

Risk Factors of Gonorrhoea Among Female Indirect Sex Workers

Anita Nugrahaeni¹⁾, Muchlis AU Sofro²⁾, Zahroh Shaluhiah³⁾
Antono Suryosaputro³⁾ Bagoes Widjanarko³⁾

¹⁾Masters Program in Epidemiology, Diponegoro University

²⁾Department of Internal Medicine, Faculty of Medicine, Diponegoro University

³⁾Department of Health Promotion, Faculty of Public Health, Diponegoro University

ABSTRACT

Background: Gonorrhoea is one of sexually transmitted infections (STI) with high incidence, besides chlamydia, syphilis, and trichomoniasis. STIs are spread predominantly by sexual context including vaginal, anal, and oral. STIs have a profound impact on sexual and reproductive health worldwide. STIs can increase the risk of HIV acquisition three fold or more. This study aimed to determine the risk factors of gonorrhoea among female indirect sex workers.

Subjects and Method: This was a case control study carried out in Wonosobo district, Central Java, from April to May 2017. A sample of 84 female indirect sex workers were selected for this study consisting of 42 cases of gonorrhoea and 42 control. The dependent variable was gonorrhoea. The independent variables were sex combination and condom use. Data on gonorrhoea was collected from STI clinic. The other data were collected by questionnaire. The data were analyzed using logistic regression.

Results: The risk of gonorrhoea among female indirect sex workers increased with sex combination practice (OR=3.17; p=0.027; 95% CI= 1.14 to 8.82) and absence of condom use (OR= 8.04; 95% CI= 2.30 to 28.12; p=0.001).

Conclusion: The risk of gonorrhoea among female indirect sex workers increases with sex combination practice and absence of condom use.

Keywords : gonorrhoea, sex combination, condom use, female, indirect sex workers

Correspondence:

Anita Nugrahaeni. Masters Program in Epidemiology, Diponegoro University, Jl. Imam Bardjo SH No. 5, Semarang, Central Java. Email: nitaozora@gmail.com. Mobile: 081335980666.

BACKGROUND

Gonorrhoea is one of sexual transmitted infections (STI) caused by the bacterium *Neisseria gonorrhoeae*. Clinical manifestation of the disease are cervicitis, urethritis, proctitis and conjunctivitis. Gonorrhoea infection on women leads to particular problems since it initiates reproduction development disorder such as pelvic inflammatory disease, ectopic pregnancy, scar tissue in the tuba, and infants being born by mothers with gonorrhoea may get eye infection to blindness (Daili, 2015; Mayor et al., 2012).

The phenomena of increase and spreading of STI cases including gonorrhoea rapidly occurs in high-risked groups. Female Indirect Sex Workers (FISW) is a high-risk group to STI. FISW is female sex worker who get her clients out in the street or during working in entertainment places such as night clubs, massage parlors, discotheques, cafes, karaoke bars, or bars, and sells sex for additional income (Widodo, 2009). The group conducts sexual activities with multiple partners and has high level of mobility. In addition, the group is also at high-risk for transmitting STI to communi-

ty through their clients (Thuong et al., 2008).

More than 150 million gonorrhoea cases found globally each year. The incidence of gonorrhoea in developing countries is higher than in developed ones. Gonorrhoea cases by 3.9% each year, which is from 421.9 per 100,000 population to 438.2 per 100,000 population (Centers for Disease Control and Prevention, 2010). Gonorrhoea prevalence in developing countries is reported to be high on female sex workers with low social economy condition. In Asia, gonorrhoea prevalence is varied in every country. It ranges between 11-38% and the highest and the second prevalence are China and Indonesia respectively (Blanchard & Moses, 2008).

The data of gonorrhoea prevalence in Indonesia taken from several hospitals were varied. In Mataram General Hospital it was reported that gonorrhoea prevalence was 52.8% out of all STI cases, in Pringadi Hospital, Medan it was 16% out of all STI cases, in Dr. Soetomo hospital it was 25.22% out of STI cases, in Kariadi Hospital, Semarang it was 17.56% out of all STI cases (Hakim, 2011).

The result of Hasil integrated Biological Behavioral Surveillance (IBBS) 2015 found that gonorrhoea prevalence in key population is consecutively 21.12% on FDSW, 12.71% on MSM, 12.12% on transgender and 9.67% on FISW (Kementerian Kesehatan Republik Indonesia, 2015).

In 2014 in Central Java it was recorded that there were 28,472 cases of STI positive, 14,295 cases were found in female sex workers group. It increased in 2015 to 30,650 cases of STI positive, 13,053 cases were found among sex workers group. Gonorrhoea cases found was 7.8%, which was in the fifth, and came place after bacterial vaginosis which was 32.33%, cervicitis which was 25.80%, vaginal candidiasis

19.15% and non gonorrhoea urethritis 9.40% (Dinas Kesehatan Provinsi Jawa Tengah, 2015).

The number of STI found and treated in Wonosobo Regency was 1682 cases. There were 1261 cases in 2015 and 844 cases in 2016. Gonorrhoea came the third place, with 19.3%. The biggest gonorrhoea distribution to various risk groups was in FSW group which was 29.4%, the rest was found on high risk couples which was 19.1%, customers of sex workers 14.1%, MSM 9.8%, transgender 6.1%, male sex workers 0.6% and general public was 20.8%. Wonosobo regency does not have any red light districts. Female sex workers in Wonosobo regency are categorized as Female Indirect Sex Workers (FISW), who are mostly work as ladies companion in cafés or karaoke bars (Dinas Kesehatan Kabupaten Wonosobo, 2016).

Gonorrhoea is known to facilitate HIV transmission that may develop into AIDS with high mortality rate. Gonorrhoea incidence is influenced by sexual behaviors. The high rate of gonorrhoea on FISW is influenced by the low consistency of condom use (Budiman et al., 2015; Budiono, 2012). Another factor that influences the incidence of gonorrhoea is the forms of sexual activity conducted by FSW including vaginal sex, anal sex, oral sex as well as the combination of them. Vaginal sex, oral sex, and sex activities are related to the incidence of STI such as gonorrhoea (Zhao et al., 2015). The number of sexual partner is related to the incidence of gonorrhoea (Alexander et al., 2014). Based on the above elaboration and description, the researcher was interested to study further about factors of characteristics and sexual activities related to the incidence of gonorrhoea among Female Indirect Sex Workers in Wonosobo regency that aimed to prove the

risk factors toward gonorrhoea incidence on FISW.

SUBJECTS AND METHOD

1. Design of the Study

The design of the study used was analytic observational, by using case control approach. Data collection was conducted in STI Clinic of Wonosobo I Community Health Center, Selomerto I Community Health Center, Leksono I Community Health Center during April-May 2017.

2. Population and Sampling Technique

The population of the study was FISW that worked as ladies companion of karaoke bars in Wonosobo Regency, who had gone through STI examination by STI clinic. Inclusion criteria of the sample was FISW who worked as ladies companion of karaoke bar who were under the supervision of an NGO Wonosobo Youth Center at least once a month and had undergone STI examination by STI clinic, based on laboratory investigation. The case group was karaoke bar ladies companion, who were based on laboratory investigation, were gonorrhoea positive. Meanwhile the control group was those who were stated as gonorrhoea negative as well as other type of STI. The sample collection technique use was non probability sampling with consecutive sampling selected based on the order of the newest secondary data of STI clinic registry as the initial data until the number of sample is completed.

3. Variables of the Study

Independent variables being studied were characteristics and sex activities. Characteristics consisted of age, educational level, marital status, and working period as FSW. Sex activities included history of vaginal sex, history of anal sex, history of oral sex, history of sex combination practice, num-

ber of sex partner, frequency of sexual intercourse and consistency of condom use.

4. Operational Definition of Variable

Age was defined as the age of the study subjects calculated from the date of birth up to the date of the interview and it was measured in year.

Educational level is the level of formal education finished by the study subjects. Marital status was defined as legal marital status the study subjects had. Working period as female sex workers was the period of time spent since the beginning of becoming FSW up to the time of STI examination, and it was measured in unit of month

History of vaginal sex was defined as the history of study subjects in doing sexual intercourse with the customers in the last one month by penetrating sex partner's penis into vagina of the study subjects. History of anal sex was defined as the history of study subjects in doing sexual intercourse with the customers in the last one month by penetrating sex partner's penis into rectum of the study subjects

History of oral sex was defined as the history of study subjects within the last one month in which the study subject obtained oral sex stimulation onto vagina, in particular on the area of clitoris by the customer by using lips or tongue.

History of sex combination practice was defined as the history of study subjects in doing sexual intercourse with customer in the last one month by conducting combined manners of vaginal-oral, oral-anal, vaginal-anal, anal-vaginal-oral.

Number of sex partners was defined as the number of customers of study subjects within the last one week. The frequency of sexual intercourse was defined as the number of sexual intercourse conducted within 1 night with customers. Condom use was defined as the customers' behavior in using condom during sexual intercourse.

Gonorrhoea incidence was defined as the study subjects whose result of examination on smear preparation of vaginal discharge found that ≥ 1 intracellular diplococcus.

5. Validity and Reliability Test

Validity and reliability test was conducted on ladies companion of karaoke bars in Banjarnegara Regency. The result of validity test on sex activities variable found that the value of r counting was bigger than r table, therefore all question items were considered as valid. Reliability test was conducted by using alpha Cronbach that revealed all variables ≥ 0.50 therefore all question items were considered as reliable.

6. Data Analysis

Univariate analysis of quantitative data was conducted to present characteristics data and descriptive variable of the study. Bi-

variate analysis was conducted to analyze the association of independent variables toward dependent variable by using Chi Square test. Multivariate analysis by using logistic regression analysis was used to predict dependent variable out of several independent variables.

RESULT

1. Univariate Analysis

The study was conducted in Wonosobo Regency, Central Java on 84 FISWs who worked as ladies companion in 12 karaoke bars under the supervision of an NGO Wonosobo Youth Center. The case sample consisted of 42 people with gonorrhoea positive and control sample consisted of 42 people with gonorrhoea negative as well as other STIs.

Table 1. The result of univariate analysis on study subjects characteristics

Variables	Categories	Frequency	%
Age	Age < 25 year	54	62.3
	Age \geq 25 year	30	35.7
Educational Level	Primary school/ equal	13	15.5
	Secondary school/ equal	45	53.5
	High school/ equal	26	31.0
Marital Status	Unmarried	26	30.9
	Married	23	27.4
	Divorced	34	40.5
	Widowed	1	1.2
Working period as FSW	≥ 6 months	62	73.8
	< 6 months	22	26.2
History of vaginal sex	Vaginal sex	81	96.4
	No vaginal sex	3	3.6
History of anal sex	Anal sex	7	8.3
	No anal sex	77	91.7
History of oral sex	Oral sex	6	7.1
	No oral sex	78	92.9
History of sex combination practice	Sex combination	51	60.7
	No sex combination	33	39.3
Number of sex partners	At risk (≥ 2 per week)	68	80.9
	Not at risk (1 per week)	16	19.1
Frequency of sexual intercourse	At risk (≥ 2 times per night)	15	17.8
	Not at risk (1 time per night)	69	82.2
Consistency in using condom	Inconsistent	60	71.4
	Consistent	24	28.6

Most FISW who worked as ladies companion in karaoke bars were <25 years of age (62.3%), they were secondary school graduates (53.5%), divorced (40.5%) and had worked as FSW for ≥6 months (73.8%). Based on sex activities, it was revealed that most FISW had history of vaginal sex (96.4%), did not have history of anal sex (91.7%), did not have history of oral sex (92.9%), had history of sex combination practice (60.7%) had sex partners ≥ 2 people per week (80.9%), had frequency of sexual intercourse <3 times each night (82.2%) and were not consistent in using condom (71.4%)

2. Bivariate Analysis

The result of bivariate analysis with Chi Square test was presented in Table 2. Based on Table 2 it was revealed that the age ≥25 years (OR= 1.87; CI 95%= 0.76 up to 4.64; p= 0.172), educational level <SMP (OR= 1.25; CI 95%= 0.49 up to 3.16; p= 0.637), single (OR= 1.83; CI 95%= 0.69 up to 4.87; p= 0.221), period of being FISW ≥6 monts (OR= 2.12; CI 95%= 0.78 up to 5.79; p= 0.136), conducted oral sex (OR= 2.10; CI 95%= 0.36 up to 12.17; p= 0.397), and frequency of sexual intercourse ≥2 times each night (OR= 1.21; CI 95%= 0.51 up to 2.86; p= 0.661) affected toward the increasing risk for having gonorrhoea on FISW, although it was statistically significant.

The number of sex partner ≥2 per week (OR= 3.80; CI 95%= 1.11 up to 12.98; p= 0.026), conducted sex combination practice (OR= 3.10; CI 95%= 1.24 up to 7.71; p= 0.014), and inconsistent condom use (OR= 8.64; CI 95%= 2.16 up to 28.53; p<0.001) affected toward the increasing risk for having gonorrhoea on FISW and statistically significant.

3. Multivariate Analysis

The result of multivariate analysis on logistic regression was discovered through Table 3 that risk factors of gonorrhoea on FISW were history of sex combination practice (OR=3.17; CI 95%=1.14 up to 8.82; p= 0.027) and consistency in using condom (OR= 8.04; CI 95%=2.31 up to 28.12; p= 0.001).

The result of the analysis showed that the form of model to predict the incidence of gonorrhoea on FISW based on the value of 2 predictor variables was :

$$P = \frac{1}{1 + e^{-(\alpha + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_k x_k)}} \times 100\%$$

Information :

p = Probability of an individual experience the incidence; e=natural figure (e value = 2.7182); α= Constanta; β= regression coefficient; x= predictor variables (history of sex combination practice, consistency in using condom).

Based on the form of the model, it was discovered that FISW with the history of sex combination practice and inconsistency in using condom had the probability or risk for the incidence of gonorrhoea as much as 49.5%, and the other 50.5% was caused by other factors.

The result of multivariate analysis with multiple logistic regression test presented in Table 3 gave information that history of sex combination practice (OR= 3.17; CI 95%= 1.14 up to 8.82; p= 0.027) and consistency in using condom (OR= 8.04; CI 95%= 2.30 up to 28.12; p<0.001) affected the increasing incidence of gonorrhoea on FISW.

Table 2. The result of bivariate analysis on independent variables toward gonorrhoea incidence on FISW

Variables	Categories	Gonorrhoea		Non Gonorrhoea		OR	95 % CI		p
		n	%	n	%		Lower	Upper	
Age	< 25 years	30	71.4	4	57.1	1.87	0.76	4.64	0.172
	≥ 25 years	12	28.6	18	42.9				
Educational Level	<Secondary School	30	71.4	28	66.7	1.25	0.49	3.16	0.637
	≥Secondary School	12	28.8	14	33.3				
Marital Status	Unmarried	33	78.6	28	66.7	1.83	0.69	4.87	0.221
	Married	9	21.4	14	33.3				
Working period as FSW	≥6 months	34	81.0	28	66.7	2.12	0.78	5.79	0.136
	<6 months	8	19.0	14	33.3				
History of Vaginal sex	Vaginal sex	40	95.2	41	97.6	0.49	0.04	5.59	0.557
	No vaginal sex	2	4.8	1	2.4				
History of Anal Sex	Anal sex	3	7.1	4	9.5	0.73	0.15	3.48	0.693
	No anal sex	39	92.9	38	90.5				
History of Oral Sex	Oral sex	4	9.5	2	4.8	2.10	0.36	12.17	0.397
	No oral sex	38	90.5	40	85.2				
History of sex combination practice	Sex combination	31	73.8	20	47.6	3.10	1.24	7.71	0.014
	No sex combination	11	26.2	22	52.4				
Number of sex partners	≥2 /week	38	90.5	30	71.4	3.80	1.11	12.98	0.026
	1 /week	4	9.5	12	28.6				
Frequency of sexual intercourse	≥2 times per night	24	57.1	22	52.4	1.21	0.51	2.86	0.661
	Once per night	18	42.9	20	47.6				
Consistency in using condom	inconsistent	38	90.5	22	52.4	8.64	2.16	28.53	<0.001
	consistent	4	9.5	20	47.6				

Table 3. The result of multivariate analysis on factors that most influenced the incidence of gonorrhoea on FISW

No	Variables	OR	95 % CI	p
1.	The history of sex combination practice	3.17	1.14 to 8.82	0.027
2.	Consistency in using condom	8.04	2.30 to 28.12	0.001
	Constant	0.04		<0.001

DISCUSSION

1. Association of history of sex combination practice with gonorrhoea incidence on FISW

The result of multivariate analysis stated that FISW with history of sex combination practice had 3.17 times bigger possibility to

experience gonorrhoea incidence than FISW with no history of sex combination practice (OR=3.17; CI 95%= 1.14 up to 8.82; p= 0.027). The result of the study is in accordance with a study by Velicko (2016) which used cohort method, states that history of sex combination practice is related

to STI (ARR= 1.84; CI 95%= 1.09 up to 3.10; p= 0.019).

Murtono (2016) in his study conveys that sex combination practice has 4.32 times bigger risk for suffering from HIV/AIDS on key population including FSW (OR= 4.32; CI 95%= 1.74 up to 10.75; p= 0.002).

Vaginal, oral and anal sex contribute in increasing the possibility of microorganism invasion that may cause STI. Anal sex is also risky since it may bring wound onto rectal tissue thus microorganism can get into body through the wounded tissue (Daili, 2015). Vaginal, anal and oral sex are risky sex behavior therefore it facilitates the transmission of HIV and STI (Rahardjo, 2008).

Based on the result of the study it found an information that most of the study subjects conducted oral-vaginal sex combination practice both in case group (57.1and control group (40.5%). There were subjects who conducted sex combination oral-vaginal-anal in case group (9.5%) dan control group (7.1%). The result of the study did not find any subjects who conducted sex combination oral-anal.

FISW conducts various things to get extra money including sex combination practice. Sex partners, in this term are the customers of FSW will try various forms of sex activities because of curiosity and the intention to get more pleasure than ordinary sex activities. Sex combination practice gives bigger risk for being exposed with STI including gonorrhoea (Rahardjo, 2008).

2. Association of consistency in using condom with gonorrhoea incidence on FISW

FISW who were inconsistent in using condom had 5.78 times bigger risk for having gonorrhoea incidence than FISW were consistent in using condom who

(OR= 5.78; CI 95%= 1.55 up to 21.49; p= 0.009).

The study was in accordance with Budiman (2015) who states that inconsistent condom use with multiple sex partners is a risk factor for gonorrhoea infection (OR= 3.99; CI 95%= 1.18 up to 13.49; p= 0.045). Jung (2012) in his study states that there is an association between the frequency of using condom with STI incidence on FSW.

The result of the study found an information that all respondents know condom, however only 27.38% study subjects who stated that they had condom and 20.32% study subject who offered condom to their customers. Study subjects who stated that they were consistent in using condom was only 27.8%.

The result of IBBS 2015 indicated that consistency in using condom on FISW (40.19%) was lower than on FDSW (43.43%). The low usage of condom among FISW is caused by the low capability to negotiate with the customers since almost all customers refuse to use condom with an argument that it lessen the pleasure of sexual intercourse. The low negotiation capability among FISW is caused by the absence of ability to explain and convince customers about the importance of condom use. Although FISW has obtained regular medical checkups and medication, somehow they are still inconsistent in using condom, therefore it will facilitate the occurrence of STI including gonorrhoea.

Male condom functions to prevent the microorganisms that may carry diseases (and cement) of a man into his sex partner. Condom also prevents vaginal discharged (and the germs within) to enter male urinary tract through urethra cavity or small wounds on the surface of penis (Hutapea, 2014).

Condom use during risky sexual intercourse is one of the strategies that can be conducted to prevent STI transmission among risky groups including FISW and their customers. FSW must use condom consistently to protect themselves as well as their sex partners (Budiono, 2012).

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