



## Determination of Factors Associated With Adherence of Pregnant Women to HIV Screening in Indonesia: A Single-Center Study

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### Abstract

**Background:** The number of human immunodeficiency virus (HIV)-positive cases is increasing every year. This will in turn increase the risk of mother-to-child transmission of HIV. Despite the efforts made and counseling from health workers, only a small proportion of pregnant women adhere to HIV screening and retests in the city of Jambi, Indonesia. This study aimed to determine factors associated with adherence of pregnant women to HIV screening at the Putri Ayu public health center, Jambi City, Indonesia.

**Methods:** This cross-sectional study was done on 93 pregnant women who received antenatal care services at the Putri Ayu health center in Jambi City, Indonesia, from February to August 2020. The subjects were selected via a proportional quota sampling method. Data were collected using a 4-part questionnaire on demographic characteristics, vulnerability perception, knowledge of HIV, and adherence to HIV screening. The collected data were analyzed using the chi-square test and logistic regression analysis. A P-value of less than 0.05 was considered statistically significant.

**Results:** The majority of subjects were young (66.3%), unemployed (59.8%) and with low education level (71.7%). Only 33.7% of the respondents had good adherence to HIV screening. Of these individuals, 22.8% had good knowledge of HIV, 28.3% were adults, 40.2% were employed, and 28.3% had high education level. Adherence to HIV screening had significant association with knowledge ( $P=0.0001$ ), age ( $P=0.0001$ ), perceptions of vulnerability ( $P=0.017$ ), occupation status ( $P=0.017$ ), and education level ( $P=0.020$ ).

**Conclusion:** Based on the results, knowledge, perception, age, education level, and occupation of pregnant women significantly affect their adherence to HIV screening at the Putri Ayu Health Center, Jambi City.

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### Highlights:

#### What is current knowledge?

If a pregnant woman has HIV, the child in the womb is at risk of contracting it. Compliance with HIV screening for pregnant women is important.

#### What is new here?

In this study, it was proven that pregnant women's adherence to HIV testing was influenced by maternal knowledge, low education level, young maternal age, and negative perceptions.

### Introduction

Infection with the human immunodeficiency virus (HIV) has become a global health problem (1). According to a report by the World Health Organization in 2015, 36.7 million people were living with HIV, consisting of 36.3 million adults, 17.8 million women, and 1.8 million children. In the same year, the rate of HIV-related mortality was reported to be 1.1 million in adults and 110,000 in children (2). The number of new HIV cases is increasing annually (3). In Indonesia, the number of HIV-positive and acquired immunodeficiency syndrome (AIDS) cases increased from 859 and 5,239 in 2005 to 232,323 and 86,780 cases in 2016, respectively. The cumulative percentage of HIV/AIDS was 67.9% in men and 31.5% in women (4).

HIV infection in pregnant women can threaten the mother's life and transmit the virus to her baby (5-7). Vertical transmission of HIV has increased along with the increase in the number of HIV-infected women (4).

Based on the initial survey by the health office of Jambi City in Indonesia, the number of HIV-positive pregnant women is increasing every year (8). The Ministry of Health issued the Decree of the Minister of Health (DMO) No. 51 on preventing mother-to-child transmission of HIV. One form of the DMO implementation program is voluntary counseling and testing (VCT) for HIV (9). Prevention of vertical transmission of HIV is part of the efforts made to control

HIV and AIDS in Indonesia (10). In this regard, HIV testing has been carried out in the country since 2004 by using a counseling approach or at the client's initiative and the recommendation of healthcare workers (11). In pregnant women, HIV tests are carried out every three months, particularly to monitor high-risk individuals such as drug users, sex workers, etc. (12). A post-screening retest is a repeat of an HIV test in a person who has had a previous test. Retests are carried out to keep the results negative and prevent HIV transmission (13, 14).

The rate of pregnant women in various parts of Indonesia who had repeated HIV tests ranged from 7% in Pontianak (15) to 67.5% in Denpasar (16). According to these studies, factors such as women's knowledge, age, education level, and occupation status play an essential role in adherence to HIV retesting (15, 16).

Given the increase in incidence rate of HIV in Jambi City (17), the present study aimed to determine factors associated with pregnant women's adherence to HIV screening at the Putri Ayu public health center, Jambi City, Indonesia.

### Methods

The present cross-sectional study was conducted in the working area of Putri Ayu public health center, Jambi City in 2020. Adherence of pregnant women to HIV screening was considered as the dependent variable, and knowledge, perceived susceptibility, age, education level, and employment status were considered as the independent variables. The study population included 1,278 pregnant women who made antenatal care (ANC) visits at the Simpang IV Sipin health center from February to August 2020. Overall, 92 eligible pregnant women were recruited by quota sampling. Inclusion criteria were primigravida, lack of pregnancy complications, and willingness to participate in the research. Written informed consent was taken from all participants after explaining the aims and objectives of the study to the prospective participants.

To determine factors associated with pregnant women's adherence to HIV screening, a researcher-made questionnaire consisting of four parts was used.

The questionnaire in this study was prepared by the researcher himself. The first part is demographic data that age is categorized into 3, namely young adults starting at the age of 18 years to 25 years, namely the age between 25 to 40 years and adults, namely those aged over 40 years. The categorization of education is divided into 2, namely high education for undergraduate and above and low education, namely junior high school to elementary school. Employment variables are divided into 2, namely employee, unemployed, while the other movement is not having a permanent job.

The second part is a compliance questionnaire with eight questions and has yes and no answers, when respondents answered yes they were given a score of 1 and the answer was not given a score of 0. Then the compliance variable is divided into 2 criteria, namely yes and no. if the total score of respondents' answers is > 5 then the category is yes while < 5 is in the no category.

The third part is a knowledge questionnaire with ten questions and has yes and no answers, when respondents answered yes they were given a score of 1 and the answer was no score 0. Then there are 3 categories of knowledge variables namely good, sufficient, and poor. If a total score of 7-10 answers is in a good category, a total of 4-6 answers is in the medium category and a total score of 1-3 answers is in the less category.

The fourth part is the Vulnerability Perceptions questionnaire with ten questions and has yes and no answers, when respondents answered yes they were given a score of 1 and the answer was no score 0. If the total answer score was 6-10 it was in a good category and if the total answer score was 1-5 it was in a good category not enough.

Reliability of the research instrument was confirmed by obtaining a Cronbach's alpha value of 0.816.

Statistical analysis of data was carried out using the chi-square test. The analysis of Data were analyzed using SPSS Statistics for Windows, version 16 (SPSS Inc., Chicago, Ill., USA).

**Results**

The majority of subjects were young (66.3%), employed (59.8%) and with low education level (71.7%) (Table 1).

**Table 1: Demographic characteristics of the subjects (n=92)**

Characteristics	N (%)	Percent
<b>Age (years)</b>		
18-25	61	66.3
25-40	26	28.3
>40	5	5.4
<b>Education level</b>		
Low (elementary school, junior high school)	66	71.7
High (high school diploma, bachelor's degree)	26	28.3
<b>Employment status</b>		
Employed	55	59.8
Unemployed	37	40.2

Of 92 respondents, 21 (22.8%) had good knowledge of HIV and 54 (58.7%) had good perception of vulnerability to HIV. Overall, only 33.7% of the participants had good adherence to recommendations for HIV screening (Table 2).

**Table 2: Knowledge, perceived vulnerability, and adherence of subjects to HIV screening**

Variables	N (%)	Percent
<b>Knowledge</b>		
Poor	43(46.7)	30.4
Sufficient	28	22.8
Good	21	
<b>Vulnerability perception</b>		
Good	54	58.7
Poor	38	41.3
<b>Adherence</b>		
Good	31	33.7
Poor	61	66.3

Based on the findings, all subjects with poor knowledge of HIV had no adherence to HIV screening, while 81% of subjects with good knowledge of HIV adhered to HIV screening. Of 92 subjects, 24 (44.4%) had good perception of HIV and adhered to HIV screening. Most subjects with poor HIV vulnerability perception (82.6%) did not adhere to HIV screening. Statistical test results obtained P=0.017, it can be interpreted that the perception of pregnant women influences mothers to screen for HIV. 61 (100%) were young adults obedient to HIV screening. The results of the statistical test obtained P=0.000, this means that young pregnant women are more obedient in participating in HIV screening.

Overall, unemployment and having high education level, good knowledge of HIV and good vulnerability perception of HIV were significantly associated with adherence to HIV screening (Table 3).

**Table 3: Association of research variables with adherence to HIV screening**

Variable	Adherence to HIV screening				Chi-square P-value
	Good		Poor		
	N%	Percent	N%	Percent	
<b>Knowledge</b>					
Poor	43	100	0	0.0	0.0001
Sufficient	14	50.0	14	50.0	
Good	4	19.0	17	81.0	
<b>Vulnerability perception</b>					
Poor	31	82.6	7	18.4	0.017
Good	30	55.6	24	44.4	
<b>Age (years)</b>					
18-25	61	100	0	0.0	0.0001
25-40	0	0.0	26	100	
>40	0	0.0	5	100	
<b>Education level</b>					
Low (elementary school, junior high school)	49	74.2	17	25.8	0.020
High (high school diploma, bachelor's degree)	12	46.2	14	53.8	
<b>Employment status</b>					
Employed	52	94.5	3	5.5	0.017
Unemployed	9	24.3	28	75.7	

**Discussion**

The present study was carried out to determine the factors associated with pregnant women's adherence to HIV screening at the Putri Ayu public health center, Jambi City, Indonesia. Based on the findings, only 33.7% of the respondents adhered to HIV screening. In Indonesia, under the law no. 23 of 2002 concerning child protection, efforts must be made to protect children from life-threatening diseases. In this regard, HIV screening is carried out to eliminate risk of vertical transmission (18). The respondents' non-adherence to HIV screening might be due to lack of information and counseling services. In the present study, the majority of subjects had poor knowledge of HIV and the benefits of HIV screening, which is in line with results of a similar study in Indonesia (19). Good knowledge of HIV is essential for preventing mother-to-child transmission of HIV. Our respondents' poor knowledge of HIV might be due to the lack of exposure to HIV-related information since the majority of respondents were homemaker. None of the subjects with poor knowledge of HIV adhered to HIV screening. Based on the results, having a good knowledge of HIV was significantly associated with adherence to HIV screening. This finding is in line with results of a study by Legiati et al. (20) on the behavior of pregnant women regarding HIV testing in Semarang.

In the present study, having a good perception of vulnerability was significantly associated with adherence to HIV screening. This is also consistent with findings of the study by Legiati et al. (20).

According to the results, the majority of subjects who made the most ANC visits were adult's less than 20 years of age. Contrary to this finding, a previous study reported that the majority of pregnant women who had ANC visits were 25-45 years of age (21). The relationship between age and adherence showed that all adult respondents were obedient to HIV screening, while young adults (61 respondents (66.3%)) did not obedient to HIV screening. So it can be concluded that there is a significant relationship between the age of pregnant women and adherence after HIV screening. Legiati also reported that adults had better adherence to HIV testing (20).

In the present study, most subjects had low education level, and respondents with a high education level had better adherence to HIV screening. This is inconsistent with results of a previous study that reported that pregnant women with low educational backgrounds are more likely to use VCT services (21, 22, 23).

In our study, the majority of individuals who visited the Putri Ayu Health Center were employed, which is in line with results of a previous study (21). Our findings indicated a significant association between employment and adherence to HIV screening. Indeed, having an occupation and a relatively good socioeconomic status will provide the necessary facilities to obtain HIV-related information. The small sample size and not examining the role of family support and healthcare workers were limitations of this study.

**Conclusion**

Knowledge, perception, age, education level, and occupation of pregnant women significantly affect their adherence to HIV screening at the Putri Ayu Health Center, Jambi City.

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**Ethical statement**

The study was approved by the Health Research Ethics Committee of Komisi Etik Penelitian Kesehatan Poltekkes Kemenkes Jambi (Reference number LB.02.06/2/121/2020).

**Conflict of interest**

The authors declare that there is no conflict of interest regarding publication of this article

**Author contributions**

NR and TIK were responsible for the study conception and design; IM performed the data collection; RO and RRH performed the data analysis; NR, TIK, and IM were responsible for the drafting of the manuscript; NR and RRH made critical revisions to the paper for important intellectual content.

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