

HIV-RELATED KNOWLEDGE, ATTITUDE AND BEHAVIOR AMONG MALE TO FEMALE TRANSGENDERS: THE CASE OF INDONESIA

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ABSTRACT

Male to Female (MtF) transgender persons are called *waria* in Indonesia. As generally around the world, many *waria* involved in prostitution which are disclosing them to several high risk behaviours related with Human Immunodeficiency Virus (HIV). The aim of this study was to examine the knowledges, attitudes, and HIV risk behaviours among MtF transgenders in Semarang City, Indonesia. This study employed a validated questionnaire in Bahasa Indonesia to measured knowledges, attitudes, and HIV risk behaviours. With a simple random sampling method, 35 subjects took part in the survey. Data analysis used IBM SPSS statistics. Most of the subjects revealed to have HIV-related sexual risk, eventhough only a quarter were sex workers. Misconceptions still remained among the subjects. Inconsistent condom use was often. Adequate knowledge did result in better attitude towards HIV. However, multiple regression analysis showed that subjects with higher knowledge in HIV tend to have higher sexual risks ($\beta = 0.320$, $p = 0.030$). Educating the MtF transgender community about HIV does not see to adequately reduce the HIV related sexual risks. Raising perception of risk (fear) may be effective to raising awareness of MtF transgenders to eliminate HIV-related high risk behaviours.

Keywords: Transgender, HIV, AIDS, sex worker, risk behaviour.

I. INTRODUCTION

Government, academicians, and public health practitioners have been struggling to identify the most effective assessment as well as interventions for most at risk populations (MARPs). National surveillance data

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are still limited in relation with the prevalence of Human Immunodeficiency Virus (HIV) among transgender populations or *waria* (Indonesian). Based on the newest trend, Male to Female (MtF) transgenders are at greater risk of HIV compare to other MARPs. Several reasons make MtF transgenders being MARPs of HIV infection. The most understandable factor is involvement in prostitution or multipartner sexual behaviours. Prostitution is a source of HIV risk not only because of having multiple partners of sex but also related with inconsistent safe sex (with condom). Knowledge and attitude in relation with HIV/AIDS could also be the determinants of HIV-related sexual behaviors (Graczkowski, 2018; Lim et al., 2014; Pharr et al., 2018; Pisani et al., 2004).

Studies in many countries reveal that HIV prevalence of MtF transgenders relatively high (Colby et al., 2016; Logie et al., 2016; Poteat et al., 2017; Salas-Espinoza et al., 2017; Weissman et al., 2016; Zea et al., 2015). A systematic review (1980-2007) of 25 studies from 14 countries worldwide show that prevalence of HIV was 27.3% in MtF transgenders as sex workers (Operario, Soma, & Underhill, 2008). Another systematic review of 2000-2011 studies in 15 countries of Asia-Pacific, Europe, Latin America, and North America reveal that the HIV prevalence of MtF transgenders is 19.1%. It was 48.8 odds ratio compared to adults of the non MARPs (Baral et al., 2013).

Other previous studies showed that only 50% MtF transgenders in USA always use condom with their regular partner (Wilson, Garofalo, Harris, & Belzer, 2010). Meanwhile, in Dominican Republic, a condom use of MtF transgenders was only 67.76% for the last sexual act with their regular partner (Budhwani et al., 2017). Another study in Nepal revealed the high prevalence of multiple sex partners of MtF transgenders, about 88% (Bhatta, 2014). Further, a study from Thailand found that 52.3% of MtF transgenders reported did inconsistent condom use (Chemnasiri et al., 2010). Two studies from Malaysia found that for MtF transgenders, HIV was not a main concern compared to other issues (Barmania & Aljunid, 2017) and misconceptions toward HIV still exist (Draman et al., 2016). A meta-analysis based on recent studies from USA showed that depression, abuse, unstable housing, employment, incarceration and health insurance were revealed to be related with HIV risk among MtF transgenders (Becasen, Denard, Mullins, Higa, & Sipe, 2018).

At present, there have been few studies that recorded HIV-related problems of *waria* population in Indonesia. In 2015 according to the Integrated Biological and Behavioural Surveillance (STBP), the HIV rate among *waria* reach 24.8% (STBP, 2015). Prabawanti et al. (2011) has attempted to discuss about HIV knowledge and HIV-risk behaviors among MtF transgender persons in Indonesia covering issues such as moderate knowledge, sex working and condom breakage. Meanwhile, finding of Pisani et al. (2004) and Safika, Johnson, Cho, & Praptoraharjo (2014) revealed that condom use among MtF transgenders in Jakarta was more usual among paid sex partners than regular partners.

Rauf, Suryoputro, & Shaluhiyah (2019) found that there was a correlation between perceived usefulness ($p=0,013$) with condom use consistency among MtF transgenders sex worker in Makassar. Meanwhile, Murwanto (2014) found that HIV prevention behavior among MtF transgenders community in Kalianda is really good despite their knowledge and attitude is not good enough. In Manado, study of Firmansyah, Asrifuddin, & Kalesaran (2018) revealed that 70% MtF transgender subjects have a good knowledge about HIV, while Awad,

Elim, Dundu, & Ekawardani (2015) found that there is a differences of knowledge and attitude level among sex worker and non sex worker MtF transgenders. Lastly, in Banda Aceh, study of Anita & Magfirah (2016) revealed that there is a significant attitude change among MtF transgenders whose get HIV.

Despite these past studies, there are inconsistency findings that focused on HIV-related knowledges, attitudes and HIV-risk behaviors among MtF transgenders in Indonesia as well as the correlation. That condition left a gap for more studies to be done in Indonesia. Hence, the aim of this study are (1) to measured the prevalence of HIV-related knowledges, attitudes and sexual risk behaviors and (2) to measured the correlates among HIV-related knowledge, attitude and sexual risk behaviors of MtF transgender persons.

II. METHODOLOGY

The present study employed cross-sectional survey with quantitative approach (correlational design). The population of this study are MtF transgender persons located in Semarang City, Indonesia. Semarang becomes one of a city with most HIV case in Indonesia (Kemenkes, 2017). There are some versions of total number of population of MtF in Semarang City. According to Kemenkes (2014) about 89 persons, Perwaris (local MtF transgender organisation) about 120 persons, and PKBI of Semarang City (local HIV-issue NGO) about 152 persons. The authors decided to chose an average of the three versions and met 121 persons. Based on that final number population, with minimum size of sample is 10% (Yount, 2006) and minimum number is 30 (Cohen, Manion, & Morrison, 2007) the authors took 35 persons. This study employed a simple random sampling.

A developed questionnaire is the main data collection tool. The questionnaire were used in this study based on Draman et al. (2016) as well as Ward, Darke, & Hall (1990). These questionnaires were adapted and translated into Bahasa Indonesia.

The final version of the questionnaire has four parts, namely socio-demographic part (9 items), knowledges HIV-related part (17 items), attitudes HIV-related part (10 items), and sexual risk behaviors part (5 items). Within the socio-demographic part, it consist of question related to their age, self-identification, religion, hometown, permanent sexual couple, occupation, last education, and residential. Within socio-demographic part, the subjects were given a semi open ended of answer. For the last item, a likert scale with 5 options ranging from 1 (never) to 5 (always) was provided. Within the knowledges HIV-related part, the subjects were given a three option (true/false/pass). Within the attitudes HIV-related part, a three option (agree/disagree/unsure) was provided. For sexual risk behaviors part, a five likert scale option also provided.

The developed questionnaire was validated by two experts and distributed to some MtF transgender persons in Semarang City for pilot test. Some similar questions were deleted, and some ambiguous questions was improved.

A letter was sent to PKBI of Semarang City as well as Perwaris to obtain their permission for the study to be conducted. After being permitted, the selected subjects were recruited in the study. Recruitment took place at their event and at other community contact points where MtF transgender persons are found. The Bioethics

commission from Faculty of Medicine of Universitas Sultan Agung approved the study. Every subjects completed an informed consent procedure.

Subjects in the present study were informed about the aims of the study and confidentiality of the data. Each subjects's informed consent was obtained after assuring confidentiality. The guided filling questionnaire was carried out in a private place. A gift provided for recompense to subjects. Confidentiality of information was assured. Data collection took about an hour.

Before and after of data entry, the data were cleaned and cross-checked. IBM SPSS software was employed to estimate the prevalence of the study variables of interest,. Descriptive and inferential statistics were implemented. To determine significant differences among socio-demographic variables, knowledge, attitude, and sexual risk behaviors, the Fisher's exact test was applied. To identify the factors associated with the possibility of having a HIV-related knowledge, attitude and sexual risk behavior, the variables were examined in the binary logistic regression in order. When sampling is correlated with potential independent variables in a multivariable model, those variables should be incorporated. Thus, the multivariate results shown here were derived from unweighted estimations, with each variable known to be associated with participation in the sample included in the model.

III. RESULT

Socio-Demographic

Table 1 Socio-demography profile of *waria* subjects

Parameters		Frequency
Age		N = 35, n (%)
	Minimum	18
	Maximum	49
	Mean (SD)	28.26 (7.671)
	Median (IqR)	26 (8)
	15-19	1 (2.9)

	20-24	10 (28.6)
	25-49	24 (68.6)
Monthly Income		N = 35, n (%)
	Minimum	1,000,000
	Maximum	10,000,000
	Mean (SD)	2,827,571.43
	Median	2,500,000
	< 2,300,000	15 (42.9)
	> 2,300,000	20 (57.1)
Education Level		N = 35, n (%)
	Elementary School	2 (5.7)
	Junior High School	12 (34.3)
	Senior High School	16 (45.7)
	University	5 (14.3)
Occupation		N = 35, n (%)
	Entertainment	11 (31.4)
	Salon	7 (20.0)
	Salon & Entertainment	2 (5.7)
	Sex Work	8 (22.9)

	Others	7 (20.0)
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A total of 35 subjects participated in the study. Details of the socio-demography profile of the subjects were shown in Table 1. The mean age among the subjects was 28.26 (SD = 7.671) years, where majority of them (68.6%) were between the ages of 25 to 49.

More than half (60.0%) of the subjects received senior high school, 34.3% of them received junior high school. The median of their income was 2.500.000 rupiah, and majority of them (57.1%) has higher monthly income than city minimum income (UMR). For inquiries on employment, many of them had multiple jobs, which were classified into the categories in Table 1. Almost one quarter (22.9%) of them openly admitted to be sex workers.

HIV-related Knowledge

Table 2 – Knowledge in HIV/AIDS among MtF transgender subjects

o.	Items	True n (%)	False n (%)	“I don’t know” n (%)
	Coughing and sneezing DO NOT spread HIV.	*20 (57.1)	12 (34.3)	3 (8.6)
	Someone can be infected with HIV by sharing a glass of water with person living with HIV.	1 (2.9)	*31 (88.6)	3 (8.6)
	Withdrawing the penis before a climaxes prevents his partner being infected with HIV during sex.	20 (57.1)	*12 (34.3)	3 (8.6)
	A woman can be infected with HIV if she do anal sex with a man.	*31 (88.6)	2 (5.7)	2 (5.7)
	Washing genitals parts after having sex prevents a person being infected with HIV.	11 (31.4)	*20 (57.1)	4 (11.4)

	All pregnant women living with HIV will have babies born with HIV as well.	14 (40.0)	*18 (51.4)	3 (8.6)
	People who have been infected with HIV quickly show serious signs of being infected.	10 (28.6)	*20 (57.1)	5 (14.3)
	There is a vaccine that can prevents a person being infected with HIV.	5 (14.3)	*23 (65.7)	7 (20.0)
	Someone may being infected with HIV by putting their tongue in their partner's mouth (with HIV).	10 (28.6)	*25 (71.4)	0 (0.0)
0	A woman cannot infected with HIV if she has sex during her period.	2 (5.7)	*26 (74.3)	7 (20.0)
1	There is a female condom that can help decrease a woman's chance of being infected with HIV.	*21 (60.0)	7 (20.0)	7 (20.0)
2	Someone will NOT be infected with HIV if he is taking antibiotics.	10 (28.6)	*23 (65.7)	2 (5.7)
3	Having sex with multiple partner can higher a person's chance of being infected with HIV.	*34 (97.1)	1 (2.9)	0 (0.0)
4	Taking a test for HIV a week after having sex is a right decision.	12 (34.3)	*19 (54.3)	4 (11.4)
5	A person can infected with HIV by showering or swimming with a person living with HIV.	0 (0.0)	*32 (91.4)	3 (8.6)
6	A person can be infected with HIV from oral sex.	26 (74.3)	*5 (14.3)	4 (11.4)
7	Smearing condoms with baby oil or vaselin can decrease the chance of being infected with HIV.	7 (20.0)	*24 (68.6)	4 (11.4)

*the correct answer

The average score of the 35 subjects' answers was 27.97 (SD = 3.14) out of 34, ranged from 19 to 33. When the scores were categorized into "adequate knowledge" and "poor knowledge" with the cutoff point of 50.0%, 29 (82.9%) of the subjects had adequate knowledge, and 6 (17.1%) had poor knowledge.

Table 2 showed the answers of the MtF transgender subjects in knowledge of HIV/AIDS. Most of the subjects (97.1%) were aware that having sex with multiple partner can higher a person's chance of getting HIV (item 13). Majority of them (88.6%) were aware that anal sex could be a way of transmitting HIV (item 4). However, more than half (57.1%) believed that the withdrawal method before ejaculation could prevent HIV infection (item 3) and some (31.4%) still believed that washing the genitals after sex could prevent HIV infection (item 5). About one-third (28.6%) still believed that HIV infection symptoms will rapidly appear (item 7), and 34.3% believed that any HIV blood test would give a positive result within one week of infection (item 14). About one-fifth (20.0%) also believed that taking antibiotics, using lubricants during sex, and vaccines could prevent HIV infection (item 17).

HIV-related Attitude

Table 3 – Attitude towards HIV/AIDS among MtF transgender subjects

No	Statement	*Agree n (%)	Do not agree n (%)	Not sure n (%)
1	I am willing to intermingle with HIV/AIDS personnel	30 (85.7)	0 (0.0)	5 (14.3)
2	I am willing to eat food prepared by HIV person	25 (71.4)	4 (11.4)	6 (17.1)
3	I am willing to share toilet with HIV person	30 (85.7)	0 (0.0)	5 (14.3)
4	I am willing to support family members with HIV/AIDS	33 (94.3)	1 (2.9)	1 (2.9)

5	I volunteer for HIV screening test	33 (94.3)	0 (0.0)	2 (5.7)
6	I am loyal to my spouse who was infected through blood transfusion	17 (48.6)	10 (28.6)	8 (22.9)
7	I am loyal to my spouse who was infected through needle sharing	15 (42.9)	12 (34.3)	8 (22.9)
8	If infected with HIV, as a preventive measure, I am ready to use condoms	33 (94.3)	1 (2.9)	1 (2.9)
9	If infected with HIV, as a preventive measure, I will accept needles exchange programs	32 (91.4)	1 (2.9)	2 (5.7)
10	If infected with HIV, as a preventive measure, I will accept free condom	34 (97.1)	0 (0.0)	1 (2.9)

Table 3 described the answers on the MtF transgender’s attitude towards HIV/AIDS. The mean score of the subjects’ attitude towards HIV/AIDS was 17.23 (SD = 2.961) out of 20, ranged from 11 to 20. When the scores were categorized into “overall positive attitude” and “overall negative attitude” with the cut-off point of 50.0%, 25 (71.4%) of the subjects had overall positive attitude, and 10 (28.6%) had overall negative attitude. Answers from most of the items showed that the subjects generally had positive attitude towards HIV/AIDS, except for items 6 (“I am loyal to my spouse who was infected through blood transfusion”) and 7 (“I am loyal to my spouse who was infected through needle sharing”).

HIV-related Sexual Risk Behaviors (Key Findings)

Table 4 – HIV-related risk behaviors among MtF Transgender subjects

N o.	Item	n (%)
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1	How many people, including clients, have you had sex with in the last month?	
	None	2 (5.7)
	One	12 (34.3)
	Two	8 (22.9)
	3-5 people	7 (20.0)
	6-10 people	1 (2.9)
	More than ten people	5 (14.3)
2	How often have you used condoms when having sex with your regular partner(s) in the last month?	
	No reg. partner	6 (17.1)
	Every time	12 (34.3)
	Often	3 (8.6)
	Sometimes	8 (22.9)
	Rarely	0 (0.0)
	Never	6 (17.1)
3	How often did you use condoms when you had sex with casual partners?	
	No cas. partners	7 (20.0)
	Every time	11 (31.4)

		Often	2 (5.7)
		Sometimes	10 (28.6)
		Rarely	1 (2.9)
		Never	4 (11.4)
4	How often have you used condoms when you have been paid for sex in the last month?		
		No paid sex	7 (20.0)
		Every time	10 (28.6)
		Often	3 (8.6)
		Sometimes	12 (34.3)
		Rarely	1 (2.9)
		Never	2 (5.7)
5	How many times did you have anal sex in the last month?		
		No times	8 (22.9)
		One time	7 (20.0)
		Two times	5 (14.3)
		3-5 times	9 (25.7)
		6-10 times	2 (5.7)

	More than 10 times	4 (11.4)
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Table 4 showed HIV-related risk behaviours among the subjects. More than half (54.3%) reported to have high risk behaviour. Most of them (60.1% and 77.1% respectively) reported to have more than 10 sex partners (item 1) as well as anal sex in the past one month (item 5). Consistent condom use each time they had sex was between 28.6% to 34.3% (items 2 to 4). Some of them (5.7% to 17.1%) never used condoms during sex in the past 1 month.

Corellation among HIV-related Knowledge, Attitude & Sexual Risk Behaviors

Table 5. Corellation among HIV-related Knowledge, Attitude & Sexual Risk Behaviors

Independents factors	Outcomes	
	HIV-related risk behaviors	
	Yes	No
Knowledge in HIV/AIDS		
Adequate	6	23
Poor	1	5
ρ (Fisher's exact test)	1.000	
	Attitude toward HIV/AIDS	
	Possitive	Negative
Knowledge in HIV/AIDS		
Adequate	23	6

Poor	2	4
ρ (Fisher's exact test)	0.043	
	At risk acquiring HIV infection (Behaviour score)	
	Yes	No
Reported to be sex workers (from sociodemography)		
Yes	6	2
No	13	14
ρ (Fisher's exact test)	0.244	
	History of anal sex (Behaviour item 5)	
	Yes	No
A woman can get HIV if she has anal sex with a man (Knowledge item 4)		
Answered correctly	26	5
Answered wrongly	1	3
ρ (Fisher's exact test)	0.030	
	History of multiple sex partner (Behaviour item 1)	
	Yes	No

Having sex with more than one partner can increase a person's chance of being infected with HIV (Knowledge item 13)		
Answered correctly	20	14
Answered wrongly	1	0
ρ (Fisher's exact test)	1.000	

Correlation between the 3 domains (HIV knowledge, HIV attitude, HIV risk behaviours) was calculated. The correlation between HIV knowledge and attitude was statistically significant ($\rho = 0.043$). However, There was no correlation between HIV knowledge and HIV risk behaviour ($\rho = 1.000$) as well as between HIV attitude and HIV risk behaviours ($\rho = 0.644$).

Items from the three domains were compared against each other with Fisher's exact test. There was no significant difference in risk of acquiring HIV infection between those who report to be sex workers and those who do not ($\rho = 0.244$). There was a significant difference in history of anal sex between those who answer correctly that "a woman can get HIV if she has anal sex with a man" and who answer wrongly ($\rho = 0.030$). Whether or not the subjects knew about anal sex as a risk of transmitting HIV, there was (74.3%) still recent history of having anal sex. Whether or not the subjects knew about having multiple sex partner as a risk factor of transmitting HIV, recent history of having multiple sex partner still existed (57.14%, $\rho = 1.000$).

IV. DISCUSSION

Based on socio-demography, the MtF in Semarang City, Indonesia match the profile and characteristics of MtF in Banda Aceh, Indonesia in terms of age. The youngest MtF transgender aged 18 years and the average age is between 26 and 28 years (Anita & Magfirah, 2016). Meanwhile, MtF transgenders in Dominican Republic were younger with average age 23 years and there is no MtF transgender above 40 years (Budhwani et al., 2017). More than 50% of MtF transgenders have monthly income above UMR (adequate salary) and around 60% completed up to senior high school. This characteristics regarding salary and education level are similar to MtF transgenders in Pahang, Malaysia (Draman et al., 2016). In contrary to many other studies, 50-70% of MtF transgenders are work as sex workers (Awad et al., 2015; Budhwani et al., 2017; Draman et al., 2016; Operario et al., 2008; Salas-Espinoza et al., 2017). However, in this study only 22% who claimed as a sex worker.

Semarang City MtF transgenders had good basic knowledge of HIV. More than 80% answered correctly nine of seventeen questions, with a mean score of 27.97 of the possible 34. Similar to MtF transgenders in Manado, Indonesia 70% had good basic knowledge of HIV (Firmansyah et al., 2018). Thirty four (97.1%) understand that 'having sex with multiple partner can higher a person's chance of getting HIV'. However, there are 26 (74.3%) answered that 'a person can be infected with HIV from oral sex'. Similarly, 79.5% MtF transgenders in Dominican Republic also confirmed that oral sex leads to HIV transmission (Budhwani et al., 2017). This result indicates that MtF transgenders in Semarang City are aware of the possible routes of HIV transmission in general, however there is a misunderstanding in some area of knoweledge.

Awad et al. (2015) in their study with MtF transgenders in Manado, Indonesia noted that there were 53% MtF transgenders have positive attitudes towards people living with HIV (PLHIV). This finding is similar to results from present study where 25 MtF transgenders (71.4%) in Semarang City have overall positive attitude, and 10 (28.6%) have overall negative attitude. More than 70% of MtF transgenders in Semarang City agree the statement "I am willing to eat food prepared by HIV person". In contrast, 73% MtF transgenders in Dominican Republic believe that various of food can leads to HIV transmission (Budhwani et al., 2017).present study found that most of MtF transgenders (94.3%) are willing to be volunteer for HIV screening test. Contrary, less than 50% MtFs in Banda Aceh, Indonesia joined HIV voluntary test. Compared to MtF transgenders in Pahang, Malaysia (Draman et al., 2016), MtF transgenders in Semarang City are more loyal with their partner who infected with HIV.

Regarding practices, 82.8% of the subjects had sexual partners in one month less than 6 and 14.3% had more than 10 sexual partners. Compared to MtF transgenders in Dominican Republic (Budhwani et al., 2017) in which they had average 8 sexual partners with maximum 49 sexual partners in one month, our subjects had fewer sexual partners. In present study, only 28.6 to 34.3% of subjects always used condom when having sex with all type of sexual partner (including regular partners, paid sexual partners, and casual partners). There are 17.21% of the subjects who never used condom. Comparing with the some studies in Asia countries, unprotected sex among present subjects were higher than MtF transgenders in Thailand (52.3%), lower than MtF transgenders in Nepal (88.4%), but similar to MtF transgenders in Vietnam with around 70% (Bhatta, 2014; Chemnasiri et al., 2010; Colby et al., 2016).

According to bivariate analysis, there was no correlation between knowledge and behavior related HIV. Semarang City MtF transgenders with adequate knowledge tend to have high risk HIV behaviour. On the other hand, a study in Manado, Indonesia revealed that 61% of MtF transgenders had adequate knowledge but their behaviour was risk to HIV (Awad et al., 2015). Our proportion of MtF transgenders who claimed their self is not a sex worker has greater risk acquiring HIV infection than who claimed as a sex worker. This is also diiferent from study in Manado, Indonesia in which MtF transgenders who is not a sex worker has better knowledge than who is a sex worker (Awad et al., 2015). In present study, 26 (74.3%) subjects knew that people can get HIV if they do anal sex but they did anal sex. More than have of subject knew that people who have multiple partners can increase a chance of being infected with HIV, but they have multiple sex partner. This is different to study

in Dominican Republic, in which MtF transgenders with lower HIV knowledge was associated with lower rate of condom use (Budhwani et al., 2017).

V. CONCLUSION

It is essential to provide accurate information about HIV/AIDS to the MtF community. Also, the correct attitude about HIV/AIDS should be instilled among them. HIV/AIDS awareness is still poor among the subjects in this study, because HIV-related sexual risk behaviors still persist although they already have the knowledge about prevention of HIV transmission. It is suggested that, beside the conventional methods of education on HIV/AIDS prevention, Islamic religious and spiritual elements could be added into the education methodology, with the hope that risk behaviour would be further reduced.

Most of the subjects reported to have HIV-related sexual risk, although only a quarter were sex workers. Misconceptions still remained among the subjects. Inconsistent condom use was common. Adequate knowledge did result in better attitude towards HIV/AIDS. However, subjects with higher knowledge in HIV/AIDS tend to have higher sexual risks.

The authors in this study would like to suggest for further explorations on the reasons behind these findings. From this study, it could be concluded that the majority of this sample of subjects still engaged in HIV-related high risk sexual behaviours although they reported to have better knowledge in HIV/AIDS compared to another similar study. New approaches must also be explored to reduce the HIV-related risks in MtF transgender community. Applying the Theory of Planned Behavior may help in reducing the HIV-related behaviors. For instance, raising the perception of risk (negative behavior belief) of anal sex may decreasing intention to do anal sex.

Lastly, this study has some limitations. The use of small sample limits the generalization ability of this study. The MtF transgenders is a hidden community in Indonesia so it is difficult to ask them to involved in a research studies. This result some important issues in the MtF transgenders community might be underrecorded. In addition, the data were obtained by a questionnaire with interviewer-administered may have resulted a bias.

Study with sample from different provinces of Indonesia, and generalizations to other MtF transgender populations are important. Studies within ethnic groups are essential to further explore the role of socio-demographic factors. Additional empirical evidence is needed to gain a firm understanding of the different sampling approaches.

REFERENCES

1. Anita, & Magfirah. (2016). Pengaruh VCT HIV/AIDS terhadap Perubahan Sikap Seksual pada Kalangan Transgender di Banda Aceh [Effect of HIV / AIDS VCT on Changes in Sexual Attitudes among Transgender People in Banda Aceh]. *Idea Nursing Journal*, 7(2), 71–75.

2. Awad, L., Elim, C., Dundu, A. E., & Ekawardani, N. (2015). Perbedaan Tingkat Pengetahuan dan Sikap tentang HIV/AIDS pada Waria Pekerja Seks Komersial dan Waria Non-Pekerja Seks Komersial di Kota Manado [Differences in the Level of Knowledge and Attitudes about HIV / AIDS in Commercial Sex Workers' Transgenders an. *JURNAL E-CLINIC*, 3(1), 463–471. Retrieved from <https://ejournal.unsrat.ac.id/index.php/eclinic/article/view/7477>
3. Baral, S. D., Poteat, T., Strömdahl, S., Wirtz, A. L., Guadamuz, T. E., & Beyrer, C. (2013). Worldwide burden of HIV in transgender women: A systematic review and meta-analysis. *The Lancet Infectious Diseases*, 13(3), 214–222. [https://doi.org/10.1016/S1473-3099\(12\)70315-8](https://doi.org/10.1016/S1473-3099(12)70315-8)
4. Barmania, S., & Aljunid, S. M. (2017). Transgender women in Malaysia, in the context of HIV and Islam: A qualitative study of stakeholders' perceptions. *BMC International Health and Human Rights*, 17(1), 1–10. <https://doi.org/10.1186/s12914-017-0138-y>
5. Becasen, J. S., Denard, C. L., Mullins, M. M., Higa, D. H., & Sipe, T. A. (2018). Estimating the Prevalence of HIV and Sexual Behaviors Among the US Transgender Population: A Systematic Review and Meta-Analysis, 2006–2017. *American Journal of Public Health*, November, e1–e8. <https://doi.org/10.2105/ajph.2018.304727>
6. Bhatta, D. N. (2014). HIV-related sexual risk behaviors among male-to-female transgender people in Nepal. *International Journal of Infectious Diseases*, 22, 11–15. <https://doi.org/10.1016/j.ijid.2014.01.002>
7. Budhwani, H., Hearld, K. R., Hasbun, J., Charow, R., Rosario, S., Tillotson, L., ... Waters, J. (2017). Transgender female sex workers' HIV knowledge, experienced stigma, and condom use in the Dominican Republic. *PLoS One*, 12(11), e0186457. <https://doi.org/10.1371/journal.pone.0186457>
8. Chemnasiri, T., Netwong, T., Visarutratana, S., Varangrat, A., Li, A., Phanuphak, P., ... Van Griensven, F. (2010). Inconsistent condom use among young men who have sex with men, male sex workers, and transgenders in Thailand. *AIDS Education and Prevention*, 22(2), 100–109. <https://doi.org/10.1521/aeap.2010.22.2.100>
9. Cohen, L., Manion, L., & Morrison, K. (2007). Research Methods in Education. In *Research Methods in Education*. <https://doi.org/10.4324/9780203224342>
10. Colby, D., Nguyen, N. A., Le, B., Toan, T., Thien, D. D., Huyen, H. T., ... Stall, R. (2016). HIV and Syphilis Prevalence Among Transgender Women in Ho Chi Minh City, Vietnam. *AIDS and Behavior*, 20(S3), 379–385. <https://doi.org/10.1007/s10461-016-1485-8>
11. Draman, S., Suofeiya, M., Lizam, M. S., Anuar, M., Hussin, M. S. M., Hisham, M. F., ... Musa, R. (2016). Knowledge and Attitude towards HIV/AIDS among transsexuals in Kuantan, Pahang. *Revelation and Science*, 6(1), 7–16. Retrieved from <https://journals.iium.edu.my/revival/index.php/revival/article/view/166/154>
12. Firmansyah, F., Asrifuddin, A., & Kalesaran, A. F. C. (2018). Gambaran Epidemiologi dan Pengetahuan HIV/AIDS pada Waria di Kota Manado Tahun 2018 [Overview of Epidemiology and Knowledge of HIV / AIDS in Transvestites in Manado City in 2018]. *KESMAS*, 7(4).
13. Graczkowski, R. (2018). *HIV Knowledge, Attitudes, and Sexual Risk Behaviors among Women from Trinidad* (Florida International University). Retrieved from <https://digitalcommons.fiu.edu/etd/3689>

14. Kemenkes. (2014). *Estimasi Jumlah Populasi Kunci Terdampak HIV tahun 2012 [Estimated Number of Key Affected Populations of HIV in 2012]*. Jakarta.
15. Kemenkes, D. P. (2017). *Laporan Situasi Perkembangan HIV-AIDS dan PIMS di Indonesia Januari - Desember 2017 [Situation Report on the Development of HIV-AIDS and PIMS in Indonesia January - December 2017]*. Retrieved from http://siha.depkes.go.id/portal/files_upload/Laporan_HIV_AIDS_TW_4_Tahun_2017__1_.pdf
16. Lim, T. W., Davis, W. W., Quan, V. M., Frangakis, C., Ha, T. V., Le Minh, N., ... Go, V. F. (2014). Association between HIV knowledge and risk behavior in persons who inject drugs in Thai Nguyen, Vietnam. *Southeast Asian Journal of Tropical Medicine and Public Health*, 45(6), 1425–1436.
17. Logie, C. H., Lacombe-Duncan, A., Wang, Y., Jones, N., Levermore, K., Neil, A., ... Newman, P. A. (2016). Prevalence and Correlates of HIV Infection and HIV Testing Among Transgender Women in Jamaica. *AIDS Patient Care and STDs*, 30(9), 416–424. <https://doi.org/10.1089/apc.2016.0145>
18. Murwanto, B. (2014). Perilaku Pencegahan HIV/AIDS pada Kelompok Wanita Pekerja Seks dan Waria [HIV / AIDS Prevention Behavior in Women Groups of Sex Workers and MtF Transgender]. *Jurnal Kesehatan*, 5(1), 23–33.
19. Operario, D., Soma, T., & Underhill, K. (2008). Sex work and HIV status among transgender women: Systematic review and meta-analysis. *Journal of Acquired Immune Deficiency Syndromes*, 48(1), 97–103. <https://doi.org/10.1097/QAI.0b013e31816e3971>
20. Pharr, J. R., Enejoh, V., O. Mavegam, B., Olutola, A., Karick, H., & E. Ezeanolue, E. (2018). A Cross-Sectional Study of the Role of HIV/AIDS Knowledge in Risky Sexual Behaviors of Adolescents in Nigeria. *International Journal of High Risk Behaviors and Addiction*, 6(4), e63203. <https://doi.org/10.5812/ijhrba.63203>
21. Pisani, E., Girault, P., Gultom, M., Sukartini, N., Kumalawati, J., Jazan, S., & Donegan, E. (2004). HIV, syphilis infection, and sexual practices among transgenders, male sex workers, and other men who have sex with men in Jakarta, Indonesia. *Sexually Transmitted Infections*, 80(6), 536–540. <https://doi.org/10.1136/sti.2003.007500>
22. Poteat, T., Ackerman, B., Diouf, D., Ceesay, N., Mothopeng, T., Odette, K. Z., ... Baral, S. (2017). HIV prevalence and behavioral and psychosocial factors among transgender women and cisgender men who have sex with men in 8 African countries: A cross-sectional analysis. *PLoS Medicine*, 14(11), e1002422. <https://doi.org/10.1371/journal.pmed.1002422>
23. Prabawanti, C., Bollen, L., Palupy, R., Morineau, G., Girault, P., Mustikawati, D. E., ... Magnani, R. (2011). HIV, sexually transmitted infections, and sexual risk behavior among transgenders in Indonesia. *AIDS and Behavior*, 15(3), 663–673. <https://doi.org/10.1007/s10461-010-9790-0>
24. Rauf, D. A., Suryoputro, A., & Shaluhayah, Z. (2019). Analisis Hubungan Persepsi Manfaat Yang Dirasakan Terhadap Konsistensi Penggunaan Kondom Pada Waria Pekerja Seks Dalam Pencegahan HIV/AIDS di Kota Makassar [Analysis of the Perceived Relationship of the Perceived Benefits to the Consistency of Condom Use]. *Al-Sihah: The Public Health Science Journal*, 10(2), 120–130. <https://doi.org/10.24252/as.v10i2.6051>

25. Safika, I., Johnson, T. P., Cho, Y. I., & Praptoraharjo, I. (2014). Condom Use Among Men Who Have Sex With Men and Male-to-Female Transgenders in Jakarta, Indonesia. *American Journal of Men's Health*, 8(4), 278–288. <https://doi.org/10.1177/1557988313508430>
26. Salas-Espinoza, K. J., Menchaca-Diaz, R., Patterson, T. L., Urada, L. A., Smith, D., Strathdee, S. A., & Pitpitan, E. V. (2017). HIV Prevalence and Risk Behaviors in Male to Female (MTF) Transgender Persons in Tijuana, Mexico. *AIDS and Behavior*, 21(12), 3271–3278. <https://doi.org/10.1007/s10461-017-1931-2>
27. STBP. (2015). *Estimasi dan Proyeksi HIV/AIDS di Indonesia 2015-2020 [HIV / AIDS Estimation and Projection in Indonesia 2015-2020]*. Jakarta.
28. Ward, J., Darke, S., & Hall, W. (1990). The HIV Risk-Taking Behaviour Scale (HRBS) Manual. In *The HIV Risk-Taking Behaviour Scale (HRBS) Manual*. Sydney.
29. Weissman, A., Ngak, S., Srean, C., Sansothy, N., Mills, S., & Ferradini, L. (2016). HIV Prevalence and Risks Associated with HIV Infection among Transgender Individuals in Cambodia. *PLoS ONE*, 11(4), e0152906. <https://doi.org/10.1371/journal.pone.0152906>
30. Wilson, E. C., Garofalo, R., Harris, D. R., & Belzer, M. (2010). Sexual risk taking among transgender male-to-female youths with different partner types. *American Journal of Public Health*, 100(8), 1500–1505. <https://doi.org/10.2105/AJPH.2009.160051>
31. Yount, W. R. (2006). *Research design and statistical analysis for Christian ministry* (4th ed). Fort Worth, Tex.
32. Zea, M. C., Reisen, C. A., Del Río-González, A. M., Bianchi, F. T., Ramirez-Valles, J., & Poppen, P. J. (2015). HIV prevalence and awareness of positive serostatus among men who have sex with men and transgender women in Bogotá, Colombia. *American Journal of Public Health*, 105(8), 1588–1595. <https://doi.org/10.2105/AJPH.2014.302307>