



Effectiveness Of Hiv & Syphilis Screening Program For High Risk Groups In Kendari City: A Case Study Of At-Risk Groups In The Working Area Of Kemaraya Health Center, Indonesia

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Abstract

Sexually transmitted infections (STIs) such as HIV and Syphilis are serious global health problems, especially with high prevalence in at-risk groups and the potential for co-infection. However, data on the effectiveness of screening programs at the local level, particularly in Kendari City which is experiencing an increase in HIV and Syphilis cases, is limited. Key challenges include lack of access to health services, poor understanding of early detection, and stigma and discrimination. Therefore, this study focuses on evaluating the effectiveness of the HIV and Syphilis screening program at Puskesmas Kemaraya, Kendari, to improve knowledge and early

detection among high-risk groups in the area. This study used a community service approach with a pre-post design. The intervention involved health education and screening using rapid tests to detect infections early. Knowledge of participants was measured before and after the intervention through pre-test and post-test questionnaires. The study sample consisted of 50 participants from the reproductive age group, commercial sex workers, transgender women, and the general public around the Kemaraya Health Center. Data were analyzed using SPSS version 21 to calculate percentages and compare pre-test and post-test results. Results showed a significant increase in knowledge about HIV and Syphilis in at-risk groups after the intervention. For HIV, good knowledge increased from 36% (pre-test) to 56% (post-test). For Syphilis, good knowledge increased from 8% (pre-test) to 42% (post-test), although poor knowledge was still dominant (58%). HIV screening found no positive cases among the 50 respondents (0%). However, 3 out of 50 respondents (6%) tested positive for syphilis. This program demonstrates that community-based education and screening interventions are effective in increasing knowledge and early detection of HIV and Syphilis among high-risk groups. These results underscore the importance of early detection, especially for Syphilis which is still found in this population, and the need for continuous education and strengthening collaboration between Puskesmas, communities, and related institutions to expand the coverage of STI prevention and control programs.

Keywords: *HIV, Syphilis, Screening, Health Education*

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Introduction

Sexually transmitted infections (STIs), including Human Immunodeficiency Virus (HIV) and Syphilis, are significant global public health problems. The burden of viral hepatitis and HIV in sub-Saharan Africa is enormous, with an estimated 64.7 million people living with Hepatitis B virus (HBV), 8 million with Hepatitis C virus (HCV), and 20.8 million people living with HIV infection (Saayman et al., 2025). These diseases have serious health implications and can cause long-term complications if not diagnosed and treated early. In Taiwan, since 2022, Mpox has emerged among men who have sex with men (MSM), and data on local risk factors are still limited, especially the role of sexual behavior and STI history (Chen et al., 2025).

HIV and Syphilis are common sexually transmitted infections in sub-Saharan Africa. The population-based prevalence of syphilis was 0.9% in Tanzania and Zimbabwe, 2.1% in Uganda, and 3.0% in Zambia. Overall, an estimated 1,027,615 participants had active syphilis in the five countries, comprising 266,383 HIV-positive individuals and 761,232 HIV-negative individuals. Syphilis prevalence was higher among people living with HIV (ranging from 2.6% in Ethiopia to 9.6% in Zambia) compared to those without HIV (ranging from 0.8% in Tanzania to 2.1% in Zimbabwe) (Farahani et al., 2024). Men who have sex with men (MSM) in British Columbia (BC) are disproportionately affected by infectious syphilis and HIV (Zhu et al., 2024).

The high prevalence of sexually transmitted co-infections is not uncommon in at-risk populations, whose management requires integrated testing, treatment, and prevention (Lin et al., 2021). HIV co-infection with HCV in Pretoria, South Africa, which is the epicenter of HCV infection for people who inject drugs (PWID), continues to increase. Given this growing burden, a decentralized triple prevention and treatment intervention has been evaluated for PWID (Saayman et al., 2025).

Screening is a crucial component in preventing and controlling the spread of HIV and Syphilis. The World Health Organization (WHO) recommends "frequent" sexually transmitted infection (STI) screening for people taking HIV pre-exposure prophylaxis (PrEP) (Kim et al., 2023). Universal screening programs, such as opt-out syphilis screening in emergency departments (EDs) in the UK, have been hypothesized to identify a large number of cases in high prevalence areas (Chadwick et al., 2025).

Innovative screening strategies are essential to reach high-risk populations. An innovative community health worker program was developed in East Baton Rouge Parish, Louisiana, as part of the "Ending the HIV Epidemic in the U.S." initiative. In addition to HIV/STI testing outside of traditional settings, community health workers provide integrated services, including referrals for



people with HIV, navigation of pre-exposure prophylaxis, and provision of sterile syringes and referrals to syringe service programs (Hammack et al., 2021).

Interventions such as pre-exposure prophylaxis (PrEP) against HIV for at-risk groups can be highly effective. Research has also shown that increasing the frequency of syphilis testing, such as testing every four months for HIV-diagnosed MSM, can significantly lower syphilis incidence rates. In addition, prevention with doxycycline (Doxy-P) has also shown promising impact in reducing syphilis incidence if it reaches target coverage (Zhu et al., 2024).

Nonetheless, there are challenges in prevention and control efforts. In Portugal, the national HIV/AIDS Program has been the core health program and led the country's response to the HIV epidemic since the 1980s, but faced a reorganization of central services and reform of vertical programs in 2011 (Augusto et al., 2020). Optimizing screening for sexually transmitted infections in men using self-collected swabs is also a growing area of research (Yared et al., 2018).

Indonesia is ranked third with the largest growth in HIV spread among Asia Pacific countries after China and India. UNAIDS (2021) noted that the spread of HIV in Indonesia is growing 16% every year. HIV case data in Indonesia has tended to increase in recent years. 30,935 cases were recorded in 2018, 41,250 cases in 2019, 46,650 cases in 2020. This figure peaked in 2021 at 50,282 cases, with the distribution in the age group 15-24 years there were 9,142 cases or 18.2% of the total cases (Jahro & Mulyana, 2023).

In 2023, Southeast Sulawesi Province recorded a total of 638 new ODHIV cases found in all districts/cities. Of this number, 566 people or around 88.71% of the total new PLHIV have received standardized antiretroviral (ARV) treatment. The district with the highest number of new PLHIV is Kendari City with 321 cases, all of which (100%) have received ARV treatment. This reflects the relatively better health care system in Kendari City in detecting and providing therapeutic interventions for HIV patients (South East Sulawesi Provincial Health Office, 2024).

Data from the Kendari City Health Office shows a fluctuating trend of HIV and AIDS cases over the past nine years, with combined total cases varying each year. In 2015 there were 51 cases, then increased to 58 cases in 2016. 2017 and 2018 showed alternating decreases and increases, while in 2019 cases increased again. A significant spike occurred in 2020 with 127 HIV cases and only 7 AIDS cases, allegedly due to improved early detection. In 2021 AIDS cases jumped to 108, although HIV decreased to 47 cases. In 2022 there was another increase with a total of 219 cases, and in 2023 321 new HIV cases were recorded, indicating the need to strengthen prevention and handling efforts (South East Sulawesi Provincial Health Office, 2024).

HIV/AIDS disease is caused by several causative factors including sexual intercourse, lack of knowledge or information about how to prevent HIV/AIDS disease, work, gender, direct contact with blood, non-sterile needles, simultaneous use of needles and injecting drug addicts, non-sterile



blood transfusions, pregnant women with HIV to their babies, either during pregnancy or during childbirth, or after childbirth (Herlinda et al., 2023).

Although HIV and syphilis are globally significant public health problems, with high prevalence among at-risk groups and serious potential for co-infection, specific data on the effectiveness of screening programs implemented at the local level are limited. Challenges in the implementation of effective screening and interventions, as seen in the reorganization of health programs in different countries, suggest that program success is highly dependent on geographic and demographic context. Therefore, the lack of a comprehensive evaluation of the HIV and Syphilis screening program among high-risk groups in Kendari City poses significant health challenges, especially regarding the increase in HIV and syphilis cases among at-risk groups such as sex workers, injecting drug users, and men who have sex with men. Lack of access to health services and a lack of understanding of the importance of early detection means that many do not undergo routine screening. Stigma and discrimination are also major barriers to prevention and treatment. Therefore, effective and community-based counseling is needed to increase public awareness, encourage safe sexual behavior, and build social support for infected individuals.

Puskesmas Kemaraya, located in West Kendari, has a strategic role in reaching high-risk groups in urban areas such as transport drivers, port workers, and communities around nightlife centers. Through inclusive screening and counseling activities, the health center seeks to increase access to health services, reduce infection rates, and improve the quality of life of the community. This community-based approach not only benefits the individual, but also has a positive impact on the overall health of the community

Methods

This study uses a community service program approach that combines health education, screening using rapid tests, and knowledge assessment before and after the intervention. This method aims to increase knowledge and early detection of HIV and syphilis in high-risk groups. The research design used was a pre-post design to measure the effectiveness of the program. Knowledge data of participants was measured before and after the implementation of education and screening. In its implementation, this research method consists of several main stages, namely:

1. Health Counseling & Education

Providing information about Sexually Transmitted Infections (STIs), especially HIV and syphilis, followed by questions and answers to explore knowledge and understanding. Through a community-based approach, it is hoped that this activity can reduce stigma and discrimination against infected individuals, as well as increase access to health services, using visual media and leaflets for easy understanding.



2. HIV & Syphilis Screening for At-Risk Groups

Screening using rapid tests to detect infection early, followed by pre- and post-test counseling to provide psychosocial support. The aim is to provide objective data and open access to health services in the effort to prevent and control HIV and syphilis in Kendari City.

3. Simple Monitoring & Evaluation

Question and answer during education to see changes in knowledge. Giving pre-test and post-test questionnaires before and after counseling. The aim is to measure the level of knowledge and understanding of at-risk groups in early detection of Sexually Transmitted Infections (STIs).

The study was conducted in the working area of Kamaraya Health Center, Kendari City, which is the location of the screening and education program intervention for groups at high risk of HIV and Syphilis. The research sample consisted of 50 participants from the reproductive age group, commercial sex workers, waria (transgender), and the general public around the Kamaraya Health Center working area. The targets of this service activity are at-risk groups in the Kamaraya Health Center Working Area, West Kendari District, Kendari City, the target targets consisting of:

1. Women of childbearing age, as part of efforts to prevent transmission of HIV and syphilis from mother to child through maternal and child health services (MCH) at the Puskesmas.
2. Key groups such as sex workers, men who have sex with men (MSM), Waria, which include populations with a higher risk of HIV and syphilis transmission.
3. The general public around the Puskesmas working area and centers of economic activity, who are vulnerable to exposure due to high mobility and interaction with key populations.

The instrument used was a pre-test and post-test questionnaire to assess the level of knowledge about HIV and syphilis of participants before and after the educational intervention and screening. Data were analyzed using SPSS version 21. Descriptive analysis was used to calculate percentages. Data analysis was conducted by comparing pre-test and post-test results to assess changes in participants' knowledge. HIV and syphilis screening results were also analyzed to determine the prevalence of infection among risk groups.

Results

Kemaraya Health Center is located in West Kendari Sub-district, Kendari City, Southeast Sulawesi. The exact location is on Jl. Mayjen S Parman, Lahundape Village, which is part of the Old Unhalu Complex (Old Campus of Halu Oleo University). Puskesmas Kamaraya serves an urban area in Kendari, including the port area, nightlife center, and a densely populated, socioeconomically diverse neighborhood. This location is a gathering point for several high-risk groups, such as truck/angkot drivers, port workers, and communities that frequently interact with nightlife and sex worker populations.



The study targeted a sample of 50 respondents, of which 50 completed and returned the questionnaire, resulting in an overall response rate of 100%. The results of knowledge measurement before and after counseling through Pre test and Post Test in the at-risk group are presented in Table 1 below:

Table 1. Results of Pre and Post Test HIV & Syphilis in the at-risk group

Knowledge	HIV				Syphilis			
	Pretest	%	Posttest	%	Pretest	%	Posttest	%
Good	18	36	28	56	4	8	21	42
Less	32	64	22	44	46	92	29	58
Total	50	100	50	100	50	100	50	100

Based on table 1. Above shows the results of the HIV pre-test most in poor knowledge, namely 32 respondents (64%) and after the HIV post-test most in good knowledge, namely 28 respondents (56%). While the results of the Syphilis pre-test were mostly in poor knowledge, namely 26 respondents (92%) and after the HIV post-test the most in poor knowledge, namely 29 respondents (58%).

Table 2. HIV & Syphilis Screening Results in risk groups

Screening	HIV		Syphilis	
	n	%	n	%
Positive	0	0	3	6
Negative	50	100	47	94
Total	50	100	50	100

Based on table 2. Above shows the results of HIV and Syphilis Screening in risk groups. The screening results obtained positive results in syphilis screening, namely 3 respondents (6%) and negative screening as many as 47 respondents (94%). While HIV screening there were no HIV positive respondents.



Discussion

Community service activities have been carried out with face-to-face meetings using educational methods of counseling and HIV and Syphilis screening examinations. This activity was carried out one day, namely on Saturday, June 28, 2025 from 14.00 Wita until completion. Participants of the activity amounted to 50 people in the risk group accompanied by the Puskesmas Team.

Based on Table 1, there was an increase in knowledge about HIV and Syphilis in at-risk groups after the intervention. In the HIV pre-test, the majority of respondents (32 people or 64%) had poor knowledge, and only a small proportion (18 people or 36%) had good knowledge. However, after the post-test, the number of respondents with good knowledge increased significantly to 28 people (56%), while those with poor knowledge decreased to 22 people (44%). This suggests that the intervention was effective in improving respondents' understanding of HIV. A similar situation also occurred with syphilis knowledge. Syphilis pre-test showed that 46 respondents (92%) had poor knowledge, and only 4 respondents (8%) had good knowledge. After the post-test, although there was still a dominant lack of knowledge (29 respondents or 58%), there was a significant increase in respondents with good knowledge to 21 people (42%). This indicates that educational efforts were successful in improving knowledge, although it still needs to be improved further.

Research in line with these results shows that health education can indeed improve community knowledge about STIs. Research by found significant differences between pretest and posttest on the level of knowledge and attitudes of pregnant women towards preventing mother-to-child transmission of HIV (Primadewi & Dewi, 2025). Similarly, another study reported a substantial increase in knowledge after an educational intervention to increase knowledge of HIV/AIDS prevention through training which supports that educational interventions play an important role in increasing awareness of STIs (Kusumaningtyas & Umaroh, 2025).

Table 2 presents the results of HIV and Syphilis screening in at-risk groups. For HIV, all 50 respondents (100%) were negative, meaning there were no HIV positive respondents in this study group. This is good news, indicating the low prevalence of HIV in the study group, or the effectiveness of prevention measures that may already be in place. However, for Syphilis, the results were slightly different. Out of 50 respondents, 3 people (6%) tested positive for syphilis, while 47 people (94%) were negative. The presence of 6% Syphilis positive respondents shows that this infection is still a relevant problem in at-risk groups, although the prevalence is not very high.



According to the team from Universitas Airlangga and Dr. Soetomo General Hospital Surabaya, the prevalence of syphilis was most prevalent in the age group between 25-29 years, followed by the 30-34 years age group. There were significant differences between gender, marital status, sexual orientation, and syphilis stage between groups of syphilis patients with HIV and syphilis without HIV. The results of the analysis regarding differences in serological titers before therapy between HIV-positive and HIV-negative syphilis groups in the study showed higher VDRL and TPHA titers in HIV-positive patients compared to HIV-negative patients. This suggests that HIV-positive patients may have a more active syphilis infection or a higher immune response to syphilis infection (Hidayati, 2024). It is also important to underline that Syphilis infection can increase the risk of HIV transmission by 3-5 times (Pryono et al., 2020).

The necessary implication is that increasing knowledge is key to encouraging better prevention behavior and awareness to seek health services. Early detection of syphilis cases allows for immediate treatment, prevents serious complications, and reduces transmission. Recommendations The next educational program can emphasize more on syphilis, with materials that are more detailed and easy to understand. It could possibly include more interactive sessions to answer specific questions about syphilis. Routine screening should be encouraged, especially for high-risk groups. Pre- and post-test counseling programs should be strengthened to provide psychosocial support and ensure referral to treatment services. Collaboration between Puskesmas, communities, and relevant institutions needs to be improved to achieve wider screening coverage and ensure the sustainability of STI prevention and control programs

Conclusion and Recommendation

The community service program in the form of counseling and screening of HIV & The community service program in the form of counseling and screening of HIV & syphilis in at-risk groups in the Kemaraya Health Center Working Area, West Kendari, proved effective in increasing participants' knowledge about HIV and syphilis, as shown by a significant increase in good knowledge after the educational intervention, especially for HIV (from 36% to 56%) and syphilis (from 8% to 42%), with the results of HIV screening all respondents negative and syphilis screening found 6% positive cases, thus confirming the importance of early detection and continuous education in at-risk groups to prevent and control the transmission of STIs, especially syphilis which is still found in this population; Therefore, education on syphilis needs to be further improved both in terms of materials and delivery methods, routine screening and pre-post test counseling should continue to be promoted in high-risk groups to detect and treat cases early, and collaboration between Puskesmas, communities, and related institutions needs to be strengthened



to expand the coverage and sustainability of STI prevention and control programs in the community.

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