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Research

Utilization Factors of HIV Testing by Pregnant Women in Primary Health Care

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A B S T R A C T

Background: Utilization of HIV testing during pregnancy is one of the policy efforts to prevent pregnant women from contracting the HIV virus or transmitting it to the unborn fetus. Deli Serdang has always been in second place in the district with the most HIV cases over the last 3 (three) years in North Sumatra. On the other hand, HIV testing by pregnant women in this district is relatively low, with a number of factors assumed to be the cause.
Purpose : This study aimed to investigate several factors with the use of HIV testing by pregnant women so that strategic efforts can be obtained to prevent HIV transmission by pregnant women.
Methods: This research adopts a quantitative approach and employs *a cross-sectional study* design. The data collection period spans from June to July 2023, and the study was conducted within the operating area of in 5 (five) Primary healthcare areas with the most HIV cases in Deli Serdang regency. The sample was obtained using a *cluster random sampling* technique so that 285 pregnant women were obtained. Data were collected using a questionnaire that had been tested for validation and reliability, and then analyzed univariately, bivariately using the chi-square test, and multivariately using binomial logistic regression.
Results: This study found a significant relationship between the variables of knowledge, social support, facilities and infrastructure, and the perspective of vulnerability with the use of HIV testing, respectively, with infrastructure and facilities having the greatest impact.
Conclusion: Strategic and tactical efforts in the form of appropriate interventions in the provision of supporting facilities and infrastructure desired by pregnant women will enable an increase in HIV testing.

INTRODUCTION

There were at least 85.6 million people in 2023 have contracted HIV since the beginning of the epidemic, with women and girls making up 53% of all HIV-positive individuals. 46% of all new infections in 2022 were carried by women and girls. 4000 teenage girls and young women between the ages of 15 and 24 worldwide contract HIV every week. The high population of HIV-infected people in Southeast Asia requires Indonesia to be more vigilant about the spread and transmission of this virus [1]. Human Immunodeficiency Virus (HIV) is a type of virus that infects white blood cells which causes a decrease in human immunity. Acquired Immune Deficiency Syndrome (AIDS) is a group of symptoms that arise due to a decrease in the body's immunity caused by HIV infection [2]. The immune system becomes weak, and one or more diseases may arise. Because the immune system is weak, some diseases can become more serious than usual [2], [3].

According to the Sustainable Development Goals (SDG's) Health Indicators in Indonesia, HIV/AIDS is included in the 3rd Goals which will guarantee a healthy life and promote prosperity for all people of all ages by 2030 [4]. Based on data from

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reports on the development of HIV AIDS and Infectious Infectious Diseases in 2021, the number of HIV/AIDS cases in Indonesia over the last six years, the number of HIV cases in Indonesia reached its peak in 2019, namely 50,282 cases. One of them is North Sumatra (695 cases). The highest percentage of PLWHA was found in the MSM group, 26.3%; pregnant women 20.9%; and TB patients 11.5% [5].

Women represent 31% of HIV cases, highlighting their vulnerability due to factors such as pregnancy, childbirth, and breastfeeding. These conditions not only jeopardize maternal health but also increase the risk of vertical transmission to the newborn [6]. More than 90% of cases of children infected with HIV are transmitted through the Mother To Child Transmission (MTCT) process [6], [7]. Currently, North Sumatra Province is ranked 5th for the highest cumulative number of HIV/AIDS cases in 2021. Based on HIV case report data from the North Sumatra Health Service in 2021, it is known that as of January 2022, three districts with the highest proportion of HIV are Medan (51.60%), Deli Serdang (14.20%), and Pematangsiantar (6.55%) [8]. So far, health service facilities for preventing mother-to-child transmission of HIV are adequate. In Deli Serdang Regency, HIV/AIDS ART (Anti Retroviral Therapy) and VCT (Voluntary Counseling and Testing) referral hospitals have been established, namely Deli Serdang District Hospital and Bandar Baru Primary Healthcare [8].

Utilization of health services is the result of the process of seeking health services by an individual or group (Tambunan et al., 2020). Meanwhile, utilization of health services is the use of service facilities provided such as outpatient care, inpatient care, or other forms of activities [9]. The HIV control program is included in the priority budget for minimum service standards (SPM) of the Deli Serdang District Health Office and has received support from the Global Fund and strengthening health workers in partnership with the Kasih Suwitno Foundation (YKS) in the Deli Serdang Health Sector SPM Implementation Report [10]. In 2021, some health facilities lacked this service due to insufficient guidance for strengthening programs in the Primary Healthcare network and the absence of a regional regulation draft for HIV prevention in Deli Serdang Regency.

The low number of visits and utilization of HIV testing services among pregnant women can be seen from Andersens's Theory (1980) which mentions factors that influence health behavior, namely predisposing, driving and reinforcing factors. Previous studies show that there is a relationship between staff support and counseling behavior and HIV testing of pregnant women [11]. Yuni's research (2020) shows that the level of knowledge and social support has a significant relationship with HIV testing in pregnant women [12], and social support for pregnant women is the most dominant factor influencing HIV testing in pregnant women. Furthermore, research conducted by Soli (2021) also shows that there is an influence of knowledge, attitude, distance and family support on the participation of pregnant women in HIV/AIDS screening [13].

Building on prior research, the study aims to delve deeper into various aspects such as knowledge, attitudes, social support, patient perception, psychology, and additional factors like spousal support, healthcare provider roles, facility adequacy, and HIV vulnerability perception. Notably absent from existing literature is an investigation into HIV testing services for pregnant women at primary healthcare facilities, and an understanding of the underlying issues contributing to low participation rates among this demographic. Therefore, this study aims to investigate factors associated with the utilization of HIV testing by pregnant women at the Deli Serdang District.

METHOD

1. Research design

The type of research used in this study is analytic quantitative research with a cross sectional design approach.

2. Research sites

This study was conducted in the work area of the Deli Serdang District Health Office, North Sumatra with a cluster selection of Bandar Khalipah Health Center, Batang Kuis Health Center, Sibolangit Health Center, Lubuk Pakam Health Center and Tanjung Morawa Health Center with consideration of the magnitude of the HIV case problem in the five health centers.

3. Population and Sample

The population in this study were all pregnant women in the working area of the Deli Serdang District Health Office 5 (five) health centers totaling 10,74 pregnant women. The sampling technique was carried out by cluster random sampling so that 285 pregnant women were obtained using Lemeshow (1992) sample size for testing two population proportions, with the criteria of residing in the working area of the Deli Serdang health center, mothers who were pregnant in the third trimester and had had a previous pregnancy examination at a health care facility.

4. Research procedure

The research was conducted from June to December 2023. Data were collected using a questionnaire that had been tested for validation and reliability. The instrument consists of questions regarding the social demographics of respondents, followed by questions on knowledge, attitudes, social support, vulnerability perspective, support for facilities and infrastructure, and utilization of HIV testing for pregnant women.

5. Data analysis

The data were subjected to univariate analysis to determine frequency distribution. Subsequently, bivariate analysis was undertaken using the Chi-Square test, followed by multivariate analysis using binary logistic regression to discover the dominating influential factors.

RESULT DAN DISCUSSION

1. Univariate Analysis

Table 1. Respondents Characteristic

Variables (n=285)	%	CI 95%
Age (Years)		
Min 17, Max 49, Mean 28.24, Md 27, Mo 27, SD 5.962		
Gestational age (weeks)		
Min 4, Max 45, Mean 24.83, Md 26, Mo 28, SD 7.993		
Education		
No school	-	-
Elementary school	6	2.1	0.7 - 3.9
Junior High School	45	15.8	11.2 – 20.7
Senior High School	214	75.0	70.5 – 80.4
College	19	6.6	3.9 – 9.8
Job status		
Unemployed	235	82.3	77.2 – 86.3
Employed	50	17.7	13.7 – 22.8

Based on the table above, the 285 pregnant women who underwent HIV testing were on average 28 years old with an average gestational age of 25 weeks. Apart from that, it is known that the highest proportion of respondents' education was high school graduation (75%) and they were not currently working (82.3%).

Univariate Analysis

The purpose of the analysis is to characterize the nature of each variable. The following table shows the univariate analysis.

Table 1: Univariate Analysis Table Frequency Distribution of Variables

Variable	Frequency (n)	Percentage (%)	CI 95%
Knowledge			
Poorly	105	36.8	30.9 – 42.1
Good	180	63.2	57.9 – 69.1
Attitude			

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Variable	Frequency (n)	Percentage (%)	CI 95%
Willing Not	3	1.1	0.0 – 2.5
Willing	282	98.9	97.6 – 100
Social support			
Less support	93	32.6	27.0 – 37.9
Support	192	67.4	62.1 – 73.0
Vulnerability Perspective			
Negative	35	12.3	8.4 – 16.1
Positive	250	87.7	83.9 – 91.6
Facilities and infrastructure			
Inadequate	169	59.3	53.3 – 64.9
Adequate	116	40.7	35.1 – 46.7
Utilization of HIV Testing			
Not Utilizing	149	52.3	46.3 – 58.2
Utilizing	136	47.7	41.8 – 53.7

Based on the univariate analysis table above, the majority of respondents had good knowledge regarding HIV testing, namely 180 (63.2%) and the rest had poor knowledge, namely 105 (36.8%). Based on the table above, the majority of respondents had a good attitude towards HIV testing, namely 282 (98.9%) and a small percentage of respondents, namely 3 (1.1%). Based on the analysis table above, the majority of respondents received social support, namely 192 (67.4%) and some did not receive social support, namely 93 (32.6%). Based on the analysis table above, the majority of respondents assessed that they had a positive vulnerability perspective, namely 250 (87.7%) and the majority of respondents had a negative vulnerability perspective, namely 35 (12.3%). Based on the analysis table above, the majority of respondents assessed the facilities and infrastructure as inadequate, namely 169 (59.3%) and the remainder assessed the facilities and infrastructure as adequate, namely 116 (40.7%). Based on the analysis table above, the majority of respondents did not use HIV testing, namely 149 (52.3%) and some others had used HIV testing, namely 136 (47.7%).

Bivariate Analysis

The bivariate test results in the table 3 show that pregnant women who have good knowledge tend to make more use of HIV testing (58.8%). The results of statistical tests that were carried out using chi square found a value of $p = 0.000 < 0.05$. This means that there is a relationship between respondents' knowledge of the benefits of HIV testing for pregnant women. Mothers who have good knowledge are more likely to make good use of HIV testing.

Knowledge can occur after people sense a particular object. Without knowledge, a person has no basis for making decisions and determining actions regarding the problems faced [14]. The results of this research are in line with research that was conducted on pregnant women by carrying out HIV tests. There were found that the results of these studies found relationship between pregnant women's knowledge of the use of HIV testing [15], [16]. In this study, it was also found that pregnant women who did not have good knowledge had a risk of 3,357 times not taking advantage of HIV testing.

Table 2: Bivariate Analysis Results with Chi-square test

Factors	Utilization of HIV Testing						*p-value*	*POR (95% CI)*
	Not Utilizing		Utilizing		Total			
	N	%	n	%	n	%		
Knowledge								
Poorly	74	70.5	31	29.5	285	100	**0,000***	3.299 (1.983 - 5.489)
Good	75	41.7	105	58.3	285	100		
Attitude								
Willing Not	2	66.7	1	33.3	285	100	1,000	1.878 (0.168 – 20.940)
Willing	147	52.1	135	47.9	285	100		

Factors	Utilization of HIV Testing						*p-value*	*POR (95% CI)*
	Not Utilizing		Utilizing		Total			
	N	%	n	%	n	%		
Social Support								
Less support	90	96.8	3	3.2	285	100	**0,000***	69.153 (21.034 - 227.351)
Support	59	30.7	133	69.3	285	100		
Facilities and infrastructure								
Inadequate	145	85.8	24	14.2	285	100	**0,000***	173.698 (58.609 – 514.782)
Adequate	4	3.4	112	96.6	285	100		
Vulnerability Perspective								
Negative	25	71.4	10	28.6	285	100	**0.025***	2.134 (1.027 – 4.434)
Positive	124	49.6	126	50.4	285	100		

The results of this research found that pregnant women have good knowledge and can make good use of HIV testing because they search for good information on the internet and learn from social media that broadcast information about HIV and its impacts. When compared with research at the Langsat Primary Healthcare, pregnant women have good knowledge because during consultations, doctors provide knowledge and prevention so as not to contract HIV during pregnancy so they have better anticipation and level of knowledge compared to other pregnant women.

The bivariate test results in the table 3 show that the mother's good attitude is not enough or does not necessarily encourage mothers to take an HIV test (52.1%). Meanwhile, statistical results show that the attitude factor was found to be insignificant. The reasons why the attitude of pregnant women may not always be directly related to the use of antenatal care is because even with a positive attitude towards ANC, if the pregnant women perceive the quality of care at the PHC to be subpar, they may choose not to utilize the services [17]. Additionally, individual health beliefs and perceptions about pregnancy and the necessity of ANC may vary. Some pregnant women may have different beliefs about the need for ANC based on their personal or cultural views [18]. Personal circumstances such as stress, family situations, or other health issues may impact a woman's decision to seek ANC [19], regardless of their attitude towards it.

The bivariate test results in table 3 were evidence that social support from husbands and health workers encouraged pregnant women to make more use of HIV testing (69.7%). The results of statistical tests that were carried out using chi square found a value of $p = 0.000 < 0.05$. This means that there is a relationship between social support among respondents and the use of HIV testing among pregnant women. Mothers who receive social support are more likely to make good use of HIV testing than those who do not receive social support. Husband's support for pregnant women is physical and psychological support given by the husband in the form of encouragement/motivation or encouragement and advice to pregnant women [20]. The results of this research are in line with research that was conducted on pregnant women carrying out HIV tests that found that there is a relationship between social support and the use of HIV testing [16], [21]. In this study, it was also found that pregnant women who did not receive social support were 4,357 times more likely to risk not taking advantage of HIV testing at the Primary Healthcare.

Based on the results of this research, it was found that most pregnant women took advantage of HIV testing because of information from their families and husbands regarding the dangers of HIV in pregnant women which could have an impact on the health of mothers and children. Furthermore, husband also suggested it because he had received counseling regarding HIV transmission. Pregnant women who receive support from their husbands and families have extensive information regarding the importance of HIV testing during pregnancy [21], [22]. Therefore, social support greatly influences physical and mental health during pregnancy.

The bivariate test results in table 3 were also shown that the availability of facilities and infrastructure to support the program tended to encourage mothers to check their pregnancies with HIV tests (96.6%). The results of statistical tests using the

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chi square test showed a value of p = 0.000 < 0.05. meaning, there is a significant relationship between facilities and infrastructure and the use of HIV testing. These results are in line with research conducted in the Medan Primary Healthcare working area, which obtained a p value = 0.001 <0.05, which means there is a significant relationship between facilities and infrastructure and the use of HIV testing. In addition, the study found that inadequate facilities and infrastructure had 8,706 times the risk of not taking advantage of HIV testing for pregnant women. Then, similar results were also found in research conducted at the Idi Rayeuk Health Center, East Aceh Regency in 2021, finding p=0.036<0.05. This means that there is a significant relationship between facilities and infrastructure and the use of HIV testing [23].

Based on the results of this research, it was found that the work area of the Deli Serdang Primary Healthcare was considered inadequate because the infrastructure to the local health center was difficult and far to access, so many of the respondents chose to carry out HIV tests at the clinic rather than at the Primary Healthcare. Then, there is no special room to carry out HIV testing on pregnant women, such as a separate room, so it is done at the health center registration area. Compared with previous research, it was also found that there was a shortage of laboratory space to check HIV test results. This causes pregnant women to assess that the health center still lacks adequate facilities and infrastructure.

The bivariate test results in table 3 were also shown more than half of pregnant women who had a positive perspective on their own vulnerability encouraged mothers to undergo HIV tests. (50%). Judging from the results of statistical tests using chi square, it was found that p=0.025<0.05. This means that the vulnerability perspective has a significant relationship with the utilization of HIV testing. This result is in comparison with previous research, it was found that in the Darul Aman health center working area, East Aceh Regency, when HIV AIDS screening was carried out on pregnant women, that there is a significant relationship between the perspective of vulnerability to HIV testing and the use of HIV testing during pregnancy [24].

The positive perspective in this research is more due to information being obtained more easily on various social media due to technology and the acceleration of globalization, especially for pregnant women and families. Pregnant women can easily access information regarding transmission and its impact on the health of the mother and baby. Media functions to help overcome many obstacles in a person's understanding, make it easier to convey material or health information and make it easier for the target/community to receive information [25]. Media is a tool (means) of communication such as newspapers, magazines, radio, television, films, posters and banners. In addition, a positive perspective has an influence on a mother's actions to check and utilize the HIV tests provided in the health center health program [26], [27].

Multivariate Analysis

Table 3. Results of the Logistic Binary Regression Test on the Use of HIV Testing in Pregnant Women

Variable	B	Sig.	AOR	95%CI	
				Lower	Upper
Knowledge	1,022	0.032	2,778	1,091	7,073
Social support	3,194	0,000	24,378	5,743	103,481
Facilities and infrastructure	4,485	0,000	88,691	27,763	283,333
Perspective	-1,069	0.084	0,343	0.102	1,153
Constant	-3,829	0,000	0,022		

- Abbreviations: AOR=adjusted odds ratio; CI=confidence interval.
- Nagelkerke R Square = 0.796
- Hosmer and Lemeshow Test (p=0.689)

Based on the results of the binary logistics test, it was found that support for facilities and infrastructure was the most dominant factor encouraging mothers to take an HIV test, where mothers who felt that the facilities and infrastructure of health facilities were adequate would be 88.7 times more likely to use an HIV test compared to mothers who felt that the facilities were adequate. and the infrastructure is not yet appropriate. The multivariate results above also explain that the combination of factors,

knowledge, social support, facilities and infrastructure as well as the perspective of pregnant women influences the use of HIV testing by pregnant women by 79.6%, while the other 20.4% is influenced by other factors.

This study found infrastructure and facilities having the greatest impact. Adequate facilities and infrastructure at PHC, such as comfortable examination rooms, complete medical equipment, and trained medical staff, can enhance the accessibility and comfort of pregnant women to undergo HIV/AIDS testing. The availability of adequate facilities is likely to encourage pregnant women to seek routine screenings. Conversely, discomfort or concerns regarding the HIV/AIDS testing procedure can influence pregnant women's decisions not to undergo testing. Inadequate facilities and infrastructure may increase pregnant women's levels of anxiety or fear of the testing procedure. Thus, improving the quality of facilities and infrastructure at Puskesmas can increase the utilization of HIV/AIDS testing among pregnant women by creating a supportive, comfortable, and friendly environment for them to undergo this crucial health examination.

CONCLUSION

This study found that there was a relationship between the utilization of HIV testing by pregnant women with knowledge, attitudes, facilities and infrastructure as well as a vulnerability perspective. Together the factors of knowledge, social support, facilities and infrastructure as well as the perspective of pregnant women influence the use of HIV testing by pregnant women by 79.6%, with infrastructure and facilities having the greatest impact. It is recommended that pregnant women increase their participation in the use of HIV testing to prevent transmission and the serious impact of HIV on the health of mothers and babies. It is recommended for pregnant women to actively seek information related to HIV as a prevention effort and to increase their insight in utilizing information related to HIV. It is recommended that Health officers in the working area of the Deli Serdang Primary Healthcare actively participate in providing information to the community, especially pregnant women, especially in areas far from the location of the Primary Healthcare.

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