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Individual, Sexual, and Health Risk Factors Associated With HIV/AIDS Incidence

Luluk Setiawan[1], Masrizal[2], Syafrawati[3]
[1,2,3] Master of Epidemiology, Faculty of Public Health, Andalas University, Indonesia

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ABSTRACT

Background: HIV/AIDS remains a major public health challenge in Indonesia. Dharmasraya Regency, West Sumatra, ranks second in HIV prevalence among districts in the province (0.018%), with cases increasing from 3 new infections in 2023 to 8 cases by October 2024. The specific pattern of risk factors driving this upward trend in Dharmasraya remains insufficiently documented.
Objective: This study aimed to identify risk factors of individual characteristics, sexual behavior, and health history associated with HIV/AIDS incidence in Dharmasraya Regency.
Methods: An analytical study using a non-matching case-control design was conducted from March to May 2025. A total of 117 participants were recruited from the HIV/AIDS Information System (SIHA 2.1): 39 laboratory-confirmed HIV-positive cases (total sampling) and 78 HIV-negative controls (systematic random sampling, 1:2 ratio). Data were collected through structured, interviewer-administered questionnaires. Bivariate analysis was performed using the Chi-Square test (α = 0.05), with crude odds ratios (OR) and 95% confidence intervals (CI) calculated for each variable.
Results: Five variables were significantly associated with HIV incidence: risky sexual practices (OR = 44.24; 95% CI: 9.83–199.02; p < 0.001), non-heterosexual orientation history (OR = 5.57; 95% CI: 2.40–12.93; p < 0.001), history of sexually transmitted infections (OR = 5.47; 95% CI: 2.06–14.50; p = 0.001), family history of HIV/AIDS (OR = 5.33; 95% CI: 2.08–13.70; p = 0.001), and male gender (OR = 2.62; 95% CI: 1.12–6.09; p = 0.039). Age, education level, occupation, marital status, and condom use showed no statistically significant association.
Conclusion: Risky sexual practices, non-heterosexual orientation history, STI history, family history of HIV/AIDS, and male gender are significant risk factors for HIV incidence in Dharmasraya Regency. Targeted prevention programs addressing behavioral risk factors and stigma-free healthcare access are urgently recommended. Future research should employ multivariate methods to identify independent risk factors.

Corresponding Author:

Luluk Setiawan
Master of Epidemiology, Faculty of Public Health, Andalas University, Indonesia
Email: luluksetiawan75@yahoo.co.id

Introduction

Human Immunodeficiency Virus (HIV) is a virus that systematically damages the immune system, making individuals vulnerable to serious illnesses including tuberculosis, opportunistic infections, and cancer. Without appropriate antiretroviral therapy (ART), HIV may progress to Acquired Immunodeficiency Syndrome (AIDS), which can lead to death within approximately ten years of diagnosis. Transmission occurs through infected bodily fluids blood, breast milk, semen, and vaginal secretions with significant risk of vertical transmission from mother to child during pregnancy and childbirth (Johan et al., 2022; World Health Organization [WHO], 2023).

Globally, by the end of 2023, an estimated 39.9 million people were living with HIV worldwide, with approximately 1.3 million new infections and 630,000 AIDS-related deaths recorded in that year. In the Asia-Pacific region, 300,000 new HIV cases were reported in 2023, with an incidence rate of 0.67 per 100,000 population (WHO, 2024). Based on UNAIDS (2024) data, Indonesia recorded around 28,000 new HIV infections in 2023, with 49% occurring among young people aged 15–24 years. Indonesia ranks among the high-burden countries in the region, with approximately 1.39 million individuals at risk, including sex workers, men who have sex with men (MSM), and transgender individuals (UNAIDS, 2024).

National surveillance data from Indonesia in 2023 recorded 57,299 HIV-positive individuals out of 6,142,136 screened (prevalence 0.21%). The majority of people living with HIV/AIDS (PLHIV) were aged 25–49 years (64%) and male (71%), with the predominant risk factor being homosexual contact (31%), comprising MSM at 30% and transgender individuals at 1% (Kementerian Kesehatan RI, 2022; Kementerian Kesehatan RI, 2023). West Sumatra Province ranked 22nd nationally, reporting 579 new cases in 2023 an increase from 575 cases in 2022, with an incidence rate of 10.27 per 100,000 population (Kementerian Kesehatan RI, 2022; Kementerian Kesehatan RI, 2023).

Within West Sumatra, Dharmasraya Regency ranks second among districts in HIV prevalence (0.018%), just below Tanah Datar Regency (0.022%). An alarming upward trend has been documented: from 3 new cases in 2023 (incidence: 1.25 per 100,000 population) to 8 new cases by October 2024 (incidence: 3.33 per 100,000 population), along with one recorded death (Dinas Kesehatan Provinsi Sumatera Barat, 2021; Dinas Kesehatan Provinsi Sumatera Barat, 2022).

Previous studies have identified multiple risk factors significantly associated with HIV incidence. A literature review by Ayu and Prameswari (2024) identified seven dominant risk factors in Indonesia: age, gender, education/knowledge, risky sexual behavior, marital status, sexual orientation, and drug use. Male gender has been consistently identified as a significant risk factor across multiple studies conducted in Indonesia (Widiastuti & Fibriana, 2022; Herlinda et al., 2023; Nugraha et al., 2024). A systematic review by Rahma et al. (2024) found that risky sexual practices including having multiple sexual partners (OR = 23.32) and combined sexual activities (OR = 4.89) were among the strongest behavioral predictors of HIV incidence among key populations in Indonesia. STI history (OR = 2.92), family history of HIV (OR = 2.95), and non-heterosexual orientation have also been widely documented as significant risk factors (Rahma et al., 2024; Hairunisa et al., 2023; Ajeng et al., 2023).

Despite this body of national evidence, the specific pattern of risk factors in Dharmasraya Regency remains insufficiently documented. As the second-highest district in HIV prevalence in West Sumatra, with a significant case increase over the past two years, Dharmasraya faces major challenges in controlling HIV transmission. The absence of locally specific epidemiological data impedes the design of targeted interventions. Furthermore, Dharmasraya's characteristics as a border area between three provinces with high population mobility add complexity to understanding local HIV transmission dynamics. This study therefore aims to identify risk factors of individual characteristics, sexual behavior, and health history associated with HIV incidence in Dharmasraya Regency, contributing local epidemiological evidence to inform public health policy.

Method

Study Design and Setting: This study employed an analytical, non-matching case-control design to examine risk factors for HIV incidence retrospectively. The study was conducted from March to May 2025 in Dharmasraya Regency, West Sumatra, Indonesia.

Participants and Sampling: The source population comprised all individuals who had undergone HIV/AIDS testing and were recorded in SIHA 2.1 (HIV/AIDS Information System, Ministry of Health of Indonesia), residing in

Dharmasraya Regency. Cases were defined as individuals with laboratory-confirmed HIV-positive status based on SIHA 2.1 records. Controls were individuals with laboratory-confirmed HIV-negative status from the same data source. A 1:2 case-to-control ratio was applied, yielding 39 cases and 78 controls (n = 117 total).

Total (exhaustive) sampling was applied for cases, as the total number of confirmed HIV-positive individuals in Dharmasraya Regency during the study period was small (n = 39). Controls were selected using systematic random sampling from the SIHA 2.1 HIV-negative registry to minimize selection bias.

Inclusion criteria for cases: (1) laboratory-confirmed HIV-positive per SIHA 2.1; (2) residing in Dharmasraya Regency; (3) aged ≥15 years; (4) willing to participate. Inclusion criteria for controls: (1) laboratory-confirmed HIV-negative per SIHA 2.1; (2) residing in Dharmasraya Regency; (3) aged ≥15 years; (4) willing to participate. Exclusion criteria for both groups: individuals unable or unwilling to provide informed consent or to participate in the interview..

Variables and Operational Definitions: The dependent variable was HIV/AIDS status (case: HIV-positive; control: HIV-negative). Independent variables were operationally defined as follows: (1) *Age* at risk (15–49 years); not at risk (≥50 years). (2) *Gender* male or female. (3) *Education level* low (≤ junior high school); high (≥ senior high school). (4) *Occupation* at risk (high mobility/exposure occupations: traders, drivers, service workers); not at risk (home-based or sedentary: housewives, civil servants). (5) *Marital status* unmarried; married/previously married. (6) *Sexual orientation history* non-heterosexual (same-sex or bisexual history); heterosexual. (7) *Family history of HIV/AIDS* yes or no (first-degree family member diagnosed with HIV/AIDS). (8) *History of STIs* ever diagnosed or treated for a sexually transmitted infection (yes/no). (9) *Condom use* consistently used; not consistently used. (10) *Risky sexual practices* engaging in anal intercourse, having multiple sexual partners, or exchanging sex for goods or money (yes/no).

Data Collection Instruments: Data were collected using a structured, interviewer-administered questionnaire developed based on a literature review and adapted to the local context. The questionnaire covered demographic characteristics, sexual behavior history, and health history. Primary data were obtained through face-to-face interviews conducted by trained research assistants. Secondary data (HIV status) were sourced from the 2024 SIHA 2.1 database of the Ministry of Health).

Data Analysis: Univariate analysis described the frequency distribution and percentage of each variable. Bivariate analysis using the Chi-Square test ($\alpha = 0.05$) assessed associations between each independent variable and HIV incidence; results were expressed as crude odds ratios (OR) with 95% confidence intervals (CI). The study was limited to bivariate analysis due to sample size constraints. Multivariate logistic regression to identify independent risk factors while controlling for potential confounders is recommended for future studies with larger samples. All analyses were performed using SPSS version 25.

Ethical Considerations: Ethical approval was obtained from the Research Ethics Committee of the Faculty of Public Health, Andalas University (approval number: B/61/UN16.12.D/PP/2025), in accordance with the Declaration of Helsinki and Indonesian National Research Ethics Guidelines. Written informed consent was obtained from all participants prior to data collection.

Results and Discussions

Frequency Distribution of Respondents Characteristics:

Table 1 presents the frequency distribution and bivariate comparison of risk factor variables between HIV-positive cases and HIV-negative controls.

Table 1. Baseline Characteristics of Study Participants by HIV/AIDS Status, Dharmasraya Regency, 2025

Variable	*Cases (n = 39) n (%)*	*Controls (n = 78) n (%)*	*p-value*
Age			
At risk (15–49 years)	*37 (94.9)*	*62 (79.5)*	*0.057*
Not at risk (≥50 years)	*2 (5.1)*	*16 (20.5)*	

Variable	***Cases (n = 39) n (%)***	***Controls (n = 78) n (%)***	***p-value***
Gender			
Male	*29 (74.4)*	*41 (52.6)*	***0.039***
Female	*10 (25.6)*	*37 (47.4)*	
Education level			
Low (≤ junior high school)	*10 (25.6)*	*22 (28.2)*	*0.942*
High (≥ senior high school)	*29 (74.4)*	*56 (71.8)*	
Marital status			
Unmarried	*16 (41.0)*	*24 (30.8)*	*0.370*
Married/previously married	*23 (59.0)*	*54 (69.2)*	
Occupation			
At risk	*18 (46.2)*	*46 (59.0)*	*0.264*
Not at risk	*21 (53.8)*	*32 (41.0)*	
Sexual orientation history			
Non-heterosexual	*23 (59.0)*	*16 (20.5)*	***<0.001***
Heterosexual	*16 (41.0)*	*62 (79.5)*	
Family history of HIV/AIDS			
Yes	*16 (41.0)*	*9 (11.5)*	***0.001***
No	*23 (59.0)*	*69 (88.5)*	
History of STIs			
Ever	*15 (38.5)*	*8 (10.3)*	***0.001***
Never	*24 (61.5)*	*70 (89.7)*	
Condom use			
Not consistently used	*37 (94.9)*	*72 (92.3)*	*0.897*
Consistently used	*2 (5.1)*	*6 (7.7)*	
Risky sexual practices			
Yes	*37 (94.9)*	*23 (29.5)*	***<0.001***
No	*2 (5.1)*	*55 (70.5)*	

Note. STIs = sexually transmitted infections.

Based on Table 1, the case group was predominantly composed of individuals in the productive age range (94.9%), male (74.4%), with higher education (74.4%), married (59.0%), and with a history of non-heterosexual orientation (59.0%). A notable proportion of cases reported family history of HIV/AIDS (41.0%), STI history (38.5%), and engagement in risky sexual practices (94.9%), whereas consistent condom use was very low in both groups.

Bivariate Analysis:

Table 2 presents the results of bivariate analysis examining associations between risk factors and HIV incidence.

Table 2. Bivariate Analysis of Risk Factors Associated with HIV Incidence in Dharmasraya Regency, 2025

Variable	*Cases n (%)*	*Controls n (%)*	*Crude OR (95% CI)*	*p-value*
Age				
At risk (15–49 years)	*37 (94.9)*	*62 (79.5)*	*4.77 (1.04–21.95)*	*0.057*
Not at risk (≥50 years) (ref)	*2 (5.1)*	*16 (20.5)*	*1.00*	
Gender				
Male	*29 (74.4)*	*41 (52.6)*	***2.62 (1.12–6.09)***	***0.039***
Female (ref)	*10 (25.6)*	*37 (47.4)*	*1.00*	
Education level				
Low (≤ junior high school)	*10 (25.6)*	*22 (28.2)*	*0.88 (0.37–2.10)*	*0.942*
High (≥ senior high school) (ref)	*29 (74.4)*	*56 (71.8)*	*1.00*	
Occupation				
At risk	*18 (46.2)*	*46 (59.0)*	*0.60 (0.28–1.29)*	*0.264*
Not at risk (ref)	*21 (53.8)*	*32 (41.0)*	*1.00*	
Marital status				
Unmarried	*16 (41.0)*	*24 (30.8)*	*1.58 (0.70–3.48)*	*0.370*
Married/previously married (ref)	*23 (59.0)*	*54 (69.2)*	*1.00*	
Sexual orientation history				
Non-heterosexual	*23 (59.0)*	*16 (20.5)*	***5.57 (2.40–12.93)***	***<0.001***
Heterosexual (ref)	*16 (41.0)*	*62 (79.5)*	*1.00*	
Family history of HIV/AIDS				
Yes	*16 (41.0)*	*9 (11.5)*	***5.33 (2.08–13.70)***	***0.001***
No (ref)	*23 (59.0)*	*69 (88.5)*	*1.00*	
History of STIs				
Ever	*15 (38.5)*	*8 (10.3)*	***5.47 (2.06–14.50)***	***0.001***
Never (ref)	*24 (61.5)*	*70 (89.7)*	*1.00*	
Condom use				
Not consistently used	*37 (94.9)*	*72 (92.3)*	*1.54 (0.30–8.02)*	*0.897*
Consistently used (ref)	*2 (5.1)*	*6 (7.7)*	*1.00*	

Variable	*Cases n (%)*	*Controls n (%)*	*Crude OR (95% CI)*	*p-value*
Risky sexual practices				
Yes	*37 (94.9)*	*23 (29.5)*	***44.24 (9.83–199.02)***	***<0.001***
No (ref)	*2 (5.1)*	*55 (70.5)*	*1.00*	

Note. (ref) = reference category. OR = odds ratio; CI = confidence interval; STIs = sexually transmitted infections.

Age

The majority of respondents in both groups were in the productive age range (15–49 years), accounting for 94.9% of cases and 79.5% of controls (OR = 4.77; 95% CI: 1.04–21.95; *p* = 0.057). Although this association was not statistically significant, the near-significant *p*-value and elevated OR suggest a clinically relevant difference that the study may have lacked statistical power to confirm given its small sample size. This finding is consistent with Herlinda et al. (2023), who reported similar dominance of productive-age individuals among HIV cases without a statistically significant bivariate relationship. Widiastuti and Fibriana (2022) and Johnston et al. (2021), however, did identify significant associations between productive age and HIV incidence in larger study samples. From a public health perspective, the productive age group warrants prioritized HIV prevention efforts given high sexual activity, social mobility, and potential engagement in risky behaviors (Ayu & Prameswari, 2024; Rahma et al., 2024).

Gender

Male gender was significantly associated with HIV incidence (OR = 2.62; 95% CI: 1.12–6.09; *p* = 0.039), indicating males were approximately 2.6 times more likely to be diagnosed with HIV/AIDS compared to females. This is consistent with Widiastuti and Fibriana (2022), Herlinda et al. (2023), and Nugraha et al. (2024), all of whom identified male gender as a significant risk factor. A systematic review by Rahma et al. (2024) identified male sex (OR = 1.77) as a consistent risk factor among key populations in Indonesia. Johnston et al. (2021) found that 30% of young MSM aged 15–24 years in urban Bandung, Indonesia, were HIV-positive a rate approximately 100-fold higher than the general population prevalence underscoring the disproportionate vulnerability of this subgroup. Epidemiologically, males exhibit riskier sexual behavior patterns, including having multiple partners, engaging in unprotected sex, and higher participation in anal intercourse within MSM communities (WHO, 2023; Johnston et al., 2021). Nonetheless, females also face significant biological susceptibility per exposure event, and social and economic conditions may limit their ability to negotiate safe sex practices (Dewi et al., 2022; Hairunisa et al., 2023).

Education Level

No significant association was found between education level and HIV incidence (OR = 0.88; 95% CI: 0.37–2.10; *p* = 0.942). Both groups showed a similar distribution, with the majority having higher education (74.4% of cases vs. 71.8% of controls). This contrasts with Hairunisa et al. (2023), who found low education was significantly associated with HIV risk among women in West Kalimantan, and with Dewi et al. (2022), whose literature review confirmed a significant relationship between education level and HIV among women of reproductive age. The absence of association in this study may reflect that in Dharmasraya, HIV-related information is disseminated through informal channels such as mass media, peer education, and community health outreach that transcend formal educational attainment. The relatively homogeneous educational background of the study sample may also have limited the statistical variability needed to detect a meaningful difference (Ayu & Prameswari, 2024).

Occupation

Occupation type was not significantly associated with HIV incidence (OR = 0.60; 95% CI: 0.28–1.29; *p* = 0.264). Notably, the proportion of respondents in at-risk occupations was higher among controls (59.0%) than cases (46.2%), contrary to theoretical expectations. This is consistent with Widiastuti and Fibriana (2022), who reported similar findings, but differs from Nugraha et al. (2024), who found high-risk occupations to be more prevalent among cases in Bandar Lampung. Damanik and Rahmadhani (2023) similarly reported that occupation was not a primary determinant of HIV in their study setting, suggesting that in certain contexts, other behavioral and social factors play a more dominant role in determining HIV risk than occupation type alone.

Marital Status

Marital status was not significantly associated with HIV incidence (OR = 1.58; 95% CI: 0.70–3.48; $p = 0.370$). Although unmarried individuals showed slightly higher odds, the confidence interval crossed 1, confirming non-significance. This finding is consistent with Almung et al. (2025), who reported no significant relationship between marital status and HIV incidence at the Harapan Health Center in Jayapura (OR = 1.30; $p = 0.799$), and with Sitorus (2022), who similarly found no significant association among MSM in Medan. These results contrast with Solomon et al. (2021), who found a significant relationship in Botswana, possibly reflecting sociocultural and epidemiological differences between settings.

Sexual Orientation History

A history of non-heterosexual orientation was strongly and significantly associated with HIV incidence (OR = 5.57; 95% CI: 2.40–12.93; $p < 0.001$). The proportion of individuals with non-heterosexual orientation history was markedly higher in the case group (59.0%) versus controls (20.5%). This aligns with national patterns: Ajeng et al. (2023) found that HIV cases with homosexual risk factors accounted for 82.2% of patients in a hospital setting in Garut, West Java. Efendi et al. (2023) further demonstrated that MSM with lower HIV knowledge and negative prevention attitudes had significantly higher HIV infection rates. Sari (2021) confirmed that MSM status was significantly associated with HIV-positive status among the LSL community in Bandar Lampung. Biologically, anal intercourse more prevalent among MSM carries substantially higher HIV transmission risk per exposure due to rectal mucosal vulnerability (WHO, 2023). Social stigma toward non-heterosexual identities in Dharmasraya likely leads to concealment of behavior and reduced access to prevention services, amplifying transmission risk. Stigma-free, inclusive public health strategies are therefore essential to effectively reach these high-risk populations (UNAIDS, 2024; Herlinda et al., 2023).

Family History of HIV/AIDS

Family history of HIV/AIDS was significantly associated with HIV incidence (OR = 5.33; 95% CI: 2.08–13.70; $p = 0.001$). Respondents with an HIV-positive family member were over five times more likely to be diagnosed with HIV. This aligns with Prahmawati (2022), who confirmed family history as a significant risk factor (OR = 4.2) among women with HIV/AIDS, and with Adiningsih et al. (2023), who identified family-level factors including shared social environments and limited health education as determinants of HIV risk in Papua Barat. A systematic review by Rahma et al. (2024) reported a family history OR of 2.95 for HIV incidence across key populations in Indonesia. Although HIV is not transmitted genetically, shared household environments may facilitate exposure to common behavioral and social risk factors, including economic hardship, limited health literacy, stigma preventing open discussion, and constrained access to healthcare services.

History of Sexually Transmitted Infections (STIs)

STI history was significantly associated with HIV incidence (OR = 5.47; 95% CI: 2.06–14.50; $p = 0.001$). The prevalence of STIs among cases (38.5%) was nearly four times higher than among controls (10.3%). This is consistent with Prahmawati (2022; OR = 8.76) and Herlinda et al. (2023), who found STI history present in 63.6% of HIV cases in Bengkulu. Rahma et al. (2024) confirmed in their systematic review that STI history (OR = 2.92) is a consistent predictor of HIV incidence among key populations. The biological mechanism is well established: STIs cause mucosal inflammation and disruption that facilitate HIV entry, while shared behavioral risk factors multiple partners, inconsistent condom use amplify transmission of both infections simultaneously (WHO, 2023; WHO, 2024). These findings underscore the need for integrated STI-HIV prevention, diagnosis, and treatment programs in Dharmasraya.

Condom Use

No significant association was found between condom use and HIV incidence (OR = 1.54; 95% CI: 0.30–8.02; $p = 0.897$). Critically, inconsistent condom use was nearly universal in both groups (94.9% of cases; 92.3% of controls), producing near-zero variability that precluded meaningful statistical detection. This contrasts with Prahmawati (2022; OR = 9.61) and Hairunisa et al. (2023; OR = 3.12), who demonstrated strong protective effects of consistent condom use in populations with greater behavioral variability. The uniformly low condom use in Dharmasraya reflects systemic barriers limited availability, cultural norms, and lack of targeted education rather than selective individual behavior (UNAIDS, 2024; Ayu & Prameswari, 2024). These findings emphasize that public health programs must urgently address structural barriers through social behavior change communication and improved condom accessibility, particularly for high-risk groups.

Risky Sexual Practices

Risky sexual practices showed the strongest association with HIV incidence in this study (OR = 44.24; 95% CI: 9.83–199.02; $p < 0.001$). Nearly all cases (94.9%) reported engaging in risky sexual practices, compared to only 29.5% of controls. This is consistent with national patterns: Rahma et al. (2024) found that multiple sexual partners (OR = 23.32) and combined sexual activities (OR = 4.89) are among the strongest behavioral predictors of HIV incidence in Indonesian key populations. Sitorus (2022) confirmed risky sexual behavior as the dominant risk factor for HIV among MSM in Medan, and Sari (2021) similarly found that anal intercourse and multiple partners were significantly associated with HIV status among LSL in Bandar Lampung.

However, the magnitude of OR = 44.24 warrants cautious interpretation. The extremely wide confidence interval (9.83–199.02) reflects the small sample size and the highly unequal distribution of exposure between groups. This indicates the point estimate is statistically unstable, and the true population OR may differ substantially. Potential biases — including recall bias in self-reporting sensitive behaviors, social desirability bias among controls, and residual confounding from unmeasured variables such as partner HIV status and alcohol use may have contributed to this extreme estimate (Ayu & Prameswari, 2024; Rahma et al., 2024). Regardless of the precise magnitude, risky sexual practices represent the most prominent and actionable behavioral risk factor for HIV in Dharmasraya, underscoring the urgent need for evidence-based behavioral change interventions and accessible reproductive health services.

Limitations and Methodological Considerations:

Several limitations should be acknowledged when interpreting these findings. First, the relatively small sample size (n = 117) limits statistical power and produces unstable estimates, particularly evident in the extremely wide CI for risky sexual practices (OR = 44.24; 95% CI: 9.83–199.02). Second, the analysis was restricted to bivariate methods; without multivariate logistic regression, independent risk factors could not be isolated and potential confounders — such as co-occurring risky behaviors could not be controlled for. Third, self-reported data on sensitive behavioral exposures introduce potential recall bias and social desirability bias; underreporting of stigmatized behaviors by controls would inflate observed OR estimates. Fourth, selection bias cannot be fully excluded, as controls were recruited from individuals who voluntarily sought HIV testing and may not represent the general HIV-negative population. Fifth, the retrospective collection of behavioral data limits causal inference. Future studies should employ larger samples, multivariate analytic approaches, and validated behavioral instruments to generate more robust local evidence on HIV risk determinants in Dharmasraya Regency.

Conclusions

This study identified five variables significantly associated with HIV incidence in Dharmasraya Regency: male gender, history of non-heterosexual orientation, family history of HIV/AIDS, history of sexually transmitted infections, and risky sexual practices. Among these, risky sexual practices showed the strongest bivariate association (OR = 44.24), though this estimate should be interpreted with caution given the small sample size and wide confidence interval. Variables including age, education level, occupation, marital status, and condom use did not reach statistical significance in the bivariate analysis.

These findings highlight the urgent need for targeted, community-based HIV prevention and education programs for high-risk groups particularly males and individuals with a history of non-heterosexual partnerships — in Dharmasraya Regency. Strengthening STI surveillance and treatment integration, reducing structural barriers to condom accessibility, and developing stigma-free healthcare environments are critical action areas. The Dharmasraya District Health Office is strongly encouraged to enhance HIV education and screening programs targeting identified high-risk populations. Future research should employ multivariate methods with larger samples to identify independent risk factors and guide the design of evidence-based public health interventions.

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