

The determinants of Sexually Transmitted Infections (STIs) among Female Sex Workers (FSWs) in Indonesia: A literature review

Determinan PMS (Penyakit Menular Seksual) pada Wanita Pekerja Seks di Indonesia: Sebuah Tinjauan Pustaka

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Abstrak. Penyakit menular seksual (PMS) merupakan 10 penyakit serius di negara berkembang, khususnya pada wanita pekerja seks (WPS). Lebih lanjut, Kementerian Kesehatan Indonesia pada Januari-Maret 2017 melaporkan bahwa WPS adalah populasi dengan resiko tertinggi (8.765 kasus) berdasarkan sindrom dan tes laboratorium untuk terdiagnosa PMS. Tujuan dari studi ini yaitu untuk mereview literatur dan menentukan determinan PMS pada WPS berdasarkan jurnal artikel yang ditemukan. Subjek penelitian ini yaitu WPS di Indonesia. Studi ini mereview dari 6 sumber jurnal internet (Scopus, Medline, Google Scholar, ProQuest, CINAHL, dan PubMed). Dari 183 artikel diperoleh 17 artikel sesuai kriteria inklusi. Artikel dipilih berdasarkan kriteria inklusi yang merujuk pada diagram alur PRISMA dan didasarkan pada *Social Cognitive Theory (SCT)*. Artikel yang diseleksi adalah terbitan antara 1997 sampai 2016. Variabel yang direview antara lain: kognitif/ faktor individu antara lain umur (14 dari 17), pendidikan (7 dari 17), durasi bekerja seks (7 dari 17), faktor kebiasaan meliputi penggunaan kondom (8 dari 17), jumlah klien (7 dari 17), gejala terdahulu (3 dari 17), faktor lingkungan meliputi lokasi seks (2 dari 17), tempat asal (2 dari 17), dan proteksi (1 dari 17). Determinan PMS yang paling kuat pada WPS di Indonesia yaitu umur, pendidikan, durasi bekerja seks, penggunaan kondom, jumlah klien, gejala terdahulu, lokasi seks, tempat asal, dan proteksi.

Kata Kunci: determinan, Penyakit Menular Seksual (PMS), Wanita Pekerja Seks (WPS), Indonesia

Abstract. STIs is the 10 biggest serious disease in many developing countries, primarily among FSWs (female sex workers). Additionally, the Ministry of Health Indonesia in January-March 2017 reported Female Sex Worker is the highest risk population (8.765 cases) regarding to syndrome approach and laboratory examination to have STIs with diagnosing outcome. The objective of this study is to conduct a literature review and to examine the determinants of STIs among FSWs as found in the published papers. The subject of this study is female sex workers in Indonesia. This study used literature review from six internet data based (Scopus, Medline, Google Scholar, ProQuest, CINAHL, and PubMed). It got 183 scientific articles and selected 17 based on inclusion criteria. The articles chronicled by inclusion criteria in the revised PRISMA flow diagram of article review and inclusion and review by *Social Cognitive Theory (SCT)*. The selected articles were published between 1997 to 2016. Variables which reviewed consist of: cognitive/personal factors which were found are age (14 of 17), education (7 of 17), duration of sex work (7 of 17), behaviour factors which found condom use (8 of 17), number of client (7 of 17), past symptoms (3 of 17), environmental factors which found sex venue (2 of 17), place of origin (2 of 17), and protection (1 of 17). Strongly determinants related to STIs among FSWs in Indonesia are age, education, duration of sex work, condom use, number of clients, past symptoms, sex venue, place of origin, and protection.

Keywords: determinant, Sexually Transmitted Infections (STIs), Female Sex Workers (FSWs), Indonesia

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Introduction

Sexually Transmitted Infections (STIs) are infections or diseases via vaginal, anal or oral sex that are passed skin to skin during unprotected sex.¹ STIs among the world's at the very general diseases, with an annual incidence surpassed only by diarrheal disease, malaria, and lower respiratory infections. It is caused by bacteria, viruses, and parasites that known transmitted through by sexual contact. Worldwide, one million over STIs are increased each day. Some STI viruses, like Human Papillomavirus (HPV) and HIV, it still cannot be healed and can be deadly.² STIs is large burden and serious consequences related to sexual and reproductive health, such as fetal and neonatal deaths, cervical cancer, infertility, HIV risk, and direct physical, psychological and social consequences.³

Worldwide, everyday more than a million people acquire the STIs, particularly 499 million incidence of curable STIs, 536 million incidence of incurable herpes simplex virus type 2 (HSV-2) infection, and 291 million women have a HPV infection.³ It is strongly worried like HIV that can be threatening for whole life and still have no medicine to be recover.⁴ Furthermore, STIs is a serious disease that could increase morbidity and mortality.

One study reported the risk factors of STIs are male, never married, smokers, alcohol users, had casual sex during travel, did not always use condom, no religious belief, current STD, and perception of being at low risk for STD.⁵ Based on Bandura Theory called Social Cognitive Theory, determinant human behaviour cause of three important factors such as cognitive factors, behaviour factors, and environmental factors.⁶ So Social Cognitive Theory combines 3 related factor to link the output. Firstly, cognitive factors tell about socio-demographic factors like age, education, marital status, lives with a partner, family earnings, self-described health status, and status of recruitment.⁷ Additionally, those associated with STIs in Tanzania which has directly lie in a person, so this cognitive factors also called "personal factors". Secondly, behaviour factors that related to STIs in Canada such as smoking, frequently of risky drinking⁸ and concurrent partners, lifetime number of sex partner and STI prevalence.⁷ Thirdly, that is an environmental factor, they are some variable out of subject but around the subject and has the

impact. An ecological study in Ohio showed the environmental factors has to impact with STIs, the result is any relationship between activity of shale gas and rate of three declared STIs: Chlamydia, Gonorrhoea, and Syphilis.⁹ Furthermore, those 3 factors link each other as risk factors of STIs.

In Indonesia, one of the key populations of HIV is Female Sex Workers (FSWs) together with the prisoners, MSM (Man Sex Man)/transgender, IDUs (Injecting Drug Users), and FSW's partners. STIs are general among FSWs that make them into susceptible group.¹⁰ In 2002, the prevalence of HIV in direct female sex workers was 3.6% and it increased to be 10% in 2011.^{11,12} Usually, FSWs sell sex to more than one client per day even use a condom or not, so it is the risk to transmit STIs.

The objective of this study is to conduct a literature review and to examine the determinants of STIs among Female Sex Workers as found in the published papers. The study was identified to 3 categories: cognitive factors, behaviour factors, and environmental factors.

Method

This study conducted a Systematic Literature Review (SLR) retrieved from of Scopus, Medline, Google Scholar, ProQuest, CINAHL, and PubMed. Particularly, there were 30 journal articles from Scopus, 23 journal articles from Medline, 29 journal articles from Google Scholar, 32 journal articles from ProQuest, 39 journal articles from CINAHL, and 30 journal articles from PubMed. Key words to choose article are based on aspects: Female sex worker, the determinant of STIs, Indonesia, STDs. The author conducted database searches early and chosen the articles to be reviewed. This is a reconditioned version of the PRISMA model (Figure 1). The inclusion criteria to select the journal articles were: conducted in Indonesia, related to HIV/AIDS or STIs or STDs, exclusively only among female sex workers, provided in full text. After dwelling articles were evaluated for any strong findings on STIs, 17 articles picked for inclusion end (Table I).

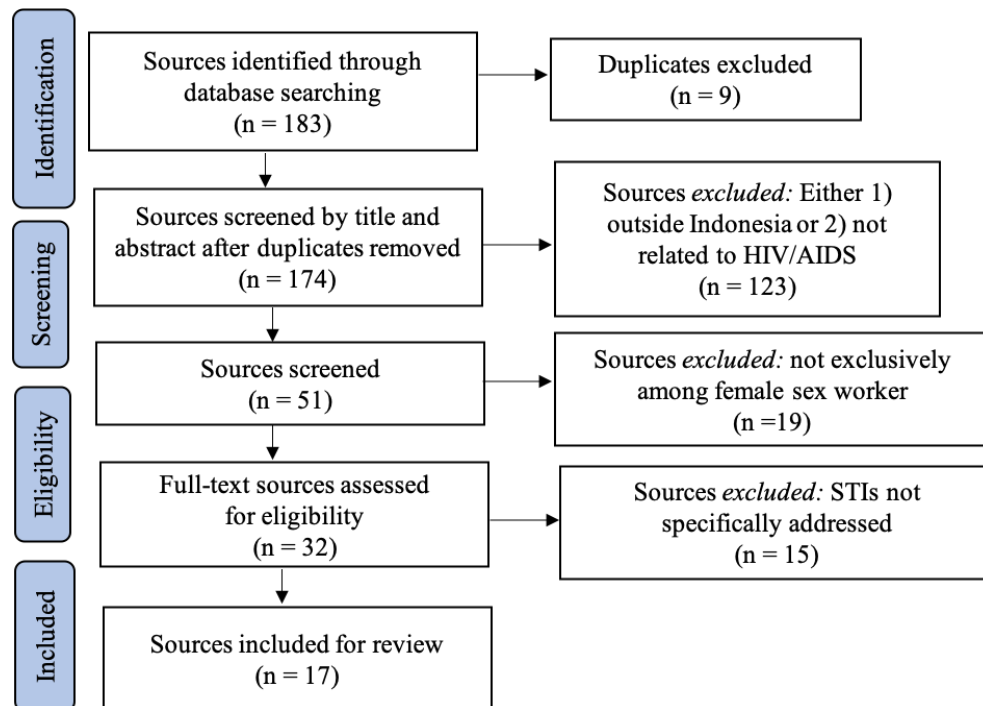


Figure 1. Modified from PRISMA flow diagram of article review and inclusion

Result

There were 183 articles found. Then deleted the duplicates, sources were originally pulled out regarding of the title and abstract if they were not going over research studies, were not obtained in Indonesia, or did not connected with FSWs.

Socio-demographic or personal or cognitive factors:

Personal factors that related determinants of STIs are: range of age of FSWs are 15 to 36 years old (14 of 17), for the education variable most of FSWs completed elementary school (6 of 7) and only one completed junior high school. Duration

of work of FSWs is divided to 2 groups, 6 months – 2 years (5 of 7) and 2 years – 4 years (2 of 7) and have 2 years stay in Bali (1 of 17). Marital status of most of FSWs is divorced/ widowed (5 of 5) and has one or more children (1 of 17). Articles presented that heard of STDs and believe STDs can prevent was related to STIs (1 of 17). FSWs is direct FSWs and had STIs and HIV test (2 of 17). Additionally, respondent knowledge, AIDS knowledge, STI/STDs knowledge, and condom knowledge is related to STIs (2 of 17). About symptoms, FSWs has STI history (1 of 17), has past symptoms (3 of 17), current symptoms (2 of 17), sign (1 of 17), and awareness of STIs (1 of 17).

Table 1. Characteristics of Reviewed Study

No.	Author (year)	Location	Sample (FSWs)	Findings
1.	Davies, S. C., et al. (2003) ¹³	Kupang	288 women Brother (b) = 252 Independent (i) = 36	QT,CS: 6 months. The laboratory test, algorithms based. Mean age was 30.4 years, the median was 30, i-FSWs about 5 years younger ($p < 0.0001$). Approximately 48% had paid off primary school, with 28% never adhered school. About 96% b-FSWs arrived from East Java. 90% had seasoned a marriage bothered (64% divorced). The first sexual deed was with their husband 91% at age 16 56%. With a non-regular partner, 3% FSWs regularly utilized a condom and 13% never, more i-FSWs than b-FSWs($p=0.01$). 81% had minimum one regular partners, paying, or non-paying. With a regular partner, only 1.8% used condoms perennially and 63% never. Fewer use condoms with a regular partner ($p<0.0001$). 278 of 288 applied some form cleanser after sexual intercourse (271 cases), before sex (163). Cleansers used inclusive soap 63%, toothpaste 35%.
2.	Sedyaningsih-Mamahit, E.R., (1999) ¹⁴	Kramat Tunggak, Jakarta	30 FCSWs (Brothel complex)	QT,QL:CS: Cross-sectional behavioural survey, preliminary qualitative, participatory observation, FGD 67% FCSWs were on age 25 or below, 86% had minimum 6 years of schoolings, 7% never attended school. 83% were either divorced or widowed. More than 80% of FSWs had worked for two years. 7 persons were smoker and 5 persons were drinker beer. In the previous two weeks, 25% FCSWs did not use condoms, 35% always used, and 40% used inconsistently. Preventing and checking frequently.
3.	Tanudyaya, F.K., et al. (2010) ¹⁵	North Sumatera, Riau Island, South Sumatera, West Jakarta, West Java, Central Java, East Java, North Sulawesi, Papua.	2.500 female sex workers	QT:CS: Participation invitation Median age is 25, marital status (separated 57.7%), steady partner 55.6%, none or primary education completed 45%, no contraception 33.3%, Venue (Brothel 42.6%). Median age at first selling sex = 24, median duration of sex work per =12, douching during previous week 89.6%, douching performed by nursing previous week 9.9%, number of clients in last week = 4, Brothel = 7, Street = 3, Entertainment = 3, clients who use condom during last week (sometimes 49.7%), used condom at last sex with client 50.7%, number of visit to STIs clinic in previous 3 months (Never = 56.2%), source of treatment previous year (self-treatment at drugstore 36.4%), number of contacts by outreach worker during previous 3 months (Never 39.9%). Factors associated with gonorrhoea and/or chlamydia infection; all province except North Sulawesi, sex venue brothel (AOR 1.6) and street (AOR 1.4), age <25 years old (AOR 2.0), none or primary education (AOR 1.2), <1 year duration of sex work (AOR 1.4), inconsistent condom use (AOR 1.3). The highest risk is FSWs in brothel or street IBBS.
4.	Reed, B.D., et al. (2001) ¹⁶	Bali	625 Commercial Sex Workers	QT: 6 months study of evaluation; extensive evaluation, information of historical, data of physical check-up, and in-house and surrender laboratory data. Associated between how many times of utilizing of vaginal cleansers with symptoms end vaginal discharge with OR 1.04, vaginal itching (OR 1.08), Pain low abdomen (OR 1.28). Associated with the attendance of genital infections; HPV on the cervix (OR 1.15), Neisseria gonorrhoeae by LCx (OR 1.07), Candida species on culture (OR 1.87), Candida vulvovaginitis (culture and symptoms) (OR 1.18). Associated between knowledge and attitudes about STDs, AIDS, and depending on that using genital cleansers will help avoid STDs. STD factors: Heard of STDs (OR 2.64), belief cleaning after sex can prevent STDs (OR 3.18). AIDS factors: Heard AIDS (OR 1.99), Knowledge about AIDS (OR 1.62), Worried about catching AIDS (OR 1.72), Believe medications can sustain life with AIDS (OR 1.57), believes condoms may contribute avert AIDS (OR 1.90). Average age 25.8 years, had 4.9 years of formal education, 93.9% were Muslim, 11.9% had never been married, 70.4% were currently divorced. The first age of selling sex 13.5, had average 3.7 sexual clients the previous day. 100% use condom only in 22.2%, 50%-<100% 60.8%, <50% in 16%. Using vaginal cleansers <1% daily. 90% had at once employed soap, toothpaste or both. Reasons using a cleanser, to feel clean 82%, to prevent infection 41.1%, using genital cleansers was associated with the confidence that STD s can be stave off.
5.	Majid, N., et al. (2010) ¹⁷	10 major cities in Indonesia such as Jakarta, Deli Serdang, Batam, Jayapura, Sorong, Denpasar, Surabaya, Bandung, Banyuwangi, and Semarang (250 per group per city).	2436 direct FSWs and 1888 indirect FSWs	QT: behaviour survey, biomarker survey, laboratory analysis. Characteristics associated with active syphilis (RPR \geq 1:8); direct target group (AOR 2.9), Age > 27 years old (AOR 1.4), duration of sex work >12 months (AOR 1.7), Gonorrhoea test positive (OAR 1.6) Median age is 27 years, most women divorced, separated or widowed, most had children. Education levels were low. The median number of clients in the week range 0-76. I-FSWs reported consistent condom use with clients. Genital ulcers were 15% of direct-FSWs and 7.9%. Genital Ulcers 15% of direct and 7.7% of indirect

No.	Author (year)	Location	Sample (FSWs)	Findings	
6.	Sugihantono, A. et al. (2003) ¹⁸	Tegal district, Central Java	200 CSWs (199 F, 1 male transvestite)	QT:QL: CS: HIV and Syphilis laboratory test, questionnaire.	Mean age was around 27.3 years, very active sexually and low in condom use. Approximately 69% denounced having minimum 14 partners per week, about 29.2% notified regular use of STI prevention such as condoms, topical compounds etc. About 30% never used condoms, 67% occasional use, 30% always used condoms. 23.5% has well-grounded minimum one phenomenon of an STI in the past, 4.5% seasoned STI symptoms within the last 6 months and about 59.1% never tempt for the HIV virus. Qualitative: occupation status of the client were truck drivers and sailors, travellers. Mostly 2 years' experience as CSW and laboured in Jakarta. Knowledge about STIs signs, symptoms, and preventions among the CSWs was low. Most have found out STIs and AIDS but cloud not depict general causes and symptoms. Often meant of traditional rectifies in self-treatment. Prevention strategies (avoid tattoos guy). Prevalence of STIs was about 7.5%, mean number of clients was 2.27, regular use of STI prevention like condom was 29.2%, condom wear with partner 30%, had experienced minimum one symptoms of a STI in the past about 23.5%, experienced STI symptoms within the ultimate 6 months 4.5%, never having been tempted for the HIV virus 59.1%.
7.	Ford, K. et al. (2000) ¹⁹	Bali	407 FSWs in low price brothel	QL:CS: Survey and intervention, FGD, in-depth interview, a questionnaire on AIDS and STD knowledge	Age is associated with syphilis (OR 1.02), education associated with Chlamydia Trachomatis (OR 1.07), HPV (OR 1.0), Neisseria Gonorrhoea (OR 1.03), time working in Bali is associated to Trichomonas (OR 1.01), unpaid partner in last 7 days associated with HPV (OR 1.22) and syphilis (OR 1.01), AIDS knowledge associated with HPV (OR 1.04) and syphilis (OR 1.06), STD knowledge associated with Chlamydia trachomatis (OR 1.10), Neisseria gonorrhoea (OR 1.11) and syphilis (OR 1.01), possible catch disassociated with HPV (OR 1.28), Trichomonas (OR 1.60) and Syphilis (OR 1.48), self-efficacy for condom use associated with HPV (OR 1.1) and Syphilis (OR 1.13), Condom knowledge associated with HPV (OR 1.06) and Syphilis (OR 1.39). demographic: mean age 25.8 years, most women had some elementary school 4.6 years. Generally, 66% divorced, 69% had a living child and Islamic 95%, work in Bali about 13 months with median was six months. Almost had heard of STDs 94% but only 50% can answer correctly about STD treatment and symptoms. 85% respondent use a condom, but investigations which dud such as taking antibiotic consistently 56%, injections or exams 37%, drinking a jamu 21%, genital cleaning 16%.
8.	Wirawan D.N, et al (2007) ²⁰	Bali	71 CSWs Low price = 31 Kuta=20 Mid-high price=20	QT:CS: Mainly of open-ended question.	Mean age was 24.4 years old, place of origin rural East Java (75%), religion Islam (87%), mean duration of education is 7.3 years, marital status previously (ever married) 66%, one or more children 67%, average duration in Bali 28.5 months, mean age became CSW 243 years, in last 2 years place worked as CSW was only in Bali about 74%, have heard of AIDS 72%, sources of information from magazine/newspaper 39%, transmission belief by sexual contact 94, have done anything to protect 73% by medical check-up/injections 43%. Total of clients in previous week has mean 17.4, the vaginal intercourse with clients without condom 12.1 times, with condom 5.2 times, vaginal intercourse with close partners 32%.
9.	Puspita, L. (2017) ²¹	Bandar Lampung,	83 FSWs	QT:CS: Observation, interview, and collected data the same time.	Strong correlation between age (p = 0.012; OR = 3.6), marital status (divorced) (p = 0.035, OR = 3.1), condom use (p = 0.001, OR = 5.5). The multivariate result exhibited that condom use was the dominant variable cohesive to STIs (p = 0.002, OR = 7.7).
10.	Kusnsan, Adius. (2016) ²²	Kendari, Bau-Bau, Muna,	222 FSWs	QT:CS: Field visit to a brothel, identification related prepared criteria.	Four factors which have a strong intercourse with the sexual disease prevalence: age < 29 years (p = 0.001 <0.005), respondents knowledge (p = 0.001 < 0.005), sexual intercourse method vaginal (p = 0.002 < 0.005), and number of sexual intercourse (p = 0.016).
11.	Kotaki, Tomohiro, et al.(2013) ²³	Surabaya	200 CSWs HIV+ 22 HIV - 178	QT:CS: interviewed by questionnaire, collected EDTA anti-coagulated peripheral blood	Univariate of demographic information (HIV+ : HIV-) = Gender Male (0:3), female (22:175), Age (20-29=59.1%: 30-39=43.8%), latest education background elementary school (45.5% : 43.8), duration of commercial sex work 1-3 years (54.5% : 50%), number of clients per week 1-3 and >7 (31.8% : 40%), no awareness of STIs (86.4% : 80.9%), not using condom (86.4% : 89.9%), not using drug (100% : 89.3%).
12.	Joesoef,MR. et al. (1997) ²⁴	Surabaya	1873 FSWs	QT:CS: Interview and collected specimens.	Multivariate analysis showed factors associated with STIs are: category/ venue of selling sex (Brothel OR 4.4, street OR 4.0, barber shop OR 1.9, call-girl OR 1.3), age (15-20 OR 1.5, 21-25 OR 1.1, 26-30 OR 1.0), education (<elementary OR 2.2, Elementary OR 1.6, Junior OR 1.8), number of sex partners (2-7 OR 1.1, >7 OR 1.1), condom use OR 0.9.
13.	Ford, K. et al. (2003) ²⁵	Bali	600 FSWs	QT:CS: Intervention (pamphlets and papers), video, test and STDs treatment every 6 months.	Logistic regression of HPV; intercept OR 5.14, High programme area OR 1.77, First enrolment OR 1.16, number of STD symptoms, Infection of Neisseria Gonorrhoeae was related to HPV infection (p =0.03). HPV infection decreased in this study area with the more educational programme intensively (P<0.01).

No.	Author (year)	Location	Sample (FSWs)	Findings	
14.	Magnani, R. et al. (2010) ¹⁷	10 cities in Indonesia (Medan, Batam, Jakarta, Bandung, Semarang, Banyuwangi, Surabaya, Denpasar, Sorong, Jayapura)	5947 FSWs	QT:CS: Structure and preceded questionnaire. STI tested and receive treatment, laboratory test.	Factors cohesive to Chlamydia or Gonorrhoea infection; Province Java (OR 0.64, P<0.001), Bali (OR 0.45, P<0.001), Papua (OR 0.65 P=0.003), type of sex worker direct (OR 1.78 P<0.001), age (OR 0.96 P <0.001, total of clients in the previous week (OR 1.01 P=0.011), has STI check-up in the past 3 months (OR 0.73 P<0.001), get three rounds of periodic presumptive cure in past 6 months (OR 0.54 P<0.001), and drank alcohol in the past 3 months ere sex (OR 1.20 P=0.023).
15.	Safika, I. et al. (2013) ²⁶	Senggigi, Lombok,	115 FSWs Freelance (F)=47, Brothel (B)= 39, Entertainment (E)= 29	QT:CS: multi-level design employing ethnographic observation, in-depth interview with a structured questionnaire.	Characteristic of FSWs by sex work venue; mean age (F=24, B=27,E=31), age category (F<=25 72%, B>26 54%, E>26 62%), education (F= junior high school and higher 74%, B <=elementary school 77%, E=junior high school and higher 52%), year of work at venue mean (F=2, B=1, E=2), year worked mean (F=3, B=3,E=4), place of origin (F=Lombok 62%, B=Lombok 90%, E=Non Lombok 93%), marital status ever married (F=57%, B=87%, E=83%), FSWs reported Senggigi as first sex work site (F=Lombok origin 67%, B=Lombok Origin 94%, E= Non Lombok Origin 95%), knowledge of HIV mean (F=8,B=6,E=7).
16.	Silitonga, N. et al. (2011) ²⁷	Timika, Papua	3086 FSWs (1997-2002)	QT:CS: standardized questionnaire, clinical history, and examination. Laboratory test.	Significantly adjust risk factors for infection with any STI (NG, CT, TV, positive Syphilis serology, or HIV) were: age less than 21 years (OR 1.4, 95% CI 1.1-1.9, P=0.006), did not utilize contraceptive (OR 1.3, 95% CI 1.1-1.7, P=0.006) and number of sex is the sublime (more than 10 act of vaginal sex per week with OR 1.6, 95% CI 1.1-2.2, P=0.01).
17.	Hananta, I.P.Y. et al. (2016) ²⁸	Jakarta, Yogyakarta, and Denpasar	229 FSWs	QT:CS: Clinical-based and outreach approaches with clinician-collected urogenital specimens.	Demographic, sexual history, and clinical; city of recruitment (Jakarta 72.1%), STI service format (outreach 99.1%), median age was 31 (26-38), age group (25-34 = 43.7%), education (junior high school 45.4%), occupation (Informal job 90.4%), marital status (widowed/divorced 46.3%), median number of sex partners 40 (10-100), reported genital sex contact (via anal and/or vaginal contact 52.4%), condom for anal and/or vaginal contact (inconsistent 99.6%).

Behaviour factors:

Risk behaviours of STIs among FSWs are such as condom use, number of clients, and past symptoms. Mostly FSWs did not use a condom when sexual intercourse (6 of 8), and a few of them sometimes use a condom (2 of 8). An average number of clients from 7 articles is 7.07 clients per week. Past symptoms was achieved 2 of 3 in percentage 33.75% and 1 of 3 had HPV infection associated with STD symptoms. Just a few FSWs has STI history (1 of 17), current symptoms (2 of 17), sign (1 of 17). Method of sexual intercourse is vaginal (3 of 17), the frequency of sexual intercourse are 1-2 times per week and another study showed >10 episode of vaginal sex/week. STIs among HIV negative in an urban area more likely to using a drug when sexual intercourse 84.6% (1 of 17) and a few FSWs drank alcohol in the past 3 months before having sex 1 of 17).

Environmental factors:

Environmental factors that mentioned in this study are: sex venue, FSWs who sell sex in brothel is more likely to get STIs than sell sex in massage parlour, barber shop, call-girl, and nightclub (2 of 17), place of origin was from East Java Province for study in Bali and from Lombok for study in Lombok (2 of 17), and the way to protect such as avoid tourists, use condom, medical check-up, and take jamu (1 of 17).

Discussion

Socio-demographic factors of STIs found in this study were age, education level, duration of work, marital status, number of children, belief, knowledge, current symptom, and the history of STIs. The result of this study which presented above has similarly with study in India that showed a large percentage of FSW's age is in range 25-29 years, illiterate, marital status, has no additional income, duration of sex work 2-4 years, has more than 10 commercial clients per week.²⁹ Personal factors mentioned Bandura has a strong effect to health status, when people have lack of awareness with their lifestyle it could be difficult to change the habits.⁶ Age effected to vulnerability so older people tend to get morbidity and mortality than younger one, when compared with men, women have more vulnerable.³⁰ Uneducated women tend to have STIs compares those who are educated, it might be because they have more knowledge to prevent the STIs by practicing the personal

hygiene. Marital status has the effect to health, but in term of physical impairment and for overall health problem never married tended to have health tendency that is worse than divorced and separated status.³¹ For those who are married might be get more physical and psychological depression compared to single one. This statement contraries with STIs because the widowed or separated women tended to have STIs than married women might be due to FSWs almost all are non-married women. FSWs who has more duration of work, tended to have more STIs because contact to sexual intercourse was more. Additionally, FSWs who have many clients have STIs more than those who only contact few times with client, because more often FSWs have sex it might increase the risk to transmit of STIs. More clients has more chance to have unprotected sexual intercourse. Women who have more children tend to have more STIs might be because physically they experienced the delivery. Women's belief may prevent the STIs because of their psychological can be balance and prevent the depression due to religious practices. This study also found the influence of knowledge, which can be reflected that women who have more knowledge tend to have less risk of STIs. It could be because of the knowledge of personal hygiene. Women who have the symptom of STIs when the study conducted tend to have more risk of STIs because the symptom is the first sign to diagnose the STIs. Furthermore, women who have history of STIs tend to have repeated morbidity of STIs.

This study found that condom use, number client, and using drug and alcohol are the risk factor of STIs. The result in this study was supported by a study in China which conducted risk behaviour such as more than a half did not behaviour to use condom when sexual intercourse, having an irregular sex partner and using drugs.³² The condom has 2 functions as a contraception as well as to prevent STIs and HIV even though not really 100%, but FSWs who did not use condom has a higher risk to get STIs. Irregular partner, this term was clients take a part as a reason to transmit STIs to FSWs. Using drug and alcohol when sexual intercourse has a risk if they try to inject drug so the risk to get HIV is higher as well, it might be because they tend to be more vulnerable. Interesting article describes behaviour influenced to STIs which might be; number of partner (included in sexual behaviour), condom use (included in preventive behaviour) and

periodic screening and treatment (included in health-related behaviour).³³

Sex venue, place of origin, and the way to prevent the STIs are the risk factor found in this study. The result of this study concern on the sex venue, place of origin and the way to protect but study in Ohio added environment of workplace related to STIs that convinced the relationship between shale gas activity and Gonorrhoea which could be caused by the resistance of antibiotics.¹⁴ Other environmental factors such as client work history such as study in China that examined Chinese miner clients who majority of them were migrant and the results they can function as bridge populations for HIV/STIs to low-risk populations.³⁴ In context of Indonesia, Bali is the most popular tourism destination in Indonesia so most brothel in Bali offered the tourist oversea who might be have more risk to have STIs. Another study in EU (European Union) concluded that incidence of STIs has described within migrant status and ethnic minority which mean that place of origin reflected the high prevalence.³⁵ This ethnic took a special trend in America, which STIs were higher in African American adolescents ethnic than others.³⁶ Environmental determinant included social which has a n important role in STIs were racial and ethnic.³⁷ Place of origin mentioned in this study found that most of FSWs come from Java Island. It could be the most crowded population in Indonesia located in Java. Some FSWs practiced the personal hygiene to prevent and protect STIs, even by using medical or traditional treatment. This is one factor which can increase their awareness.

Trend of determinants of STIs among FSWs not only specify on socio-demographic factors and behaviour factors but also environmental factors which become the new trend of risk factors particularly occur in developing countries. Therefore, an effective and efficient interventions must consider those factors to decrease the number of morbidity and mortality of STIs. Indonesia as a destination of tourism in the world put some provinces to concern to tourism venue like nightclub, massage, etc. FSWs in Bali mostly come from East Java Province. The way to prevent the spreading STIs were ignore the tourist as a client, use condom, routinely health checking, and consume traditional drink.

Conclusion and Recommendation

These findings which contributed to STIs among FSWs in Indonesia is in 3 groups. The strong determinants related to STIs among FSWs in Indonesia are, in cognitive factors: Age, Education, and duration of selling sex; in behaviour factors: condom use, number of clients, and past symptoms; in environmental factors: sex venue, place of origin and protection. The other determinants of STIs which were found the weak relationship consists of marital status, having children, knowledge, having the history of STIs before, method and frequency of sexual intercourse, and drank alcohol before having sex.

Prevention and treatment programmes at all levels are urgently evaluated and improved to decrease the prevalence of STIs among FSWs and manage the determinants. It can be promote and provide the condom to decrease unprotected sexual intercourse and increase the knowledge about personal hygiene. Future survey and study may to publish the results in order to see the picture of prevalence of STIs in Indonesia. There is need prevention focuses on FSWs to decrease the number of morbidity of STIs and collaboration among peer-group, health service and FSW's self-efficacy to work together.

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Author Contribution

AR contributed to arrange the topic and the main idea. YH and LM collected the journal articles and analysed the data. M and AY helped in the discussion part.

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