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Association Between Knowledge of Sexually Transmitted Infections and STI/HIV Preventive Behaviors Among Female Sex Workers

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ABSTRACT

Female sex workers are at high risk of sexually transmitted infections (STIs) and Human Immunodeficiency Virus (HIV), and adequate knowledge is essential for adopting preventive behaviors. This study aimed to analyze the association between knowledge of sexually transmitted infections and STI/HIV preventive behavior among female sex workers in Tegal Gede, Bekasi Regency. An analytical cross-sectional study was conducted in 2023 using total sampling of all 36 active female sex workers in the study area. Data were collected using structured questionnaires to assess STI knowledge and STI/HIV preventive behavior. Descriptive statistics, including frequencies, percentages, and a 2 × 2 crosstabulation, were calculated. Because 75% of the expected cell counts were below 5, the two-sided Fisher exact test was used, and the association was expressed as an odds ratio (OR) with a 95% confidence interval (CI). Poor STI knowledge was identified in 33 respondents (91.7%), and 32 respondents (88.9%) demonstrated unsupportive STI/HIV preventive behavior. Unsupportive behavior was observed in 31 of 33 respondents (93.9%) with poor STI knowledge compared with 1 of 3 respondents (33.3%) with good STI knowledge. Knowledge of STIs was significantly associated with STI/HIV preventive behavior (Fisher exact $p = 0.027$; OR = 31.00; 95% CI: 1.896–506.771). Poor STI knowledge was associated with substantially higher odds of unsupportive STI/HIV preventive behavior. These findings highlight the importance of targeted, non-stigmatizing health education and improved access to STI/HIV prevention services for female sex workers.

Keywords: female sex workers, sexually transmitted infections (STIs), HIV/AIDS, STI knowledge, preventive behavior

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INTRODUCTION

Female sex workers are a key population with increased exposure to sexually transmitted infections (STIs) and HIV. Occupational and structural conditions may involve multiple sexual partners, inconsistent condom use, stigma, and limited access to health services. STIs may facilitate HIV transmission through genital inflammation and mucosal disruption; therefore,

prevention, early detection, and continuous health education are essential for this population (Sari, 2024).

The World Health Organization reports that more than 30 bacteria, viruses, and parasites can be transmitted through sexual contact. More than one million curable STIs are acquired each day worldwide, and an estimated 374 million new infections with chlamydia, gonorrhea, syphilis, or trichomoniasis occurred in 2020. These infections can contribute to infertility, adverse pregnancy outcomes, cervical cancer, and increased HIV transmission (WHO, 2025).

Indonesia continues to face a substantial HIV and STI burden. By the end of 2023, 391,598 people living with HIV were aware of their status, while 140,622 were receiving antiretroviral therapy. West Java recorded 21,281 HIV infections and ranked fourth among Indonesian provinces, indicating the continuing need for promotive, preventive, testing, and treatment services for populations with higher exposure (Ministry of Health, 2023).

At the local level, Bekasi Regency recorded 487 STI cases in 2019 and 2020, increasing to 804 cases in 2021 according to the local health profile. This pattern underscores the importance of focused prevention among groups with higher exposure, including female sex workers (Dinas Kesehatan Kabupaten Bekasi, 2023).

The burden of HIV is concentrated among adults of reproductive age. National data indicate that people aged 25–49 years accounted for the largest proportion of reported HIV cases, while global evidence also demonstrates a substantial STI burden among people aged 15–49 years. These patterns are relevant to female sex workers because consistent condom use, regular testing, and timely treatment can protect individual health and reduce onward transmission (Kemenkes RI, 2023; WHO, 2025).

Preventive behavior may be influenced by knowledge, perceived risk, partner negotiation, peer support, access to condoms, and access to health services. In Tegal Gede, Bekasi Regency, understanding whether knowledge is associated with preventive behavior is important for designing interventions that are practical, acceptable, and non-stigmatizing.

An initial assessment of 10 active female sex workers in the Tegal Gede area found that eight had limited STI knowledge and reported inadequate STI/HIV prevention practices.

These preliminary findings suggested a gap between the health risks faced by female sex workers and the knowledge and behaviors needed to reduce STI and HIV transmission.

Accordingly, this study aimed to examine the association between STI knowledge level and STI/HIV preventive behavior among female sex workers in the Tegal Gede area of Bekasi Regency in 2023.

METHODS

Study design and setting

An analytical cross-sectional study was conducted in the Tegal Gede area, Bekasi Regency, Indonesia, in 2023. STI knowledge and STI/HIV preventive behavior were measured simultaneously (Notoatmodjo, 2018).

Population and sample

The study population comprised all active female sex workers in the Tegal Gede area during the study period. The accessible population consisted of 36 female sex workers. Because the population was small and accessible, all 36 individuals were included in the study.

Sampling technique

Total sampling was used; therefore, every eligible active female sex worker in the study area was invited and included.

Data collection

Primary data were collected directly from respondents using structured questionnaires. Respondents selected the answer option that best represented their knowledge and preventive behavior.

Study variables and instruments

STI knowledge was measured using multiple-choice items and categorized as poor or good. STI/HIV preventive behavior was measured using agree/disagree items and categorized as unsupportive or supportive.

Statistical analysis

Data were analyzed using SPSS. Frequencies and percentages summarized the categorical variables. A 2 × 2 crosstabulation was used to examine the association between STI knowledge and preventive behavior. Because three of the four cells (75%) had expected counts below 5, with a minimum expected count of 0.33, the two-sided Fisher exact test was selected rather than relying on Pearson's chi-square test. The strength of association was expressed as an odds ratio (OR) with a 95% confidence interval (CI). Statistical significance was set at $p < 0.05$.

RESULTS

Univariate analysis

Table 1. Distribution of STI knowledge levels among female sex workers (n = 36)

Knowledge level	Frequency	Percentage
Poor	33	91.7%
Good	3	8.3%
Total	36	100.0%

Of the 36 respondents, 33 (91.7%) had poor STI knowledge and 3 (8.3%) had good STI knowledge.

Table 2. Distribution of STI/HIV preventive behavior among female sex workers (n = 36)

Preventive behavior	Frequency	Percentage
Unsupportive	32	88.9%
Supportive	4	11.1%
Total	36	100.0%

Of the 36 respondents, 32 (88.9%) had unsupportive STI/HIV preventive behavior and 4 (11.1%) had supportive preventive behavior.

Bivariate analysis

The association between STI knowledge and STI/HIV preventive behavior was assessed using a 2 × 2 crosstabulation and the two-sided Fisher exact test.

Table 3.
Association between STI knowledge level and STI/HIV preventive behavior (n = 36)

Knowledge level	Unsupportive n (%)	Supportive n (%)	Total n (%)	p-value*	OR (95% CI)
Poor	31 (93.9)	2 (6.1)	33 (100.0)	0.027	31.00 (1.896–506.771)
Good	1 (33.3)	2 (66.7)	3 (100.0)	—	Reference
Total	32 (88.9)	4 (11.1)	36 (100.0)	—	—

*Source: Primary data, 2023. *Two-sided Fisher exact test. Pearson's chi-square assumptions were not met because 75% of expected cell counts were below 5.*

Among respondents with poor STI knowledge, 31 of 33 (93.9%) had unsupportive preventive behavior, compared with 1 of 3 respondents (33.3%) with good knowledge. The two-sided Fisher exact test showed a statistically significant association between STI knowledge and preventive behavior (p = 0.027). Respondents with poor knowledge had 31.00 times the odds of unsupportive preventive behavior compared with respondents with good knowledge (95% CI: 1.896–506.771). The wide confidence interval indicates substantial uncertainty because of the small sample and sparse cell counts.

DISCUSSION

This study found a high prevalence of poor STI knowledge (91.7%) and unsupportive STI/HIV preventive behavior (88.9%) among female sex workers in Tegal Gede. The proportion with unsupportive behavior was markedly higher among respondents with poor knowledge (93.9%) than among those with good knowledge (33.3%).

The Fisher exact test indicated a statistically significant association between knowledge and preventive behavior. The estimated OR of 31.00 suggests a strong association; however, the 95% CI was very wide (1.896–506.771). This imprecision reflects the small number of respondents with good knowledge and supportive behavior and means that the magnitude of the association should not be interpreted as a precise population effect.

Knowledge can support preventive behavior by improving understanding of transmission routes, symptoms, complications, condom use, and the importance of testing and treatment. Health education is therefore expected to increase awareness and facilitate healthier decisions, although knowledge alone may not be sufficient to change behavior.

The present finding is consistent with Siregar (2019), who reported significant relationships between knowledge, attitudes, and STI-prevention practices. Together, these findings indicate that educational interventions should not only provide information but also address attitudes, perceived susceptibility, and practical skills for negotiating preventive practices.

Consistent and correct condom use remains an important component of STI/HIV prevention. Nevertheless, preventive behavior also includes regular screening, early treatment, partner notification where appropriate, and access to health services. Programs that focus only on information without ensuring access to condoms, testing, and treatment may have limited effects.

Panonsih & Silvia (2014) found that self-efficacy was associated with condom use among female sex workers. This supports the view that confidence in negotiating condom use and managing client resistance may influence whether knowledge is translated into action. Peer support and repeated counseling may help strengthen this self-efficacy.

Fitrianingsih et al. (2018) also identified knowledge as one of the factors related to HIV-prevention behavior. However, preventive behavior can be shaped by multiple personal and

structural determinants, including stigma, economic dependence, partner pressure, service accessibility, and perceived confidentiality. These factors should be considered when designing interventions for female sex workers.

The findings have practical implications for local health services. Education should be delivered repeatedly, in clear language, and without stigmatizing participants. Outreach should be linked directly to condoms, voluntary counseling and testing, STI screening, treatment, and referral services so that improved knowledge can be translated into feasible preventive action.

This study has several limitations. The sample was small and drawn from a single location, limiting generalizability. The cross-sectional design cannot establish temporal sequence or causality. Knowledge and behavior were self-reported and may have been affected by recall or social-desirability bias. The very wide OR confidence interval further indicates that the effect estimate is unstable and should be confirmed in larger studies.

Despite these limitations, the study provides local evidence that poor STI knowledge is associated with unsupportive STI/HIV preventive behavior and identifies an important target for integrated education and service-based interventions.

CONCLUSION

Among 36 female sex workers, 33 (91.7%) had poor STI knowledge and 32 (88.9%) had unsupportive STI/HIV preventive behavior. Poor knowledge was significantly associated with unsupportive preventive behavior (two-sided Fisher exact p = 0.027; OR = 31.00; 95% CI: 1.896–506.771). Because this was a small cross-sectional study, the finding demonstrates an association rather than causation and should be interpreted cautiously.

RECOMMENDATION

Health services should provide repeated, non-stigmatizing STI/HIV education, ensure access to condoms, testing, and treatment, and strengthen peer-based support. Future multicenter studies with larger samples should assess additional determinants such as self-efficacy, partner support, stigma, condom negotiation, and access to healthcare services.

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