

Research Article

Analysis of Risky Sexual Behaviour towards Human Immunodeficiency Virus (HIV) Infection among Female Sex Workers (FSWs)

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Abstract

Background: Female sex workers are a group that has a high risk of contracting Human Immunodeficiency Virus (HIV) infection. Sexual intercourse without using condoms, starting sexual activity at a young age, having multiple sex partners, length of time working as a sex worker, frequency of sexual intercourse and having group sex, are risky sexual behaviors that can lead to HIV infection.

Objective: Analyzing the association of risky sexual behavior with HIV infection among female sex workers.

Subjects and methods: This study was an observational analytic study conducted with a cross-sectional approach on 60 FSWs. All subjects underwent history taking, HIV testing by rapid test, and risk sexual behavior assessment using a questionnaire. The relationship between risk sexual behavior and HIV infection was analyzed using the Chi Square test and was significant if the p-value < 0.05, to see the effect of the independent variable on the dependent variable simultaneously, it will be analyzed using multivariate analysis with logistic regression test.

Results: In FSWs found the average age of 36.9 ± 10.087 , the highest level of education in high school 33 people (55%), the most marital status in widows as many as 41 people (68.3), more work as direct FSWs, laboratory examination found 40 people (66.7%) infected with HIV in FSWs, level of sexual behavior is high with a result of 50%, there is a relationship between condom use, number of sex partners, and length of work as a FSW ($p < 0.05$). The results of multivariate analysis are most associated with HIV infection is the use of condoms and length of work as FSWs.

Conclusion: There is an association between condom use, number of sex partners, and length of time working as a FSW with HIV infection. Multivariate analysis most associated with HIV infection is whose sexual partners never used condoms during sexual intercourse with female sex workers.

Keywords: Risky sexual behavior; Human immunodeficiency virus infection; Female sex workers

Introduction

Risky sexual behaviour is sexual activity that increases the chance of a person getting or transmitting Sexually Transmitted Infections (STIs) including HIV infection [1,2]. These behaviours can include vaginal, oral or anal sex

[3]. Sexual intercourse without condoms, starting sexual activity at a young age, having multiple sexual partners, length of time working as a sex worker, frequency of sexual intercourse and group sex are risky sexual behaviours that can lead to HIV infection. The results of the 2018 Survei Terpadu Biologis dan Perilaku (STBP) show that HIV prevalence in key populations is generally still high, above 10%. There has been an increasing trend in the prevalence of HIV infection in Indonesia in recent years, especially in certain groups, such as Female Sex Workers (FSWs), followed by the male sex with men (MSM) population, and customers of sex workers [4-6].

The prevalence of HIV infection in Indonesia among various high-risk behavioural groups is reported to be increasing. The number of People Living with HIV (PLHIV) reported from 2004 to December 2022 was 367, 401, and in the January 2022-December 2022 period, 42, 616 people received Antiretroviral (ARV) treatment. The provincial distribution of the most PLHIV obtained from the sistem informasi HIV AIDS (SIHA) data of the Ministry of Health of the Republic of Indonesia from January to December 2022 is the Daerah Khusus Ibukota (DKI) Jakarta with 80,611 people and the highest in the age group of 25 years-49 years. Based on gender, the percentage of ODHIV found in men was 59% and women were 41% [7,8].

The highest risk sexual behaviour in this study was sexual intercourse with FSWs without using condoms [9]. Wilda et al. (2020) found that HIV has a great risk of being transmitted through sexual intercourse, including FSWs and their customers because of unsafe sexual behaviour. The increasing prevalence of HIV in FSWs in Indonesia is related to the low HIV prevention behaviour of FSWs in Padang City [10]. Research by Ancella in Surakarta showed that there is a significant relationship between sociodemographic factors, especially unmarried and low

education, which affect sexual behaviour in MSM so that it can increase the occurrence of HIV infection with the prevalence of HIV infection is 34% and STIs have a risk of 2.397 times to suffer from HIV [11]. Gemala et al. (2022) in a study in Medan found a non-coinfection group of HIV and there was a significant relationship, namely 24 subjects (40%) who had risky sexual behaviour with the incidence of HIV infection in street children [12].

Methods

Study design

This study is an observational analytic study conducted with a cross sectional approach.

Setting and respondents

This study was conducted from October 2023 to June 2024. Examination of research subjects and completion of research status were carried out at the Polyclinic of Padang Bulan Health Centre, Medan.

Inclusion criteria in this study were patients aged ≥ 18 years, female sex workers in the Medan area, willing to participate in the study by signing an informed consent letter. Female sex workers who had previously been diagnosed with HIV infection were included as exclusion criteria.

In research subjects who have expressed willingness and have signed informed consent to participate in the study, then interviews and filling in the research status include the identity of the research subject, the results of history taking, physical examination, dermatological examination and questionnaire filling. The research subjects signed informed consent and then blood specimens were collected at the Padang Bulan Health Centre Polyclinic. The research material was taken 10 μ L–25 μ L of serum/plasma/venous blood/capillary blood in the available holes, if the blood serum specimen will be allowed to coagulate and will be centrifuge to separate the serum, if the blood plasma collection is put into a tube containing heparin anticoagulant, sodium citrate, or EDTA, then centrifuge to separate the plasma, then in the same hole dripped buffer 1–3 drops, wait and read the results 15 minutes–20 minutes. HIV serological testing for screening in high-risk groups is carried out using an HIV rapid test consisting of 3 stages (3 reagents), namely ViroChek HIV $\frac{1}{2}$ Reagent, Standard Q HIV1/2 Ab 3-Line Reagent, Rapid and Anti-HIV $\frac{1}{2}$ Reagent.

Ethical consideration

The research was conducted after obtaining ethical clearance from the Research Ethics Commission of the University of North Sumatra with number 361/KEPK/USU/2024.

Data analysis

Univariate analysis with descriptive data was use to describe demographic characteristics (e.g age, education level, marital status, work other than FSWs, risky sexual behavior). Bivariate analysis using Chi-Square, but if it does not meet the requirements, it will be tested with Fisher's exact test. Data is said to be meaningful if the p

value is <0.05 . After the Chi-Square test to see the effect of the independent variable on the dependent variable simultaneously, it will be multivariate analysis using the regression test.

Results

This study taking subjects in this study by non-probability sampling, and has been conducted from April 2024 to July 2024 by taking a sample of 60 respondents who are FSWs in Medan city. All research respondents have received an explanation of the purpose of the research conducted, filling and signing the consent form after explanation, filling out research questionnaires, and laboratory testing for HIV tests for FSWs respondents and at risk of HIV infection. Furthermore, the results of filling out the questionnaire and laboratory tests for HIV infection were then entered as variables and processed statistically.

Based on the data in Table 1, it was found that out of 60 FSWs, the highest age group in this study was 26 years–35 years old as many as 26 people (43.3%). Most research subjects have a high school education, which amounted to 33 people (55%). Marital status, the most research subjects were widows, namely 41 people (68.3%). Characteristics based on work other than FSWs it is stated that most of the 39 subjects (65%) of the study did not have other jobs as FSWs or so-called direct female sex workers. The rest work as massage attendants as many as 6 subjects (10%), bar/karaoke waitresses as many as 2 subjects (3.3%), cleaning service officers as many as 4 subjects (6.7%), sales as many as 3 subjects (5%), hotel employees as many as 2 subjects (3.3%), and salon employees as many as 4 subjects (6.7%).

Table 1: Characteristics of respondents (n=60)

| Characteristics | Research subject | |
|----------------------------|------------------|------|
| | n | % |
| Age | | |
| 18-25 | 7 | 11.7 |
| 26-35 | 26 | 43.3 |
| 36-45 | 12 | 20 |
| 46-55 | 13 | 21.7 |
| ≥ 56 | 2 | 3.3 |
| Level of education | | |
| No school | 2 | 3.3 |
| Elementary school | 13 | 21.7 |
| Junior high school | 11 | 18.3 |
| Senior high school | 33 | 55 |
| College | 1 | 1.7 |
| Marital status | | |
| Not married yet | 11 | 18.3 |
| Marry | 8 | 13.3 |
| Widow | 41 | 68.3 |
| Work other than FSW | | |
| yes (FSWs-indirect) | - | - |
| Massage attendant | 6 | 10 |
| Bar/karaoke hostess | 2 | 3.3 |
| Cleaning Service | 4 | 6.7 |
| Sales | 3 | 5 |
| Hotel employee | 2 | 3.3 |
| Salon employee | 4 | 6.7 |
| No (FSWs-direct) | 39 | 65 |

| | | |
|-------|----|-----|
| Total | 60 | 100 |
|-------|----|-----|

Laboratory examination found 40 people (66.7%) in FSWs with positive HIV serological examination laboratory results using HIV rapid test reagents consisting of 3 stages (3 reagents). Complete data can be seen in Table 2 laboratory examination results. The high prevalence of HIV among FSWs is strongly influenced by causative factors such as criminalisation of sex workers and violence, which can be based on life background conditions such as early pregnancy in adolescents, sexual harassment. The results showed that most subjects had a high-risk behaviour category of contracting HIV infection as many as 30 people (50%). Some were at moderate risk of contracting HIV infection 21 people (35%), and 9 people (15%) were at low risk of contracting HIV infection (Table 3).

Table 2: Laboratory examination results HIV serology

| Examination of serology 3 reagents | n | % |
|------------------------------------|----|------|
| Reactive | 40 | 66.7 |
| Non-reactive | 20 | 33.3 |
| Total | 60 | 100 |

Table 3: Level of risky sexual behavior for HIV infection in FSWs (n=60)

| Level of risky behavior | Mark | n | % |
|-------------------------|-------|----|----|
| High risk behavior | 36–45 | 30 | 50 |
| Moderate risk behavior | 26–35 | 21 | 35 |

Table 4: Relationship between sexual behavior and HIV infection in FSWs (n=60)

| Variable | HIV testing | | | | p value |
|------------------------------------|--------------|------|----------|------|---------|
| | Non-reactive | | Reactive | | |
| | n | % | n | % | |
| Use of condoms | | | | | |
| Never used | 0 | 0 | 19 | 31.7 | 0.001* |
| Use it sometimes | 7 | 11.7 | 13 | 21.6 | |
| Always use it | 13 | 21.7 | 8 | 13.3 | |
| Age of first sex | | | | | |
| 14 years old–17 years old | 10 | 16.7 | 24 | 40 | 0.857 |
| 18 years old–25 years old | 5 | 8.3 | 13 | 21.7 | |
| 26 years old–35 years old | 5 | 3.3 | 3 | 5 | |
| Number of sexual partners | | | | | |
| ≥ 2 people/week | 13 | 21.7 | 40 | 66.6 | 0.001* |
| 1 person/week | 7 | 11.7 | 0 | 0 | |
| There isn't any | 0 | 0 | 0 | 0 | |
| Long time working as a FSWs | | | | | |
| More than 12 months | 9 | 15 | 28 | 46.6 | 0.012* |
| 6–12 months | 4 | 6.7 | 10 | 16.7 | |
| <6 months | 7 | 11.7 | 2 | 3.3 | |
| Frequency of sex | | | | | |
| ≥ 7 time a week | 16 | 26.7 | 38 | 63.3 | 0.06 |
| 2–6 time a week | 4 | 6.7 | 2 | 3.3 | |
| 1 time a week | 0 | 0 | 0 | 0 | |
| Having group sex | | | | | |
| Always | 0 | 0 | 0 | 0 | 0.156 |
| Sometimes | 9 | 15 | 21 | 35 | |
| Never | 11 | 18.4 | 19 | 31.7 | |

*p value<0.05, means there is a significant

| | | | |
|-------------------|-------|----|-----|
| Low risk behavior | 15–25 | 9 | 15 |
| Total | - | 60 | 100 |

The bivariate analysis show that use of condoms, age of first sex, number of sexual partners, long time working as a FSWs, frequency of sex, and having group sex were significantly associated with risky sexual behavior (Table 4). We found that use of condom, number of sexual partners, long time working as a FSW, and frequency of sex was positively associated with risky sexual behavior (p-value<0.05).

The multivariate analysis was conducted on variables that were included as candidate models in the bivariate selection. The resulting multivariate analysis model is then analyzed multivariate and seen from the variables that become candidate models, which variables have the highest influence on HIV infection. Subjects who used inconsistent condom use were 8.03 times more likely than those who always used condoms to increase the occurrence of HIV infection (p value 0.035, PR: 8.03, 95% CI: 2.10–30.63) (Table 5). This is in line with the research findings of Kunesh et al., who found that FSWs have a 13.5 (95% CI: 10.0–18.1) times higher risk of HIV infection in inconsistent condom use due to HIV transmission during sexual intercourse [13].

Table 5: Results of multivariate analysis of risky sexual behavior related to HIV infection among FSWs

| Variable | PR* (95% CI) | p value |
|------------|-------------------|---------|
| Use condom | 8.03 (2.10–30.63) | 0.035 |

PR, prevalence ratio; CI, confidence intervals

Discussion

The results of this study differ from the research of Azinar et al., (2020) that the majority of FSWs have elementary school graduates as much as 61.4% and then followed by FSWs with junior high school graduates as much as 31.6%. The association of risky sexual behaviour with education level has not been consistent. Some studies show a significant association of risky sexual behaviour among people with secondary education and above. Conversely, other studies have shown a significant association between unsafe sexual behaviour among people with lower levels of education [15].

According to Sari et al., that FSWs in Sidoarjo found that some of the FSWs in the area had other jobs besides being FSWs, generally as massage attendants and bar/karaoke waitresses, and their side jobs tended to be just to cover up their real behaviour [16].

According to Abdella et al., HIV transmission among FSWs is 30 times higher than the transmission rate among women in the general population. HIV prevalence in Ethiopia in 2022 is 18.7% with considerable variation across cities [17]. The National Coordinator of the Indonesian Organisation for Social Change (OPSI) revealed that the estimated number of female sex workers in Indonesia estimates more than 277,000 FSWs in 2020. Based on data from SIHA, the percentage of PLHIV found in the January–December 2022 period based on risk factors in the FSW group was 3%, an increase from 2021 which was 2.4% [8].

The high prevalence of HIV in the FSW group is strongly influenced by causative factors such as criminalisation of sex workers and violence, it can be based on background conditions such as early pregnancy in adolescents, sexual abuse, etc. Research in Kenya by Beattie et al. (2024) showed that HIV prevalence among FSWs in 2021 was 29.3%, an increase from the previous year of 28% [18].

In Chabata et al. (2019) study showed that FSWs in Zimbabwe started sexual activity mostly at the age of 16 years–17 years, starting the first sexual activity at a younger age has a higher risk of HIV infection than those who started at an older age [19].

According to this study, the question regarding the number of sex partners in 1 week was answered variously, with the highest number ≥ 2 people/week as many as 55 people (91.7%). Research by Beattie et al. in Kenya on FSWs had 5 or more clients a week. A high number of sex partners in FSWs is consistently associated with an increased risk of HIV infection [18]. The greater the number of sex partners, the higher the risk of HIV exposure [20].

Condom use among FSWs plays an important role in the

prevention of HIV infection. The effectiveness of consistent and correct condom use can significantly reduce the risk of HIV transmission, with an estimated effectiveness of 80%–95%. In a study by Wirawan et al. (2021) reported that as many as 87.5% of FSWs used condoms and 12.5% did not routinely use condoms [21]. In this study, it was found that there were 20 people (33.3%) whose sex partners sometimes used condoms, there were 19 people (31.7%) who never used condoms when having sex.

Statistically, there was no significant relationship between age of first sex and HIV infection in FSWs ($p > 0.05$). This contradicts the research of Chabata et al. which shows there is a significant relationship between the age of first sex and HIV infection in FSWs in Zimbabwe starting sexual activity mostly at the age of 16 years–17 years, as many as 56 people (51.8%) [19].

Conclusion

There is an association between condom use, number of sex partners, and length of time working as a FSW. Multivariate analysis most associated with HIV infection is whose sexual partners never used condoms during sexual intercourse with female sex workers.

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Conflicting Interests

The authors declare that there is no conflict of interest in this report.

Authors' Contributions

All authors are responsible for conceptualization, manuscript preparation, manuscript editing, and manuscript assurance.

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