

Research Article

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Anogenital Warts Prevalence and Associated Risk Factors among MSM Population in Surakarta, Indonesia

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ABSTRACT

To know anogenital warts prevalence and its correlation with HIV infection in men who have sex with men (MSM) population in Surakarta, Indonesia. To identify risk factors associated with anogenital warts among MSM population in Surakarta, Indonesia.

This cross-sectional study collects data from MSM population in Surakarta, Indonesia. Patients are MSM who joined monthly mobile clinic held by the health government of Surakarta and those who attend the Voluntary Consultation and Testing Clinic of Dr. Moewardi General Hospital. Risk factors were asked using questionnaire. Physical examination was used to diagnose anogenital warts, and took blood samples for HIV screening.

From 190 subjects, 25 (13.1%) had anogenital warts, and 17 (8.9%) are HIV positive. Anogenital warts increase the odds of having HIV infection by 5.18 times. Risk factors that contribute to anogenital warts include age 25-34 years old (OR= 3,729) and a history of drug abuse (OR= 7.184).

This research only uses simple physical examination to diagnose anogenital warts, and the small study subjects may not be representative of general MSM population in Indonesia.

Age 25-34 years old and history of drug abuse are substantial risk factors for anogenital warts. Having anogenital warts infection increases the odds of acquiring HIV. This study highlights the importance of STD screening especially in high-risk population such as MSM, which currently is still neglected by the Health Department of Indonesia.

Key words: Anogenital Warts, HIV, MSM, Prevalence, Risk Factors

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**INTRODUCTION**

Anogenital warts are commonly caused by Human Papillomavirus (HPV) type 6 and 11 (Moscicki dan Palefsky, 2011), although it can also cause by the carcinogenic form (Quinn et al., 2012). They are usually asymptomatic however, when lesions are present, depending on the size and location, it can feel itchy or painful (Workowski dan Bolan, 2015). The prevalence of anal warts is notably high in men who have sex with men (MSM), with more than 90% prevalence found in HIV-infected MSM (Palefsky dan Rubin, 2009).

In recent years, the prevalence of HIV/AIDS and other sexually transmitted diseases (STD) in Indonesia among MSM is rising rapidly, therefore it is becoming a cause of concern among public health fields (Morineau et al., 2011, Integrated biological behavioral surveillance among most- at-risk-groups (MARG) in Indonesia: Surveillance Highlights: men who have sex with men and warias/ transgender, 2007). However, the prevalence of anogenital warts within MSM population in Indonesia is still unknown. Stigma and discrimination about homosexual activities even among health care providers is one of the many barriers faced by MSM and transgender from accessing sexual health services (HIV/AIDS among men who have sex with men and transgender populations in South-East Asia. The Current Situation And National Responses, 2010).

This study aims to know the prevalence of anogenital warts among MSM population in Surakarta, Indonesia, to identify the correlation between anogenital warts and HIV infection, as well as to recognize risk factors that may have been associated with acquiring anogenital warts. By understanding the risk factors and its prevalence, we can create a surveillance program and control strategy for STD especially for anogenital warts in MSM and transgender population, which currently is still lacking in Indonesia's health department.

MATERIAL AND METHODS

In this cross-sectional study, data were collected from MSM population that attended the monthly mobile clinic in cooperation with the Public Health Department of Surakarta and MSM that visited the Voluntary Consultation Testing (VCT) Clinic of Dr. Moewardi General Hospital in Surakarta, Indonesia. The study was conducted between November 1 2016, and September 30 2017, and received approval of the Ethics Committee of Dr Moewardi General Hospital, Surakarta.

Using a logistic regression test for statistical analysis requires us to have a total of 190 subjects because the rule of thumb is to have ten times the amount of questions which is a total of 19 in this questionnaire. Questionnaire was used to obtain the following data: sociodemographic characteristic (regarding age, education, employment, marital status, and place to meet partner), risky health behavior (about smoking, drinking alcohol and history of drug abuse) and sexual behavior (concerning age at first sex, sexual orientation, position during sex, number of sexual partner in the last year, number of sexual partner till now, consistency of using condoms, the use of sex toys, previous STI history, previous HIV examination, sexual abuse, paid to do sexual intercourse).

Subjects were also examined physically by a dermatologist for the presence of genital warts, and blood samples were taken to detect HIV positivity by using HIV Rapid test as per WHO protocol for diagnosing HIV infection. Diagnosis of genital warts was determined by physical examination only.

Data were analyzed using backward logistic regression test using SPSS 22 for Mac with significance level at $P < 0.05$. To see the correlation between a genital wart and HIV infection, data were analyzed using Chi Square test with significance level of $P < 0.05$.

RESULTS

We recruited 190 MSM into our study. Of these men, 25 (13.1%) had anogenital warts, of which 23 of 25 subjects had anal warts (92%), and 3 of 25 subjects had penile warts (12%). Out of the 190 subjects, 65 (34.2%) were infected with HIV (Table 1). There are 17 (8.9%) subjects with both anogenital warts and HIV infection and 8 (4.2%) subjects with anogenital warts but HIV-negative. Bivariate analysis showed that being infected with anogenital warts increases the odds of having HIV infection by 5.18 times (OR = 5.18; 95% CI = 2.905 – 12.804; $p = 0.000$).

Table 1: Subjects Description of the study

	N (%)
Genital Warts	25 (13.1)
Anal Genital Warts	23 (92)
Penile Genital Warts	3 (12)
HIV positive	65 (34.2)

Bivariate analysis showed that employment ($p = 0.040$) and history of drug abuse ($p = 0.038$) were correlated with genital warts. However, there was no correlation between sexual history and genital warts (Table 2). In multivariate analysis, independent risk factors that contribute to genital warts incidence include age, especially between 25-34 years old (OR= 3.729; 95%CI= 1.052 – 13.215; $p = 0.041$) and have a history of drug abuse (OR 7.184; 95% CI = 1.815 – 28.438; $p = 0.005$) (Table 3). Drugs most commonly used in our study include methamphetamines and heroin.

Table 2: Bivariate Analysis for Anogenital Warts Risk Factors

Variable	Anogenital Warts		p
	Negative (%)	Positive (%)	
Sociodemographic factor			
Age			0.279
< 25 years	27 (16.4%)	5 (20.0%)	
25 – 34 years	64 (38.8%)	13 (52.0%)	
≥ 35 years	74 (44.8%)	16 (28.0%)	
Education			0.090
None	1 (0.6%)	0 (0%)	
Primary School	18 (10.9%)	0 (0%)	
Junior High School	31 (18.8%)	1 (4.0%)	
Senior High School	87 (52.7%)	17 (68.0%)	
University	28 (17.0%)	7 (28.0%)	
Employment			0.040*
Civil Servant	3 (1.8%)	0 (0%)	
Private	91 (55.2%)	14 (56.0%)	
Employee	38 (23.0%)	4 (16.0%)	
Student	5 (3.0%)	4 (16.0%)	
Manual labor	19 (11.5%)	0 (0%)	
Farmer	1 (0.6%)	0 (0%)	
Not working	7 (4.2%)	2 (8.0%)	
Retired	1 (0.6%)	1 (4.0%)	
Marital status			0.376
Single	121 (73.3%)	22 (88.0%)	
Married	25 (15.2%)	2 (8.0%)	
Divorced	11 (6.7%)	0 (0%)	
Widow	8 (4.8%)	1 (4.0%)	
Place to meet partner			0.114
Work place	71 (43.0%)	5 (20.0%)	
Gym	2 (1.2%)	0 (0%)	
School	8 (4.8%)	0 (0%)	
Vacation/trips	6 (3.6%)	2 (8.0%)	
Social Media	63 (38.2%)	16 (64.0%)	
Bar/Club/ Karaoke	15 (9.1%)	2 (8.0%)	
Risky Health Behaviour			
Smoking			0.119
Yes	87 (52.7%)	9 (36.0%)	
No	78 (47.3%)	16 (64.0%)	
Drinks Alcohol			0.911
Always	3 (1.8%)	0 (0%)	
Sometimes	35 (21.2%)	5 (20.0%)	
Rarely	11 (6.7%)	2 (8.0%)	
Never	116 (70.3%)	18 (72.0%)	
History of drugs abuse			0.038*
Yes	12 (7.3%)	5 (20.0%)	
No	153 (92.7%)	20 (80.0%)	
Sexual behaviour			
Age at first sex			0.433
< 20 years	93 (56.4%)	12 (48.0%)	
≥ 20 years	72 (43.6%)	13 (52.0%)	
Number of sexual partner until now			0.927
1 - 10 people	86 (52.1%)	14 (56.0%)	
11-49 people	45 (27.3%)	6 (24.0%)	
≥ 50 people	34 (20.6%)	5 (20.0%)	
Number of sexual partner within the past year			0.171
None	28 (17.0%)	8 (32.0%)	

< 5 people	106 (64.2%)	12 (48.0%)	
≥ 5 people	31 (18.8%)	5 (20.0%)	
Sexual orientation			0.472
Homosexual	72 (43.6%)	9 (36.0%)	
Bisexual	93 (56.4%)	16 (64.0%)	
Position during sexual intercourse			0.986
Mostly top	25 (15.2%)	4 (16.0%)	
Mostly bottom	24 (14.5%)	4 (16.0%)	
Versatile	74 (44.8%)	11 (44.0%)	
Only as top	19 (11.5%)	2 (8.0%)	
Only as bottom	23 (13.9%)	4 (16.0%)	
Condom use consistency			0.769
Yes	51 (30.9%)	7 (28.0%)	
No	114 (69.1%)	18 (72.0%)	
Use of sex toys			0.580
Yes	2 (1.2%)	0 (0%)	
No	163 (98.8%)	25 (100%)	
Previous STI history			0.458
Yes	18 (10.9%)	4 (16.0%)	
None	147 (89.1%)	21 (84.0%)	
Previous HIV examination			0.909
Yes	68 (41.2%)	10 (40.0%)	
None	97 (58.8%)	15 (60.0%)	
Sexual abuse			0.268
Yes	42 (25.5%)	9 (36.0%)	
No	123 (74.5%)	16 (64.0%)	
Paid to do sexual intercourse			0.226
Yes	60 (36.4%)	6 (24.0%)	
No	105 (63.6%)	19 (76.0%)	

*significance $p < 0.05$

Table 3: Multivariate analysis of Anogenital Warts Risk Factors

Variables	OR	95% CI	P
Age			0.125
< 25 years	2.729	0.591 – 12.601	0.198
25 – 34 years	3.729	1.052 – 13.215	0.041*
Employment			0.248
Civil Servant	0.000	0.000 - .	0.999
Private	0.084	0.004 – 1.647	0.103
Employee	0.045	0.002 – 1.085	0.056
Student	0.393	0.014 – 10.674	0.579
Manual labor	0.000	0.000 - .	0.998
Farmer	0.000	0.000 - .	1.000
Not working	0.209	0.007 – 5.910	0.358
History of drugs abuse			
Yes	7.184	1.815 – 28.438	0.005*
Age at first sex			
< 20 years	0.425	0.158 – 1.140	0.089

DISCUSSION

Co-infection between genital warts and HIV infection occurred in 17 (8.9%) subjects. Bivariate analysis showed that having genital warts increases the risk to be infected with HIV by 5.18 times and it is statistically significant. This increased risk is in agreement with a study by Li *et al.* in China, that states having anal HPV infection correlates with HIV infection by 3.03 times (Li *et al.*, 2016). The mechanism of HPV and HIV co-infection is still not elucidated. One hypothesis why a person with HPV infection is more prone to have HIV infection, is because the skin and mucous membrane infected with HPV is easily disrupted, hence disturbing the mucous membrane's immune system through

1) a change in density and Langerhans cells function to capture pathogens, 2) enables recruitment and activation of HIV target cells such as T-lymphocytes, 3) reduce protein expression in cell adhesion and tumor suppression, 4) inhibits protein that increase Langerhans cells infiltration in epithelial cells, 5) decrease protein production that are involved in antimicrobial activity, and 6) increases inflammatory cytokines that enable HIV replication (Lissouba et al., 2013).

In our study, we found that age between 25 – 34 years old are 3.7 times more likely to have genital warts. Our finding was an opposite of the study by Goldstone et al. (2011) who mentioned that younger MSM with age between 15- 20 years old have two times risk to have genital warts compared with those aged 21- 27 years old (Goldstone et al., 2011). However, a systematic review stated that older age men have the same risk as younger age men to be infected with HPV. This same risk may be because men do not form enough immune response to protect them from HPV infection (Moscicki dan Palefsky, 2011). Another study also stated that across all age, men have lower antibody levels towards HPV infection compared to women (Markowitz et al., 2009). Men are also more likely to have plenty of new sexual partners compared to women (Moscicki dan Palefsky, 2011).

The bivariate analysis in this study showed that history of drug abuse is a prominent risk factor for genital warts infection, with a risk of 7.18 times. This finding is similar to a study by Cranston et al., that stated MSM with methamphetamine use within the last 30 days have a higher risk of 1.54 times to have anal HPV infection (Cranston et al., 2012). This may be because after being infected, HPV infection is predominantly controlled by the cellular immune system. The use of methamphetamine disrupts antigen processing hence results in a disturbance of the cellular immune system and facilitates HPV infections and its persistence. (Talloczy et al., 2008, Cranston et al., 2012)

There are several limitations to this study. The small study population represents a resource-limited although an urban area of Surakarta, and may not be generalizable to other regions of Indonesia. Another limitation is that we only use physical examination for determining anogenital warts infection, without any use of sophisticated laboratory examination.

CONCLUSION

This study detects quite a high prevalence of anogenital warts infection in MSM population in Surakarta, Indonesia. There is also a strong correlation between anogenital warts and HIV infection. Genital warts infection is associated with age between 25-34 years old and with a history of drug abuse. We strongly urge MSM with anogenital warts infection to be examined for HIV and vice versa. We hope that this study can promote new awareness for STD especially anogenital warts and its correlation with HIV infection as well as its risk factors among health workers and nonprofit organizations working with MSM and transgenders. We are hopeful that this study can help promote new surveillance program and control strategy for STD especially anogenital warts in Indonesia's Health Department.

DISCLOSURE

There is no conflicts of interests between the authors, and there is no involvement of any financial conflicts of interest in this work.

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