2019 Integrated Biological and Behavioral Survey at 19 districts/cities in Indonesia. Data was analyzed using multiple logistic regression to control potential confounder variables. The consistency of condom use was 37.7% and 15% were HIV antibody positive. Young MSM who inconsistently used condoms were 1.56 times (95% CI: 1.10-2.22) more likely to be infected with HIV than who consistently used condoms after controlled with age. MSM aged 20-24 years who inconsistently used condoms were at a higher risk of contracting HIV compared to aged 15-19 years. Therefore, messages on HIV prevention should emphasize the danger of using condom inconsistently. *(Afr J Reprod Health 2025; 29 [11]: 91-98).*

Keywords: HIV, condoms, homosexuality, men who have sex with men (MSM)

Résumé

Jusqu'à présent, le VIH est resté un problème de santé mondial. L'épidémie de VIH en Indonésie touchait une population clé, en particulier les hommes ayant des rapports sexuels avec des hommes (HSH). Cette étude a analysé la relation entre la régularité de l'utilisation du préservatif et le statut VIH chez 1 357 jeunes HSH (15-24 ans) participant à l'Enquête biologique et comportementale intégrée 2018/2019 menée dans 19 districts/villes d'Indonésie. Les données ont été analysées par régression logistique multiple afin de contrôler les variables confondantes potentielles. La régularité de l'utilisation du préservatif était de 37,7 % et 15 % étaient séropositifs. Les jeunes HSH qui utilisaient le préservatif de manière irrégulière présentaient un risque 1,56 fois (IC à 95 % : 1,10-2,22) plus élevé d'être infectés par le VIH que ceux qui l'utilisaient systématiquement, après contrôle de l'âge. Les HSH âgés de 20 à 24 ans qui utilisaient le préservatif de manière irrégulière présentaient un risque plus élevé de contracter le VIH que ceux âgés de 15 à 19 ans. Par conséquent, les messages de prévention du VIH devraient insister sur les dangers d'une utilisation irrégulière du préservatif. *(Afr J Reprod Health 2025; 29 [11]: 91-98).*

Mots-clés: VIH, préservatifs, homosexualité, hommes ayant des rapports sexuels avec des hommes (HSH)

Introduction

Human Immunodeficiency Virus (HIV) is a viral infection that attacks the human immune system, causing it vulnerable to infectious diseases and other malignancies that can cause death[1]. Since the epidemic in the 1980s, HIV is still one of the main problems in global public health. In 2022, as many as 39 million people worldwide had HIV positive status with an incidence of 1.3 million people. Among these, two-thirds (25.6 million) were in Africa and the second largest is in the Asia-Pacific region contributed 6.5 million cases. Although over the past two decades there has been a 30% decrease[2].

In contrast to the decrease of the general population, HIV transmission in key populations requires serious attention[3]. The prevalence of HIV globally in key populations (sex workers, injecting drug users, men who have sex with men/MSM) is much higher[2]. Twenty nine percent of the total HIV cases in Indonesia are from homosexual groups[4]. Integrated Biological and Behavioral Survey (IBBS) data shows an increase of HIV prevalence around 2.5 times in the MSM group, namely 8.48% in 2011 to 25.8% in 2015[5]. Although there was a decrease in 2018 (17.9%), HIV prevalence in MSM is still relatively high compared to the estimated prevalence of the general population in Indonesia[6].

Based on the 2015 IBBS, the average age of MSM in Indonesia was 30 years which declined to 25 years old according to the 2018/2019 IBBS[5,6]. Compared to other key HIV populations the age

categories most commonly found in the MSM group were adolescents (15-19 years) and young adults (20-24 years). Research in Bandung (2021) found that 1 out of 3 HIV-positive MSM were 15-24 years old. This figure is almost 100 times the HIV prevalence in Indonesia and 7 times the estimated average age for young MSM in the Asia Pacific region[3]. The causes of high HIV cases in young MSM (15-24 years) are anal sex, changing sexual partners, and the presence of other sexually transmitted infections/STI (syphilis, herpes, chlamydia, gonorrhea)[1,7]. MSM behavior that tends not to use condoms when having sex, both with permanent and irregular partners, and first anal sex at an early age have shown to be related with HIV transmission[8]. One of the high-risk behaviors classified to increase the probability of HIV transmission which is often used as a parameter in HIV research is anal sex without using a condom performed with more than one partner[9]. Although the specific vulnerability of young MSM to HIV infection is not well comprehended, low level of awareness and perception on the risk of contracting HIV, the influence of peers or older MSM, and multiple partners have been identified as risk factors for transmission. These risk behavior patterns are further worsened by lack of knowledge on HIV prevention and transmission methods, as well as lack of access to information or media related to HIV[10,11].

The condom is a traditional solution that is still relevant to prevent HIV and if used correctly and consistently, it is estimated to be 98.5% effective in reducing HIV transmission[12,13]. Studies in West Africa, Myanmar, and China have proven the effectiveness of consistent condom use in preventing HIV[12–14]. However, the consistency of condom use by MSM in Indonesia is still relatively low, which is calculated based on the frequency of sex using condoms during the past month and still limited to the MSM group in general but HIV prevention behavior by young MSM has not been measured[3,6].

Methods

Study sample and procedures

The 2018/2019 IBBS for the MSM group was carried out in 19 random selected districts/cities to represent the MSM population in Indonesia[6]. The sample criteria were MSM in the 15-24 years age group, had blood test results to determine HIV status, and had had sex using condoms during the past month. The sample size was calculated using the two-proportion difference hypothesis test formula[15], with a study power of 90% requiring the sample of 786 respondents. This study used all 2018/2019 IBBS samples from 19 districts/cities as many as 1,357 MSM that met the sample criteria.

Outcome, independent variable and covariate

The dependent variable was HIV status according to the results of MSM venous blood samples obtained from laboratory tests. The independent variable was the consistency of condom use obtained from MSM answers to 9 questions on condom use during the past month with permanent or non-permanent partners (men/women/transvestites), whether commercial or non-commercial relationships. Respondents who answered "never", "rarely/sometimes", and "often" were included in the "inconsistent" category, while those who answered "always" were included in the "consistent" category. The potential confounders were age, education, occupation, HIV knowledge, perceived risk of contracting HIV, duration as MSM, number of sexual partners, history of STI symptoms, and access to HIV information.

Statistical analysis

Multiple logistic regression test was used to analyze the association between consistency of condom use and HIV status controlled by age, education, occupation, HIV knowledge, perceived risk of contracting HIV, duration as MSM, number of sexual partners, history of STI symptoms, and access to information on HIV.

Ethics statement

This study obtained ethical approval from the Research and Community Engagement Ethics Committee, Faculty of Public Health, Universitas Indonesia, Number: Ket-12/ UN2.F10.D11/ PPM.00.02/ 2024.

Results

Descriptive statistics of the sample

Table 1 shows the prevalence of HIV in young MSM was 15% and those who inconsistently used condoms during sex was 62.3%.

Table 1: Descriptive Statistics of the Sample (n=1357)

Variables	n (%)
HIV status	
Negative	1154 (85)
Positive	203 (15)
Consistency of condom use	
Consistent	512 (37.7)
Inconsistent	845 (62.3)
Age (y)	
20-24	869 (64)
15-19	488 (36)
Education	
High	136 (10)
Low	1221 (90)
Occupation	
Employed	765 (56.4)
Unemployed	592 (43.6)
Knowledge about HIV	
High	433 (31.9)
Low	924 (68.1)
Perceived risk of contracting HIV	
Risky	872 (64.3)
Not risky	485 (35.7)
Duration as MSM (y)	
≤ 3	871 (64.2)
> 3	486 (35.8)
Number of sexual partners	
≤ 2 persons	782 (57)
> 2 persons	575 (43)
History of STI symptoms	
No	1008 (74.3)
Yes	349 (25.7)
Access to HIV information	
Easy	567 (41.8)
Difficult	790 (58.2)

Respondents were dominated by the 20-24 year age group (64%), had low education (90%), had jobs (56.4%), did not have comprehensive HIV knowledge (68.1%), feel at risk of HIV infection (64.3%), been an MSM for ≤ 3 years (64.2%), had ≤ 2 sex partners in the past month (57%), had no history of STI symptoms in the past year (74.3%), and had difficulty accessing information related to HIV (58.2%).

Association between consistent condom use and HIV status among young MSM

Multivariate analysis was conducted using multiple logistic regression model of risk factors, by including dependent variables, independent variables, potential confounding variables, the modification effect of the interaction between independent variable and confounding variable (Table 2).

Analysis results found that only age had a modifying effect on the association between consistency of condom use and HIV status among young MSM, therefore it will always be included in the modeling (Table 3).

The next step was to conduct a covariate test and the analysis results showed that there was association between consistency of condom use and HIV status (*p*-value = 0.013) controlled by age, while education, occupation, HIV knowledge, perceived risk of contracting HIV, duration as MSM, number of sexual partners, history of STI symptoms, and access to information on HIV were not confounders in the association. Young MSM who were inconsistent in using condoms were 1.56 times more likely to be infected with HIV than consistent MSM after being controlled with age (95% CI: 1.10-2.22). In addition, there was an interaction between consistent condom use and age, affecting the risk of HIV infection in different age groups. MSM aged 20-24 years who were inconsistent in using condoms were 1.56 times more likely to be infected with HIV than those who were consistent, while the risk of HIV infection in MSM aged 15-19 years who were inconsistent in using condoms was only 0.36 times more likely to be infected with HIV than those who consistently (Table 4).

Discussion

From a total of 1,357 young MSM in this study, 15% were HIV positive, meaning that around 1 out of 6 MSM in Indonesia have been infected with HIV at the age of 15-24 years. The increase of cases in the young MSM population in Indonesia occurred amid a relatively stable HIV trend for MSM in the Asia and Pacific region, which was below 0.1%[2]. However, the HIV prevalence is lower compared to Western Central Africa (4.3%-51%) and Eastern Southern Africa (7.5%-36%)[16]. If at other key populations the HIV prevalence is assumed remaining stable or decreasing, then the high HIV prevalence in the young MSM group reflects new infections may contribute significantly to the HIV epidemic in Indonesia[3]. Although highly vulnerable to HIV transmission very little is known and studied regarding the young MSM group in Indonesia.

Table 2: Full model multiple logistic regression analysis for association between consistency of condom use and HIV Status among young MSM

Variables	PR (95% CI)	*p*-value
Consistency of condom use	1.36 (0.63, 2.91)	0.432
Age	1.43 (0.74, 2.78)	0.289
Education	0.54 (0.34, 0.85)	0.008
Occupation	0.80 (0.56, 1.13)	0.205
Knowledge about HIV	0.74 (0.43, 1.26)	0.271
Perceived risk of contracting HIV	0.63 (0.34, 1.18)	0.150
Duration as MSM	2.58 (1.47, 4.53)	0.001
Number of sexual partners	1.25 (0.73, 2.12)	0.418
History of STI symptom	1.14 (0.59, 2.18)	0.699
Access to HIV information	0.64 (0.46, 0.89)	0.009
Consistency condom use*age	0.21 (0.09, 0.51)	0.001
Consistency condom use*knowledge about HIV	1.55 (0.77, 3.09)	0.218
Consistency condom use*perceived risk of HIV	1.08 (0.50, 2.34)	0.853
Consistency condom use*duration as MSM	0.98 (0.49, 1.99)	0.961
Consistency condom use*number sexual partners	0.88 (0.45, 1.72)	0.711
Consistency condom use*history STI symptoms	0.98 (0.45, 2.14)	0.952

Table 3: Golden standard model of multiple logistic regression analyses for association between consistency of condom use and HIV status among young MSM

Variables	PR (95% CI)	*p*-value
Consistency condom use	1.64 (1.13, 2.37)	0.009
Age	1.36 (0.73, 2.55)	0.334
Education	0.53 (0.34, 0.83)	0.006
Occupation	0.79 (0.56, 1.13)	0.194
Knowledge about HIV	0.96 (0.68, 1.35)	0.798
Perceived risk of HIV	0.66 (0.46, 0.96)	0.028
Duration as MSM	2.55 (1.81, 3.60)	<0.001
Number of sexual partners	1.15 (0.83, 1.59)	0.399
History of STI symptoms	1.12 (0.78, 1.62)	0.534
Access to HIV information	0.66 (0.47, 0.91)	0.012
Condom consistency*Age	0.23 (0.10, 0.51)	<0.001

Table 4: Final model of multiple logistic regression analyses for association between consistency condom use and HIV status among young MSM

Variables	B	PR (95% CI)	*p*-value
Consistency condom use			
Consistent		1	
Inconsistent	0.445	1.56 (1.10, 2.22)	0.013
Age (y)			
20-24		1	
15-19	-0.369	0.69 (0.39, 1.23)	0.211
Consistency condom*Age	-1.469	0.23 (0.10, 0.52)	<0.001
Inconsistent condom – age 20-24		1.56 (1.23, 1.58)	
Inconsistent condom – age 15-19		0.36 (0.30, 0.52)	

This group needs to be observed closely and continuously, both through national surveys and other studies to monitor their trend and risk behaviors. This is increasingly important despite engaging in high-risk sexual practices, young MSM tend to be unaware of their HIV status due to lack of knowledge and unaware to have themselves examined.

One of the high-risk behaviors often used in HIV research are young MSM who tend to use the condom inconsistently[9,17]. This study showed that the prevalence of consistent condom use by young MSM was 37.7%. This was in-line with studies conducted in Bandung and China where the prevalence of consistent condom use was still low among young MSM who had sex with permanent male partners, non-permanent male partners, and with female partners[14,18,19]. A similar prevalence was found in Ghana (38.9%), but lower than in Sub-Sahara Africa/SSA (44.7%). Another study reported an overall prevalence of 83.96% for consistent condom use among men who pay for sex in SSA, with variations across countries[20]. The condom has proofed to be able to reduce the risk of HIV transmission, but the consistency of condom use among MSM is still low[17,19,21]. A meta analysis studies in Africa (2007-2020) found that factors such as stigma, criminalization of same-sex behavior, and lack of access to affordable condoms were causes of low consistent condom use[20].

This study focuses on the consistency of condom use as the main determinant affecting the risk of HIV infection, meaning that the efficiency of HIV transmission can be reduced if condoms are used consistently[20]. Therefore, as an effort to break the chain of HIV transmission, consistent condom use is important. particularly among MSM who tend to have anal sex which is a higher risk of HIV infection[7]. Our study reported that young MSM who inconsistently use condoms were 1.56 times more likely (PR: 1.56, 95% CI: 1.10-2.22) to be infected with HIV, compared to MSM who consistently use condoms. This was in-line with the theoretical basis stating that MSM are 18 times more likely to be infected with HIV compared to the general population, so proper and consistent condom use is needed to prevent transmission[11]. Studies conducted in Thailand, Myanmar, China, and West Africa supported our study, namely the incidence of HIV in the MSM group is significantly associated with inconsistent condom use during sex, and the risk of HIV infection will increase if MSM are inconsistent on using a condom[8,12,13,22].

Our study showed there was no difference between young MSM who were highly educated or uneducated, employed or unemployed, had high or lack knowledge on HIV, felt at risk of contracting HIV or not, had been MSM for less or more than 3 years, had multiple sexual partners or not, had symptoms of STIs or not, also had easy or difficult access to HIV information according to the affect between the consistency of condom use and HIV status. Previous studies stated that the 8 variables do not absolutely affect consistency of condom use or the HIV status of MSM; other determinants are required to provide a greater impact on both variables[3,10,17–19, 21,23–27]. Although statistically it had no impact on both variables, 5 components of HIV knowledge distribution needed attention. Not a single question was correctly answered by young MSM. Misperceptions of myths, stigma, and how HIV spreads and transmitted were the components that are least known by young MSM. Stigma and myths often form structural barriers that limit young MSM's access to the health services needed. Similar results were found in various countries in Africa[20].
On the other hand, it was also difficult for young MSM to obtain correct information on HIV. They reported that information was mostly obtained from officials, but the proportion was still relatively low (<40%); while the source of information most frequently accessed by young people was the internet and social media, where the proportion was also still below 20%. Information on HIV obtained from peers can also be a concern. Social Peer influence is frequently a determining factor in behavior, especially in young age groups who are still unstable and in the process of self-identity searching[26].

The lack of knowledge on lower risk of HIV infection by being faithful to only one uninfected sex partner, is reflected on high-risk sexual behavior practiced by young MSM. We found a tendency that young MSM frequently change sex partners. In the past month, the number of respondents' sex partners varied greatly, from 1 person to more than 10 people. Several studies reported that MSM who have unprotected sex with a regular partner, and

simultaneously have unprotected sex with an irregular partner, will increase the risk of contracting HIV[23,24].

Lack of knowledge and the behavior of frequently changing sex partners was further worsened by the young age of MSM having anal sex for the first time. Our study found that around 2 out of 5 young MSM had had anal sex for more than 3 years, with the longest duration of 16 years; meaning that young MSM have been exposed to the risk of HIV infection since childhood. The younger a person has anal sex, the longer they will become an MSM, which will increase the chances of being infected with HIV[8,23,28].

The history of STI symptoms in this study was not a covariate variable, but results of the study showed that high-risk sexual behavior carried out by young MSM has started to manifest as STI symptoms. Approximately 1 out of 4 respondents reported experienced at least one STI symptom in the past year. Several studies stated that STIs such as syphilis and gonorrhea, in addition of causing the impact due to the infection itself, can also increase the risk of HIV infection[21,29,30]. From the 9 variables suspected to be confounders, only age was a confounder in this study. In the 20-24 age group, MSM who inconsistently used condoms were at risk of HIV infection by 1.56 times compared to those who consistently. Previous studies found the 20-24 age group was one of the variables associated with condom use consistency and HIV infection[3,31,32]. In contrast, MSM aged 15-19 who inconsistently used condoms had a risk of HIV infection of only 0.36 times compared to those who consistently used condoms; this means that the risk of HIV infection will be lower in MSM who inconsistently used condoms was influenced by their younger age (15-19 years). The higher risk of HIV infection in MSM aged 20-24 who inconsistently use condoms may occur due to differences in sexual experience in the older age group compared to aged 15-19 years. MSM aged 20-24 years are at higher risk of HIV infection, possibly due to the longer frequency of anal sex behavior compared to aged 15-19 years[12,26,33]. The history of STIs which tends to be higher in older age groups due to longer duration of exposure also increases the risk of HIV infection when compared to the younger age group[21,29,30].

The decision of young MSM to have sex without a condom may be based on the assumption that condoms can reduce sexual pleasure, their partner did not have sex with other people, their partner refuses to have sex if they use a condom, believes that their partner is not infected with HIV, feels afraid/ashamed to request/ask their partner to use a condom, or as a form of expression of love[25]. However, in the 2018/2019 IBBS, reasons for the behavior of using condoms or not by MSM have not been asked in the questionnaire.

Basic education by parents regarding health behavior, especially sex education needs to be emphasized and adjusted to a child's age level. Parents are expected to create an open communication system in their family therefore children are able to receive emotional support, most importantly to build self-confidence and the ability to make healthy decisions, and are not afraid to talk about sexuality.

This plays a significant role because a family is the first social environment and character builder of each individual. HIV prevention messages (through sex education programs integrated with the education curriculum, social media, public campaigns, *PIK-R* at schools and campuses) to increase knowledge and awareness on the importance of condom use as one of the main strategies for preventing HIV must also be specifically designed for adolescents and young people. Technology can be utilized to develop innovative and attractive educational media (such as educational videos, infographics, interactive applications on smartphones, social media) as a tool for disseminating information on sexual health and HIV prevention to young MSM. This technology can be an effective platform to reach a wider audience and deliver relevant messages that are easy to comprehend. In addition, peer education and peer support programs can be a place to support each other, sharing information, and encourage each other in maintaining sexual health. HIV intervention programs aimed at young MSM should also further explore their attitudes towards condom use in various types of sexual relationships (with regular/casual male/female/transgender partners), exercise negotiation skills with partners to use condoms, explain ways to reduce fear/shame in

purchasing and asking partners to use condoms, also conduct HIV tests as a couple.

Conclusion

There is a relationship between the consistency of condom use and HIV status in young MSM in Indonesia after controlling for age. Inconsistent condom use in young MSM in Indonesia can increase the risk of HIV infection by 1.56 times. MSM aged 20-24 years who are inconsistent condom used are at higher risk of HIV infection than MSM aged 15-19 years. Therefore, immediate action is needed to respond to this phenomenon and reduce the contribution of young MSM to the HIV epidemic in Indonesia. Messages on HIV prevention should emphasize the danger of using condom inconsistently, specifically for those who frequently change sexual partners.

Conflict of interest

The authors have no conflicts of interest associated with the material presented in this paper.

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Author contributions

Conceptualization: Sidabutar NHT, Hadi EN. Data curation: Sidabutar NHT. Formal analysis: Sidabutar NHT, Hastono SP. Funding acquisition: Hadi EN. Project administration: Hadi EN. Visualization: Sidabutar NHT, Hadi EN. Writing - original draft: Sidabutar NHT, Hadi EN, Hastono SP. Writing-review & editing: Sidabutar NHT, Hadi EN, Hastono SP.

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