

The correlation between characteristics and pregnant women's knowledge about prevention of mother-to-child transmission of HIV in Surabaya: A cross-sectional study

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Abstract

Background: HIV continues to be a serious global public health concern, having taken 40.4 million lives to date and continuing to spread throughout all nations. By the end of 2022, there were projected to be 39 million HIV-positive individuals. The annual incidence of HIV-positive pregnant women is on the rise in Indonesia. In 2021, 4396 pregnant women were diagnosed with HIV, and this number increased to 8769 in 2022. Pregnant women's behaviours to prevent HIV transmission from mother to child are mainly determined by their level of knowledge. This study was carried out to determine the level of pregnant women's knowledge and find out the relationship between the characteristics and the knowledge of the pregnant women about the prevention of mother-to-child transmission (PMTCT) in Surabaya.

Methods: This is quantitative research with a cross-sectional approach. The number of respondents involved was 235 people. The inclusion criteria for this study were pregnant women in the 1st, 2nd, and 3rd trimesters who attended antenatal care at Community Health Centres in Surabaya. Meanwhile, the exclusion criteria for this study were pregnant women with disabilities. This research was conducted at the Putat Jaya, Morokrembangan, Perak Timur, Pucangsewu, Kalirungkut, and Tanah Kali Kedinding Community Health Centres in Surabaya during August–October 2023. Samples were collected using a purposive sampling technique. An overview of knowledge is known through a questionnaire. The findings have been calculated using the Spearman and Chi square statistical tests.

Results: According to the findings, less than half (49.4%) have sufficient knowledge of PMTCT. The result of the statistical test revealed that the correlation between age and knowledge has a p-value of 0.735, education and knowledge have a p-value of 0.066, information sources and knowledge have a p-value of 0.087, gravidity and knowledge have a p-value of 1, and occupation and knowledge have a p-value of 0.308, ethnicity and knowledge have a p-value of 0.104, monthly income and knowledge have a p-value of 0.278.

Conclusion: The findings revealed that less than half of respondents have sufficient knowledge of PMTCT. Knowledge was unrelated to age, education, source of information, gravidity, occupation, ethnicity, and monthly income.

Keywords: Characteristics; Knowledge; Pregnant women; PMTCT; HIV; Surabaya

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1. Introduction

HIV is an infection that is common throughout the world for which there is presently no treatment or vaccine ¹. The transmission of HIV from mother to child can take place during pregnancy, childbirth, and breastfeeding. The infection in infants born with HIV can lead to suffering, impairment, and even mortality ². Over 90% of HIV infections in children result from transmission during labor, known as Mother-To-Child Transmission (MTCT). The percentage of vertical transmission during breastfeeding is 30.8% among infants, and 5.2% of those identified early with HIV were diagnosed during their initial stages ³.

There are more prenatal cases of HIV in low-income countries than in high-income countries ⁴. According to the World Health Organization, in 2022, there will be a significant increase in HIV infection among pregnant women in Indonesia ⁵. By 2021, the number of HIV-positive pregnant mothers was 4,396 ⁶, with a significant rise by 2022 to 8,769 ⁷. Babies infected with HIV in January–March 2022 in Indonesia included as many as 20 babies out of a total of 358 babies tested for HIV (early infant diagnosis) ⁸. A total of 680,270 pregnant women were tested for HIV from January to March 2023, and 2133 pregnant women were found to be HIV-positive. Out of the total number of HIV-positive mothers, only 17% were treated with ARV. Data from Ministry of Health of the Republic of Indonesia also showed the number of babies born alive from HIV-positive mothers: as many as 134 babies, and 26 of them had ARV ⁹. Knowledge has a big impact on a person's mindset and behaviors. According to previous study, most expectant mothers are unwilling to get routine HIV tests and are uninformed of mother-to-child transmission (MTCT) ¹⁰. Ethiopian research conducted by Yeshaneh demonstrates the continued poor level of awareness, attitudes, and behaviors surrounding the prevention of HIV vertical transmission. Pregnant women must so gain a deeper awareness of the prevention of HIV transmission from mother-to-child in order to enhance their own knowledge and comprehension of the subject ¹¹. Knowledge is the most influential factor in a mother's behaviour in preventing mother-to-child transmission of HIV ¹².

In order to reduce the rising rate of HIV transmission from mother to child, Ministry of Health of the Republic of Indonesia has implemented a triple elimination strategy in accordance with WHO guidelines ¹³. Triple elimination refers to the use of ANC on pregnant women in order to implement tests for syphilis, hepatitis B, and HIV ¹⁴. The WHO criteria, which include the quality of comprehensive antenatal services and early detection activities of hepatitis B, HIV, and syphilis, are already met by the triple elimination programme in Putat Jaya, Dupak, and Perak Timur Community Health Centres ¹⁵. Based on the background above, it is necessary to study the relationship between characteristics with knowledge of pregnant women towards prevention of mother-to-child HIV transmission because there are still high cases of transmission of HIV from mother-to-child, and knowledge of mothers is one of the most influential factors in prevention of mother to child HIV transmission.

2. Methods

This research is an observational analytical study with a cross-sectional approach carried out at the Putat Jaya, Morokrembangan, Perak Timur, Pucangsewu, Kalirungkut, and Tanah Kali Kedinding Community Health Centres, Surabaya City, from August to October 2023. The research data uses primary data obtained through filling out questionnaires carried out by respondents themselves using printed questionnaires and Google Forms. The population of this study was pregnant women in the working areas of the Putat Jaya, Morokrembangan, Perak Timur, Pucangsewu, Kalirungkut, and Tanah Kali Kedinding Community Health Centres in Surabaya, and a sample of 235 people was obtained. The sampling method used in this research was purposive sampling. Data collection in this study used a questionnaire containing data on respondent characteristics and questions about HIV and preventing mother-to-child transmission of HIV. Then the data from filling out the questionnaire was processed using SPSS 25 by analysing univariate and bivariate data.

3. Results

The data collection covered 235 pregnant women in all, with a 100% response rate. Data from 235 respondents were thus used into the analysis. The distribution of frequency characteristics of respondents obtained from the data collection carried out by the researchers can be seen in the following table:

Table 1 Socio-Demographic Characteristics of Pregnant Women Attended ANC at Community Health Centers in Surabaya, August-October 2023

Characteristics	Pregnant women's knowledge about PMTCT						Total	
	Good		Sufficient		Poor			
	f (n=60)	%	f (n=116)	%	f (n=59)	%	f (n=235)	%
Age								
<20 years old	0	0%	4	1.7%	3	1.3%	7	2.9%
20-35 years old	56	23.8%	100	42.5%	48	20.4%	204	86.8%
>35 years old	4	1.7%	12	5.1%	8	3.4%	24	10.2%
Total	60	25.5%	116	49.4%	59	25,1%	235	100%
Educational status								
Primary school	1	0.4%	7	2.9%	6	2.5%	14	5.9%
Junior high school	3	1.3%	12	5.1%	6	2.5%	21	8.9%
Senior high school	36	15.3%	53	22.5%	33	14%	122	51.9%
Bachelor/Diploma	20	8.5%	44	18.7%	14	5.9%	78	33.2%
Total	60	25.5%	116	49.4%	59	25,1%	235	100%
Source of information								
Health workers	25	10.6%	37	15.7%	17	7.2%	79	33.6%
Internet/Mass media	28	11.9%	51	21.7%	22	9.3%	101	42.9%
Friends	4	1.4%	15	6.4%	7	2.9%	26	11%
Others	3	1.3%	13	5.5%	13	5.5%	29	12.3%
Total	60	25.5%	116	49.4%	59	25,1%	235	100%
Gravidity								
Primigravida	30	12.7%	57	24.2%	29	12.3%	116	49.3%
Multigravida	29	12.3%	57	24.2%	30	12.7%	116	49.3%
Grandemultigravida	1	0.4%	2	0.8%	0	0%	3	1.3%
Total	60	25.5%	116	49.4%	59	25,1%	235	100%
Occupation								
Housewife	35	14.9%	51	21.7%	28	11.9%	114	48.5%
Farmer/Laborer	1	0.4%	1	0.4%	1	0.4%	3	1.3%
Bussinessman/Entrepreneur	8	14.9%	15	6.4%	10	4.2%	33	14%
Employer	10	4.2%	28	11.9%	13	5.5%	51	21.7%
PNS/TNI/POLRI	1	0.4%	15	6.4%	4	1.7%	20	8.5%
Others	5	2.1%	6	2.5%	3	1.3%	14	5.9%
Total	60	25.5%	116	49.4%	59	25,1%	235	100%
Ethnicity								
Javanese	37	15.7%	72	30.6%	29	12.3%	138	58.7%
Maduranese	5	2.1%	22	9.3%	15	6.4%	42	17.8%

Sundanese	14	5.9%	14	5.9%	12	5.1%	40	17%
Others	4	1.7%	8	3.4%	3	1.3%	15	6.4%
Total	60	25.5%	116	49.4%	59	25,1%	235	100%
Monthly income								
Have no income	26	11%	42	17.8%	21	8.9%	89	37.9%
<Rp1500000	8	3.4%	9	3.8%	6	2.5%	23	9.8%
Rp1500000-Rp2500000	14	5.9%	41	17.4%	17	7.2%	72	30.6%
>2500000	12	5.1%	24	10.2%	15	6.4%	51	21.7%
Total	60	25.5%	116	49.4%	59	25,1%	235	100%

Of all respondents, 7 (2.9%) were in the <20 age group, 204 (86.8%) were in the 20-35 age group, and 24 (10.2%) were in the >35 age range. At the time of data collection, more than half (51.9%) of the pregnant women had attended senior high school, and 33.2% of them had attended college or university. Most participants (42.9%) got information about HIV and PMTCT from the internet/mass media. Participants with primigravida and multigravida status had the same proportion, namely 49.3%. Housewives accounted for 48.5 % of the respondents, with employers coming in second with 51 (21.7%) and entrepreneur with 33 (14%). The majority ethnic group [138 (58.7%)] was Javanese, followed by Maduranese [42 (17.8%)]. 37.9% of the respondents had no income at all, while 30.6% of them made more than 1.5 million until 2.5 million Rupiahs per month.

3.1. Triple elimination program

Putat Jaya, Morokrembangan, Perak Timur, Pucangsewu, Kalirungkut, and Tanah Kali Kedinding Community Health Centres in Surabaya have implemented triple elimination programmes in accordance with the rules of the Kemenkes RI and is a program recommended by the WHO to counter increased transmission of HIV from mother to baby. Here is the coverage of triple elimination screening examination obtained from data collection by the researchers:

Table 2 Coverage triple elimination examination in Putat Jaya, Morokrembangan, Perak Timur, Pucangsewu, Kalirungkut, and Tanah Kali Kedinding Community Health Centres in Surabaya, August-October 2023

Triple elimination screening	F (n=235)	Percentage
Been checked	197	83.8%
Hasn't been checked	38	16.2%
Total	235	100%

Table 3 Results of a bivariate analysis investigating the correlation between characteristics of participants and knowledge regarding the prevention of mother-to-Child transmission of HIV

Participants' characteristics	Knowledge about PMTCT
	(P-Value)
Age	0.735
Educational status	0.066
Source of information	0.087
Gravidity	1
Occupation	0.308

From table 2 it can be seen that the majority of respondents (74.3%) have already undergone triple elimination screening which is now a mandatory government program for pregnant mothers to screen for infectious diseases such as HIV, syphilis, and hepatitis B.

The results of bivariate analysis show that there is no correlation between participants' characteristics and their knowledge about Prevention of Mother-To-Child HIV Transmission.

Table 4 Percentage of pregnant women's answer on the knowledge scale about HIV and prevention of mother-to-child transmission

Questions	Answers	
	Yes	No
Can pregnant women be infected with HIV?	184 (78.3%) ^{CA}	51 (21.7%)
Can HIV be transmitted through:		
Hand shake or hugging	44 (18.7%)	191 (81.3%) ^{CA}
Kissing	157 (66.8%)	78 (33.2%) ^{CA}
Foods and beverages	104 (44.3%)	131 (55.7%) ^{CA}
Sexual intercourse	232 (98.7%) ^{CA}	3 (1.3%)
Mosquito bites	64 (%)	171 (72.8%) ^{CA}
Can HIV be transmitted from mother-to-child during pregnancy?	190 (80.9%) ^{CA}	45 (19.1%)
Can HIV be transmitted from mother-to-child during labor?	154 (65.5%) ^{CA}	81 (34.5%)
Can HIV be transmitted from mother-to-child during breastfeeding?	159 (67.7%) ^{CA}	76 (32.3%)
Is the treatment (ARV) given to pregnant mothers during pregnancy an attempt to prevent the transmission of HIV from mother to baby?	196 (83.4%) ^{CA}	39 (16.6%)
Is cesarean birth an attempt to reduce the risk of transmission of HIV from mother-to-child?	110 (46.8%) ^{CA}	125 (53.2%)

*CA: Correct answer

From the respondents' answers, it can be seen that majority of respondents answered the question correctly, however there are still many who do not know that HIV is not transmitted through kissing. Table 4 shows that there are still many respondents who don't know that HIV can also be transmitted from mother-to-child during pregnancy, childbirth, and breastfeeding. More than half of the respondents (53.2%) also didn't know that caesarean delivery was an effort to reduce the risk of HIV transmission from mother-to-child.

4. Discussion

Comprehensive HIV prevention efforts must improve the understanding of HIV among reproductive populations, particularly among pregnant women who reside in marginal areas where HIV infection is more common. The results of this study show that pregnant women generally have sufficient knowledge about HIV transmission from mother-to-child. A study showed results that are not consistent with this study. The results of the Manjate study concluded that there is a meaningful relationship between the age of respondents and their knowledge of PMTCT, with a p value of 0.040¹⁶. Women in the 30-35 age group have a higher level of consciousness than other groups. This is due to the fact that media sources provide more information than healthcare providers¹⁷. This study shows that most respondents have a sufficient level of knowledge about PMTCT. Age is no longer a factor influencing knowledge or a key determining factor in determining the high or low level of knowledge of respondents. Knowledge can be acquired in a variety of ways, such as through experience or through non-formal learning.

This study show that the respondents well-known majority last educated high school level. According to bivariate analysis, a p-value of 0.066 ($p > 0.05$) was obtained shows that there is no correlation between respondents' educational status with a level of knowledge about PMTCT. The absence of a relationship or influence between an individual's education and knowledge about HIV is due to the lack of awareness of respondents in searching for information about

HIV/AIDS¹⁸. This study is inconsistent with the previous study by Hafeez, 2021 show that there is a correlation between education and mother's knowledge of sexually transmitted infections. That's because education has a direct impact on the level of awareness of a more educated person so that they better understand the issue of STD¹⁹. Educated women can easily understand the health education they receive compared to uneducated women²⁰. This research is also inconsistent with the theory that reveals that through the formal education process, individuals are taught to identify problems, analyze situations, and find solutions or possible alternatives in addressing them²¹.

The majority of respondents obtained information about HIV and its prevention from the mass media because it was easy to access and quickly affected the general public, including pregnant mothers²². The mass media can be a very useful means of providing information to those with low education²³. Based on research conducted by Remijawa, 2022 shows results of bivariate analysis that there is a relationship between the sources of information used by respondents and knowledge²⁴. Research by Leziak in 2021 shows that there are three areas related to the knowledge and attitudes of respondents, namely type knowledge, sources of information, and perspectives on people with HIV. There are three types of information sources used by respondents in the research, namely literature or education, media broadcasts, and information by word of mouth²⁵.

Based on the results of the Spearman statistical test, a p-value was obtained 1 ($p > 0.05$), which means there is no significant relationship between gravidity with the level of knowledge of pregnant women regarding PMTCT. This research is consistent with previous study, which shows the results of the bivariate analysis obtained a p value of 0.077, which means there is no relationship between gravidity and the level of knowledge of pregnant women regarding HIV transmission²⁶. There is no relationship between gravidity and pregnant women's knowledge about HIV/AIDS because they think pregnancy is a normal thing, and pregnant women do too have a lot of experience and knowledge about pregnancy so that they no longer feel the need to regularly attend counseling during pregnancy²⁷. Women who already have experience in pregnancy, childbirth, and has attended more ANC or PNC, then has earned more There is a lot of education about PMTCT in health service facilities. Woman those who have been pregnant and given birth have more knowledge better compared to those who have never been pregnant and do ANC in health care facilities. This is in accordance with the research results previously, the presence of pregnant women during ANC was related with a higher chance of knowledge about PMTCT²⁸.

Previous research indicates that the work occupied by someone does not have significant influence on knowledge about HIV. That matter this is because in the work environment, it is very rare or almost non-existent have provided or disseminated information about HIV and how it is transmitted and prevented²⁹. Other study shows that there is no relationship between occupation and level of knowledge that someone has¹⁸. Most of the respondents are housewives and doing daily activities at home. This situation does not make pregnant women to obtain information about HIV and PMTCT as well. Information about HIV and PMTCT can be obtained in various ways such as from the media or counseling from health workers.

4.1. Limitation

Respondents who participated in this research were pregnant women who filled out the questionnaire at the time of the antenatal care visit, so that the pregnant women who do not visit the community health centres for ANC then the knowledge of pregnant women is not assessed. However, researchers believe that this research makes an important contribution to the description of pregnant women's knowledge also better knowledge and understanding of pregnant women regarding HIV prevalence, PMTCT and triple elimination screening in Surabaya.

5. Conclusion

This research shows that less than half of respondents, namely 49.4%, have sufficient knowledge, 25.5% of respondents have good knowledge, and the other 25.1% of respondents have insufficient knowledge about preventing mother-to-child transmission of HIV (PMTCT) at the Putat Jaya, Morokrembangan, Perak Timur, Pucangsewu, Kalirungkut, and Tanah Kali Kedinding Community Health Centres in Surabaya. Putat Jaya, Morokrembangan, East Perak, Pucangsewu, Kalirungkut, and Tanah Kali Kedinding Community Health Centres have implemented a triple elimination screening programme according to WHO recommendations, with triple elimination screening coverage of 83.8% of the total respondents. The findings also discovered that pregnant women's knowledge was unrelated to age, education, source of information, gravidity, occupation, ethnicity, and their monthly income.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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