

Analysis of the Level of Knowledge and Perceptions of Pregnant Women Regarding the PMTCT Program in Antenatal Services in Bukittinggi City

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DOI: <https://doi.org/10.52403/ijrr.20231229>

ABSTRACT

The problem with Prevention of mother to Child Transmission (PMTCT) among pregnant women in Bukittinggi City is that there are still many pregnant women who do not carry out HIV tests. In 2021 K1 coverage is 95% but HIV screening coverage is only 45%, this shows that there are still many pregnant women who do not know their HIV status even though they have visited a health service facility. The aim of this research is to analyze the relationship between the level of knowledge and perceptions of pregnant women regarding the implementation of PMTCT. This research is a mix method study with systematic random sampling of 100 respondents. The results of bivariate analysis show the level of knowledge ($p = 0.199$), perceived vulnerability ($p = 0.054$), perceived severity ($p = 0.916$), perceived benefits ($p = 0.993$), perceived barriers ($p = 0.360$), perceived threats ($p = 0.669$) is not related to the implementation of PMTCT. Perception of cues to action ($p=0.035$) and support from health workers ($p=0.007$) were related to the implementation of PMTCT. Meanwhile, the results obtained from the multivariate analysis showed that the most significantly related variable was health workers ($p = 0.005$). Conclusion: The support provided by health workers is socialization and counseling, but not all health workers providing antenatal care have implemented this. Suggestions for Community Health Centers to optimize the implementation of counseling before and after HIV testing and for the Health Service to actively monitor the

implementation of integrated ANC for all health workers providing antenatal care.

Keywords: Knowledge, perception, pregnant women

INTRODUCTION

WHO noted that in 2021, the number of people with HIV/AIDS or known as ODHA, namely people who are suffering from HIV/AIDS, will be around 38.4 million. 157,000 of them were HIV infections in children acquired from their mothers. It is estimated that infections in children caused by HIV positive women who do not receive antiretroviral therapy are around 75,000, HIV infections that occur when mothers cannot continue treatment during pregnancy or breastfeeding are around 34,000, HIV infections that occur because HIV-infected women skip the Prevention of Mother to Child Transmissions (PMTCT) program are around 35,000 and vertical infections that occur because the mother receives treatment but does not experience viral suppression are around 13,000(1). ODHA in Indonesia reached 493,118 people as of September 2022. HIV cases in pregnant women have increased. In 2021, of the 2,485,430 pregnant women who were tested for HIV, 4,466 (0.18%) pregnant women were HIV positive, while in 2022 (until September) of the 1,920,712 pregnant women who were tested for HIV, 4,256 (0.22%) of pregnant

women are HIV positive (2). from data from the West Sumatra Provincial Health Service, it is recorded that until September 2022 the number of HIV AIDS sufferers is 4,734 people (3). So West Sumatra is in position 15 to 20 of all provinces in Indonesia. During 2021, 45,272 pregnant women were examined, and 37 pregnant women were found to be HIV positive in West Sumatra Province (0.08%) (4). In Bukittinggi City, the number of HIV cases has increased, from 27 cases in 2021 to 56 cases in 2021. in 2022. The total number of cases discovered or people with HIV AIDS who are taking anti-retroviral therapy (ODHA on ART) is 325 cases. So Bukittinggi City is in 2nd place with the most cases found in West Sumatra Province. Of the 325 ODHA, 21 (6%) were pregnant women. In 2022, of the 1,116 pregnant women examined, (0.26%) pregnant women were found to be HIV positive (5).

90% of HIV/AIDS transmission to children occurs due to maternal infection from mother to child during pregnancy and breastfeeding. (Mandal, Wilkins, and Dunbar 2008) The rate of HIV transmission from mother to child ranges from 18 to 23% and increases by 25- 69% of new HIV infections in children (6). The impact if a child is infected with HIV is that the child will experience several risk factors that can hinder the achievement of the child's developmental potential. Some of the risks that babies infected with HIV will experience are premature birth, pneumonia, diarrhea which is more severe than children in general, being susceptible to infectious diseases such as tuberculosis (7) and even causing death (8). In Yani's research et al (2006) from 85 children who were diagnosed with HIV, looking at the pattern of the course of the disease, the results showed that 47.3% of children suffered from TB, 44.7% from pneumonia, 13.1% from pneumocytis corinii pneumonia (PCP), then 15.2% died (9). Apart from that, babies who are cared for by mothers who experience health problems, both physical and mental, will cause the child's

development to be disrupted so that children with HIV become less independent and do not get the opportunity to interact with other children and people. adults in their environment (10). In Noviasi's (2022) research, it was found that growth disorders occurred in HIV children due to lack of nutrition (11). Apart from that, children with HIV AIDS often experience violence. as well as discrimination from society (12).

Transmission of HIV from mother to child is seen as a certain thing, but scientifically this can be prevented by reducing the amount of active virus, which in biomedical terms is called the viral load, and at the same time increasing Helper T-Cells (CD4). This can be done by giving the mother antiretroviral (ARV) during pregnancy and breastfeeding (13). Every pregnant woman who is found to be HIV positive must receive ARV treatment to reduce the amount of virus in her body. In developed countries, the risk of a child contracting HIV from their mother has been reduced by more than 90%. This is due to the availability of optimal PMTCT services. However, in developing or poor countries, with minimal access to intervention, the risk of transmission is higher, reaching 40% (14).

MATERIALS & METHODS

This research uses a mix method study approach or a combination of two types of research, namely quantitative research and qualitative research. The type of mix method study design used is explanatory sequential design. This research design is dominated by quantitative research with a cross sectional study design carried out in the first stage, followed by qualitative research in the second stage. The research was carried out in Bukittinggi City West Sumatra Province in 2023. This research starts from September 2022 to August 2023. Data analysis in research using a quantitative approach consists of univariate analysis, bivariate analysis and multivariate analysis. The final result of research using a quantitative approach is the knowledge of

the frequency distribution of knowledge, perception (perception of vulnerability, perception of severity, perception of benefits, perception of threat, perception of obstacles and signals for action), support from health workers and the frequency distribution of PMTCT behavior, the variables related to the implementation of PMTCT are known. in pregnant women who receive antenatal care in Bukittinggi City and determine the variables that are most related to the implementation of PMTCT in pregnant women who receive antenatal care in Bukittinggi City. Data analysis in research using a qualitative approach is carried out to find out in depth things related to the most dominant or most significant variables. This research was carried out after the issuance of ethical clearance by the research ethics commission

of the Andalas University medical faculty with number 281/UN.16.2/KEP-FK/2023.

STATISTICAL ANALYSIS

The data that has been collected by the researcher is then analyzed using univariate analysis to see the frequency distribution and bivariate analysis to find out the relationship between the independent variable and the dependent variable and multivariate analysis to see the most related factors which are then carried out in-depth qualitative research.

RESULT

Quantitative research results

The following table shows the frequency distribution of the characteristics of the research respondents:

Table 1 Frequency Distribution of Respondent Characteristics

Respondent Characteristics	Frequency (n)	Percentage (%)
Respondent's Age		
Reproductive Age	84	84
Non-Reproductive Age	16	16
Education		
High	87	87
Low	13	13
Job		
Work	22	22
Not Working	78	78

Based on table 1, you can see the frequency distribution of characteristics of respondents in Bukittinggi City according to age, showing that the majority of respondents are of reproductive age, namely 21-35 years with a total of 84 respondents, according to education, showing that the most respondents' education is higher education

with 87 respondents, while according to occupation, the largest number of respondents were respondents who did not work with a total of 78 respondents.

The following shows the results of the univariate analysis frequency distribution study:

Table 2 Univariate Analysis

Variable	Category	Frequency (n)	Percentage (%)
Utilization of VCT	No HIV test	44	44
	HIV test	56	56
Knowledge	Not good	53	53
	Good	47	47
Perception of Vulnerability	Negative	61	61
	Positive	39	39
Perception of Severity	Negative	54	54
	Positive	46	46
Perception of Benefits	Negative	33	33
	Positive	67	67
Perception of Barriers	Negative	76	76
	Positive	24	24
Threat Perception	Negative	49	49
	Positive	51	57
Perception Cues to action	Negative	21	21

	Positive	79	79
Health Worker Support	Negative	43	43
	Positive	57	57

Based on table 2, it can be seen that almost half (44%) of pregnant women do not carry out PMTCT, most (53%) of pregnant women have a poor level of knowledge, most (61%) of pregnant women have a negative perception of vulnerability, most (54%) respondents had a negative perception of severity (54%), Most (67%) of respondents had a positive perception of

benefits and almost all respondents (76%) had a negative perception of barriers (76%). the majority (51%) of respondents had a positive threat perception, almost all respondents had a positive perception of action cues (79%) and the majority (57%) of respondents had positive health worker support.

Table 3 Bivariate Analysis of Knowledge Level with PMTCT Implementation

Knowledge level	Implementation of PMTCT				Amount		P Value	OR (0,821-4,089)
	No HIV test		HIV test		f	%		
	f	%	F	%				
Not good	27	50,9	26	49,9	53	100	0,199	
Good	17	36,2	30	63,8	47	100		
Amount	44	44	56	56	100	100		

Based on table 3, it can be seen that the level of knowledge of respondents who have a poor level of knowledge tend not to carry out an HIV test (50.9%) compared to respondents who have a good level of knowledge (36.2%). However, statistically this difference is not significant (p=0.199). This shows that statistically there is no relationship between the level of knowledge and the implementation of PMTCT for

pregnant women in antenatal services in Bukittinggi City in 2023.

Based on the POR value, the level of knowledge is a risk factor. Pregnant women who have a poor level of knowledge are 1.833 times more likely to not carry out PMTCT than someone who has a good level of knowledge and pregnant women with a good level of knowledge are 4.089 times more likely to carry out an HIV test than mothers with a poor level of knowledge.

Table 4 Bivariate analysis of health worker support with PMTCT implementation

Health Worker Support	Implementation of PMTCT				Amount		p Value	OR (CI 95%)
	No HIV test		HIV test		f	%		
	F	%	F	%				
Negative	26	60,5	17	39,5	43	43	0,007	
Positive	18	31,6	39	68,4	57	57		
Amount	44	44	56	56	100	100		

Based on Table 4, it can be seen that respondents who have negative health worker support are less likely to carry out an HIV test (60.5%) compared to respondents who have positive health worker support (31.6%). Statistically (p=0.007) this

difference is significant. This shows that there is a relationship between support from health workers and the implementation of PMTCT in antenatal services in the work area of the Bukittinggi City Health Service in 2023

Table 5 Bivariate Analysis of Perception Levels with the Implementation of PMTCT

Perception of Vulnerability	Implementation of PMTCT				Amount		p Value	OR (CI 95%)
	No HIV test		HIV test		f	%		
	f	%	F	%				
Negative	32	52,5	29	47,5	61	100	0,054	
Positive	12	30,8	27	69,2	39	100		
Amount	44	44	56	56	100	100		
Perception of Severity	Implementation of PMTCT				Amount	p Value	OR	

	No HIV test		HIV test				(CI 95%)	
	f	%	F	%	f	%		
Negative	23	42,6	31	57,4			0,916 0,883 (0,400-1,950)	
Positive	21	45,7	25	54,3				
Amount	44	44	56	56				
Perception of Benefits	Implementation of PMTCT				Amount		p Value	OR (CI 95%)
	No HIV test		HIV test					
	f	%	F	%	f	%		
Negative	16	48,5	17	51,5	33	100	0,675 1,311 (0,567-3,030)	
Positive	28	41,8	39	58,2	67	100		
Amount	44	44	56	56	100	100		
Perception of Barriers	Implementation of PMTCT				Amount		p Value	OR (CI 95%)
	No HIV test		HIV test					
	f	%	F	%	f	%		
Negative	31	40,8	45	59,2	76	100	0,250 0,583 (0,231-1,469)	
Positive	13	54,2	11	45,8	24	100		
Amount	44	44	56	56	100	100		
Threat Perception	Implementation of PMTCT				Amount		P Value	OR (CI 95%)
	No HIV test		HIV test					
	f	%	F	%	f	%		
Negative	20	40,8	29	27,4	49	100	0,669 0,776 (0,352-1,713)	
Positive	24	47,1	27	52,9	51	100		
Amount	44	44	56	56	100	100		
Perception of Action Cues	Implementation of PMTCT				Amount		P Value	OR (CI 95%)
	No HIV test		HIV test					
	f	%	F	%	f	%		
Negative	20	40,8	29	27,4	49	100	0,035 3,267 (1,184-9,011)	
Positive	24	47,1	27	52,9	51	100		
Amount	44	44	56	56	100	100		

Based on table 5 in the bivariate analysis, if it is not controlled by other variables, the level of perception of vulnerability (p value = 0.054), the level of perception of severity (p value = 0.916), the level of perception of benefits (p value = 0.675), the level of perception of obstacles (p value = 0.250) and the level of threat perception (p value = 0.669) has a p value of more than 0.05,

statistically this shows that there is no significant relationship with the implementation of PMTCT in antenatal services in Bukittinggi City. Meanwhile, the level of perception of action cues (p value = 0.035) has a p value of more than 0.05, so statistically this shows that there is a significant relationship.

Table 6 Bivariate Selection for Multivariate Analysis

PMTCT	OR Value	95% CI		p Value
		Lower	Upper	
Knowledge level	1,918	0,787	4,672	0,152
Perception of vulnerability	2,251	0,897	5,562	0,084
Cue to action	1,721	0,556	5,323	0,346
Health worker support	3,386	1,347	8,346	0,008

Based on table 6, it can be seen that there are 4 variables whose p-value is <0.25, namely level of knowledge, perception of vulnerability, cues to action and support from health workers. These four variables can be continued into the multivariate modeling stage. Meanwhile, test results with a p-value >0.25 cannot be continued into multivariate.

Based on table 7, it can be seen that the results of the multivariate analysis show that the health worker support variable is the most significant variable related to the

implementation of PMTCT in antenatal services in the work area of the Bukittinggi City Health Service in 2023 with a POR value of 3.741 and 95% CI (1.554-9.005).

2. Qualitative research results

Socialization

Based on the results of interviews conducted, 3 out of 5 pregnant women stated that health workers had socialized the PMTCT program in pregnant women's classes. The pregnant woman's statement was also supported by information from

cadres, as explained by the following informant:

"I always come along, if I don't need anything... I'll definitely come. It was announced in the group with midwives and cadres".

"Yes, there was counseling about HIV AIDS but I forgot what month. no, not every month" (Inf-1).

"Yes, there is, ma'am. But I don't remember anything about HIV AIDS. Is there any or not, it's not clear... because there are a lot of children too" (inf-3)

"O...If there's a lot of counseling, take turns from the women from the puskesmas. We were told about the dangers of pregnancy, how to process food, sometimes there were also exercises for pregnant women. HIV AIDS " (inf-4)

"Yes, there was counseling at that time. I don't know about HIV AIDS but I've been in the field before. "If you're in a pregnant women's class, just ask for a test at the puskesmas, right?" (inf-5)

Meanwhile, according to cadres (inf-6), PMTCT socialization activities by health workers were carried out in pregnant women's class activities.

"There is, sir, but we are not the ones doing the counseling. The women from the community health center took turns providing counseling. "In the beginning...it's still good, listen to all the pregnant women...but when it's the last time, the behavior will start to change, not to mention the child crying..." (Inf_6).

"There is, there is always socialization in class for pregnant women, it doesn't take long, Sis. does not specifically contain about HIV AIDS or the PMTCT program. It's only included in health education activities for pregnant women. There continues to be

counseling every month, if I just collect it, call the cadres to contact pregnant women, then the people who give the counseling are people from the community health center... there is already a team. There are sometimes HIV AIDS themes, depending on the schedule of the community health center".(Inf-7)

"There is counseling about HIV AIDS, but not every month, because there is a lot of counseling material that we have to convey to pregnant women, so in one month we can only provide a maximum of 3 counseling sessions, and that's all. Pregnant women are already anxious" (Inf- 9).

"Our education about HIV AIDS focuses on key populations and school children because they are the nation's next generation of young people. If it is for pregnant women, it has become a triple elimination program so every activity of the pregnant class must also include HIV AIDS or PMTCT material" (Inf-10).

"When it comes to outreach to the community, of course our friends at the community health center will coordinate it. For us, the health department is providing outreach to clinics... because they accept pregnant women... so they need to know about the PMTC target problem (Inf-11)

"For outreach activities, the reports don't go to the university anymore... that is included in the health promotion program, right? If the activities are entirely in the puskesmas, wherever it is, responsible for the KIA program with PJ HIV and also responsible for health promotion programs who plan and implement it... (Inf-12).

Counseling

Furthermore, the informant said that he did not receive counseling about HIV testing for pregnant women. When carrying out HIV testing, pregnant women do not receive counseling about what tests will be carried out, what their purpose is and what the

impact will be if the baby is infected with HIV while in the womb. In accordance with the results of in-depth interviews with informants below:

"At the Puskesmas, it's not far. They were told to bring the KIA book, when they arrived at the health center they went straight to the KIA polyclinic, they were examined and then they were told to go to the laboratory, after that they were told the results. I'm all negative... Thank God, my heart is calm" (Inf-1)

"At the Puskesmas, sir... it's the same as at the health post, there are blood tests, sir. the results came out the same day, quickly. and immediately tell you the results. negative. Yes, the results are recorded in the KIA book."

"What... I don't remember anything, I was only told the results. Then there will be no more counseling because the results are already negative, right? good means yes" (Inf-2)

"When I took the test, I told him to go straight to the laboratory. "After the test, I was immediately told the result. Yes, it was negative, thank God. What was it, sir, just calm down... We weren't told anything else" (inf-3)

Based on information obtained from health workers providing antenatal care, it is known that HIV counseling and testing is carried out at the Community Health Center, as stated by the following informant:

"Yes... if a pregnant woman comes for ANC (Antenatal Care) we will immediately send her to the laboratory at the puskesmas to have her blood checked. We also have meetings every month with pregnant women, there we will ensure whether all pregnant women have had an HIV test" (Inf-7)

"There...uni told me to go to the puskesmas. but yes, sometimes the same patient doesn't come back again..." (Inf-8)

Regarding the SOP for ANC services, information was obtained from interviews as follows:

"We didn't make our own SOP, sis, but used the community health center's SOP. there are. It's just not attached. where is it... there are quite a lot of patients so I have memorized it" (Inf-7)

"No, there aren't many patients either, sis, so the clinic itself just serves it... you're healthy, the pregnant women who come here... give birth smoothly too. I rarely refer" (Inf-8)

"No, usually pregnant women just want to do it when they arrive at the health center, we ask pregnant women to do laboratory tests for 3 diseases, Hepatitis, Syphilis and HIV. "We don't have time to be counseled one by one...there are a lot of patients...but if someone looks confused, we will counsel them first...so that they don't hesitate to get tested" (inf-9)

"We counsel patients who are sent to the VCT clinic both pre-test and post-test, whether they want to be pregnant or not pregnant... if they arrive at the VCT clinic, we do counseling" (inf-10)

DISCUSSION

The results of this study are not in line with research conducted by Astuti (2017) which states that there is a relationship between the level of knowledge of pregnant women about HIV/AIDS and VCT and attitudes towards voluntary HIV/AIDS counseling and testing at the Karangdoro Health Center Semarang (15) however This is in line with research by Nurmasari and Hati (2015) which states that there is no relationship between the level of knowledge of pregnant women about HIV/AIDS and their PITC (Provider Initiated Test and Counseling) Test Behavior at the Sleman Yogyakarta Community Health Center (16).

The results of this research are in line with research conducted by Putri et al (2021)

which states that there is a relationship between perceived vulnerability and HIV testing in pregnant women in the working area of the Panjang Health Center, Bandar Lampung City in 2020 (17) but it is not in line with with research by Wenny et al (2016) with the research title Factors that influence the participation of pregnant women in carrying out HIV screening at Yogyakarta health centers (18). This research did not find a significant relationship between perceived vulnerability and HIV testing in pregnant women. The negative level of perception of vulnerability of pregnant women can occur due to the mother's poor level of knowledge. Pregnant women do not know that a housewife, even if she does not engage in deviant behavior, needs to be tested for HIV because housewives are also at high risk of contracting HIV (19).

According to researchers, the level of negative severity of perceptions of pregnant women regarding the implementation of PMTCT that occurs can be caused by incorrect information received. The results of this study are in line with the research of Wenny et al. (2016) with the research title Factors that influence the participation of pregnant women in HIV screening at Yogyakarta health centers but are different from the research of Arniti et al., (2014) where mothers who have a high perception of severity are more likely to receive HIV testing than mothers who have a low perception of severity (20).

The results of this study are in accordance with research by Wenny et al (2016) which states that statistically there is no relationship between the perception of the benefits of HIV testing and the behavior of HIV testing in pregnant women (21) but is not in line with research by Putri et al (2021) which states that there is a relationship between the perceived benefits of HIV testing for pregnant women in the working area of the Panjang Health Center, Bandar Lampung City in 2020 (22). The results of this study are in line with research by Wenny, (2016) where there is no

relationship between perceived barriers and the use of VCT in high risk groups in Yogyakarta (Wahyuni, Widjanarko, and Shaluhiyah 2016) but are not in line with the results of research by Arniti et al., (2014).) which shows that there is a significant relationship between barriers and acceptance of HIV testing by pregnant women (20). The implementation of PMTCT will run well if health workers can find out what are the obstacles in the motivation of pregnant women in implementing PMTCT. If PMTCT can run well, the transmission of HIV/AIDS will be suppressed/reduced. According to researchers, a positive level of perceived threat does not increase pregnant women's interest in carrying out tests because perceived threat is not the only risk factor for pregnant women to carry out HIV testing. There are several factors that contribute to interest in carrying out VCT, including stigma, concerns about one's HIV positive status, lack of guarantee of client confidentiality, long distance to reach the VCT clinic, and the length of time it takes to return to the VCT clinic to see the test results (23).

The results of this research show that positive action cues are not a variable related to the implementation of PMTCT in antenatal services. This is not in line with the Health Belief Model theory of health behavior change which predicts that behavior is influenced by cues to action such as information, personal or family experience, advice from people closest to them and regulations. (Javaheri Tehrani et al. 2014) The results of previous research also illustrate the reasons. Housewives carry out HIV tests because they are advised by doctors, plan to have children and have information (24). The results of this study are in accordance with the results of research by Irmawati (2020) which shows that there is a relationship between the role of health workers and the participation of pregnant women in VCT examinations (25) but are not in line with research by Wenny et al., (2016) which states support from

health workers and behavior of pregnant women in HIV testing is not statistically significantly related (21). Based on the results of in-depth interviews, it is known that all the health support provided is socialization, counseling before and after HIV testing and giving advice by health workers. However, not all health workers provide positive support because not all antenatal services can carry out HIV tests.

CONCLUSION

Based on research results, it is known that almost half of pregnant women do not carry out PMTCT in antenatal care. Most pregnant women have poor levels of knowledge, negative perception of vulnerability, negative perception of severity, positive perception of benefit, positive perception of threat, positive support from health workers and almost all respondents have negative perception of obstacles and perception of positive cues to action. There is a significant relationship between the perceived level of vulnerability and support from health workers and the implementation of PMTCT in antenatal services in Bukittinggi City. The variable that is most significantly related to the implementation of PMTCT is support from health workers in the form of socialization of PMTCT, counseling before and after HIV testing and giving recommendations by health workers which have not been carried out by all health workers providing antenatal care.

Declaration by Authors

Ethical Approval: This research has received ethical approval from the ethics committee of the Faculty of Medicine Universitas Andalas with number 281/UN.16.2/KEP-FK/2023.

Acknowledgement: None

Source of Funding: None

Conflict of Interest: The authors declare no conflict of interest.

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- How to cite this article: Septi Sholehawati, Delmi Sulastri, Hardisman. Analysis of the level of knowledge and perceptions of pregnant women regarding the PMTCT program in antenatal services in Bukittinggi city. *International Journal of Research and Review*. 2023; 10(12): 252-261. DOI: <https://doi.org/10.52403/ijrr.20231229>
