

BARRIERS TO EARLY DETECTION OF HIV/AIDS IN PREGNANT WOMEN IN MEDAN HELVETIA SUB-DISTRICT MEDAN CITY 2023

Martalena Br S Kembaren¹, Ida Yustina², Nurmaini³, R Kintoko Rochadi⁴, Fikarwin Zuska⁵, Fazidah⁶

¹⁻⁶ Faculty of Public Health, North Sumatera University

ABSTRACT

Pregnant women are one of the populations at risk of contracting Human immunodeficiency Virus (HIV), Syphilis, and Hepatitis B diseases in children more than 90% are infected from their mothers. The risk of mother-to-child transmission for HIV/AIDS is 20%-45%, for Syphilis is 69-80%, and for Hepatitis B is more than 90%. All three have the same transmission routes in the form of sexual intercourse, blood, and this transmission mostly occurs through vertical transmission from mother to fetus during pregnancy. Triple elimination is a program that aims to achieve and sustain mother-to-infant elimination of HIV/AIDS, Hepatitis B, and Syphilis in order to achieve better health for women, children, and their families through a coordinated approach. Detection and prevention of HIV incidence during pregnancy or postpartum should be prioritized and is essential to reduce mother-to-child transmission of HIV. In line with the increasing cases of mother-to-child HIV transmission, the government has made various control efforts through the PPIA or PMTCT (Prevention of Mother-to-Child Transmission) program. This research used field research to obtain qualitative data. Researchers go to the field to make observations about a phenomenon in a natural situation and are closely related to participant-observation. The results of the research obtained ANC services have been running well. Barriers to ANC access are related to cultural aspects and organizational systems that have not made maximum efforts to improve services, especially STIs (HIV/AIDS). At Puskesmas Helvetia, every pregnant woman will be directed to do HIV testing. Integrated ANC services have been running well. Routine technical training to improve obstetric competence for midwives and other supporting training needed as well as laboratory examination training for laboratory analysts (including STI and HIV/AIDS testing training) has been running well and systematically.

Keywords: Early detection, HIV & AIDS, pregnant women



Received : May 2, 2023

Received in revised form : May 20, 2023

Accepted : May 21, 2023

INTRODUCTION

Pregnant women are one of the populations at risk of contracting

Human immunodeficiency Virus (HIV), Syphilis, and Hepatitis B diseases in children more than 90% are transmitted from the mother. The risk of mother-to-

Correspondence : Martalena Br S Kembaren. Faculty of Public Health, University of North Sumatra. lenaskmb@gmail.com

child transmission for HIV/AIDS is 20%-45%, for Syphilis is 69-80%, and for Hepatitis B is more than 90%.¹ All three have the same transmission routes in the form of sexual intercourse, blood, and this transmission mostly occurs through vertical transmission from mother to fetus during pregnancy. Transmission of HIV, Syphilis, and Hepatitis B to the child from the patient's mother results in morbidity, disability, and death.² According to WHO data, in Southeast Asia in 2015 the HIV rate reached 5.1 million patients with 77,000 pregnant women living with HIV, and 19,000 new cases of pediatric HIV infection were discovered. This is a fantastic number compared to other regions. In Indonesia, the prevalence rate of the three diseases reached 0.39% for HIV, 1.7% for Syphilis and 2.5% for Hepatitis B.¹ With Indonesia's large population, these figures are still high, so more attention is needed to overcome them.

Triple elimination is a program that aims to achieve and sustain mother-to-infant elimination of HIV/AIDS, Hepatitis B, and Syphilis in order to achieve better health for women, children, and their families through a coordinated approach.³ According to John Dewey, education is a process of experience

(Efendi, 2015). The higher a person's level of education, the easier it is to receive information so that the more knowledge they have.⁴

Countermeasure activities have been carried out by the Ministry of Health of the Republic of Indonesia with a program called Triple elimination in accordance with WHO recommendations (2017). WHO argues that the transmission rate can decrease to below 5% from the supposed 15% with preventive activities. These activities are in the form of conducting HIV, Hepatitis B and Syphilis tests during Antenatal Care (ANC) for pregnant women. This must be done immediately considering the complications that will occur if there is transmission of the three diseases from mother to baby. The impact of HIV on pregnancy is very dangerous including prematurity, low birth weight babies, and the most severe is death.⁵ The baby himself, he will be born with a very low immunity disorder because he has HIV early on. Hepatitis B in pregnant women will also cause low birth weight (LBW), prematurity, congenital abnormalities, and death. Infants will also be at risk of liver disease from mild to severe.⁶ The triple elimination program has a target to reach zero by 2030 in accordance with what is

written in the Regulation of the Minister of Health of the Republic of Indonesia number 52 of 2017 concerning Elimination of Mother-to-Child Transmission of HIV, Syphilis and Hepatitis. The goal of triple elimination is to break the chain of transmission which is useful for achieving the 3 Zero targets, namely zero new infections (decrease in the number of new cases), zero death (decrease in mortality), zero stigma and discrimination (decrease in the level of discrimination). HIV, syphilis and hepatitis B elimination efforts are carried out together because they have relatively similar transmission patterns, namely through sexual intercourse, blood exchange or contamination and vertically from mother to child.

Research on STIs such as HIV, Syphilis and Hepatitis B in pregnant women, especially regarding the triple elimination program, is still minimal. Previous research conducted was only limited to the previous program, namely Prevention of HIV Transmission from mother to child (PPIA).^{7,8} Abroad, in the Netherlands, research has been conducted.⁹ The results suggest that the number of HIV, syphilis, and Hepatitis B infections is so low that it suggests WHO to revalidate the elimination program

because more data is needed in its implementation. Some recent studies that also focused on the profile of triple elimination programs have been conducted by several researchers abroad with many producing important information regarding the ongoing triple elimination.¹⁰

Detection and prevention of HIV incidence during pregnancy or postpartum should be prioritized and is essential to reduce mother-to-child transmission of HIV. In line with the increasing cases of mother-to-child transmission of HIV, the government has made various control efforts through the PPIA or PMTCT (Prevention of Mother-to-Child Transmission) program, namely conducting HIV testing in early pregnancy and following the prevention of HIV transmission from mother to baby is a series of efforts to control HIV / AIDS cases with the aim that babies born to HIV positive mothers are free from HIV, then mothers and babies remain alive and healthy.¹¹

Voluntary Counseling and Testing (VCT) is a confidential process of pre-testing counseling, post-testing counseling, and voluntary HIV testing that helps people know their HIV status earlier, which is important for prevention

and treatment. VCT is important for pregnant women because it aims to prevent HIV transmission from mother to child. Factors that greatly influence efforts to prevent HIV transmission from mother to baby Antenatal Care (ANC) services are the first step for pregnant women to have direct contact with health workers to prevent HIV transmission to babies.¹² Pregnant women who come to ANC services will indirectly need self-understanding of HIV status in order to prevent themselves from transmitting other infectious diseases and transmission to others. All pregnant women who come to ANC services will receive information on preventing HIV transmission during pregnancy and breastfeeding. In addition to ANC visits, other prevention efforts can be done by conducting HIV testing so that many HIV cases will be found and prevention of HIV transmission from mother to child can run optimally. HIV testing should be done for all pregnant women.

MATERIAL AND METHOD

This was descriptive qualitative research. Qualitative research can mean understanding a phenomenon about what the research subject experiences, for

example behavior, perceptions, motivations, actions, etc., holistically and by means of descriptions in the form of words and language in a special natural context and by utilizing various natural methods). The approach in this research was a phenomenological study that intends to explore a person's life experience or a method for studying how individuals subjectively feel experiences and provide meaning from these phenomenon.¹³ This research uses field research or field research to obtain qualitative data. Researchers go to the field to make observations about a phenomenon in a natural setting and are closely related to participant-observation.

The data collection instrument in this research was the researcher himself. Other data collection tools are interview guidelines, tape recorders, and notebooks. The researcher used snowball sampling technique to get the main informant. The researcher chose the first informant who was considered capable of explaining and connecting the researcher with the problem to be studied. The main informants in this study were midwives in MCH program holders, HIV program holders and 4 pregnant women. The MCH and HIV program holders were chosen because the problem was related to MCH

services, namely HIV/AIDS counseling and offering HIV/AIDS tests at ANC services. From the first informant, the researcher asked for recommendations for potential second informants who were considered to be able to provide information to the researcher. The next informant was selected based on the recommendation of the previous informant.

The number of informants was not limited from the start. In this research, data collection is considered sufficient or complete when no more data variations are obtained, or the data is considered saturated. The data analysis technique used is content analysis. Checking the truth/credibility in this research is by source triangulation. According to Moleong (2017)¹⁴, source triangulation is checking data through several sources. Data taken from the main informants, namely midwives and doctors, were checked by collecting data from pregnant women who had ANC.

RESULT

HIV and its Transmission

"Just doing the examination. At other puskesmas, there was no explanation about HIV, so I just got teste, I heard it

from outside, from friends. It was never explained here. They just do the examination. At other health centers, they don't explain about HIV, they just check it" (Pregnant Women 1)

"When I was in school, I knew it was usually people who had sexual intercourse, then from needles. But recently there are people in the neighborhood who are affected, but we also don't believe it because the people are healthy. He does a lot of exercise, so we were suspicious because we got the news from other people. So what exactly causes HIV to affect us is also a question." (Pregnant woman 2)

"When I was at school, the health center/health service never explained it. So I just found out on my own, HIV can be cured" (Pregnant woman 3)

Barriers to HIV Testing in Pregnant Women

"..No. Just a blood check only.....Just a pregnancy check only....I registered first, then I waited for the queue. Then I was called and told to enter the midwife's room. After entering I was asked about the purpose. After being asked, I had my blood checked and then I went back in to get the letter" (Pregnant woman 3)

DISCUSSION

Pregnant women are usually recommended to undergo laboratory tests, including HIV (human immunodeficiency virus) screening. As stated by the midwife in charge at the site, 'For pregnant women here, all pregnant women at the first visit must be tested for HIV syphilis. But if there is a hepatitis program, it is also mandatory. If hepatitis is sometimes available, sometimes not. But for HIV, it is mandatory for all pregnant women whose K1 visit is here or K1 comes first but they come here only for HIV testing sent from the network health facility'. Reinforced by a statement from pregnant woman 1 who answered "Just doing the examination. At other puskesmas, there was no explanation about HIV, so I just got tested", which reinforces that the purpose of conducting laboratory tests is HIV screening. This is to determine whether the pregnant woman is a person living with HIV/AIDS and could potentially transmit the virus to her baby.

In the Health Belief Model (HBM), it is believed that an individual's knowledge and beliefs about a phenomenon or problem will determine

his behavior towards it. If the knowledge is good about it, then there will be beliefs in him and will eventually form complex behaviors related to it. An individual's belief in his or her susceptibility to complications refers to the extent to which a person thinks that he or she will develop health problems according to his or her condition. A person's beliefs about certain behaviors will determine how he or she undergoes the recommended behavior because it will calculate the profit and loss and effectiveness of a behavior, whether the behavior is costly, unpleasant, causes pain, discomfort and so on. A person may discourage healthy behaviors even though he believes that there are benefits in carrying out these behaviors if the obstacles perceived by the individual exceed the benefits obtained.

Based on the results of the initial survey and during the research that has been conducted at the health center, it was found that some pregnant women did not know at all about HIV infectious diseases. This happens because the average pregnant woman in this health center has never received counseling about the disease and the dangers of HIV to the health of pregnant women. However, all pregnant women have heard about information about HIV infectious diseases

obtained by mothers while still in school, friends and also the surrounding environment. 'I heard it from outside, from friends. It was never explained here. They just do the examination. At other health centers, they don't explain about HIV, they just check it.' Responded pregnant woman 1. Similar to the answer of pregnant woman 3 'When I was at school, the health center/health service never explained it. So I just found out on my own.'

The mothers did not know the causes, modes of transmission and risks of HIV disease and thought that HIV disease could be cured as expressed by pregnant woman 2 'When I was in school, I knew it was usually people who had sexual intercourse, then from needles. But recently there are people in the neighborhood who are affected, but we also don't believe it because the people are healthy. He does a lot of exercise, so we were suspicious because we got the news from other people. So what exactly causes HIV to affect us is also a question.' and pregnant woman 4 who answered 'HIV can be cured'. This happens because of the lack of knowledge about the importance of HIV prevention for pregnant women from an early age.

Women who have adequate knowledge about HIV prevention, protect themselves, their husbands and children from HIV infection and are more likely to undergo HIV testing than women who do not have adequate knowledge about HIV. Women who have adequate knowledge about HIV prevention protect themselves, their husbands and children from HIV infection and are more likely to undergo HIV testing than women who do not have adequate knowledge about HIV. Women of childbearing age's knowledge about preventing mother-to-child transmission (MTCT) of HIV plays a major role in limiting the number of children infected with HIV. With timely interventions such as HIV testing during pregnancy, safe delivery, anti-retroviral drugs (ARVs), and modified infant feeding, the risk of infants acquiring HIV infection from infected mothers can be reduced from 20-45% to 2-5%.¹⁵

One of the efforts to prevent HIV transmission from mother to baby is Antenatal Care (ANC) services. Prevention of mother-to-child HIV transmission among pregnant women included in integrated ANC services was implemented in 2014. All pregnant women who receive integrated ANC services receive an HIV test to diagnose

HIV and the results will not be disclosed without the patient's consent. This is in accordance with the following explanation from the HIV doctor 'Mandatory...In KIA, they will refer to the laboratory, from the laboratory, they will be informed to us, then later if the results are positive or negative, we will give counseling to the patient....' '..... we are afraid that the mother will be HIV positive, pity the child who is born. We are a little scared so that she wants to. Indeed, we say we know that the mother is not at risk but maybe HIV transmission is not only from free sexual intercourse but also the mother has a transfusion like that. We tell her how long it takes to know that our husbands don't know what's going on outside, we can't guarantee our husbands who we think are good, we know. In his house our husband is out we don't know what he is like. I can't even guarantee what my husband is like. So, that's what we tell pregnant women. But most of them want to be checked."

Support for the integrated ANC service program has previously been implemented through the Citizen Charter (service contract / edict) related to MCH services where the Citizen Charter intervenes at the level of performance of MCH services including integrated ANC

Puskesmas.¹⁶ Pregnant women who come to ANC services will indirectly need self-understanding of HIV status in order to prevent themselves from transmitting other disease infections and transmission to others.¹²

All pregnant women attending ANC services will receive information on preventing HIV transmission during pregnancy and breastfeeding. In addition to ANC visits, other prevention efforts can be done by conducting HIV testing so that many HIV cases will be found and prevention of HIV transmission from mother to child can run optimally. HIV testing should be done for all pregnant women. The government targets that the initial achievement of the triple elimination program in 2022 is by reducing the number of new cases of HIV infection in newborns ≤ 50 cases of children infected with HIV, Syphilis or Hepatitis B per 100,000 live births by maximizing the coverage of antenatal services and quality early detection, targeted 100% of pregnant women tested for HIV, Syphilis and Hepatitis B in 2022.¹⁵ Many pregnant women do not understand the importance of triple elimination testing and the importance of early screening to improve the health status of mothers and children.

The absence of counseling conducted by the health center on HIV disease resulted in a lack of knowledge of pregnant women about the dangers of HIV disease. If there are pregnant women who are HIV positive, the procedure that will be carried out to deal with these cases is therapeutic action. After that the mother will still be given drugs to prevent transmission to the baby. The delivery process will be carried out at certain referral hospitals and after the child is born at the age of 1 year and 8 months, further examinations will be carried out on the child. If the examination shows a positive result for HIV, the child will continue to take ARVs for life.

The services and facilities at the Helvetia Health Center are good, but it is unfortunate that the health center also does not provide an explanation of the series of examinations that will be carried out. Like the confession of pregnant woman 3 '...No. Just a blood check only.....Just a pregnancy check only....I registered first, then I waited for the queue. Then I was called and told to enter the midwife's room. After entering I was asked about the purpose. After being asked, I had my blood checked and then I went back in to get the letter.'

Pregnant women also did not receive an explanation of the series of activities carried out during the check-up by the midwife. For example, blood collection activities, pregnant women did not know the purpose of the blood collection because there was no explanation by the midwife. So they think that this is a procedure that must be followed and carried out only.

At the time of checking, pregnant women were not given an explanation from the health worker on duty about a series of activities that they would do such as blood collection activities. If examined by considering the answer from the HIV doctor, namely 'At KIA, they will refer to the laboratory, from the laboratory, they will be told to us, then later, if the results are positive or negative, we will give counseling to the patient', it can be assumed that this procedure is mandatory so that it is no longer necessary to educate and explain before its implementation. The absence of an explanation of the purpose of the blood draw and the absence of an explanation of HIV disease are factors that increase the gap between breaking the negative stigma about HIV in the community. Health workers who do not provide explanations or education about HIV disease to patients result in

patients not knowing the dangers of HIV disease for the health of pregnant women and also do not care about HIV disease.

Research conducted in Northwest Ethiopia found that women who had a history of antenatal visits were about 4.4 times (AOR = 4.4, 95% CI 1.47-13.34) more likely to have knowledge about PMTCT HIV/AIDS than those who did not have antenatal care checks. This happens because women who have a history of ANC visits can have the opportunity to get information from health workers, thus increasing women's knowledge about PMTCT.¹⁶ Research conducted in southern Ethiopia found that women who performed ANC checks during pregnancy showed a significant association with knowledge of HIV PMTCT in multivariate analysis. This means that the increased behavior of pregnant women in examining their pregnancy allows them to have good knowledge about PMTCT.^{17,18}

Information on triple elimination spearheads the successful implementation of triple elimination. Several studies have found that the inadequate number of health workers in most developing countries has led to inadequate interactions between pregnant women and PMTCT service providers. With gaps in

interactions between HIV-positive pregnant women and PMTCT health workers, peers or expert patients are important sources of information for newly diagnosed HIV-positive pregnant women.^{18,19,20} Good information media also determines the mother can be conveyed information and can provide motivation to mothers regarding triple elimination checks. Apart from logistics, lack of human resources is a barrier that can occur from external factors. So that the balance of information and maximum support from external parties can help and give mothers the confidence to be able to carry out triple elimination checks. This proves that the base of the problem is the minimal information and media provided to pregnant women so that it can affect the knowledge, beliefs, perceptions and motivation of mothers for their health and especially to carry out triple elimination checks.

Some respondents said that there were no barriers in referring patients and counseling and offering HIV testing to patients. No barriers were found when conducting examinations or counseling patients and offering HIV testing to patients, because the program is mandatory and the facilities provided by the Puskesmas are complete. However,

the high level of stigma surrounding HIV in the community means that many people or pregnant women are afraid to seek HIV testing. As acknowledged by the doctor in charge of the HIV program 'Usually it's like that because they are afraid of the stigma. Our society also cannot deny that people with HIV are considered sinful, not necessarily that they contracted it from that. That's what we still have difficulty changing the image of the community. Like now, children, don't tell my parents and family before I tell them myself. Before he is able to tell you, don't tell him, the difficulty is there.' Therefore, it is necessary to increase education and real support for people who have HIV disease so that they are not shunned and ostracized in the community. Likewise, for pregnant women, this screening should be accompanied by a proper understanding of HIV and the potential for transmission during pregnancy and childbirth.

CONCLUSION

ANC services have been running well. Barriers to ANC access are related to cultural aspects and organizational systems that have not made maximum efforts to improve services, especially

STIs (HIV/AIDS). At Puskesmas Helvetia, every pregnant woman will be directed to do HIV testing. Integrated ANC services have been running well. Routine technical training to improve obstetric competence for midwives and other supporting training needed as well as laboratory examination training for laboratory analysts (including STI and HIV/AIDS testing training) has been running well and systematically. It is necessary to socialize and educate pregnant women consistently so that the fear and anxiety of HIV testing decreases. Pregnant women's knowledge about HIV is also getting better day by day. The pregnancy that pregnant women undergo is free from the fear of contracting HIV. The stigma against HIV that still occurs in the community is a barrier for pregnant women to participate in HIV early detection.

ACKNOWLEDGMENT

We would like to thank the principal and teachers for permitting us to conduct research and facilitating the needs of this research.

REFERENCES

Correspondence :. Martalena Br S Kembaren. Faculty of Public Health, University of North Sumatra. lenaskmb@gmail.com

1. Ministry of Health RI. 2017. Data dan Informasi Kesehatan Profil Kesehatan Indonesia 2016
2. WHO. Factsheet HIV/AIDS 2017 [Available from: <http://www.who.int/mediacentre/factsheets/fs360/en/>].
3. Young, S. 2018. The Triple Elimination of Mother-to-Child Transmission of HIV, Hepatitis B
4. Ministry of Health RI. Laporan Perkembangan HIV-AIDS Triwulan IV Tahun 2015. Jakarta: Kemenkes RI; 2016
5. Gonzales et al, 2017, Effects of HIV Infection on maternal and neonatal health in southern Mozambique: A prospective cohort study after a decade of antiretroviral drugs roll out; PLOS ONE 12(6): e0178134, <https://doi.org/10.1371/journal.pone.0178134> and Syphilis in Asia and the Pacific, 2018–2030. World Health Organization 2018, 1-44.
6. Tarsikah T, Diba DAA, Didiharto H. (2020). Komplikasi Maternal dan Luaran Bayi Baru Lahir Pada Kehamilan Remaja di Rumah Sakit Umum Daerah Kanjuruhan, Kepanjen, Malang. Jurnal Kesehatan. 2020;13(1):54–68.
7. Ningsih dan Hastuti, 2018. Kajian Pencegahan Penularan HIV dari Ibu ke Anak pada Antenatal Care oleh Bidan Praktik Mandiri di Yogyakarta. Vol. 6. No. 1. Pp 61-67
8. Puspitasari DE. Analisis Faktor Yang Mempengaruhi Kepatuhan Minum Obat Antiretroviral (ARV) Pada Ibu HIV Berbasis Information Motivation Behavioral Skills (IMB) Model of Antiretroviral Therapy (ART) Adherence di Poli UPIPI RSUD dr. Sutomo Surabaya. In: Airlangga U, editor. Surabaya. 2016.
9. Visser et al, 2019, “Evaluating progress towards triple elimination of mother to child transmission of HIV, syphilis and hepatitis B in the Netherlands” BioMed central Public Health, 19:353.
10. Chen NE, Gallant JE, Page KR. A systematic review of HIV/AIDS survival and delayed diagnosis among hispanics in the United States. Journal of Immigrant and Minority Health. 2012; 14(1):65-81. (Abstrak).
11. Ministry of Health RI. 2011, Ditjen PPM & PL. Pedoman nasional tatalaksana klinis infeksi HIV dan terapi Antiretroviral pada orang dewasa. Jakarta.
12. Firdayanti, N. (2019). manajemen asuhan kebidanan internatal pada ny “N” dengan usia kehamilan pretern di RSUD syekh yusuf gowa. Jurnal Widwifery, 1(1), 1–14.
13. Creswell, John W, 2014, Penelitian Kualitatif & Desain Riset, Yogyakarta, Pustaka Pelajar
14. Moleong 2017, Metode Penelitian Kualitatif, Bandung: PT. Remaja Rosdakarya.
15. Mikrajab, M. A., & Rachmawati, T. (2015). Analisis Kebijakan Implementasi Antenatal Care Terpadu Puskesmas di Kota Blitar. Puslitbang Humaniora dan Manajemen Kesehatan .
16. Liyeh, T. M., Cherkose, E. A., Limenih, M. A., Yimer, T. S., & Tebeje, H. D. (2020). Knowledge of prevention of mother to child transmission of HIV among women of reproductive age group and associated factors at Mecha district, Northwest Ethiopia. BMC Research Notes, 13(1), 1–6. <https://doi.org/10.1186/s13104-020-05005-5>

17. Central Statistical Agency [Ethiopia], & ICF International. (2012). Ethiopia
18. Abajobir, A.A. and Zeleke, A.B. (2013) Knowledge, Attitude, Practice and Factors Associated with Prevention of Mother-to-Child Transmission of HIV/AIDS among Pregnant Mothers Attending Antenatal Clinic in Hawassa Referral Hospital, South Ethiopia. *Journal of AIDS and Clinical Research*, 4, Article No. 215. <https://doi.org/10.4172/2155-6113.1000215>
19. Eide, K. T., Fadnes, L. T., Engebretsen, I. M. S., Onarheim, K. H., Wamani, H., Tumwine, J. K., & Norheim, O. F. (2016). Impact of a peer-counseling intervention on breastfeeding practices in different socioeconomic strata: results from the equity analysis of the PROMISE-EBF trial in Uganda. *Global Health Action*, 9(1). <https://doi.org/10.3402/gha.v9.30578>
20. Hamilton, A. R. L., le Roux, K. W. d. P., Young, C. W., & Södergård, B. (2020). Mentor Mothers Zithulele: exploring the role of a peer mentorship programme in rural PMTCT care in Zithulele, Eastern Cape, South Africa. *Paediatrics and International Child Health*, 40(1), 58–64. <https://doi.org/10.1080/20469047.2018.1474697>
21. Philemon, R. N., Mmbaga, B. T., Bartlett, J., Renju, J., Mtuy, T., Mboya, I. B., & Msuya, S. E. (2021). Do women enrolled in PMTCT understand the recommendations: A case study from Kilimanjaro. *Patient Preference and Adherence*, 15, 1301–1309. <https://doi.org/10.2147/PPA.S307847>