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Factors Affecting HIV Test in Public Health Center at Childbearing Age : A Cross – Sectional Analysis of Demographic and Health Survey in Indonesia

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Abstract
The National HIV/AIDS Strategy predicts that 86% of people with HIV (PLHIV) worldwide will know their HIV status by 2022, the remaining 14% do not know that they have HIV and still need access to HIV testing services. As an effort to realize the Sustainable Development Goals and to reduce the incidence of HIV/AIDS by 2030, the Indonesian Ministry of Health needs to design and implement appropriate prevention mechanisms related to HIV/AIDS by conducting early detection of HIV, namely by empowering Community Health Centers to provide HIV testing services and counseling. This study aims to analyze the factors influencing HIV testing at Public Health Centers among women of childbearing age in Indonesia. This study uses a cross-sectional design with data from the 2017 Indonesian Demographic Health Survey (SDKI). Data were analyzed using the logistic regression. The variable in this study were demographic sharacteristics and HIV testing. HIV testing at Public Health Centers among childbearing age in Indonesia was at 32.5%. Several factors influencing HIV testing were identified, including region (OR: 1.22, 95% CI: 1.10 - 1.35), wealth index (OR: 0.82, 95% CI: 0.74 - 0.91), residence (OR: 0.82, 95% CI: 0.74 - 0.91), health insurance coverage (OR: 1.15, 95% CI: 1.04 - 1.27), level of knowledge (OR: 0.92, 95% CI: 0.83 - 1.01), stigma (OR: 0.81, 95% CI: 0.73 - 0.90), and AIDS knowledge source from health professionals (OR: 1.90, 95% CI: 1.70 - 2.12). To optimize HIV testing coverage, healthcare workers should enhance awareness by providing comprehensive HIV/AIDS education. This can be done through various media, such as posters, brochures, and community-involved seminars. The government must ensure HIV testing services are accessible in all regions, including rural and remote areas. Additionally, continuous monitoring and evaluation of HIV testing programs at Public Health Centers are necessary. This will help improve and tailor programs to meet community needs and address influencing factors effectively.

Keywords: HIV, Public Health Center, HIV Test, Childbearing Age.

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1. INTRODUCTION

HIV (Human Immununodeficiency Virus) is a group of retroviruses that attack the human immune system (Jocelyn et al., 2024). A collection of clinical conditions caused by HIV infection called AIDS (Acquired Immune Deficiency Syndrome) (Martilova, 2020). Spread of the HIV virus in the human body through sexual intercourse (heterosexual or homosexual), blood transfusions, maternal and infant exposure during pregnancy, concomitant use of syringes and drug abuse can also cause transmission of the HIV virus (Sutrasno et al., 2022; Van Heuvel et al., 2022). The HIV virus cannot be transmitted through air, water, saliva, sweat, tears, kissing with the mouth closed, insects, pets, using the same toilet, food and drink (Suantari, 2021).

World Health Organization (WHO) in 2022 recorded as many as 39 million people exposed to the HIV virus, while the deaths caused by the HIV virus were recorded at 630,000 people, so that the HIV virus is still a world health problem that has claimed 40.4 million lives (WHO, 2021). National HIV/AIDS Strategy (NHAS) (2022) predict as many as 86% of people living with HIV (ODHA) worldwide knew their HIV status in 2022, the remaining 14% (about 5.5 million people) did not know that they had HIV and still needed access to HIV testing services. Strengthened again by the Kementerian Kesehatan Republik Indonesia (2021), the number of HIV cases in Indonesia was recorded at 515,455 in addition to the number of people with HIV (ODHA) found in January – March 2022 was 10,525 people out of 941,973 people who had been tested for HIV.

The high prevalence rate of HIV can be significantly attributed to the low level of public knowledge about HIV/AIDS ($p<0.05$) (Martilova, 2020; Virdausi et al., 2022). Lack of HIV/AIDS knowledge can trigger negative stigma and discriminatory behavior of the community towards HIV (Suantari, 2021). Knowledge about HIV/AIDS can be in the form of knowledge about how HIV is transmitted, how to prevent HIV (condom use), early detection (e.g. VCT services), and stigma against HIV (Pradnyani et al., 2020). The level of knowledge about HIV in Indonesia is still very low (Pradnyani et al., 2020). According to Umam et al (2019) shows that many Indonesian people still do not know how HIV is transmitted and do not know HIV/AIDS prevention and early detection methods.

Realize Sustainable Development Goals (SDGs) is to end the AIDS epidemic by 2030 (Ibrahim et al., 2022). The Indonesian Ministry of Health needs to design and implement appropriate prevention mechanisms related to HIV/AIDS by conducting early detection of HIV (Virdausi et al., 2022). Early detection of HIV is the first step in HIV/AIDS prevention to ensure that sufferers are diagnosed early and can then plan HIV/AIDS treatment and HIV/AIDS sufferers get social support (Nshimirimana et al., 2022). Efforts to increase the coverage of early detection of HIV/AIDS (VCT Services) and finding new cases of HIV infection needs to be carried out, in support of this, a strategy to increase HIV test coverage is needed involving empowering Public health center to provide HIV testing services and counseling (Pradnyani et al., 2020). Public health center is the first health facility established by the government to increase comprehensive HIV testing and based on the regulation of the Ministry of Health of the Republic of Indonesia Number 75 of 2014 states that Public health center is a health service facility that organizes public health efforts by prioritizing promotive and preventive actions to achieve the highest degree of public health in their work area (Ibrahim et al., 2022).

According to the guidelines of the World Health Organization (WHO), the reproductive age is defined as the age range between 15 and 49 years (WHO, 2021). During this period, both men and women have optimal reproductive capability, supported by estrogen in women and testosterone in men. This age range not only indicates the biological potential for reproduction but is also a key focus in various reproductive health programs, including efforts to prevent sexually transmitted infections (STIs) such as HIV/AIDS (Viridula et al., 2021). Research that has been conducted by Ibrahim et al (2022) about the factors that affect HIV testing in eastern Indonesia, it was found that gender, wealth, region, stigma, and HIV-related information. In

addition, based on research by Bekele and fekadu (2020). It was found that educational status, place of residence, alcohol consumption, number of sexual partners and visits to health facilities in the 12 months prior to the survey were shown to be significant for HIV testing. In the research of Adugna and Warku (2022) in Eastern African countries, age, marital status, place of residence, age at first sex, community poverty level, HIV knowledge, HIV stigma, risky sexual behavior, and health insurance have a significant relationship with HIV test coverage among men in Eastern Africa. The research conducted by Purwani et al (2020) the factors related to HIV testing in pregnant women in Indonesia found that the level of education and level of knowledge had a significant relationship with HIV testing. However, the analysis of factors influencing HIV testing in Indonesia based on DHS data has not been evaluated and has not been published in the international journal Artikel. Therefore, we conducted a study that aimed to find out the factors that affect HIV test checks at health centers in childbearing age in Indonesia.

2. RESEARCH METHOD

This study uses a quantitative research design with a cross sectional approach method. The data source used in this study is secondary data based on the results Indonesian Health Demographic Survey (SDKI). SDKI 2017 was carried out nationally by the Central Statistics Agency (BPS) in collaboration with the National Population and Family Planning Agency and the Indonesian Ministry of Health. The survey is technically assisted by the International InnerCity Fund (ICF), through the Demographic and Health Surveys (DHS) Program (2018). The dataset was obtained from the DHS Program website (URL: https://www.dhsprogram.com/data/available-datasets.cfm). The dataset used in this study is Individual recode DHS to obtain survey data for men and women.

3. RESULTS AND DISCUSSION

Table 1 presents that this study has 8,425 respondents, of which 7,314 (86.8%) are male and 1111 (13.2%) are female. Respondents who took HIV tests at health centers were 2,740 (32.5%), the majority of respondents were <35 years old (62.3%), while respondents who took HIV tests using health insurance were (33.6%). Based on this study, the majority of respondents are spread outside Java (56.6%) with high income (52.1%) and as many as (34.8%) respondents are highly educated. Respondents who live in rural areas are (67.7%), (56.5%) of respondents in this study are working and (6.5%) of respondents are married who take HIV tests. The level of knowledge of the respondents was high (44.2%) according to the questions that had been answered by the respondents (table 1). The majority of the respondents who stigmatized (30.9%) (table 1). The sources of knowledge about HIV/AIDS obtained by respondents were sourced from television (76.3%), while health professionals (21.7%) and through the internet (36.7%). Based on the results, it was shown that region, wealth index, education, residence, covered by health insurance, stigma, source for AIDS knowledge: internet and source for AIDS knowledge: health professionals had a significant relationship with HIV testing at health centers at childbearing age.

Table 1. Factors related to HIV testing at the health center

Variable	HIV Test				p-value
	Yes		No		
	n	%	n	%	
Region					
Non-Javanese	1.333	28.0	3.433	72.0	<0.001*
Javanese	1.407	38.5	2.252	61.5	

Age					
Less than 35	1.720	32.8	3.525	67.2	0.511
More than 35	1.020	32.1	2.160	67.9	
Sex of household head					
Male	2.385	32.6	4.929	67.4	0.689
Female	355	32.0	756	68.0	
Wealth Index					
Low Income	1.376	34.1	2.658	65.9	0.003**
High Income	1.364	31.1	3.027	68.9	
Education					
Primary Education	1.860	33.9	3.634	66.1	<0.001*
Higher Education	880	30.0	2.051	70.0	
Residence					
Urban	1.802	31.6	3.898	68.4	0.011**
Rural	938	34.4	1.787	65.6	
Respondents working					
No	1.212	33.1	2.449	66.9	0.328
Yes	1.528	33.1	3.236	67.9	
Covered by health insurance					
No	887	31.3	1.945	68.7	0.093**
Yes	1.853	33.1	3.740	66.9	
Level of Knowledge					
Low Knowledge	1.563	33.2	3.139	66.8	0.119
High Knowledge	1.177	31.6	2.546	68.4	
Stigma					
No	1.968	33.8	3.854	66.2	<0.001*
Yes	772	29.7	1.831	70.3	
Source for AIDS knowledge: Television					
No	649	32.5	1.347	67.5	1.000
Yes	2.091	32.5	4.338	67.5	
Source for AIDS knowledge: health professional					
No	1.956	29.7	4.640	70.3	<0.001*
Yes	784	42.9	1.045	57.1	
Source for AIDS knowledge: the internet					
No	1.779	33.4	3.554	66.6	0.033**
Yes	961	31.1	2.131	68.9	
Marital Status					
Single	2.574	32.7	5.306	67.3	0.310
Married	166	31.6	379	68.4	

Description: **p-value <0.001. ** p-value <0,05*

Factors that can affect HIV testing at health centers at childbearing age based on logistic regression tests obtained by Region, wealth index, residence, covered by health insurance, level of Knowledge, stigma, and Source for AIDS knowledge: health professionals have a significant influence on HIV test at the Health Center at childbearing age. Respondents who received knowledge sources from health workers were more likely to conduct HIV tests at health centers, as evidenced by the old ratio value of 1.901 compared to respondents who obtained knowledge sources through the internet and television. Respondents who lived in urban areas were more likely to take an HIV test compared to respondents who lived in rural areas (table 2)

Table 2. Factors that affect HIV testing at the Health Center

Characteristics Respondent	B	S.E	value	OR	95 % CI	
					Lower	Upper
Region						
Non-Javanese	0.614	0.051	<0.001*	1.222	1.102	1.356
Javanese						
Age						
Less than 35	-0.066	0.053	0.216	0.937	0.844	1.039
More than 35						
Gender						
Male	-0.030	0.071	0.677	0.971	0.845	1.116
Female						
Wealth index						
Low Income	-0.194	0.051	<0.001*	0.824	0.745	0.911
High Income						
Education						
Primary Education	-0.083	0.057	0.144	0.920	0.824	1.029
Higher Education						
Residence						
Urban	0.201	0.053	<0.001*	1.222	1.102	1.356
Rural						
Respondent Working						
No	0.004	0.050	0.939	1.004	0.910	1,107
Yes						
Covered by health insurance						
No	0.142	0.052	0.006**	1.153	1.042	1.276
Yes						
Level of Knowledge						
Low Knowledge	-0.084	0.048	0.084**	0.920	0.837	1.011
High Knowledge						
Stigma						
No	- 0.202	0.052	<0.001*	0.817	0.738	0.905
Yes						
Source for AIDS knowledge: television						
No	0.068	0.058	0.237	1.071	0.956	1.199
Yes						
Source for AIDS knowledge: health professional						
No	0.643	0.057	<0.001*	1.901	1.701	2.125
Yes						
Source for AIDS knowledge: internet						
No	-0.039	0.055	0.478	0.962	0.864	1.071
Yes						
Marital Status						
Single	-0.139	0.098	0.156	0.871	0.719	1.054
Married						

Description: ** p-value <0.001. ** p-value <0,05*

HIV testing services are a form of HIV/AIDS prevention program (Tampubolon, 2018). Optimizing HIV test coverage can prevent the risk of early spread of HIV/AIDS by ensuring

that patients are diagnosed and then patients can plan HIV/AIDS treatment (Nshimirimana et al., 2022). However, according to data from the Kementerian Kesehatan Republik Indonesia (2021) noted that the number of people with HIV is still relatively high and the number of sufferers is still increasing so the government needs to optimize HIV test coverage. HIV/AIDS diagnosed late can increase the risk of transmitting HIV to others, which can lead to death and costly management (Gray et al., 2019).

Previous research revealed that barriers to HIV testing include: age, sex workers, transgender, injecting drugs, perceived lack of health status, lack of health insurance, fear of breach of confidentiality, and one's desire to get tested for HIV (Gray et al., 2019; Nursalam et al., 2021; Riono & Challacombe, 2020; Sianturi et al., 2019). In other research, it was also found that factors that affect HIV testing include gender, wealth, region, stigma, and HIV-related information (Ibrahim et al., 2022). However, in this study, the factors that affect HIV testing at childbearing age in Indonesia are Region, Wealth index, Residence, Covered by health insurence, Level of Knowledge, Stigma.

In accordance with the data we found that the region specifically java and non-java has a significant influence on HIV test examinations at community health centers for individuals of reproductive age. According to research conducted by Ibrahim et al. (2022), the region significantly affects HIV test examinations ($p<0.05$). The influence of the region on HIV testing can be observed through aspects such as accessibility, affordability of healthcare services, service quality, and the relationship between healthcare workers and the community regarding HIV tests (Ingala et al., 2024). This influence is evident in better accessibility to HIV test examinations in certain regions that optimize healthcare services, which can increase public awareness and willingness to undergo HIV testing (Khin et al., 2023).

Respondents living in Java are more likely to undergo HIV testing at community health centers due to the high prevalence of AIDS cases in the region (Kementerian Kesehatan Republik Indonesia, 2021). Moreover, the provinces on Java, such as East Java, had a greater number of healthcare facilities that were more accessible compared to other regions. The wide availability of HIV testing services made it easier for the public to undergo examinations and receive counseling related to HIV/AIDS (Natasha et al., 2023). The local government in Java has implemented various HIV/AIDS prevention programs, including promotion, prevention, treatment, and social rehabilitation. These efforts aim to raise public awareness and facilitate access to HIV testing services (Hutabarat & Kismartini, 2019). The wealth index has a significant influence on HIV test examinations among individuals of reproductive age. The wealth index represents household characteristics that often have a substantial impact on health and helps identify inequitable access to healthcare services (Baderan et al., 2021). High income significantly influences HIV testing, as higher socioeconomic status is associated with greater awareness of HIV testing, while financial barriers to undergoing testing affect its utilization (Ante-Testard et al., 2020).

According to research by Bekele and Fekadu (2020), individuals with a higher wealth index have a greater likelihood of undergoing HIV testing. Higher household income influences decision-making processes in seeking better healthcare services to improve health outcomes (Hamzah et al., 2024). Therefore, individuals with higher incomes tend to prefer healthcare services they perceive as superior, such as hospitals or private practitioners. In contrast, individuals with lower incomes utilize and rely on government-provided free healthcare services as part of the national health insurance program (Ibrahim et al., 2022).

Based on research findings, there is a significant influence between place of residence and HIV testing among individuals of reproductive age. Indonesia's geographical conditions and disparities in urban-rural development contribute to the utilization of community health centers (public health centers) for HIV testing services. The results of this study differ from the research conducted by Asresie et al., (2023) which states that people living in urban areas are more likely to use HIV testing services at public health centers due to better access to healthcare

facilities. Moreover, HIV testing services in rural areas are relatively low due to limited media exposure, low education levels, and economic status (Truong et al., 2021). However, this study found that rural communities are more likely to undergo HIV testing at public health centers.

The government has made efforts to address urban-rural disparities by intensifying healthcare development, which consists of four key aspects: mobilizing and empowering communities to lead healthy lives, improving public access to quality healthcare services and facilities, enhancing the health monitoring and information surveillance system, and (increasing healthcare funding (Muhaji, 2021). As the frontline of development and community welfare improvement, villages can serve as a strategy for promoting behavioral change in health through rural communities acting as agents of change (Wulandari & Purba, 2020). Efforts to develop healthcare facilities have been implemented in remote and island regions. Development initiatives that begin in peripheral areas and villages within the framework of national unity are one of the priorities (Nawacita) of the Working Cabinet (Siswanto et al., 2020). Consequently, many development programs have been initiated in rural areas, supported by village fund policies. This enables communities to optimize the healthcare services provided by the government by utilizing health check-ups and services at Public health centers, the primary healthcare facility established by the government to enhance comprehensive HIV testing, as regulated by Indonesia's Ministry of Health Regulation No. 75 of 2014.

Health insurance has a significant influence on HIV testing among individuals of reproductive age. Health insurance serves as a form of financial protection, providing coverage for medical treatment and care needed by individuals seeking healthcare services (Listiani et al., 2023). According to research by Adugna and Worku (2022), there is a significant relationship between health insurance and HIV testing. Individuals with health insurance are more likely to visit healthcare facilities to access services, including HIV testing, as these services are provided free of charge under their insurance coverage.

Health insurance plays a critical role in ensuring equitable access to healthcare, enabling individuals to utilize health services, and improving awareness of HIV testing (Joseph et al., 2024). By reducing financial barriers, health insurance increases the likelihood that people will seek timely medical care and undergo preventive measures such as HIV testing, contributing to better public health outcomes (Serag et al., 2023). The level of knowledge has a significant influence on HIV testing among individuals of reproductive age. The findings of this study do not align with the research conducted by Joseph et al. (2024) which states that individuals with higher education levels tend to have greater knowledge about HIV/AIDS, a better understanding of the importance of HIV testing, and the ability to make more informed decisions regarding HIV screening. Knowledge is a crucial domain in shaping an individual's actions (Umar & Erni, 2019)

The level of knowledge is associated with a strong understanding of HIV risk factors and the necessity of testing to determine HIV status, which is essential for preventing the disease and its complications (Khin et al., 2023). However, based on the findings of this study, individuals with lower levels of knowledge are more likely to undergo HIV testing at Public health centers. This is because the government has optimized healthcare service programs by implementing direct public health initiatives, such as free healthcare services, health education, and HIV awareness campaigns (Adugna & Worku, 2022). As a result, communities with lower levels of knowledge are more frequently reached by community-based health programs, which are more accessible in places like Public health centers. Health education provided through community health programs encourages individuals to undergo HIV testing, particularly because they feel more empowered by these initiatives (Adugna & Worku, 2022; Kidman et al., 2020; Sabin et al., 2019).

Stigma has a significant influence on HIV testing among individuals of reproductive age. Societal stigma is a critical barrier to obtaining accurate diagnoses and appropriate HIV

treatment services. According to Adugna and Worku (2022) stigma significantly impacts HIV testing. Individuals who test positive for HIV may face discrimination, leading to the loss of friendships, strained family relationships, job insecurity, housing difficulties, and reduced access to healthcare services (Pachena & Musekiwa, 2022). Research by Fauk et al (2021) highlights that the societal stigma attached to individuals with HIV/AIDS discourages many from seeking counseling and HIV testing.

Stigma manifests in various ways, such as keeping HIV diagnoses secret, feeling shame if a family member is HIV-positive, avoiding purchasing vegetables from vendors with HIV, speaking negatively about individuals with or suspected of having HIV, and fearing transmission through casual contact like saliva. Previous studies have reported that stigma is one of the primary reasons for the low utilization of HIV testing services, especially in low- and middle-income countries. HIV-related stigma hinders the use of HIV testing services at community health centers (Public health centers), delays access to comprehensive healthcare, and contributes to higher transmission rates (Hutahaean et al., 2023). Efforts to reduce stigma must include public education campaigns, community-based interventions, and policies aimed at eliminating discrimination and promoting acceptance of individuals living with HIV/AIDS (Andersson et al., 2020). These measures are essential to improving access to HIV testing and ensuring timely healthcare for those affected.

The findings indicate that healthcare professionals as sources of HIV-related information have a significant influence on HIV testing among individuals of reproductive age. Healthcare professionals play a key role in initiating community visits to community health centers (Public health centers) for HIV testing (Astiti et al., 2024). Information provided by healthcare workers about HIV testing services has been shown to increase the proportion of individuals seeking HIV testing (Levy et al., 2023). This aligns with previous research highlighting the relationship between the quality of HIV-related media information and individual willingness to undergo HIV testing at Public health centers (Pradnyani et al., 2020). Adequate information utilization significantly helps expand HIV testing coverage and optimizes healthcare services. According to Ibrahim et al. (2022), individuals with knowledge about HIV are more likely to undergo HIV testing. This is further supported by Sari (2022), who stated that information sources fundamentally support and enable behavioral changes, particularly in the utilization of HIV testing services. Healthcare professional information delivery involves providing education on HIV, recommending testing, and offering post-test referrals (Worku et al., 2022). The role of healthcare workers is highly influential as their frequent interactions foster a better understanding of patients' physical and psychological conditions (Hidayati et al., 2022; Wardojo et al., 2021). Such interactions build trust and acceptance of the healthcare professional presence. Additionally, the education and counseling provided by healthcare workers play a critical role in encouraging individuals to undergo HIV testing (Pachena & Musekiwa, 2022). Strengthening the role of healthcare professionals in disseminating accurate and empathetic HIV-related information can further enhance public trust and encourage greater utilization of HIV testing services.

4. CONCLUSION

This study analyzes the factors influencing HIV testing among individuals of reproductive age in Indonesia, specifically at Public health centers, which are the primary healthcare facilities in the country. The factors identified as influencing HIV testing at Public health centers including region, wealth index, residence, health insurance coverage, level of knowledge, stigma, and AIDS knowledge source from health professionals. To optimize HIV testing coverage, healthcare workers should enhance awareness by providing comprehensive HIV/AIDS education. This can be done through various media, such as posters, brochures, and community-involved seminars. The government must ensure HIV testing services are accessible in all regions, including rural and remote areas. Additionally, continuous monitoring

and evaluation of HIV testing programs at Public Health Centers are necessary. This will help improve and tailor programs to meet community needs and address influencing factors effectively.

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