

The Relationship Between Sociodemographic and HIV Incidence Among 17–65 Age Group at the VCT Clinic of Padang Bulan Community Health Center Medan in 2025

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Abstract

By the end of 2023, global HIV prevalence reached 5‰ with a Case Fatality Rate (CFR) of 16‰. In Indonesia, prevalence stands at 2‰, while incidence has increased from 13 per 100,000 population in 2021 to 21 per 100,000 in 2023, with a CFR of 7‰. In Medan City, HIV incidence reached 70 per 1,000 population. Padang Bulan Community Health Center (Puskesmas) is a health facility in Medan providing voluntary counseling and testing (VCT) services. This study aims to analyze the relationship between sociodemographic and HIV incidence at the VCT Clinic of Padang Bulan Community Health Center Medan in 2025. This study employs an analytic observational design with a cross-sectional approach, involving 85 samples by purposive sampling. Univariate data were analyzed descriptively and bivariate data were analyzed by chi square test with 95 percent confidence level ($\alpha=0.05$). Results showed that 75.3% of respondents at the VCT Clinic of Padang Bulan Medan Health Center in 2025 were diagnosed HIV-positive. There was an association between gender ($p < 0.05$), marital status ($p < 0.05$), education level ($p < 0.05$), income ($p < 0.05$), STI history ($p < 0.05$), place of residence ($p < 0.05$), and mode of sexual intercourse ($p < 0.05$) with HIV incidence. Meanwhile, age ($p > 0.05$), ethnicity ($p > 0.05$), occupation ($p > 0.05$), and regional origin ($p > 0.05$) has no significant association with HIV incidence. Individuals with HIV should adhere to antiretroviral treatment and adopt a healthy lifestyle to improve quality of life and prevent transmission.

Keywords: Acquired Immunodeficiency Syndrome, Community Health Center, Human Immunodeficiency Virus, Sociodemographic, Voluntary Counseling and Testing.

1. Introduction

Communicable diseases, including sexually transmitted infections (STIs), remain one of the leading challenges in global public health. Among various STIs, Human Immunodeficiency Virus (HIV) continues to demand serious attention due to its profound impact on the immune system and its high incidence, particularly among the productive age group. Despite numerous global and national prevention efforts, the increasing trend of new HIV cases in several regions highlights that transmission remains active, especially among communities with specific sociodemographic characteristics (Apriliyani & Wijaya, 2022). This suggests the existence of a scientific gap in understanding how sociodemographic factors contribute to HIV incidence, particularly at the local level, such as in Medan, North Sumatra.

HIV is transmitted through various forms of sexual contact and is caused by a virus that compromises the immune system. If left untreated, the infection can progress to Acquired Immunodeficiency Syndrome (AIDS), which significantly increases the risk of death. The



World Health Organization (WHO) reported that by the end of 2023, global HIV prevalence reached 5% of the population, with a case fatality rate (CFR) of 16% (WHO, 2024c). In Indonesia, the number of new HIV cases has continued to rise, from 13 per 100,000 people in 2021 to 21 per 100,000 in 2023 (Ministry of Health RI, 2021–2023), emphasizing the need for more in-depth investigation of risk factors associated with HIV transmission.

At the provincial level, North Sumatra ranks sixth in Indonesia for the highest number of new HIV cases, with Medan City recording the most cases (Provincial Health Office of North Sumatra, 2024). In particular, Padang Bulan Community Health Center, one of five facilities offering Voluntary Counseling and Testing (VCT) services in Medan, reported an HIV prevalence of 17% in 2023, with the majority of cases occurring in the 20–40 age group. These individuals are considered to be in their sexually active and productive years, thus posing a higher risk of HIV transmission. However, few local studies have specifically examined the relationship between sociodemographic characteristics and HIV incidence in this setting, despite its importance in guiding targeted prevention strategies.

Moreover, the relatively high average number of monthly visits to the Padang Bulan VCT clinic is ranging from 300 to 360 patients, suggests increasing public awareness of early HIV detection. From January to September 2024, 520 people accessed HIV counseling and testing services. While this shows progress in early detection efforts, a comprehensive analysis of how HIV cases are distributed based on patients' sociodemographic profiles is still lacking, hindering the development of more targeted public health interventions.

Given this background, this study aims to analyze the relationship between sociodemographic characteristics and HIV incidence among individuals aged 17–65 years at the VCT Clinic of Padang Bulan Community Health Center, Medan, in 2025. The results are expected to contribute to the scientific literature by addressing the existing knowledge gap and supporting evidence-based decision-making in local HIV prevention and control programs.

2. Methods

This research is an analytical observational study with a cross-sectional design, conducted at the Voluntary Counseling and Testing (VCT) Clinic of Padang Bulan Health Center, Medan, during the period of January to March 2025. The cross-sectional approach was chosen to examine the relationship between sociodemographic factors and HIV incidence at a single point in time. The study population consisted of all individuals who visited the VCT clinic during the study period. A total of 85 participants were selected using a purposive sampling technique, with inclusion criteria including individuals aged 17–65 years who had visited the VCT clinic and agreed to participate voluntarily. Those who did not complete the questionnaire or refused to participate were excluded from the study.

The dependent variable in this study is HIV incidence, identified based on confirmed diagnosis recorded in clinic's medical records. Independent variables include age, gender, ethnicity, marital status, education, occupation, income, history of sexually transmitted infections (STIs), area of origin, residence, and sexual relationship patterns. Data were collected through face-to-face interview using a structured questionnaire that covered the participant's sociodemographic characteristics, sexual behavior, and history of STIs. Secondary data were obtained from the clinic's medical records to verify HIV status and clinical information.

All interviews were conducted in a private setting to ensure participant confidentiality and promote accurate responses. Before data collection, interviewers were given instructions regarding the objectives and technical procedures of the study to ensure consistency and

adherence to ethical standards. The collected data were analyzed using descriptive statistics to describe participant characteristics, and chi-square tests were applied to determine the relationship between each independent variable and HIV incidence. The chi-square test was selected because the variables involved were categorical in nature and the method is appropriate for testing associations in cross-sectional studies. A p-value of less than 0.05 was considered statistically significant.

3. Results and Discussion

3.1. Proportion of HIV Incidence

The HIV status of respondents at the VCT Clinic of Padang Bulan Health Center, Medan, in 2025 can be seen in the figure 1 below.

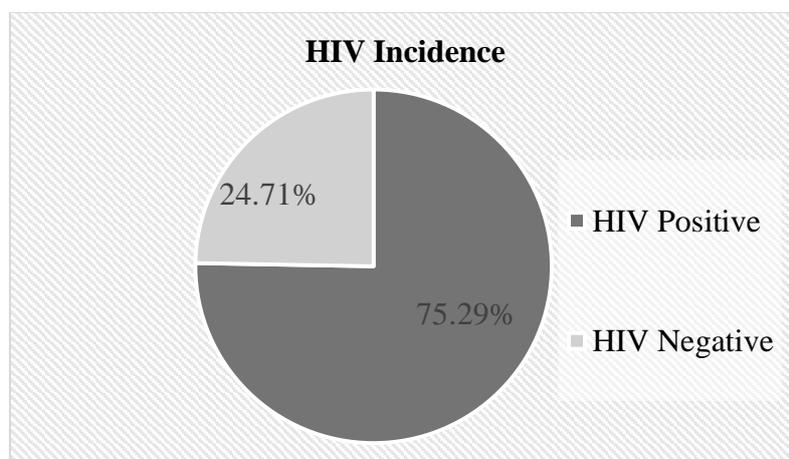


Figure 1. Pie chart of HIV incidence proportion distribution at VCT Clinic, Padang Bulan Community Health Center, Medan, 2025

Based on the pie chart above, the proportion of HIV incidence with positive HIV status at the VCT Clinic of Padang Bulan Health Center is 75.29%, with the majority of respondents coming from the productive age group. According to data from the Kementerian Kesehatan RI (2023), the productive age group has the highest vulnerability to HIV. The productive age group tends to have high levels of sexual activity, thus tending to engage in free sex. Lack of education about prevention, limited access to contraceptives, and social norms that can influence health-related decision-making contribute to high HIV infection rates in this group (Rahma et al., 2024). High prevalence can also be influenced by low education levels, history of STIs, and sexual behavior patterns (Susilowati et al., 2020).

Based on field findings, the VCT Clinic at Padang Bulan Health Center indeed focuses on HIV management, although it also handles other sexually transmitted infections such as syphilis, condyloma, and candidiasis. The high HIV rate at this clinic is most likely due to the dominance of HIV patient visits who routinely take medication every month, reflecting the characteristics of the population coming to this facility and the high need for treatment and health services for HIV patients.

3.2. Relationship Between Age and HIV Incidence

The relationship between age and HIV incidence at the VCT Clinic of Padang Bulan Community Health Center, Medan, in 2025 can be seen in the figure 2 below.

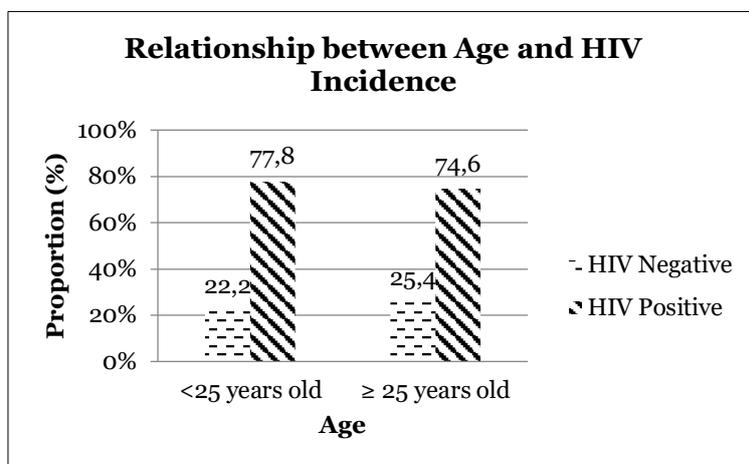


Figure 2. Bar chart of the relationship between age and HIV incidence at VCT Clinic, Padang Bulan Community Health Center, Medan, 2025

Based on Figure 2, the proportion of individuals with positive HIV status in the age group under 25 years reaches 77.8%, while in the age group 25 years and above it is 74.6%. Meanwhile, the proportion of individuals with negative HIV status in the <25 years age group is 22.2%, and in the ≥25 years age group it is 25.4%. Statistical analysis results show that the p value = 1.000, which is greater than the significance threshold p = 0.05. Therefore, no significant relationship was found between age and HIV incidence at the VCT Clinic of Padang Bulan Community Health Center in 2025. This finding is consistent with research by Nugraha et al. (2024), which also found no significant relationship between age and HIV/AIDS incidence in the Simpura Health Center working area (p = 0.096).

Although statistical results do not show a significant relationship, it is important to note that the productive age group still dominates the number of HIV cases nationally. The executive report on HIV/AIDS development in Indonesia in 2023 recorded that the 25-49 years age group is the group with the highest number of cases compared to other age groups (Kementerian Kesehatan RI, 2023). This indicates that age factors may not have a direct effect but play a role through risky behaviors and socio-economic conditions that are generally more intense at productive age. Therefore, prevention efforts must still be strategically directed at this age group by considering behavior-based approaches, education, and improving access to health services such as VCT.

3.3. Relationship Between Gender and HIV Incidence

The relationship between gender and HIV incidence at the VCT Clinic of Padang Bulan Community Health Center, Medan, in 2025 can be seen in the figure 3 below.

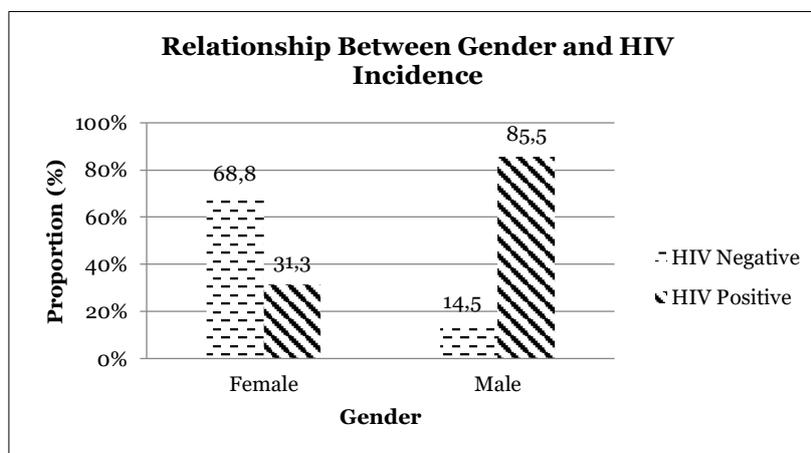


Figure 3. Bar chart of the relationship between gender and HIV incidence at VCT Clinic, Padang Bulan Community Health Center, Medan, 2025

Based on Figure 3, the proportion of individuals with positive HIV status among females reaches 31.3%, while among males it is 85.5%. Meanwhile, the proportion of individuals with negative HIV status is higher among females at 68.8%, compared to males at 14.5%. Bivariate analysis results show that the p value is 0.001, which is smaller than 0.05, so there is a significant relationship between gender and HIV incidence at the VCT Clinic of Padang Bulan Health Center in 2025. The prevalence ratio (RP) value = 2.736 indicates that male individuals have a 2.7 times higher likelihood of being infected with HIV compared to females.

This research result is consistent with research by Widiastuti & Fibriana (2022), where there is a significant relationship between gender and HIV incidence in Semarang city with p value = 0.034, and it was also found that males have a 2.3 times greater risk compared to females. In research by Damanik & Rahmadhani (2023) conducted at South Medan Area Community Health Center, they consistently found a significant relationship between gender and HIV incidence with p value of 0.001.

Generally, patients visiting the VCT clinic at Padang Bulan Community Health Center are indeed dominated by males. This can be influenced by the prevalence of sexual relationships between men who have sex with men (MSM). Studies show that MSM have a higher likelihood of engaging in unprotected sexual intercourse, such as anal sex without condoms, which is a factor that can increase the risk of HIV transmission and Sexually Transmitted Infections (STIs) (Putri & Herbawani, 2024).

Men who have sex with men (MSM) face significantly higher biological risks for HIV transmission through anal sex compared to vaginal sex due to anatomical and histological characteristics. The rectum has only one thin epithelial cell layer, unlike the vagina which has several protective layers, thus offering minimal defense against viruses. Additionally, rectal tissue is very fragile and easily experiences microtrauma during sexual activity, creating direct pathways for HIV to enter the body. Rectal tissue is also rich in CD4 T cells, immune cells that are the primary targets of HIV infection, so the abundance of target cells increases the likelihood of transmission when the virus is exposed to this area (Kelley et al., 2021). On the other hand, in society, sexuality norms tend to give males freedom to explore sexual experiences before and outside marriage, while females face stricter moral control. Masculinity values that emphasize male sexual satisfaction often encourage them to have more

than one partner, reinforced by cultural, social, and economic factors that support male sexual exploration compared to females (Ilham et al., 2023).

3.4. Relationship Between Ethnicity and HIV Incidence

The relationship between ethnicity and HIV incidence at the VCT Clinic of Padang Bulan Community Health Center, Medan, in 2025 can be seen in the figure 4 below.

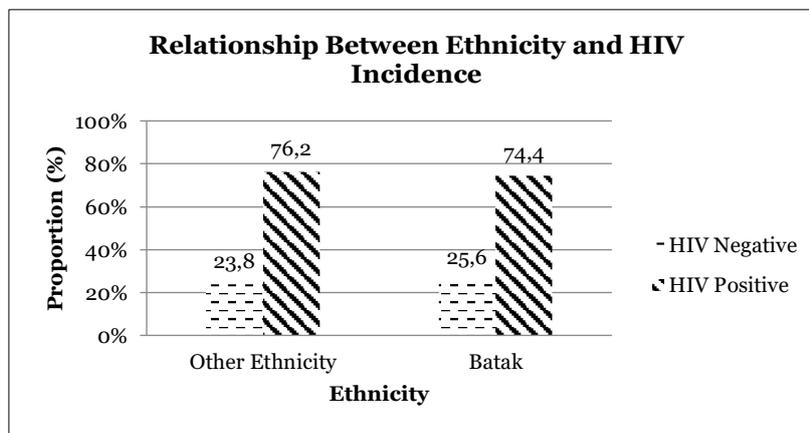


Figure 4. Bar chart of the relationship between ethnicity and HIV incidence at VCT Clinic, Padang Bulan Community Health Center, Medan, 2025

Based on Figure 4, the proportion of individuals with positive HIV status among non-Batak ethnicities reaches 76.2%, while among the Batak ethnic group it is 74.4%. Meanwhile, the proportion of individuals with negative HIV status among non-Batak ethnic groups is 23.8% and among the Batak ethnic group it is 25.6%.

Statistical analysis results show that $p = 0.850$, which is greater than the significance threshold $p = 0.05$. Therefore, no significant relationship was found between ethnicity and HIV incidence at the VCT Clinic of Padang Bulan Health Center in 2025. The majority of recorded HIV patients are of Batak ethnicity. However, this finding does not necessarily indicate that the Batak ethnicity is at higher risk of contracting HIV. This pattern may be influenced by the demographic dominance of the Batak ethnicity in Medan City and surrounding areas, considering that Batak is one of the largest ethnic groups in Medan City.

Various studies and global health institutions consistently emphasize that although HIV affects all levels of society, disparities observed in certain racial or ethnic groups are not caused by ethnic identity itself. Instead, these differences are driven by social and structural factors, such as HIV stigma, homophobia, discrimination, poverty conditions, and limited access to quality health services. Therefore, HIV prevention and control efforts must focus on addressing these social and structural root causes, not on ethnic characteristics (CDC, 2024).

3.5. Relationship Between Marital Status and HIV Incidence

The relationship between marital status and HIV incidence at the VCT Clinic of Padang Bulan Community Health Center, Medan, in 2025 can be seen in the following figure 5.

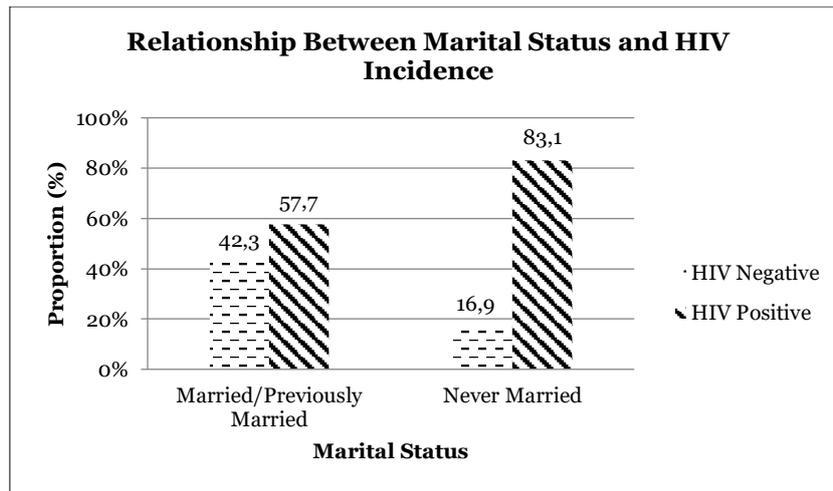


Figure 5. Bar chart of the relationship between marital status and HIV incidence at VCT Clinic, Padang Bulan Community Health Center, Medan, 2025

Based on Figure 5 above, it can be seen that the proportion of individuals with positive HIV status who are married/ever married is 57.7%, while among unmarried individuals it is 83.1%. Meanwhile, the proportion of individuals with negative HIV status who are married/previously married is 42.3% and among unmarried individuals it is 16.9%. Based on bivariate analysis, the p value obtained is $0.012 < p < 0.05$, so it can be concluded that there is a significant relationship between marital status and HIV incidence at the VCT Clinic of Padang Bulan Health Center in 2025 with a prevalence ratio (RP) value = 1.440, meaning that unmarried individuals have a tendency of 1.440 times to be infected with HIV compared to those who are married/previously married.

This research result is reinforced by research by Sari et al. (2021), who found that there is a significant relationship between marital status and HIV incidence with p value = 0.014. Additionally, research in Palembang City by Murni & Wahyudi (2024) shows that the majority of HIV patients are unmarried individuals. This indicates that the unmarried group has a higher risk for HIV, which can be associated with risky sexual behaviors, such as more frequent partner changes and inconsistent condom use.

Research conducted by (Ilham et al., 2023) found that marriage can be a protective factor against HIV transmission. The main protection mechanism is through monogamy practice, where both partners maintain faithfulness to each other, substantially reducing potential HIV exposure from external sources. Marriage also encourages open communication about health status, allowing partners to make safer and more responsible decisions.

However, it is important to note that this protection is not an absolute guarantee; transmission risk still exists if one partner has been infected with HIV or if risky sexual behavior occurs outside marriage, showing that monogamy that is not strictly practiced can erode the protective effect of marital status itself. Thus, marital status affects HIV vulnerability, not only through the relationship status itself but also through sexual behavior patterns and commitment to faithfulness inherent in it.

3.6. Relationship Between Education Level and HIV Incidence

The relationship between education level and HIV incidence at the VCT Clinic of Padang Bulan Community Health Center, Medan, in 2025 can be seen in the following figure 6.

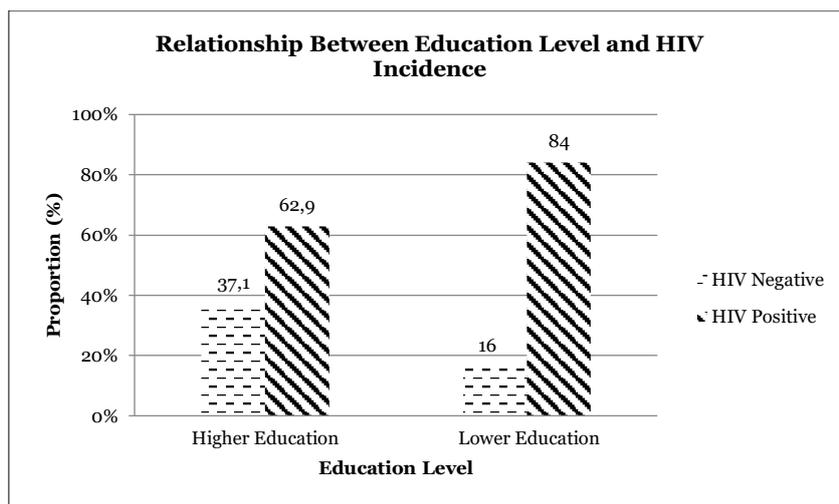


Figure 6. Bar chart of the relationship between education level and HIV incidence at VCT Clinic, Padang Bulan Health Center, Medan, 2025

Based on Figure 6, it can be seen that the proportion of individuals with positive HIV status who have higher education is 62.9%, while among individuals with lower education it is 84%. Meanwhile, the proportion of individuals with negative HIV status who have higher education is 37.1% and among individuals with lower education it is 16%. Based on bivariate analysis, the p value obtained is $0.026 < p 0.05$, so it is concluded that there is a significant relationship between education level and HIV incidence at the VCT Clinic of Padang Bulan Health Center in 2025 with a prevalence ratio (RP) value = 1.336, meaning that individuals with lower education have a tendency of 1.336 times to be infected with HIV compared to individuals with higher education.

This research result is consistent with research by Mokhtar et al. (2023), which shows that the main risk factor affecting HIV incidence at Dr. Wahidin Sudirohusodo Hospital, Makassar, in the 2020-2021 period is low education level, with a prevalence of 64.7%. This condition shows that education plays a crucial role in shaping individual understanding of HIV. Lack of knowledge can increase vulnerability to risky behaviors and limit individuals' ability to seek appropriate medical help.

Consistent with these findings, there is a negative correlation between education level and HIV incidence. Where individuals with higher education levels have lower risk of contracting HIV, because higher education provides broader access to health information, increases understanding of prevention methods such as condom use and safe sexual practices, and encourages critical thinking in making health-related decisions, so all these factors contribute to reduced HIV risk in individuals with higher education levels (David et al., 2020). Additionally, higher education levels also tend to be associated with more active involvement in HIV/AIDS screening or early detection programs, as well as greater willingness to access counseling and treatment services. This reinforces the importance of education-based interventions in comprehensive HIV prevention strategies.

3.7. Relationship Between Occupation and HIV Incidence

The relationship between occupation and HIV incidence at the VCT Clinic of Padang Bulan Community Health Center, Medan, in 2025 can be seen in the following figure 7.

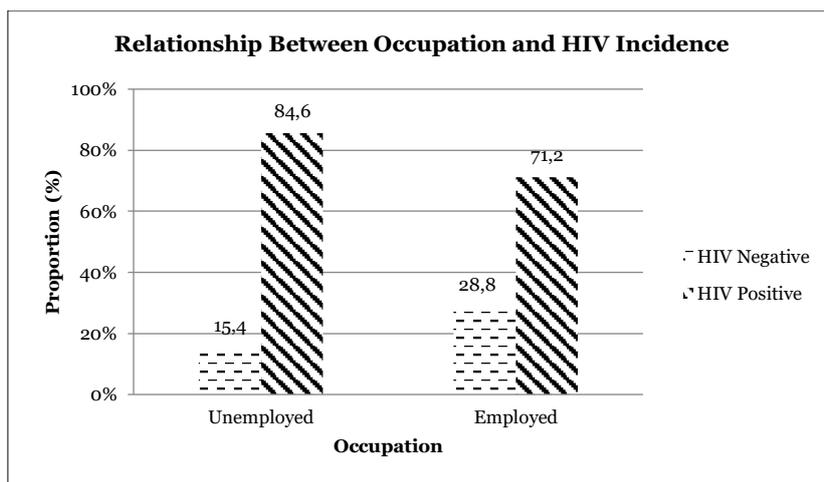


Figure 7. Bar chart of the relationship between occupation and HIV incidence at VCT Clinic, Padang Bulan Community Health Center, Medan, 2025

Based on Figure 7, the proportion of individuals with positive HIV status who are unemployed reaches 84.6%, while among employed individuals it is 71.2%. Meanwhile, the proportion of individuals with negative HIV status is higher among the employed group at 28.8%, compared to unemployed individuals at 15.4%. Bivariate analysis results show a p value of 0.186, greater than the significance threshold $p = 0.05$, so no significant relationship was found between employment status and HIV incidence at the VCT Clinic of Padang Bulan Health Center in 2025.

This finding is reinforced by case analysis of respondents in the study. One affected HIV couple shows transmission patterns more related to risky behavior compared to occupational factors. The husband, who has a permanent job, was infected first due to risky sexual behavior outside marriage. The infection was then transmitted to the wife, who is a housewife and economically dependent on her husband. This case confirms that employment status, whether employed or unemployed, is not a direct factor in HIV transmission. Instead, risky individual behavior becomes the main determinant in infection transmission. However, this research result differs from the study conducted by Damanik & Rahmadhani (2023), which shows a significant relationship between employment status and HIV incidence at South Medan Area Health Center (p -value = 0.001). That research found that employed individuals have higher risk for HIV transmission compared to those who are unemployed.

Furthermore, it is important to note that HIV can attack individuals from various employment statuses because its transmission mechanism does not depend on someone's profession. This virus can infect workers in various sectors, both formal and informal, regardless of job type, economic level, or specific work environment. Therefore, HIV prevention and control strategies must be inclusive, covering all community groups whether they are employed or unemployed. This approach needs to emphasize health education, improving access to prevention and treatment services, and implementing non-discriminatory policies in work and social environments (ILO, 2022).

3.8. Relationship Between Income and HIV Incidence

The relationship between income and HIV incidence at the VCT Clinic of Padang Bulan Community Health Center, Medan, in 2025 can be seen in the following figure 8.

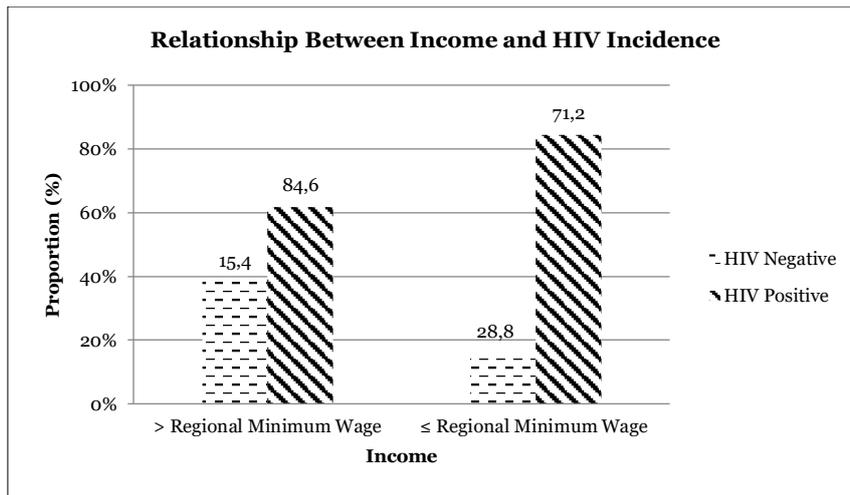


Figure 8. Bar chart of the relationship between income and HIV incidence at VCT Clinic, Padang Bulan Community Health Center, Medan, 2025

Based on Figure 8 above, it can be seen that the proportion of individuals with positive HIV status who have income > Medan City minimum wage is 61.8%, while among individuals with income ≤ Medan City minimum wage it is 84.3%. Meanwhile, the proportion of individuals with negative HIV status who have income > minimum wage is 38.2% and among individuals with income ≤ minimum wage it is 15.7%. Based on bivariate analysis, the p value obtained is $0.018 < p < 0.05$, so it can be concluded that there is a significant relationship between income and HIV incidence at the VCT Clinic of Padang Bulan Health Center in 2025 with a prevalence ratio (RP) value = 1.365, meaning that individuals with income below or equal to Medan City minimum wage have a tendency of 1.365 times to be infected with HIV compared to individuals with income above minimum wage.

Although these results show a significant relationship, this finding differs from the findings of Susilowati et al. (2020), which show no significant relationship between income and HIV incidence (p value = 0.072). However, these results are consistent with other research conducted in Kendal Regency, which found a significant relationship between low economic status, characterized by income below minimum wage, and HIV incidence (Musyarofah et al., 2017).

Consistent with findings in Kendal Regency indicating a significant relationship, low income is often associated with unfavorable socio-economic conditions, including limited access to health services, education, and information about HIV, which can increase individual vulnerability to infection. Large income inequality also contributes to health disparities, where low-income groups have higher risk of contracting HIV and experiencing AIDS-related complications due to limitations in obtaining adequate care (American Psychological Association, 2020).

Therefore, it can be emphasized that income is one of the important determinants in HIV spread. The wider the economic gap between high and low-income groups, the higher the recorded HIV cases. Increased income inequality in one year correlates with increased HIV infection risk in the following year. This indicates that unequal income distribution contributes to accelerating HIV spread rates. Individuals with low income tend to experience barriers in accessing health services, obtaining HIV-related education, and meeting protective equipment needs such as condoms.

3.9. Relationship Between STI History and HIV Incidence

The relationship between STI history and HIV incidence at the VCT Clinic of Padang Bulan Community Health Center, Medan, in 2025 can be seen in the figure 9 below.

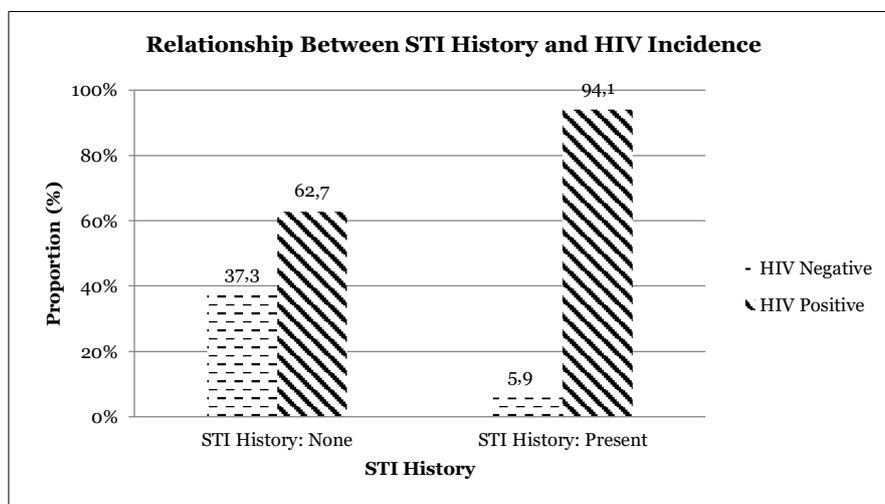


Figure 9. Bar chart of the relationship between STI history and HIV incidence at VCT Clinic, Padang Bulan Health Center, Medan, 2025

Based on Figure 9, it can be seen that the proportion of individuals with positive HIV status who have no STI history is 62.7%, as well as among individuals who have had or are currently experiencing STI history at 94.1%. Meanwhile, the proportion of individuals with negative HIV status who have no STI history is 37.3% and among individuals with STI history it is 5.9%. Based on bivariate analysis, the p value obtained is $0.001 < p < 0.05$, so it can be concluded that there is a significant relationship between STI history and HIV incidence at the VCT Clinic of Padang Bulan Health Center in 2025 with a prevalence ratio (RP) value = 1.500, meaning that individuals with STI history have a tendency of 1.5 times to be infected with HIV compared to individuals without STI history.

This result is consistent with research conducted in the Penurunan Health Center Working Area, Bengkulu City, in 2022, where analysis showed a p value of 0.001. With $p < 0.05$, it can be concluded that there is a significant relationship between STI history and HIV/AIDS incidence. This finding reinforces that STI history is one of the main risk factors increasing the likelihood of HIV transmission, especially because mucosal damage occurring due to STIs can facilitate HIV virus entry into the body (Herlinda et al., 2023).

Support for this finding is also reinforced by CDC's STI Treatment Guidelines (2021), which states that individuals previously diagnosed with STIs such as primary or secondary syphilis, gonorrhea, and rectal chlamydia have higher vulnerability to HIV. Groups at high risk, such as men who have sex with men (MSM), are strongly recommended to undergo routine HIV screening, because STI diagnosis is often used as an important indicator in predicting HIV acquisition likelihood. CDC emphasizes that sexual behaviors causing STIs, such as not using condoms and changing sexual partners, are essentially the same risk factors that also drive increased HIV infection.

Deeper explanation is provided by the National Academies of Sciences, Engineering (2021), which describes how biological changes due to STIs strongly support HIV infection occurrence. STIs cause chronic inflammation and mucosal damage, eliminating the body's natural barriers, while increasing expression of receptors used by HIV to enter target cells, such as CCR5 and CXCR4. Additionally, the number of immune cells, especially CD4 cells,

increases at inflammation sites; these cells are actually HIV's primary targets. Even in individuals already infected with HIV, STI presence can increase virus concentration in genital fluids, increasing transmission risk to sexual partners.

Thus, it cannot be denied that STIs not only become precursors to HIV infection but also play a role in strengthening and accelerating virus transmission. Comprehensive HIV prevention strategies need to include early STI detection and treatment, community-based sexual education, condom provision, and expanding health service access for at-risk populations. Partner notification recommended by WHO also becomes an important step to break the transmission chain, providing opportunities for partners to undergo early examination and treatment.

Therefore, integrating STI and HIV management in one public health service approach becomes very important. Strengthening referral systems, training health workers in integrated counseling, and local culture-based awareness campaigns are crucial steps that must be taken. These efforts will not only directly reduce HIV cases but also strengthen health system resilience against sexually transmitted diseases in general. Given the close relationship between STIs and HIV, STI prevention can be viewed as the first line of defense in fighting the HIV epidemic in various parts of the world.

3.10. Relationship Between Area of Origin and HIV Incidence

The relationship between area of origin and HIV incidence at the VCT Clinic of Padang Bulan Community Health Center, Medan, in 2025 can be seen in the figure 10 below.

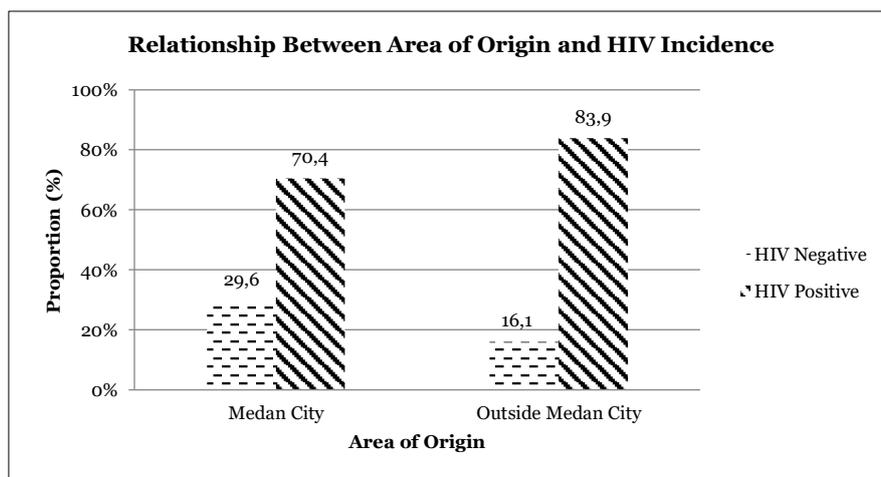


Figure 10. Bar chart of the relationship between area of origin and HIV incidence at VCT Clinic, Padang Bulan Community Health Center, Medan, 2025

Based on Figure 10, it can be seen that the proportion of individuals with positive HIV status originating from Medan City is 70.4%, while among individuals from outside Medan City it is 83.9%. Meanwhile, the proportion of individuals with negative HIV status originating from Medan City is 29.6% and among individuals from outside Medan City it is 16.1%. Based on bivariate analysis, the p value obtained is $0.165 > p < 0.05$, so it can be concluded that there is no significant relationship between area of origin and HIV incidence at the VCT Clinic of Padang Bulan Health Center in 2025.

This finding is consistent with previous research conducted at the VCT Lazarus Clinic of Santo Antonius General Hospital in 2017, which showed that 55.14% of HIV/AIDS patients came from Pontianak City, while the rest came from various regencies in West Kalimantan

and other provinces. In this research, the data does not show a causal relationship between area of origin and HIV incidence, but rather reflects health service accessibility and respondent visit patterns to certain health facilities (Prawira et al., 2020).

The high number of respondent visits from Medan City to Padang Bulan Health Center can be associated with this health center's status as one of the main referral health centers providing Voluntary Counseling and Testing (VCT) services as well as Care, Support, and Treatment (CST) for individuals with HIV. The existence of this facility plays an important role in providing access to counseling, HIV testing, and antiretroviral therapy (ARV) for communities in need. Therefore, the higher proportion of HIV patients from Medan City cannot be directly interpreted as an indication that area of origin affects HIV incidence, but rather reflects health service referral patterns and respondent preferences in choosing facilities considered more accessible or having more adequate services.

3.11. Relationship Between Residence and HIV Incidence

The relationship between residence and HIV incidence at the VCT Clinic of Padang Bulan Community Health Center, Medan, in 2025 can be seen in the figure 11 below.

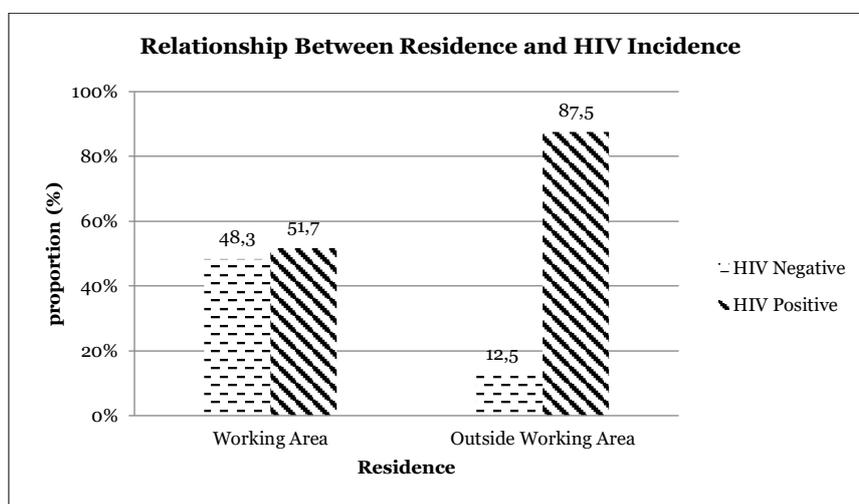


Figure 11. Bar chart of the relationship between residence and HIV incidence at VCT Clinic, Padang Bulan Community Health Center, Medan, 2025

Based on Figure 11, the proportion of individuals with positive HIV status living within the Health Center's working area reaches 51.7%, while among those living outside the Health Center's working area it is 87.5%. Meanwhile, the proportion of individuals with negative HIV status is higher among the group living within the Health Center's working area at 48.3%, compared to those living outside the Health Center's working area at 12.5%.

Based on bivariate analysis, the p value obtained is $0.001 < p < 0.05$, so it can be concluded that there is a significant relationship between residence and HIV incidence at the VCT Clinic of Padang Bulan Health Center in 2025 with a prevalence ratio (RP) value = 1.692, meaning that individuals residing outside the working area of Padang Bulan Health Center, Medan City, have a tendency of 1.692 times to be infected with HIV compared to individuals residing within the working area of Padang Bulan Health Center, Medan.

This finding is consistent with research results conducted by Wulandari et al. (2024), which revealed that among People Living with HIV/AIDS (PLWHA), there is a tendency to choose health facilities farther from their residence location. The main factors behind this decision are lack of confidentiality in patient information handling, fear of being recognized, and low trust in health service providers. Additionally, social stigma, negative experiences with

medical personnel, and ineffective referral systems also become barriers in accessing HIV health services. This condition encourages PLWHA to seek facilities considered safer and more trustworthy, regardless of the distance that must be traveled.

Field observations increasingly strengthen these findings, where many patients who come to the VCT Clinic of Padang Bulan Community Health Center wear very concealing clothing and show hurried gestures. This phenomenon can be linked to anxiety about their identity being revealed as people living with HIV (PLHIV), as well as fear of stigma and discrimination that remains strong in society. This attitude shows that access to HIV health services is not only influenced by geographical factors, but also by psychosocial aspects and perceptions of health service security, which impacts individual preferences in choosing facilities they consider more comfortable and supportive.

3.12. Relationship Between Sexual Behavior and HIV Incidence

The relationship between sexual behavior and HIV incidence at the VCT Clinic of Padang Bulan Community Health Center Medan in 2025 can be seen in the figure 12 below.

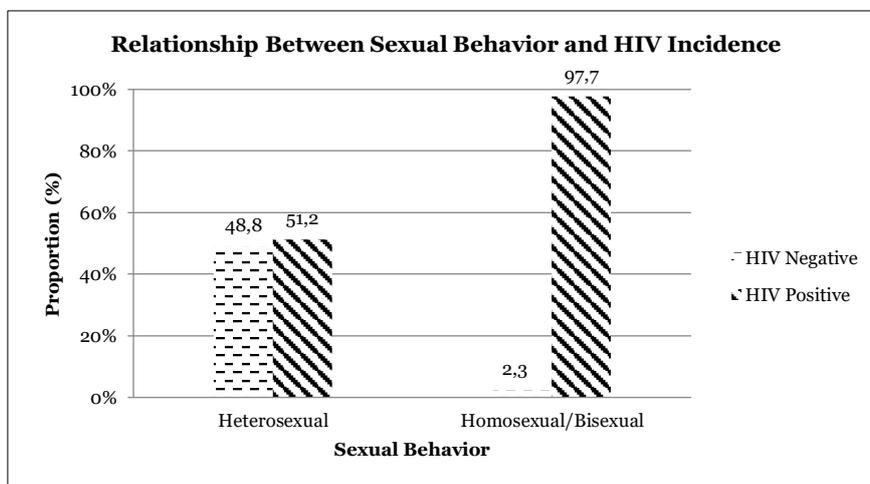


Figure 12. Bar chart showing the relationship between sexual behavior and HIV incidence at the VCT Clinic of Padang Bulan Community Health Center Medan in 2025

Based on figure 12 above, it can be seen that the proportion of HIV-positive individuals who engage in homosexual/bisexual sexual relations is 97.7%, while among individuals who engage in heterosexual relations it is 51.2%. Meanwhile, the proportion of HIV-negative individuals who engage in homosexual/bisexual sexual relations is 2.3%, and among individuals who engage in heterosexual relations it is 48.8%. Referring to the bivariate analysis, a p value of $0.001 < p < 0.05$ was obtained, so it can be concluded that there is a significant relationship between sexual behavior and HIV incidence at the Padang Bulan Community Health Center VCT Clinic in 2025, with a prevalence ratio (RP) value = 1.908, meaning that individuals who engage in homosexual/bisexual sexual relations have a tendency 1.411 times higher to be infected with HIV compared to individuals who engage in heterosexual relations.

These research results are consistent with the study by Mokhtar et al. (2023), which identified a history of homosexuality as a major risk factor in HIV patients at Dr. Wahidin Sudirohusodo Hospital Makassar. This finding aligns with research by Rohmatullailah et al. (2021), which showed that homosexual individuals have a 1.97 times higher risk of HIV infection compared to heterosexual individuals. Anal sex is riskier compared to vaginal sex

because the anal lining is thinner and lacks natural lubrication, making it more susceptible to tears that allow viruses and bacteria to enter the bloodstream. These tears can cause transmission of sexually transmitted infections, including HIV. Additionally, anal sex can also cause anal injuries, including fecal incontinence (anal leakage) and anal sphincter injuries (Sheikh, 2024).

Bisexual individuals also need to be monitored, where bisexuals have a 2.08 times greater risk of contracting HIV/AIDS compared to non-bisexuals. Bisexual individuals potentially have a higher risk for HIV because of the possibility of having sexual relations with various genders, increasing the chance of exposure to partners with HIV-positive status. If relations are conducted without protection, especially through anal sex which is more vulnerable to micro-injuries and virus transmission, the risk of infection becomes greater (Prameswari, 2024). Although heterosexual individuals have a lower risk of HIV infection compared to homosexuals and bisexuals, the risk still exists. HIV transmission can still occur through unprotected sexual relations with HIV-positive partners. Therefore, condom use, HIV status testing, and education related to HIV/AIDS prevention are very necessary to reduce transmission rates (Salbila & Usiono, 2023).

4. Conclusion

This study found a high proportion (75.3%) of HIV-positive cases at the VCT Clinic of Padang Bulan Community Health Center in 2025, with significant associations between HIV incidence and several sociodemographic and behavioral factors—namely gender, marital status, education level, income, STI history, place of residence, and sexual behavior. In contrast, age, ethnicity, occupation, and region of origin showed no significant association. These findings highlight the importance of targeted HIV prevention and intervention strategies, particularly for unmarried men with low education and income levels who engage in high-risk sexual practices.

Theoretically, the results reinforce the epidemiologic triad by emphasizing the interaction between host characteristics and environmental-social factors in HIV transmission. Practically, the study provides evidence for public health stakeholders to design culturally sensitive, area-specific programs, strengthen intersectoral collaboration, and expand outreach beyond health center boundaries. These efforts are essential to reduce new infections, combat stigma, and support national and global HIV/AIDS control targets.

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