



## Description of HIV/AIDS Incidence in Helvetia Health Center, Medan City

Apriliani<sup>1\*</sup>, Rahmat Alyakin Dachi<sup>2</sup>, Mido Ester Juniati Sitorus<sup>3</sup>, Donal Nababan<sup>4</sup>, Siska Evi Simanjuntak<sup>5</sup>  
<sup>1,2,3,4,5</sup>Universitas Sari Mutiara Indonesia, Medan

Correspondence email: [apriliani985@gmail.com](mailto:apriliani985@gmail.com)

<p><b>Track Record Article</b></p> <p>Accepted: 17 Oktober 2024 Revised: 26 November 2024 Published: 30 December 2024</p> <p><b>How to cite :</b> Apriliani, Dachi, R. A., Sitorus, M. E. J., Nababan, D., &amp; Simanjuntak, S. E. (2024). Description of HIV/AIDS Incidence in Helvetia Health Center, Medan City. <i>Contagion : Scientific Periodical of Public Health and Coastal Health</i>, 6(2), 1547–1559.</p>	<p style="text-align: center;"><b>Abstract</b></p> <p><i>HIV/AIDS is a contagious disease that has become a strategic issue in the SDGs (Sustainable Development Goals) agenda, making it a priority for development in every country to achieve HIV/AIDS elimination by 2030. HIV/AIDS poses a significant challenge to public health globally, affecting both developed and developing countries, including Indonesia. This study aims to provide an overview of the incidence of HIV/AIDS at Puskesmas Helvetia. The study employed a quantitative design with a case-control approach. The research was conducted at Puskesmas Helvetia from December 2023 to June 2024. The population of this study consisted of all HIV-positive patients at Puskesmas Helvetia, totaling 855 individuals. A purposive sampling technique was used for case and control sampling, with a sample size of 154, split evenly between cases and controls (77 samples each). The study utilized both primary data, collected through interviews, and secondary data from the SIHA 2.1 application. The instrument used was a questionnaire. Data analysis was conducted using univariate descriptive analysis, including distribution and frequency. The results revealed that the majority of respondents were unemployed (53 individuals, 34.4%), had insufficient knowledge (80 individuals, 51.9%), had a history of sexually transmitted infections (STIs) (106 individuals, 68.8%), identified as homosexual (120 individuals, 77.9%), and did not use condoms (110 individuals, 71.4%). The low level of knowledge regarding STIs contributed to high-risk sexual behaviors, including inconsistent condom use. Therefore, there is a need for interventions such as more intensive health education, improved access to sexual health services, and economic empowerment programs for vulnerable groups to reduce STI incidence.</i></p> <p><b>Keywords:</b> <i>HIV, AIDS, Incidence</i></p>
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### INTRODUCTION

Infectious diseases remain a central focus of the 2030 Sustainable Development Goals (SDGs). Indonesia faces a dual burden of both infectious and non-communicable diseases, with shifting disease patterns influenced by environmental, behavioral, demographic, technological, economic, and socio-cultural factors. Addressing the HIV/AIDS epidemic is a critical component of achieving the SDGs, with key objectives including the elimination of new infections, a reduction in AIDS-related mortality, and the eradication of stigma and discrimination against individuals living with HIV/AIDS (Kemenkes RI, 2019).

AIDS is the fourth leading cause of death worldwide. The global population of individuals living with HIV increased from 37.7 million in 2020 to 39.0 million in 2022, with 630.000 recorded deaths (WHO, 2023). HIV prevalence among key populations is as follows: 2.5% among female sex workers, 7.7% among male sex workers, 0.5% among people who inject drugs, 10.3% among transgender individuals, and 1.4% among prison inmates (UNAIDS, 2023).

According to the Indonesian Ministry of Health (2019), HIV remains a significant public health concern affecting both developed and developing countries, including Indonesia. The HIV/AIDS epidemic has evolved into a major global health crisis, with cases spreading from urban centers to remote rural areas. The prevalence of HIV/AIDS continues to rise worldwide, underscoring the persistent challenges in controlling its transmission (Widiastuti et al., 2022).

Indonesia ranks as the fifth country with the highest risk of HIV/AIDS in Asia. The number of people living with HIV increased from 543.100 in 2020 to 618.284 in 2022, with HIV cases rising from 419,551 to 478.784 and AIDS cases from 123,549 to 139.500. The primary risk factor is predominantly associated with homosexual transmission, accounting for 24.9% in 2020 (23.6% among men who have sex with men and 1.3% among transgender individuals). This proportion increased to 27.7% in 2021 (26.6% among MSM and 1.1% among transgender individuals) (Kemenkes RI, 2020; Kemenkes RI, 2022).

North Sumatra Province ranks among the top five provinces in Indonesia with the highest number of HIV/AIDS cases, with the total number of people living with HIV/AIDS increasing from 25.655 in 2020 to 427.772 in 2022 (Kemenkes RI, 2020; Kemenkes RI, 2022). In North Sumatra, the highest prevalence of HIV and AIDS cases based on risk factors was observed in the Men who have Sex with Men group, accounting for 42% (approximately 505 cases), followed by high-risk partners at 21% and clients of sex workers at 19% (Kemenkes RI, 2018).

Medan City has the highest number of HIV/AIDS cases in North Sumatra. In 2021, the number of people living with HIV (PLHIV) in Medan City was reported at 17.211 cases. This figure increased to 18.758 in 2022 and further rose to 19.750 between January and November 2023. The number of HIV-related deaths has also shown an increasing trend over the past three years. In 2020, there were 1.669 reported deaths due to HIV, which rose to 1.825 in 2021 before slightly decreasing to 1.672 in 2022 (Dinkes Kota Medan, 2022).

In 2022, the distribution of HIV and AIDS cases in Medan City based on key populations was as follows: 2.654 cases among female sex workers, 79 among male sex workers, 2.220 among transgender individuals, 49.883 among men who have sex with men (MSM), 197 among people who inject drugs (PWID), 2.941 among high-risk partners, 2.306 among clients of sex workers, and 5.577 among prison inmates. From January to June 2023, the distribution of HIV and AIDS cases in Medan City among key populations was as follows: 1.743 cases among female sex workers, 95 among male sex workers, 1,261 among transgender individuals, 26.792 among MSM, 6 among PWID, 1.218 among high-risk partners, 951 among clients of sex workers, and 1.579 among prison inmates.

Puskesmas Helvetia has the highest incidence of HIV among all community health centers (Puskesmas) in Medan City. According to data from Puskesmas Helvetia, the number of people living with HIV (PLHIV) recorded at the facility was 235 in 2020, 284 in 2021, 304 in 2022, and 251 from January to November 2023. In 2023, the distribution of HIV cases among key populations at Puskesmas Helvetia was as follows: 186 cases among female sex workers, 1.220 among transgender individuals, 19.400 among men who have sex with men (MSM), 7 among high-risk partners, and 738 among prison inmates.

One of the key strategies in preventing and addressing HIV/AIDS is public health promotion aimed at increasing overall awareness and knowledge about the disease. A comprehensive understanding of HIV/AIDS plays a crucial role in controlling its spread by fostering awareness and encouraging preventive measures. Greater knowledge about HIV/AIDS enables individuals to recognize its impact and consequences, ultimately contributing to more informed health decisions and reduced transmission rates (Van Son et al., 2020).

According to data from Puskesmas Helvetia, most HIV/AIDS cases occur among individuals aged 22–40 years, with the majority having a high school education. Many of those affected have limited knowledge about HIV transmission and prevention. People living with HIV (PLHIV) often engage in high-risk sexual behaviors, including having multiple sexual partners (heterosexual), same-sex relationships (homosexual), or being attracted to multiple genders (bisexual), often without using condoms during intercourse.

However, the causes and circumstances surrounding drug use vary among individuals. Some engage in drug use as part of their lifestyle, while others are influenced by adverse childhood experiences, including exposure to physical violence, parental divorce, or economic hardship. Additionally, some individuals initially experiment with drugs out of curiosity and later perceive their use as socially desirable or a symbol of status.

factors contributing to a history of sexually transmitted infections (STIs) among people living with HIV (PLHIV) include engaging in unprotected sex with STI-infected partners, having multiple sexual partners, and not undergoing regular STI testing. Such high-risk behaviors increase the likelihood of STI transmission, particularly among individuals who engage in anal intercourse. As a result, PLHIV are at a higher risk of acquiring infections such as syphilis and gonorrhea. Based on the background outlined above, this study aims to explore the factors contributing to the incidence of HIV/AIDS at the Helvetia Health Center in Medan City.

## METHODS

This study employs a quantitative research design using a case-control approach, comparing case and control groups based on exposure status. The study is conducted at Puskesmas Helvetia, Medan City, North Sumatra Province, from December 2023 to June 2024. The study population consists of all HIV-positive patients at Puskesmas Helvetia, totaling 855 individuals. The sample ratio for the case and control groups is 1:1, resulting in 77 participants in the case group (n1) and 77 in the control group (n2).

The sampling method for both case and control groups is purposive sampling. Primary data collection is conducted through interviews with respondents using a structured questionnaire designed to assess knowledge-related variables. Meanwhile, secondary data is obtained from Puskesmas Helvetia through the SIHA 2.1 application and screening reports from the health center.

Data analysis involves univariate analysis, which aims to describe the attributes of each variable studied. This procedure includes analyzing the percentage distribution within frequency tables for each variable, providing a comprehensive overview of the collected data. The data analysis process includes data entry, processing, and statistical analysis using SPSS software version 20.

## RESULTS

The frequency distribution of respondent characteristics and factors influencing the incidence of HIV/AIDS at Puskesmas Helvetia, Medan City, is presented as follows:

**Table 1. Frequency Distribution of Characteristics with HIV/AIDS Incidence at Helvetia Community Health Center Medan**

Variable	Frequency	%
<b>Age</b>		
17-25 years	61	39.6
26-35 years	57	37.0
36-45 years	32	20.8
>46 years	4	2.6
<b>Total</b>	<b>154</b>	<b>100</b>
<b>Gender</b>		
Male	113	73.4
Female	41	26.6
<b>Total</b>	<b>154</b>	<b>100</b>
<b>Education</b>		
Graduated elementary school	12	7.8
Graduated junior high school	26	16.9
Graduated senior high school	79	51.3
Higher Education	37	24.0
<b>Total</b>	<b>154</b>	<b>100</b>

Based on Table 1, the study results indicate that the majority of respondents were aged 17–25 years, accounting for 61 individuals (39.6%). Most respondents were male, totaling 113 individuals (73.4%), while the majority had completed high school education, with 79 respondents (51.3%).

**Table 2. Frequency Distribution of Influencing Factors with HIV/AIDS Incidence at Helvetia Community Health Center Medan**

Variable	Frequency	%
<b>Work</b>		
Female sex workers	20	13.0
Fishermen	6	3.9
Crew members	12	7.8
Driver	11	7.1
Self-employed	35	22.7
Housewife	17	11.0
Not working	53	34.4
<b>Total</b>	<b>154</b>	<b>100</b>
<b>Knowledge</b>		
Not good	80	51.9
Good	74	48.1
<b>Total</b>	<b>154</b>	<b>100</b>
<b>History of Sexually Transmitted Infections</b>		
Yes	106	68.8
No	48	31.2
<b>Total</b>	<b>154</b>	<b>100</b>
<b>Sexual orientation</b>		
Homosexual	120	77.9
Bisexual	10	6.5
Heterosexual	24	15.6
<b>Total</b>	<b>154</b>	<b>100</b>
<b>Condom use</b>		
No	110	71.4
Yes	44	28.6
<b>Total</b>	<b>154</b>	<b>100</b>

Based on Table 2, the study results indicate that the majority of respondents were unemployed 53 individuals (34.4%). Most respondents had insufficient knowledge about HIV/AIDS 80 individuals (51.9%) and a history of sexually transmitted infections (STIs) 106 individuals (68.8%). The majority of respondents identified as having a homosexual sexual orientation 120 individuals (77.9%), and most did not use condoms during sexual intercourse 110 individuals (71.4%).

## DISCUSSION

### 1. Occupational factors with HIV/AIDS incidence

Employment is closely linked to high-risk behaviors associated with HIV & AIDS infection. Socioeconomic factors drive individuals to seek employment, which, in certain cases, may increase the risk of HIV transmission. A study conducted at Puskesmas Sasi found a

significant association between specific occupations and the incidence of HIV. Interviews with several respondents revealed that while working abroad or in certain high-risk occupations—such as factory laborers, cargo handlers, long-haul truck drivers, palm plantation workers, and domestic workers they engaged in risky sexual behaviors, including having multiple sexual partners and not using condoms during intercourse. The primary reason cited was prolonged separation from their regular partners, with a reported prevalence of 81%. Consequently, individuals in high-risk occupations within the Puskesmas Sasi area were found to be 4.500 times more likely to contract HIV & AIDS compared to those in low-risk occupations (Nubabi et al., 2024).

The findings of this study may be influenced by the dominance of the case group, which primarily consisted of respondents engaged in high-risk occupations, whereas the control group comprised a larger proportion of individuals in low-risk occupations. This disparity is suspected to have contributed to the results of the statistical analysis. However, occupations traditionally considered low-risk still carry the potential for HIV/AIDS transmission, as seen in the case of housewives. Transmission in this group often occurs through husbands who have contracted HIV due to frequent changes in sexual partners. Conversely, women who engage in multiple sexual partnerships are also at risk of HIV infection and may subsequently transmit the virus to their partners.

High-risk occupations refer to types of employment associated with factors that increase the risk of HIV transmission, including entertainment industry workers, drivers, fishermen, crew members, commercial sex workers, factory laborers, construction workers, and street vendors. In contrast, occupations that do not fall into this category, such as civil servants, teachers, lecturers, doctors, and members of the military or police, are classified as low-risk occupations (Winahyu et al., 2016). Demographic factors, such as the presence of port areas, can contribute to the increasing incidence of HIV/AIDS. Ports are often populated by large numbers of crew members, a group at high risk of HIV transmission. This heightened risk is associated with the nature of their occupation, which demands high mobility, limited opportunities to reunite with family, and prolonged psychological stress. Consequently, some individuals in this group are more likely to engage in extramarital sexual relationships, further increasing the risk of HIV transmission (Widiastuti & Arulita, 2022).

## **2. Knowledge factor with HIV/AIDS incidence**

Knowledge arises from curiosity and is acquired through sensory experiences, primarily visual and auditory perception of objects. It serves as a fundamental element in the development of open-minded behavior (Astuti et al., 2022). Knowledge is a crucial determinant

in shaping behavior and influencing actions or attitudes. Behavior informed by knowledge is generally more effective than behavior that lacks a strong knowledge foundation. Individuals with sufficient knowledge are more likely to take proactive measures in preventing HIV/AIDS. Conversely, those with inadequate knowledge often exhibit indifference or a lack of concern toward preventive initiatives (Nubabi et al., 2024).

Education level significantly influences an individual's knowledge. Higher levels of education provide broader insights, ultimately enhancing understanding across various aspects, including health. Conversely, limited education can restrict an individual's perspective, leading to a narrower understanding of health-related issues (Herlinda et al., 2023).

A higher level of education enhances an individual's awareness of seeking and accepting information related to HIV & AIDS infection. This awareness enables individuals to make informed decisions about protecting themselves from HIV transmission, delaying sexual activity, and regulating behavior to maintain personal health. Furthermore, individuals with higher education levels are more likely to understand strategies for avoiding high-risk sexual behaviors, such as having multiple sexual partners and engaging in unprotected intercourse (Dewi et al., 2023).

Individuals with adequate knowledge are more aware of appropriate and inappropriate actions and recognize the health risks posed by HIV/AIDS. A deeper understanding encourages them to adopt healthier lifestyles and preventive measures to reduce the risk of HIV/AIDS infection. Behavior informed by knowledge is generally more effective than behavior based on misconceptions or a lack of awareness. Furthermore, a strong knowledge base contributes to the development of positive attitudes by enhancing understanding of HIV transmission mechanisms. Therefore, health education for university students plays a crucial role in reducing stigma and discrimination against people living with HIV/AIDS (PLWHA) (Widayanti et al., 2018).

The study findings indicate that most respondents have a relatively good level of knowledge about HIV/AIDS, while only a small proportion demonstrate a limited understanding, particularly in accurately defining HIV/AIDS. All respondents are aware of the locations where HIV/AIDS testing is available. Additionally, the majority understand high-risk sexual behaviors, such as having multiple sexual partners and not using condoms, although a small subset has only a moderate level of comprehension regarding these risks. From the researchers' perspective, knowledge plays a crucial role in HIV/AIDS transmission, as a strong understanding can promote more effective preventive behaviors, whereas inadequate knowledge may increase the risk of transmission.

The respondents' limited knowledge about HIV & AIDS is also influenced by restricted access to information. In the Puskesmas Sasi service area, high-risk groups and the general public primarily receive information on HIV & AIDS transmission and prevention from healthcare workers, without gaining a broader understanding of the importance of safe sexual behavior, risk factors, and vulnerable populations. Furthermore, most respondents do not actively seek additional information to enhance their knowledge. In reality, the more information individuals acquire about HIV & AIDS, the greater their ability to understand the risks and make informed decisions regarding their behavior.

### **3. Factors of history of sexually transmitted infections (STIs) with the incidence of HIV/AIDS**

Sexually transmitted infections (STIs) can act as a catalyst for HIV transmission, underscoring the importance of integrating HIV prevention programs with STI prevention initiatives. The relationship between STI transmission and HIV is multifaceted; STIs function as co-factors that facilitate HIV transmission; Individuals with STIs are at a higher risk of contracting HIV; Those coinfecting with both STIs and HIV are more likely to transmit the virus to others; HIV positive individuals are more susceptible to various infections, including STIs and People coinfecting with both HIV and STIs tend to progress to AIDS more rapidly (Kemenkes RI, 2020).

The relationship between HIV/AIDS and sexually transmitted infections (STIs) is particularly strong, especially for STIs that cause lesions, as these can serve as entry points for HIV transmission through sexual contact. Individuals who do not undergo STI screening are at a higher risk of contracting HIV compared to those who seek regular testing. This increased risk arises because undiagnosed individuals remain unaware of their potential infection status, making them more likely to engage in high-risk behaviors without protection, ultimately increasing their susceptibility to HIV. Additionally, genital ulcers caused by STIs can facilitate HIV transmission during unprotected sexual intercourse (Oktaseli et al., 2019).

The researchers observed that some respondents in this study tested positive for HIV/AIDS despite having no prior history of sexually transmitted infections (STIs). Individuals at risk of HIV/AIDS are not limited to those with a history of STIs. Other high-risk groups include individuals who engage in unprotected sexual intercourse, people who inject drugs, and those who frequently undergo body piercing. However, HIV/AIDS can affect anyone, not just high-risk populations. Therefore, implementing effective measures to prevent HIV/AIDS transmission is essential.



Respondents with a history of sexually transmitted infections (STIs) were more likely to contract HIV/AIDS, as genital lesions caused by STIs can facilitate HIV transmission during unprotected sexual intercourse. Individuals with a history of STIs may also engage in similar high-risk sexual behaviors, such as not using condoms or having multiple sexual partners, further increasing their vulnerability to reinfection.

#### **4. Sexual orientation factors with HIV/AIDS incidence**

The results of this study are in line with research Anggraini et al., (2022), The findings of this study align with previous research, indicating a significant association between sexual orientation and the incidence of HIV/AIDS. This relationship is supported by the theory that homosexual individuals are more likely to engage in anal intercourse, which carries a higher risk of developing condyloma acuminata and increases the likelihood of HIV infection (Sung et al., 2012).

HIV transmission through male-to-male sexual contact is the second most common route after heterosexual transmission, accounting for approximately one-quarter of new HIV/AIDS cases. The primary risk factor among men who have sex with men (MSM) is engaging in unprotected anal intercourse. Additionally, several interrelated factors, such as having multiple or casual sexual partners, alcohol and drug use, and co-infection with other sexually transmitted infections (STIs), further increase the risk of transmission (Lockart et al., 2019; Yan et al., 2020).

Anal intercourse carries a higher risk of sexually transmitted infections (STIs) due to several factors. Unlike the vagina, the anus lacks natural lubrication, making penetration more likely to cause tissue tears. These microtears increase the likelihood of bacteria and viruses entering the bloodstream, ultimately facilitating the transmission of STIs, including HIV/AIDS (Kutner et al., 2022; Brown et al., 2021).

Engaging in unprotected sexual intercourse, whether with opposite-sex or same-sex partners who are HIV-positive, is a primary factor in the transmission and increasing prevalence of HIV/AIDS. The risk of HIV transmission is closely associated with sexual orientation and behaviors. Risky practices, such as unprotected sex, having multiple sexual partners, and sharing needles, significantly increase the likelihood of HIV exposure. For example, among men who have sex with men (MSM), the risk of HIV is particularly high due to the greater transmission risk associated with anal sex compared to vaginal intercourse. Without protection, anal sex allows the virus to more easily enter through the rectal mucosal tissue.

## 5. Condom use factors with HIV/AIDS incidence

Condoms are easily accessible contraceptive devices that function as a barrier method. One of the main advantages of condom use is its effectiveness in preventing the transmission of sexually transmitted infections (STIs) (Murtono, 2019). One of the key strategies to prevent the spread of HIV is promoting condom use. Condoms play a crucial role in preventing the exchange of bodily fluids during sexual intercourse, thereby reducing the risk of HIV transmission to others (Fromin et al., 2020).

One of the ongoing public health concerns in Indonesia is the prevalence of HIV & AIDS infections. These cases continue to rise rapidly and can have fatal consequences. The majority of HIV & AIDS infections are attributed to behaviors such as having multiple sexual partners and engaging in unprotected sex. HIV & AIDS target the immune system, and if left untreated, can lead to serious health complications, including death (Kemenkes RI, 2020).

Condom use is an effective way to prevent HIV & AIDS transmission. Carolin et al., (2020), research indicates that during sexual contact, tissue damage may occur, facilitating the entry of the virus and subsequent infections in the affected area. Consistent condom use significantly reduces the risk of HIV and AIDS transmission, as well as other sexually transmitted infections (STIs) transmitted through genital fluids. Condom use during sexual intercourse is a key component of HIV and AIDS prevention initiatives in Indonesia. However, the effectiveness of this program remains insufficient, particularly among clients of sex workers, homosexual individuals, and transgender people. Barriers to effective HIV and AIDS prevention include the lack of regulations mandating condom use in high-risk areas and inadequate health promotion efforts regarding the importance of condom use, especially for high-risk populations.

According to the researchers, condom use is one of the primary preventive measures against HIV/AIDS in high-risk groups. However, the low rate of condom use in these groups suggests limitations in negotiating condom use with sexual partners. Additionally, many individuals are unaware that their partners may be at risk of transmitting HIV/AIDS. A lack of knowledge regarding HIV & AIDS, including risk factors, modes of transmission, and preventive methods, also influences individuals' decisions to use condoms. Some respondents who are infected with HIV & AIDS reported not using condoms due to ignorance about their existence and benefits.

Based on the researchers' observations, although some respondents possess condoms, they do not always use them consistently. The researchers hypothesize that this inconsistency may be due to the preferences of their partners, who may choose to engage in unprotected sex, possibly for reasons of comfort. In many cases, respondents agreed to forgo condom use due

to concerns about losing their partner, even though they are aware of the risks and consequences associated with unprotected sex.

## CONCLUSION

According to the study findings, the majority of respondents were unemployed, had limited knowledge, had a history of sexually transmitted infections (STIs), identified as homosexual, and did not use condoms during sexual intercourse. These findings indicate a significant gap in knowledge regarding STI risks and high-risk sexual behaviors, which could increase the potential for the spread of sexually transmitted infections. Therefore, more intensive health education efforts are required to raise awareness about STIs and the importance of safe sexual practices. Additionally, access to condoms and user-friendly healthcare services should be expanded to assist in STI prevention among high-risk populations. The government and healthcare providers must also enhance economic empowerment programs and counseling services for vulnerable groups to encourage healthier behavioral changes. With these measures, it is hoped that there will be an increase in awareness and compliance in maintaining sexual health, as well as a reduction in STI incidence rates.

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