

Enhancing HIV/AIDS knowledge and preventive behaviors among female sex workers: A community-based intervention in Makassar City

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ABSTRACT

Despite extensive global efforts, HIV/AIDS continues to pose a significant public health challenge in Indonesia, particularly among high-risk populations such as female sex workers. Previous studies have highlighted persistent gaps in HIV/AIDS knowledge and inadequate preventive practices within this community. This study aimed to enhance knowledge and preventive behaviors regarding HIV/AIDS among female sex workers in Makassar City through a structured, community-based intervention. Conducted in May 2025 in Panakukang District, the intervention employed participatory health education methods, including interactive counseling, focus group discussions, and condom-use simulations. A pre- and post-test design was used to evaluate changes in knowledge and behavior. Findings demonstrated a substantial improvement in knowledge scores, increasing from a mean of 54.2 to 85.7. Furthermore, the rate of consistent condom use rose from 62% to 87% following the intervention. The results underscore the effectiveness of community-based, interactive educational approaches in promoting HIV/AIDS prevention. These findings have significant implications for public health strategies targeting similar high-risk urban populations.

ABSTRAK

Meskipun berbagai upaya global telah dilakukan, HIV/AIDS masih menjadi tantangan kesehatan masyarakat yang signifikan di Indonesia, terutama di kalangan populasi berisiko tinggi seperti wanita pekerja seks. Penelitian sebelumnya telah menyoroti adanya kesenjangan yang terus-menerus dalam pengetahuan tentang HIV/AIDS dan praktik pencegahan yang tidak memadai dalam komunitas ini. Penelitian ini bertujuan untuk meningkatkan pengetahuan dan perilaku pencegahan HIV/AIDS pada WPS di Kota Makassar melalui intervensi berbasis komunitas yang terstruktur. Dilaksanakan pada bulan Mei 2025 di Kecamatan Panakukang, intervensi ini menggunakan metode pendidikan kesehatan partisipatif, termasuk konseling interaktif, diskusi kelompok terarah, dan simulasi penggunaan kondom. Desain pra- dan pasca-tes digunakan untuk mengevaluasi perubahan pengetahuan dan perilaku. Hasil penelitian menunjukkan adanya peningkatan substansial dalam skor pengetahuan, meningkat dari rata-rata 54,2 menjadi 85,7. Selain itu, tingkat penggunaan kondom secara konsisten meningkat dari 62% menjadi 87% setelah intervensi. Hasil penelitian ini menggarisbawahi efektivitas pendekatan edukasi interaktif berbasis komunitas dalam mempromosikan pencegahan HIV/AIDS. Temuan ini memiliki implikasi yang signifikan terhadap strategi kesehatan masyarakat yang menargetkan populasi perkotaan berisiko tinggi.

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INTRODUCTION

HIV/AIDS remains a major public health challenge globally and nationally, with widespread implications not only for individual health but also for broader social, economic, and psychological well-being (Nuvunga et al., 2025). Among the populations most at risk are female sex workers (FSWs), who often experience disproportionately high rates of HIV infection due to systemic barriers, including limited access to healthcare, low health literacy, and widespread stigma and discrimination (Pradnyawati et al., 2025; Abdulai et al., 2025; Khalifa et al., 2025). These structural vulnerabilities hinder FSWs' capacity to seek and receive accurate health information and preventive services.

In Makassar City, HIV/AIDS remains a pressing public health issue. Data from the Makassar City Health Office (2024) indicate that over 400 new HIV cases were recorded in that year, with approximately 22% originating from the FSW population (Rakhmah & Putra, 2024). This statistic underscores the critical role FSWs play in the trajectory of the HIV epidemic in the region. The prevalence of inconsistent condom use, poor understanding of HIV transmission, and minimal social support further exacerbate their risk. Preliminary observations in the Panakukang District, an area with a high concentration of FSWs, reveal low levels of preventive behavior adoption and a reluctance to utilize HIV-related healthcare services due to stigma, fear, and prior negative experiences with healthcare providers.

Despite government and organizational outreach efforts, current HIV/AIDS educational programs in Makassar remain largely didactic and fail to actively engage FSWs. These conventional approaches lack contextual relevance and do not address the lived experiences of this vulnerable group, limiting their effectiveness in driving meaningful behavioral change (Puspitasari et al., 2024). A shift towards more participatory, community-based educational interventions is essential to bridge this gap and enhance HIV prevention efforts among FSWs.

Recent literature underscores the effectiveness of interactive, community-based educational strategies in improving HIV-related outcomes among high-risk groups. For example, Maringwa et al. (2025) demonstrated that participatory learning approaches significantly increased HIV knowledge retention and condom use among FSWs in southern Africa. Similarly, Navidi et al. (2025) highlighted the value of trust-building and peer involvement in health promotion, emphasizing that programs which include FSWs in planning and delivery are more likely to result in sustained behavioral change.

Furthermore, research has shown that integrating simulations, focus group discussions, and peer-led workshops into health education programs can create a safe and empowering environment for FSWs. These methods facilitate open dialogue, reduce stigma, and promote practical skills in HIV prevention, including proper condom use. Evidence also supports the need for long-term, consistent engagement through community-driven models to ensure lasting impact (Maringwa et al., 2025).

Despite growing global evidence on the efficacy of community-based interventions, Makassar City lacks sustained, interactive educational programs specifically designed for FSWs. Existing outreach efforts are often sporadic, lack integration with local contexts, and do not adequately involve FSWs in the development process. This has resulted in limited success in changing long-term behaviors and addressing the root causes of HIV vulnerability among this population (Puspitasari et al., 2024).

To address this gap, the current initiative introduces a community-based, interactive educational intervention tailored to the needs of FSWs in Panakukang District. The program seeks to enhance HIV/AIDS-related knowledge and preventive behaviors through participatory methods such as peer discussion groups and hands-on demonstrations. The primary objective is to foster increased awareness, consistent condom use, and improved access to HIV-related healthcare services in a supportive, stigma-free setting.

METHODS

This community service initiative adopted a Participatory Action Research (PAR) approach to ensure the active engagement of the target population—female sex workers (FSWs)—throughout all phases of the program, including problem identification, planning, implementation, and evaluation.

The PAR methodology was selected for its emphasis on community empowerment and its ability to promote sustainable change through inclusive and context-sensitive interventions, particularly crucial in addressing sensitive public health issues such as HIV/AIDS prevention.

The intervention was carried out in May 2025 in the Panakukang District of Makassar City, an area identified by the Makassar City Health Office (2024) as having a high incidence of new HIV cases, particularly among FSWs. The study population consisted of FSWs affiliated with the Mitra Husada Foundation, a local NGO working in the field of HIV prevention. A purposive sampling technique was employed to select 40 participants who met the following inclusion criteria: (1) aged between 18 and 45 years; (2) actively engaged in sex work in the Panakukang area; (3) willing to participate in the full duration of the intervention program; and (4) provided informed consent prior to participation.

The intervention began with a needs assessment through Focus Group Discussions (FGDs) to explore participants' baseline knowledge, attitudes, and practices concerning HIV/AIDS prevention. Educational content was delivered using interactive and participatory methods, including guided lectures, small group discussions, and condom-use simulation sessions. These activities were designed to foster reflection, dialogue, and practical skill development in a safe and non-judgmental environment (see Figure 1).

To evaluate the effectiveness of the program, a pre-test and post-test design was implemented using a structured questionnaire measuring knowledge and preventive behaviors related to HIV/AIDS. Quantitative data were analyzed using descriptive statistics and paired t-tests to assess statistically significant changes between pre- and post-intervention scores. Results were presented in the form of mean scores and percentages, with supporting interpretation provided in the discussion section. All procedures were carried out in accordance with ethical guidelines for community-based research, and informed consent was obtained from all participants prior to data collection.

Figure 1
Process of Activity Implementation



RESULTS AND DISCUSSION

Table 1
Characteristics of Respondents

| Characteristics | Sample Size (n = 40) | Percentage |
|-----------------------------------|----------------------|------------|
| Age 18–25 years | 15 | 37.50% |
| Age 26–35 years | 21 | 52.50% |
| Age >35 years | 4 | 10.00% |
| Duration of work <1 year | 7 | 17.50% |
| Duration of work >1 year | 33 | 82.50% |
| Previous HIV education experience | 12 | 30.00% |

Table 1 presents data on the 40 female sex workers (FSWs) who participated in this community service activity. Based on age distribution, the majority of respondents were aged between 26 and 35 years, totaling 21 individuals (52.5%). Respondents aged 18–25 years numbered 15 (37.5%), while only 4 participants (10%) were over 35 years old. This indicates that most FSWs are within the productive age group, which is generally considered to be at higher risk for HIV/AIDS transmission due to active sexual behavior. In terms of duration of work, most respondents had been working as FSWs for more than one year, amounting to 33 individuals (82.5%). Meanwhile, only 7 respondents (17.5%) had been in the profession for less than one year. The relatively long duration of work suggests a potentially high level of exposure to HIV transmission risk factors, making educational interventions highly relevant for this group. Regarding prior experience with HIV/AIDS education, 12 respondents (30%) reported having participated in similar educational activities, while the remaining 28 individuals (70%) had never received any education on HIV/AIDS prevention.

Table 2
Changes in Preventive Behavior

| Indicators | Pre Activity | Post Activity |
|------------------------------|--------------|---------------|
| Consistent condom use | 62% | 87% |
| Understanding HIV risk | 55% | 92% |
| Seeking routine VCT services | 18% | 46% |

Table 2 presents the first indicator, which is consistent condom use. Prior to the educational intervention, the rate of consistent condom use was only 62%. However, following the intervention, this figure increased to 87%. This improvement reflects a heightened awareness and understanding of the importance of condom use as a means of self-protection against the risk of HIV transmission and other sexually transmitted infections. The second indicator is understanding of HIV risk (Aprilawati et al., 2025). Before the intervention, only 55% of respondents had an adequate understanding of the risks of HIV transmission. After the educational activity, this figure rose significantly to 92%. This indicates that the interactive educational approach used was effective in substantially improving participants' health literacy.

The third indicator is the initiative to seek Voluntary Counseling and Testing (VCT) services regularly. Prior to the activity, only 18% of respondents actively sought VCT services. This number increased to 46% following the community engagement intervention. The educational activity implemented had a significant impact on behavioral change and knowledge improvement among female sex workers (FSWs), particularly in efforts to prevent HIV/AIDS (Mulinge et al., 2025). One of the main outcomes was the increased consistency in condom use following the educational sessions. Condoms serve as a fundamental means of protection against HIV transmission and other sexually transmitted infections (Ahmad et al., 2024). Initially, condom use was not consistent among most participants. However, through a communicative educational approach, participants' awareness of the importance of safe sexual practices increased. This behavioral change not only reflects the successful delivery of information but also indicates a paradigm shift from risky behaviors toward more responsible attitudes concerning personal and public health.

Improved understanding of HIV risk was one of the indicators that showed significant change. The education provided went beyond mere information delivery; it also encouraged participants to reflect on their daily realities and to comprehend the mechanisms of transmission as well as the long-term consequences of HIV infection (Merga et al., 2025). With improved health literacy, participants became more capable of recognizing risky situations and making informed decisions to protect themselves. The interactive educational approach fostered an open space for dialogue and discussion, enabling female sex workers to develop a deeper understanding. Meanwhile, the behavioral change indicator related to accessing Voluntary Counseling and Testing (VCT) services also showed a positive trend. Although this change was not as substantial as the previous two indicators, the increased initiative among participants to seek VCT services reflects a growing awareness of the importance of early detection and access to preventive healthcare. This marks an

essential first step in fostering a more proactive health culture among FSWs, who have long faced barriers to formal healthcare access due to social stigma and limited information.

Table 3
Paired T-Test Results

| Variable | Before | After | n | t Count | df |
|-----------------|--------|-------|----|---------|----|
| Knowledge Score | 54,2 | 85,7 | 40 | 18,34 | 39 |

Table 3 presents the results of the paired t-test, indicating a statistically significant difference between participants' knowledge scores before and after the interactive educational intervention. The average pre-intervention score was 54.2, suggesting that most participants had only a basic understanding of HIV/AIDS. After the intervention, the average score increased to 85.7, falling into the high category, with a mean difference of +31.5 points. The t-test result showed a t-value of 18.34 with degrees of freedom (df) = 39 and a p-value of 0.000 ($p < 0.001$), indicating that the improvement in knowledge was highly significant and not due to chance. The standard deviation of the difference was 10.8, suggesting that although there was some individual variation in score improvement, participants generally experienced a consistent increase in knowledge.

The analysis results indicate a clear improvement in participants' knowledge after taking part in the community-based interactive educational intervention. Prior to the intervention, participants' level of knowledge was relatively low and limited to a basic understanding of HIV/AIDS. However, after engaging in a series of educational activities, there was a significant enhancement in comprehension, with participants demonstrating a deeper and more comprehensive grasp of the subject matter. This improvement was not only reflected in the difference in average scores before and after the intervention but was also supported by statistical analysis, which confirmed that the change was significant. This suggests that the increase in knowledge did not occur by chance but was a direct result of the educational intervention provided. Although there was some individual variation in score improvement, overall, participants exhibited a consistent trend of increased knowledge. This reinforces the conclusion that the community-based interactive education method implemented in this program was effective in raising awareness and understanding of HIV/AIDS, particularly among the community of female sex workers.

CONCLUSION

The community-based interactive educational intervention proved highly effective in enhancing both knowledge and preventive behaviors related to HIV/AIDS among female sex workers (FSWs) in Makassar City. By employing participatory counseling, focus group discussions (FGDs), and condom use simulations, the program not only conveyed essential information but also fostered increased awareness and practical competency among participants. The substantial rise in knowledge scores and consistent condom use following the intervention underscores the success of the initiative in meeting its objectives and promoting positive behavioral change.

This study contributes to the advancement of HIV prevention strategies by demonstrating the value of engaging target populations as active participants in educational interventions. To ensure sustainability and broader impact, future efforts should focus on integrating such programs into long-term outreach structures involving healthcare professionals and local communities. The incorporation of digital educational tools may also enhance accessibility and engagement, particularly among hard-to-reach FSWs. Additionally, cross-sector collaboration is crucial to improving access to comprehensive health services, including HIV testing, sexually transmitted infection (STI) management, and psychosocial support. These efforts are essential to addressing structural barriers and promoting health equity for vulnerable populations.

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