

© 2016 The Author(s)

This is an Open Access article distributed under the terms of the [Creative Commons Attribution 4.0 International License](#) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited

ORIGINAL RESEARCH

ISSN: 2477-4073

## FEMALE SEX WORKERS' ATTITUDES TOWARD HIV TESTING: A STUDY AMONG INDIRECT SEX WORKERS IN BANTUL, YOGYAKARTA, INDONESIA

Dhesi Ari Astuti<sup>1\*</sup>, Moh. Hakimi<sup>1</sup>, Andari Wuri Astuti<sup>1</sup>, Dyah Anantalia Widyastari<sup>2</sup>, Doni Marisi Sinaga<sup>3</sup>

<sup>1</sup>Universitas Aisyiyah Yogyakarta, Yogyakarta, Indonesia

<sup>2</sup>Institute for Population and Social Research, Mahidol University, Thailand

<sup>3</sup>International Program in Hazardous Substance and Environmental Management, Graduate School, Chulalongkorn University, Bangkok, Thailand

\*Correspondence:

Dhesi Ari Astuti, S.Si.T., M.Kes.

Universitas Aisyiyah Yogyakarta, Jalan Ring Road Barat No.63 Mlangi, Nogotirto, Gamping, Sleman, Yogyakarta, Indonesia (55292) | Email: [dhesi\\_stikesayo@yahoo.co.id](mailto:dhesi_stikesayo@yahoo.co.id) | Website: [www.unisayogya.ac.id](http://www.unisayogya.ac.id)  
Phone: +62 274 4469199

### ABSTRACT

**Background:** HIV prevalence among female sex workers in Indonesia is among the highest in Asia after Papua New Guinea and Malaysia. Indirect sex workers posed a heightened risk of HIV infection compared to direct sex workers because they usually earn less than their direct counterpart and have lower bargaining power in condom use.

**Objective:** This study aims to examine the factors influencing indirect sex workers' attitudes toward HIV testing.

**Methods:** This study employed a quantitative method with a cross-sectional approach involved 67 indirect sex workers from massage parlors and beauty salons in Bantul district. Descriptive analysis of respondents' attitude, perceive threat and expectation was drawn from Health Belief Model Theory.

**Results:** The majority of indirect sex workers had positive attitude towards HIV testing. They are aware to the importance of condom in every commercial sex works, but the majority believe themselves were not susceptible to HIV-AIDS due to their preference to healthy-looking clients to serve sex. Personal expenses to visit the health center for HIV testing are less considered compared to public opinion and discrimination. Peers encouraged the workers to get tested. Disseminating HIV/AIDS information to sex workers through media and mobile phone are not successful.

**Conclusion:** The findings of the study carrying an expectation that when individuals' attitudes toward HIV testing are positive, the likelihood of getting themselves tested would also be higher. Since the perception is driven by information as stimulus, it is important to provide continuous information to create stimulus which eventually will influence their perception.

**Keywords:** HIV-testing, indirect sex workers, massage parlors, beauty salon

## INTRODUCTION

Since the past two decades, Human Immunodeficiency Virus (HIV) has drew the attention of governments all over the world. The devastating effects of HIV become the burden of the nation, not only for the infected person and their family. In Asia, more than 5 million people living with HIV, and about 180,000 died of AIDS-related causes in 2015. Although new HIV infections declined by 5% between 2010 and 2015, HIV and AIDS remain the priority for many countries.<sup>1</sup> In Indonesia, epidemiological surveillance on AIDS reported an increased in number of new infection, number of people living with AIDS and also death related AIDS. At least 73,000 new infections reported every year and make it totally 690,000 people living with HIV by 2015. Among those, about 35,000 AIDS-related death was reported.<sup>2</sup>

HIV prevalence among female sex workers in Indonesia is among the highest in Asia after Papua New Guinea and Malaysia.<sup>2</sup> It is estimated, of 300,000 female sex workers in Indonesia, both direct and indirect sex workers, 7% are HIV-positive. It should be noted that since HIV testing among Female Sex Workers (FSW) was reported low (only at 38%), the actual figure perhaps is much higher than it is found.<sup>2</sup>

Sex work is defined as the exchange of sex for money. The structure of sex work vary substantially around the world and across different cultures.<sup>3</sup> We use the term direct and indirect sex workers to differentiate the nature of the sex works as the effort of generating income. Direct sex worker refers to those who work in brothels and providing sexual services as their main occupation. Whilst indirect sex workers refers to those whose sex works as supplementary income generating activity.<sup>4</sup>

Indirect sex workers posed a heightened risk of HIV infection due to their works. Compared to direct sex workers, indirect sex workers usually earn less than their counterpart. In most cases, this population is also neglected because they are difficult to be detected. The risk of HIV and AIDS transmission is also higher with the low condom use.<sup>5,6</sup> In average, only 5.8% of female sex workers consistently used condoms.<sup>3</sup>

Sex work is also seen as quintessential expression of patriarchal gender relations. With a limited income compared to direct sex workers, indirect sex workers often have low bargaining power against their clients and ended up with unsafe sex practice because of monetary reasons.<sup>4</sup> Sex workers accepted sexual intercourse without condom because they perceived that their clients feel less pleasure having sex with condom and may come to find other services if they forced them. Female sex workers also belief that boyfriends, native Indonesians and healthy-looking clients cannot spread STD.<sup>7</sup>

This study aims to examine the factors associated to indirect sex workers' attitudes toward HIV testing. By understanding sex workers' attitudes toward HIV testing, it is expected their intention to get themselves tested can be estimated. Bantul district was selected as the study site because it is under the supervision of Bantul AIDS Committee. By exploring the nature of indirect sex workers in massage parlors and beauty salons, the findings of the study are aimed to provide evidences to health programmers and policy makers in developing a new method to encourage sex workers for HIV testing. Since mobile voluntary counseling and testing (VCT) has been established in Bantul district, promoting the importance of HIV testing

to the sex workers becomes the ultimate goals to increase its utilization.

## METHODS

This study employed quantitative study with a cross-sectional approach where the variables were observed at the same period. It was conducted at massage parlors under local NGO and beauty salons at Bantul district. Sixty-seven (67) respondents who were identified as indirect sex workers were involved in the study. A compensation was provided as a return to respondents' participation. Ethical approval was obtained from Faculty of Public Health, Diponegoro University, Semarang with reference number 151/EC/FKM/2012.

## RESULTS

Respondents of the present study were indirect sex workers who work in massage parlors and beauty salons in Yogyakarta. Of 100 indirect sex workers on the study site, only 67 willing to be interviewed. Most of respondents (76%) aged 14-40 years old and completed primary school. More than half were married or ever married, and mostly have been working as sex workers for more than

6 months. In average, respondents accepted at least 1 client per week, but top star sex workers sometimes may have more than 3 visitors per day. Compared to their income from providing sexual service, respondents received less income from their main occupation. From salon or massage parlors, respondents received approximately IDR. 250,000 or equal to USD. 18 per month; whilst from the sex work, they may earn IDR. 50,000 per client.

### *Respondents' attitude towards HIV test*

The results show 94% respondents have positive attitude towards HIV test. As shown in Table 1, the vast majority (98.5%) understand the importance of condom to prevent HIV transmission. All agreed that having sex with multiple partners is considered as risky sexual practice. The majority (95.5%) also believed that those who have risk to HIV should have themselves tested. Improving indirect sex workers' knowledge on HIV becomes more challenging since some masseuses who understood the association between risky sexual behaviors to HIV transmission undecided the importance of HIV test.

**Table 1** Respondents' attitude towards HIV test (N = 67)

No.	Statements	Responses					
		Agree		Undecided		Disagree	
		F	%	F	%	F	%
1	In my opinion, the indirect sex worker who has multiple sex partners without condom is considered as having risky sexual behavior	66	98.5	1	1.5	0	0
2	In my opinion, the indirect sex worker who has risky sexual behavior must have HIV test	64	95.5	3	4.5	0	0

### *Perceived threats of HIV/AIDS*

As shown in Table 2, most of indirect sex workers who work as beautician and masseuses realized they were at risk to HIV/AIDS infection due to their jobs – providing sex service to

multiple sex partners who have high risk to HIV. They also believed that all clients may transmit HIV/AIDS and other sexually transmitted infection. Nevertheless, about a fourth of respondents still believed that they may

not be infected by HIV and AIDS from their HIV positive-clients.

The contrast findings somehow alarm the importance of improving indirect sex workers' knowledge to HIV. Although most of respondents were aware to the importance of condom in every commercial sex works, concern should be addressed since majority believe themselves were not susceptible to HIV-AIDS because they always select healthy-looking clients as their sexual partners.

Unlike perceived vulnerability that showed an inconsistent result, respondents' perceived severity of HIV-AIDS depicted more invariable findings. Respondents considered HIV-AIDS as a severe disease and incurable. Their perceived severity was perhaps also driven by their little knowledge of anti-retroviral therapy (ARV). About a third of respondents did not understand that ARV should be taken for a lifetime and it can prevent them from death.

**Table 2** Respondents' perceived threats of HIV/AIDS (N = 67)

No.	Statements	Responses			
		Yes		No	
		F	%	F	%
Respondents' perceived vulnerability of HIV/AIDS					
1	I realize I have higher risk to HIV/AIDS due to multiple sex partners	62	92.5	5	7.5
2	I have sex with clients who have high risk to HIV then I may have HIV	57	85.1	10	14.9
3	All clients have possibility to infect sexually transmitted diseases (STD) and HIV/AIDS to me	52	77.6	15	22.4
4	I may get HIV infection from clients who have HIV	50	74.6	17	25.4
5	I am not susceptible to HIV infection since I always use condom when having multiple sex partners	62	92.5	5	7.5
6	I may get HIV infection if I have sex without condom	63	94	4	6
7	I may not have HIV/AIDS because I always select healthy-looking clients for sex	35	52.2	32	47.8
Respondents' perceived severity of HIV/AIDS					
1	I think there is no cure to HIV/AIDS	55	82.1	12	17.9
2	I think people living with HIV/AIDS should take lifetime ARV	50	74.6	17	25.4
3	ARV can prevent someone to death due to HIV/AIDS	42	62.7	25	37.3

#### *Perceived costs and benefits of HIV testing*

Of 67 respondents, 45 indirect sex workers willing to have themselves tested. It becomes interesting since the workers may not really consider to individual cost related to HIV testing but more to socio-psychological costs they have to bear. More than half respondents were not concerned to the transportation cost, HIV testing fee, and other personal expenses to visit the health center for HIV testing. However, many workers reluctant to get themselves tested due to public opinion and discrimination. The fear of knowing

their own HIV status also becomes the barrier of 32.3% respondents for having HIV test.

Respondents' perceived benefit of HIV testing lied on their expectation of not transmitting their disease to their clients. They also perceived that by knowing their HIV status as a result of HIV testing, they will be able to live longer. In addition, masseuses and beauticians also believed that by having HIV testing and knowing their HIV status will reduce the likelihood of getting opportunistic infections. They also

believed, when they are free from HIV it also means prevent their clients from infection. By preventing their clients from

HIV, it will also restrain themselves from HIV-reinfection.

**Table 3** Respondents' perceived costs and benefits of HIV testing (N = 67)

No.	Statements	Responses			
		Yes		No	
		F	%	F	%
Respondents' perceived costs of HIV testing					
1	Transportation costs	28	41.8	39	58.2
2	Productivity lost	27	40.3	40	59.7
3	High cost for HIV test	32	47.8	35	52.2
4	Prejudice from clients if know the respondents do HIV test results with refusing to have sex	48	71.6	19	28.4
5	Discrimination	54	80.6	13	19.4
Respondents' perceived benefits of HIV testing					
1	I think I don't have to be afraid to do HIV test since it is curable like other diseases	46	68.7	21	31.3
2	I think that with understanding to HIV status I will not transmit it to my clients	58	86.6	9	13.4
3	I think counseling and testing to my HIV status will not change my health condition since I have sex with multiple partners.	48	71.6	19	28.4
4	I think with less severe to my HIV status, I will live longer	19	28.4	48	71.6
5	I think with no HIV transmission from workers to clients then there is no infection to other clients	23	34.3	44	65.7
6	I think when I have less HIV-infected client, my HIV-related opportunistic diseases will not be more severe since I cannot be reinfected by HIV-infected clients.	23	34.3	44	65.7

#### *Cues to action: Peer supports*

Respondents' willingness for HIV testing was also influenced by their peers' attitudes and supports. It seems that beauticians and masseuses who involved in the study were having supportive peers. More than 70% acknowledged their peers' role in providing reminder for counseling and testing. Their peers also encourage the respondents to get themselves tested because their occupation is considered as risky. Respondents perceived that their peers have positive attitudes toward HIV testing. Respondents believed their friends agreed to have HIV counseling and testing for having greater detailed information on HIV and AIDS. By having HIV testing also will prevent them for further infection and severe disease. Respondents of the study also have internal cues to action for HIV testing. More than half (68%) aware

that supportive peers only will not guarantee they will have safe sexual practice. This implies, beauticians and masseuses still relied on themselves in making decision for HIV testing.

#### *Access to media*

Beside their peers, masseuses and beauticians are also relying to media to find information related to HIV. The finding showed that respondents who have less access to media tends to have negative perception toward HIV testing. Respondents who have better access to source of information such as outreach workers, health personal or health education at the working place tends to have better attitudes to HIV testing. The finding confirms that external sources can be a great influence to individual's decision to engage in a new behavior. However, the data provided in Table 4

shows the low number of respondents intensively used media for this purpose including internet, digital media (film/CD/VCD), printed media (book, magazine), and mobile phone.

Less than 10% openly admitted they have frequent access to media that provide information related to sexually transmitted infection and HIV-AIDS. Those who accessed media were mostly obtained information related to sexuality from printed media (43%), and their mobile phones (29%). Respondents sought for information related to HIV, AIDS and other STDs through magazines, tabloid and newspapers.

The study found 79.1% respondents have never used Internet to find information related to HIV/AIDS whilst 74.6% never divine HIV testing through Internet. Less than 20% respondents realized the purpose of

internet to disclose information related to HIV testing and effects of risky sexual behavior. Similar to the purpose of using internet, it was found that less than of respondents used digital and printed media to learn about sexually transmitted disease, HIV/AIDS, and effects of risky sexual behavior. Nevertheless, the study revealed more than half of respondents were exposed to information related to HIV testing through printed media. Seems electronic media, and also mobile phone are not success to expose indirect sex workers to information related to sexually transmitted diseases and HIV testing. Our study exhibited only 2 of 67 respondents received short message service (SMS) related to HIV testing while only 1 respondent intensively access pictures related to sexually transmitted disease and HIV/AIDS through mobile phone.

**Table 4** Roles of media to indirect sex workers' perception of HIV testing (N=67)

Purpose of using media	Responses					
	Always		Often		Never	
	F	%	F	%	F	%
<b>Internet</b>						
Sexually transmitted diseases	5	7.5	6	9	56	83.5
HIV/AIDS	3	4.5	11	16.4	53	79.1
Effects of risky sexual behavior	2	3	8	11.9	57	85.1
Information related to HIV testing	5	7.5	12	17.9	50	74.6
<b>Digital media (film/CD/VCD)</b>						
Sexually transmitted disease	5	7.5	11	16.5	51	76
HIV/AIDS	3	4.5	12	17.9	52	77.5
Effects of risky sexual behavior	4	6	14	20.9	49	73.1
<b>Printed media (book, magazine)</b>						
Sexually transmitted disease	4	6	14	20.9	49	73.1
HIV/AIDS	2	3	17	25.4	48	71.6
Effects of risky sexual behavior	2	3	20	29.8	45	67.2
Information related to HIV testing	5	7.5	29	43.3	33	49.2
<b>Mobile phone</b>						
Short message related to HIV testing	2	3	20	29.8	45	67.2
Access pictures related to sexually transmitted disease and HIV/AIDS	1	1.5	15	22.4	51	76.1

## DISCUSSION

As HIV and AIDS prevalence among indirect sex workers tends to increase, attention should be addressed to

this particular group because they are engaged in risky sexual practices. Many studies reported, indirect sex workers often had unsafe sex with both their costumers



and private partners.<sup>8</sup> Unfortunately, few of them perceived themselves risky to sexually transmitted diseases (STDs) and get themselves tested.<sup>9</sup>

The present study found the vast majority of respondents had positive attitude toward HIV testing. Health Belief Model (HBM) Theory was employed as the main framework to describe respondents' attitudes toward HIV testing and their perceptions toward HIV and AIDS. The HBM itself was originally developed as a systematic method to explain and predict preventive health behavior. It focused on the relationship of health behaviors, practices and utilization of health services. In later years, the HBM has been revised to include general health motivation for the purpose of distinguishing illness and sick-role behavior from health behavior.<sup>10,11</sup>

Respondent's perceived severity is an important factor that influence their perception and practice to HIV testing. Each individual has his/her own perception of the likelihood of experiencing a condition that would adversely affect one's health.<sup>10</sup> When individuals considered HIV-AIDS as a severe diseases and bring a huge consequences to their lives, they are more likely to perform the preventive behavior.<sup>11</sup> The vast majority of respondents in the present study considered HIV-AIDS as a severe disease. Masseuses believed that AIDS is incurable and bring devastating effects to their lives and families, including taking ARV for their life time.

Perceived vulnerability to HIV and AIDS will also influence one's attitude and behavior. When the respondents perceived themselves vulnerable to STDs, HIV and AIDS due to their risky occupation and unsafe sexual practices, they are more likely to have better preventive behavior such as HIV testing.

In general, indirect sex workers in this study considered themselves at risk to HIV and AIDS. The vast majority aware that they are at risk because they have multiple partners. More than 90% masseuses and beauticians also believed that using condom consistently with their casual partners will prevent them from HIV. Nevertheless, unlike perceived threat related to condom, respondents' awareness related to clients' risk showed that they have inadequate knowledge related to the risks obtained from their clients. Misconception toward clients' risk puts the respondents into a higher degree of vulnerability. Although some respondents are aware to the risk to HIV infection because they engaged in sexual intercourse with risky person, nevertheless, about a half perceived that they are less vulnerable because they have carefully selected good-looking clients in every commercial sex works.

According to Rosenstock, Perceived Benefits of Taking Action – testing HIV in this case, is the next step to expect after an individual has accepted the susceptibility of a disease and recognized it seriously. The direction of action that a person chooses will be influenced by the beliefs regarding the action.<sup>11</sup> When masseuses and beauticians believed that having themselves tested will prevent them from HIV infection and avert the negative effects, the likelihood of having positive attitude towards HIV testing will be increasing.

Although perceived severity cannot reflect their actual practices, but perception has already involved cognition process where one's considering the consequences of the disease and cost and benefit of HIV testing.<sup>12</sup> Cognitive process itself is influenced by information received by respondents as stimulus. Thus, it is important to provide continuous

information to create stimulus which eventually will influence their perception.

Health Belief Model posited human behavior as a result of cognitive process, including perceptions that predict the likelihood of individuals in engaging the intended behavior. Behaviors (responses) are also influenced by information received from the environment (stimulus) based on individual's perception on cost and benefit of the behavior. Perceptions also proceeded by stimulus which contained of information then it can be stored and recalled anytime.<sup>11</sup>

The present study found that respondents who showed a good perception towards HIV testing will be more likely to test themselves. Respondents also considered the importance of HIV testing based on their evaluation on the cost and benefit of HIV testing for their health. Respondents believed by getting themselves tested, it will reduce the likelihood of transmitting the disease to others including their clients. They believed, by preventing their clients, it would also prevent themselves from HIV infection.

Despite its inconsistency results in some aspects, the present study showed interesting findings. Although respondents believe of the benefit of HIV testing is relatively good, about a half respondent perceived the cost of HIV testing could be a burden. Monetary and time costs are valued by the respondents as the barriers of HIV testing. Therefore, the current HIV program such as mobile VCT remains relevant to have the commercial sex workers tested at a very low cost in terms of money and time.

Health Belief Model also acknowledges the influence of peer as external cues to action. The finding from the present study also revealed similar result. Masseuses and beauticians consider

their peers as reliable source of information. It is expected, when respondents relied on their supportive peers, the likelihood of having themselves tested is higher than compared when masseuses are surrounded by unsupportive peers. This result also corresponds to Green's theory on precede model of behavior changes. Peers as reinforcing factors may influence individual's perception in acquiring the new behavior.<sup>13</sup>

The finding of the present study confirmed that respondents who were less frequent in accessing any media tend to have lower HIV testing intention. Considering media as a source of information, respondents who have higher frequency of access are more likely to have better knowledge related HIV testing and in turn will have better intention for HIV testing. The results correspond to several media studies reported the more frequent one accessing a media individual will be directed more to media version of reality than the reality itself. The effect of media therefore is being cultivated in one's mind and perception and change the perception, attitude and behavior.<sup>14-16</sup> When masseuses and beauticians frequently access information related to HIV testing, it will improve their knowledge of the importance of HIV testing and eventually will encourage them to perform the suggested behavior

It should be noted that masseuses and beauticians also received HIV-related information from outreach workers who visited the massage parlor. Nevertheless, the information given was limited to brief introduction of HIV which unfortunately will be ignored most of the times. Limited access to HIV therefore is not only in terms of accessibility to any media but also the quality of information given to the masseuses and beauticians. Unfortunately, the present study did not collect information related to the quality of media



content. The questions posed to respondents were only accessibility to media and how frequent they access it. Therefore, further study should include the analysis of media content rather than frequency of access only.

## CONCLUSION

The findings of the study carrying an expectation that when individuals' attitudes toward HIV testing are positive, the likelihood of getting themselves tested will also be higher. Nevertheless, much should be done in order to ensure this key population has provided adequate information related HIV including HIV testing. Referring to Health Believe Model theory, individual's decision to perform the new behavior (HIV testing) is driven by the cognitive factor. Cognitive process itself is influenced by information received by respondents as stimulus. Thus, it is important to provide continuous information to create stimulus which eventually will influence their perception.

### Declaration of Conflicting Interest

None declared.

### Funding

This study was funded by Universitas Aisyiyah Yogyakarta, Indonesia.

### Authorship Contribution

Dhesi Ari Astuti, Moh. Hakimi, Andari Wuri Astuti contributed in the design, data collection, data analysis, and drafting the manuscript. Dyah Anantalia Widyastari and Doni Marisi Sinaga contributing in analyzing and re-writing the manuscript.

### References

1. United Nations Programme on HIV/AIDS. *Report on the global acquired immunodeficiency syndrome epidemic*. Geneva: UNAIDS; 2016.
2. AIDS Datahub. *Datahub for Asia and Pacific: Female sex worker*. Geneva: UNAIDS; 2015.
3. Baral S, Beyrer C, Muessig K, et al. Burden of HIV among female sex workers in low-income and middle-income countries: a systematic review and meta-analysis. *The Lancet Infectious Diseases*. 2012;12(7):538-549.
4. Weitzer R. Sociology of sex work. *Annual Review of Sociology*. 2009;35:213-234.
5. Fajans P, Ford K, Wirawan DN. AIDS knowledge and risk behaviors among domestic clients of female sex workers in Bali, Indonesia. *Social Science & Medicine*. 1995;41(3):409-417.
6. Ford K, Wirawan DN, Fajans P. Factors related to condom use among four groups of female sex workers in Bali, Indonesia. *AIDS Education and Prevention*. 1998;10(1):34-45.
7. Basuki E, Wolffers I, Devillé W, Erlaini N. Reasons for not using condoms among female sex workers in Indonesia. *AIDS Education and Prevention*. 2002;14(2):102.
8. Nemoto T, Operario D, Takenaka M, Iwamoto M, Le MN. HIV risk among Asian women working at massage parlors in San Francisco. *AIDS Education and Prevention*. 2003;15(3):245.
9. Miyazaki M, Une H, Babazono A, Kato M, Takagi S, Chimura H. Sexually transmitted diseases in Japanese female commercial sex workers working in massage parlors with cell baths. *Journal of Infection and Chemotherapy*. 2003;9(3):248-253.
10. Hochbaum G, Rosenstock I, Kegels S. *Health belief model*. United States: Public Health Service. 1952.
11. Rosenstock IM. The health belief model and preventive health behavior. *Health Education & Behavior*. 1974;2(4):354-386.
12. Jacobalis S. *Beberapa teknik dalam manajemen mutu manajemen rumah sakit [Several techniques in quality hospital management]*. Yogyakarta: Universitas Gadjah Mada 2000.
13. Green LW, Kreuter MW. *Health program planning: An educational and ecological approach*. New York: McGraw-Hill Companies; 2005.
14. Widyastari DA, Shaluhiah Z, Widjanarko B. Adolescents in peril: Internet and other factors influencing

- adolescents'sexual attitudes. *Jurnal Kesehatan Reproduksi*. 2010;1(1):1-13.
15. Widyastari DA, Shaluhayah Z, Widjanarko B. *The influence of internet exposure on adolescents' sexual attitudes: a study among secondary school students in Semarang, Central Java, Indonesia*. Thailand: Institute for Population and Social Research (IPSR), Mahidol University; 2009.
  16. Shanahan J, Morgan M. *Television and its viewers: Cultivation theory and research*.

Cambridge: Cambridge University Press; 1999.

**Cite this article as:** Astuti DA, Hakimi M, Astuti AW, Widyastari DA, Sinaga DM. female sex workers' attitudes toward hiv testing: a study among indirect sex workers in Bantul, Yogyakarta, Indonesia. *Belitung Nursing Journal*. 2016;2(6):146-155. <https://doi.org/10.33546/bnj.29>