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KNOWLEDGE OF WOMEN ON RECEIVING ANTIRETROVIRAL THERAPY TO PREVENT MOTHER-TO-CHILD TRANSMISSION OF HUMAN IMMUNODEFICIENCY VIRUS (HIV),MULEBA DISTRICT IN KAGERA, TANZANIA.

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Abstract

This paper discusses the knowledge of women attending an antenatal clinic about receiving antiretroviral therapy (ART) to prevent the transmission of HIV from mother to child among those care. It examines women's knowledge of HIV/AIDS (acquired immunodeficiency syndrome), and mothers' knowledge concerning ART. The study adopted the cross-sectional research design. Quantitative and qualitative data were collected from a sample of sixty (60) respondents and analysed. The results indicated that the participants knew about HIV/AIDS, its modes of transmission, symptoms, effects, treatment and preventive measures. The respondents also knew about ART from sources of information and testified to receiving it once they became aware of it. It was found that most people were receiving ART. The current HIV status and type of assistance from individuals and institutions are indicated, as well as those receiving ART to reduce the transmission of HIV from mother to child. It was recommended that the community should be sensitized about HIV/AIDS with regard to changing their behaviour, and that clinics should be made user-friendly so as to make women living with HIV/AIDS more aware of the benefits of receiving ART. Thus, different institutions should assist women receiving ART in meeting their needs, as well as supporting them to earn an income to meet their financial needs.

Key Words: Antenatal care Antiretroviral therapy, HIV/AIDS, Mother-to-child transmission, knowledge

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1.0 Introduction

The human immunodeficiency virus (HIV) is a virus that attacks the immune system, the body's natural defence system (Centers for Disease Control and Prevention, 2020). A person can get HIV by being in contact with infected blood, semen or vaginal fluid. HIV also can be transmitted from mother to a baby during pregnancy, birth or breastfeeding (Avert 2020a). The last stage of being infected with HIV is AIDS. People with AIDS have a low number of Cluster of Differentiation (CD4+) cells and so they catch infections. At this stage a person's immune system is so badly damaged that they can no longer fight serious infections and illnesses (Avert, 2020a).

Since the first AIDS case was reported in 1985, over 33 million people are living with HIV/AIDS worldwide, and about two-thirds of, or 25.5 million, people with HIV live in sub-Saharan Africa (UNAIDS, 2020). In 2018, 1.6 million people were living with HIV in Tanzania, equating to an estimated HIV prevalence of 4.6% among adults. In the same year, 72,000 people were newly infected with HIV, and 24,000 people died from an AIDS-related illness (Avert, 2020b).

In Tanzania, women are heavily burdened by HIV, as about 780,000 women aged 15 and over are living with HIV, as they are more prevalent to contracting HIV at 5.8% than men at 3.6% (UNAIDS, 2020). Preventive measures have been introduced to reduce these rates. For example, the availability and rapid scaling up of antiretroviral therapy (ART) has transformed what was inevitably a fatal disease to a chronic, manageable condition, leading

to a notable decline in the worldwide rates of AIDS-related deaths and new infections (Avert, 2020b).

The transmission of HIV from an HIV-positive mother to her child during pregnancy, labour, delivery or breastfeeding is called mother-to-child transmission (MTCT). In the absence of an intervention, transmission rates range from 15% to 45%. This rate can be reduced to below 5% with effective interventions during the periods of pregnancy, labour, delivery and breastfeeding (WHO, 2019). These interventions primarily involve treating the mother with ART and giving the baby a short course of antiretroviral drugs (ARVs). They also include measures to prevent pregnant woman from acquiring HIV and teaching them appropriate breastfeeding practices (WHO, 2019).

The national HIV guidelines state that all infants who are exposed to HIV should be tested for HIV-infection, even if their mothers are receiving ART for the prevention of MTCT (MOHCDGEC, 2019). The services provided by the prevention of MTCT programme are counselling, the testing of pregnant women, the provision of ART to prevent the transmission of HIV from mother to child, showing them how to safely breastfeed their infants, family planning and referring infants to Care and Treatment Centres (CTC) (Chatterjee *et al*., 2019). The World Health Organization (WHO) recommends early initiation of highly active antiretroviral therapy (HAART) for all HIV-infected infants diagnosed within the first year of life and, since 2010, within the first two years of life, irrespective of the CD4 count or WHO clinical stage (WHO, 2017).

Guidelines have been developed for early diagnosis of all infants aged 4-6 weeks, who have been exposed to HIV, in order to provide them with life-serving treatment including ART, with the aim of reducing morbidity and mortality (MOHCDGEC, 2019). Based on this statistical information, it is evident that a lot of effort is being made by the Tanzanian government to prevent the transmission of HIV from mother to child. However, questions arise concerning how such interventions are perceived by various women, and how these

interventions benefit them. Therefore, this paper examined the knowledge of women attending antenatal clinics about receiving ART to prevent the MTCT of HIV.

2. Research Method

The conceptual framework of this study was adopted by modifying some elements (the environment, health care behaviour and outcomes) from Andersen and Newman's Model of Health Care Utilization (Andersen and Newman, 2005). The underlying assumption is that using ART to prevent the MTCT of HIV is the dependent variable that is influenced by the following independent variables: (i) knowledge about HIV/AIDS, (ii) knowledge about ART and (iii) measures to improve the knowledge of women receiving antenatal care about ART. Furthermore, the intermediate variables that connect the independent and dependent variables were adopted from Andersen's Behavioural Model of Health Care Utilization, comprising, (i) the environment (health care system and external environment) and (ii) health care behaviour (personal choices regarding health and the use of health services).

The independent variables described in the conceptual framework were *"Knowledge of HIV/AIDS" and "Knowledge of Antiretroviral Therapy"*, which means facts, information, the skills acquired through experience or education and the theoretical or practical understanding of the subject (HIV/AIDS and ART).

Another component described in the conceptual framework, the intermediate variable adopted from Andersen's Behavioural Model of Health Care Utilization, were "health care system" and "external environment", whereby the external environment represents the political, physical and economic influence of health care utilization. This means that health-related actions do not occur in a vacuum, but result from an array of influences on inherent behaviour interfaced with external environmental forces.

A further component that was adopted from Andersen and Newman's Behaviour Model of Health Care Utilization was the **health behaviour component**, which emphasizes the use of

health services in terms of their type, site and purpose, as well as the remedies that are received from using health services and the time interval. Generally, by adopting and improving some elements of Andersen and Newman's model, it was possible to assess whether the use of ART to prevent the transmission of HIV from mother to child was understood by women receiving antenatal care.

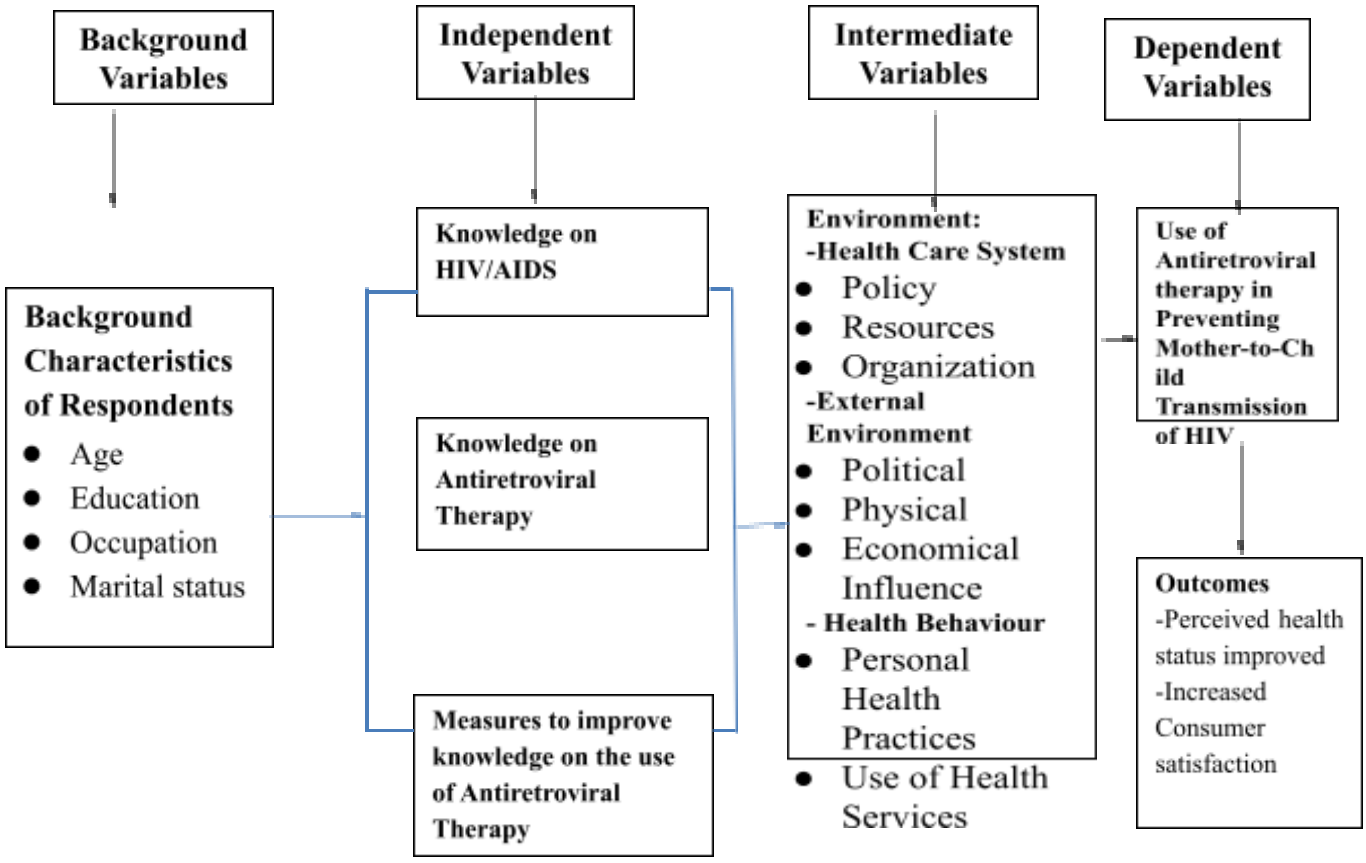

Fig 1: Conceptual Framework of the study

The study was conducted in Muleba District, Kagera Region in Tanzania, which was selected because, among all the Districts in Kagera Region, it recorded the highest number of HIV-infected women, including those who were pregnant (District AIDS Coordinator Report, 2020). The cross-sectional design was adopted to collect data at a single point in time from respondents selected for the study. The study involved 60 respondents, who were

women living with HIV and receiving ante-natal care, who filled in the questionnaire. Furthermore, the study involved 14 key informants and 16 people selected for focus group discussions (FDGs).

Both primary and secondary data were collected. Quantitative data were gathered using a questionnaire, while qualitative data were collected through key informant interviews and FGDs. Secondary data were collected from various reports by organizations, hospitals and the government, as well as online documents and research reports. The quantitative data were analysed using descriptive statistics, particularly tables showing frequency and percentages. Qualitative data were analysed using the content analysis technique.

A] Results and Discussion

In order to study the knowledge of women on receiving antiretroviral therapy to prevent mother-to-child transmission of Human Immunodeficiency Virus, the following aspects were studied;

- **Women's Knowledge concerning HIV/AIDS**

The level of women's knowledge concerning HIV/AIDS was explored by asking them about the methods/sources of information used to inform them about HIV/AIDS, the modes of HIV/AIDS transmission, the symptoms and effects of HIV/AIDS, and whether there was any treatment for HIV/AIDS and/or measures to prevent it.

Awareness of HIV/AIDS

The study found that all respondents were aware of HIV/AIDS. Some reported that HIV is a virus that attacks the immune system, the body's natural defence system. However, others just referred to HIV as a disease, but were aware that it affects the body's immune system. HIV infection was explained to be a condition that leads to the weakened ability to fight infections, which results in a dangerous condition where one acquires several secondary infections at a time.

The majority of women (58.3%) were aware of HIV through health workers (hospital staff and healthcare providers), 16% heard about HIV at school (through teachers teaching science subjects), 10% from social gatherings (for instance, during village meetings), 5% each from social media (through different radio programmes), friends and relatives and other sources of information (Table 1).

Furthermore, during FGDs, the discussants revealed that most of them had been made aware of HIV by healthcare workers. One of the discussants stated that;

> *"We gained more information on HIV/AIDS through the sensitization (counselling) sessions at the clinic during the first day of being tested for pregnancy. After we were found to be HIV-positive, we were advised to bring our partner to the clinic on the following day for HIV testing too in order to prevent the unborn infant from being infected".*

Table 1: Ways mothers came to know about HIV/AIDS

Response	**Frequency**	**Percent**
Health workers	35	58.3
Mass media	3	5.0
Friends/relatives	3	5.0
School	10	16.7
Social gatherings	6	10.0
Others	3	5.0
Total	**60**	**100.0**

Knowledge concerning HIV Transmission and its effects

The study revealed that all the respondents were aware of how HIV was transmitted from one person to another, and mentioned at least two modes of transmission. The most commonly mentioned mode of HIV transmission was through unprotected heterosexual intercourse, where one of the partners was HIV positive, followed by the sharing of sharp objects like needles with someone who is infected with HIV. On the other hand, only a few respondents mentioned the transmission of HIV from mother to baby during pregnancy, birth or breastfeeding, and the transfusion of blood infected with HIV.Certain beliefs and practices, such as having multiple sexual partners, dry sex and the traditional practice of widow/widower cleansing, also facilitate the transmission of HIV.

Concerning the awareness of the effects of HIV, the majority of the respondents (95%) were aware of the effects of HIV, while (5%) were not. The worst effects of HIV that were mentioned by the respondents were death and the deterioration of national human resources, Other effects were diarrhoea, recurrent fever, herpes-zoster, rash, red lips, sores, hair loss, boils and weight loss, if someone with HIV did not adhere to ART.

Awareness of HIV Symptoms and treatment

It was found that the majority of women (98.3%) were aware of HIV symptoms, while 1.7% were not. Those commonly identified symptoms were diarrhoea, recurrent fever, herpes-zoster, rash, red lips, sores, hair loss, boils and weight loss. The results revealed that 80% of the respondents were aware of treatment for HIV, while 20% believed that there was no treatment for HIV. Those respondents who said that HIV could not be treated were specifically clear on the provision of drugs (ARVs), which suppress HIV but do not eliminate it from the body. They added that ARVs help to maintain health and prolong the lives of people living with HIV.

Knowledge concerning the Prevention of HIV

Most women (83.3%) were aware of HIV preventive measures, while (16.7%) had no idea about how to prevent HIV from spreading. HIV preventive measures that were reported by women were having one partner and being faithful to him, abstinence/self-discipline, consistently using a condom while having sex with one's partner, preventing MTCT, not sharing sharp objects and having a safe blood transfusion. This is consistent with the main message from the ABC (Abstinence, Be faithful and Condom use) campaign. Those in the FGDs mentioned a wide range of HIV preventive measures, including voluntary counselling and testing, the prevention of MTCT (Neverapine use) and reducing the number of sexual partners.

3.2 Mothers' knowledge concerning Antiretroviral Therapy (ART)

The participants' level of knowledge of ART was explored by asking them when they became aware of ART and the sources of information about ART. They were also asked to mention whether they are receiving ART, specify the exact time when they received the treatment, how long they have been receiving it and whether they have ever thought of stopping it. More detailed information on ART was obtained by asking the participants whether they had attempted to disclose their HIV status and that they were receiving ART, whether they got any help from the people to whom they disclosed their HIV status, and the benefits and challenges of receiving ART.

Knowledge concerning Antiretroviral Therapy (ART)

Eighty four percent of women knew about ART. They mentioned that ART not only means taking the pills provided for the rest of their lives to suppress the development of the virus, but also about accepting the fact of being HIV-positive, improving their nutritional intake, and ensuring that the transmission of HIV from one person to another is prevented. One respondent maintained that: "…*while on antiretroviral therapy, HIV does not cause death, but antiretroviral therapy keeps it in one place and stops it multiplying or moving…"*

When did the respondents become aware of ART?

Half of the women living with HIV reported that they became aware of ART when they were pregnant and had to be tested for HIV, 45% were aware of ART before becoming pregnant as they were already being treated, and 5% of the respondents became aware of ART while breastfeeding another child prior to her current pregnancy (Table 2).

Table 2: Time when respondents became aware of ART (n=60)

Response	Frequency	Percent
Before pregnancy	27	45.0
During pregnancy	30	50.0
During breastfeeding	3	5.0
Total	**60**	**100.0**

Some of the discussants admitted that they knew about their HIV status and ART when pregnant, as one of them narrated;

> *…the main reason that prompted me to test for HIV was because I was pregnant. I had to test not only for HIV but also for other diseases like malaria. After finding out that I was HIV-positive, I had to have a CD4 cell count test that showed that I had fewer CD4 cells. They sensitized me for three days to start being treated with art immediately for my health and to prevent my baby from being infected with HIV…*

The majority of respondents, 76.7% (46), reported that they received knowledge about ART from health workers, 6.7% from social gatherings and community awareness meetings, 3.3% from radio and television programmes, 5% from school, 1.7% from family members and 6.7% from other sources of information. In line with these findings, Namukwaya *et al.*, (2015) stated that receiving information from peers, community lay persons and village health team members also resulted in a significant rise in the use of ART.

The use of ART

All the respondents were receiving ART. It was found that pre- and post-test counseling as well as being tested for HIV were the first steps to adopting ART, while having a CD4 cell count test and being counselled to adhere to ART were the next and final steps, respectively, to the process of initiating ART. It was reported that health education was ongoing and was given every time the ARVs were replenished, which went hand-in-hand with being recommended what type of food to eat.

Duration of ART treatment

The results showed that 43.3% of the respondents had been receiving ART for under a year, 35% for between 2-4 years, 16.7% for 5-9 years and 5% for over 10 years (Table 3). This shows that almost half of the respondents in the study started receiving ART after they found they were pregnant, due to the fact that when pregnant they needed to be tested to reveal their HIV status.

Table 3: Time of receiving ART (n=60)

Response	**Frequency**	**Percent**
0-1 year	26	43.3
2-4 years	21	35.0
5-9 years	10	16.7
10 years and over	3	5.0
Total	**60**	**100.0**

Provision of other HIV medication

Sixty percent of the respondents reported that no medicine could cure HIV/AIDS *per se* and 40% believed that HIV had no cure, although if someone infected with HIV/AIDS was receiving ART, this would prevent the development of the virus. One of them commented:

> *When we go to the monthly clinic, we are taught to ensure that we have a balanced diet and drink plenty of water. We are also taught that we must not share the ARVs with others, including family members. It is a requirement that everyone should be treated with ART not only during pregnancy, but for the rest of their lives.*

The UNAIDS Report (2020) further stated that no cure has yet been found for the deadly virus. However, ART helps to prolong life and improve the quality of life for HIV-infected people.

Thoughts about stopping ART

Eighty percent reported that they had never thought of stopping being treated with ART, while 20% admitted that sometimes they think of stopping the treatment due to stigmatization, the long distance to the health facility and the lack of privacy there. The FGDs produced the same results, as one of the discussants stated that "…*the long distance could be a hindrance to receiving ART by those who live far from the local health facility, while those living nearby were more likely to be motivated to continue with the treatment* …"

Reminder to take ART pills regularly and on time

It was revealed that 53% of the women used an alarm clock to remind them to take the ARVs, 20% were reminded by their spouse, 18% were reminded by individuals who were taking care of them, mostly their mothers, 6.7% were reminded by other people, such as family members, to whom they had disclosed their status and 1.7% were reminded by an agent from the organization providing support (Table 4).

Table 4: Reminder to take ART pills regularly and on time (n=60)

Response	Frequency	Percent
Organization	1	1.7
Spouse	12	20.0
Individual	11	18.3
Clock	32	53.3
Others	4	6.7
Total	**60**	**100.0**

The results further show that 70% of the respondents reported that they had not skipped the treatment, while 30% admitted that they had. It was common for some individuals to forget to take the ARVs, while others intentionally skipped the treatment to see whether there would be any changes in their body once they stopped taking them. One of the women said, *"…When I started receiving ART, I experienced some side effects like nausea, fatigue, vomiting and having bad dreams at night. So, I would sometimes skip taking the drugs to see whether or not the side effects would cease…"*

Other medicine for women receiving ART

The findings showed that 81.7% of the respondents had not changed the treatment since they started, while 18.3% reported that they had taken other medicine, especially when they fell sick from secondary diseases like malaria, influenza and coughing, etc., which does not affect their daily antiretroviral treatment. They also stated that, apart from receiving ART when they fall sick from secondary infections, sometimes they were given Septrine tablets to be taken daily when a CD4s count test showed that they had risen to over 200, and others took pills for tuberculosis, but that did not mean that they stopped their daily ART.

Disclosure of HIV status and help from others

Most of the respondents (96.7%) reported to have voluntarily disclosed their HIV status to their partner, family, friends or relatives, and only 3.3% had not disclosed it to anyone. One

of the healthcare providers confirmed that *"…the majority of the people said that they do not want others in their community to be aware of their HIV status because they are afraid of being stigmatized. The possibility of being stigmatized by others has resulted in some people not wanting to know their own HIV status…"*

It was noted that the respondents who told family members about their HIV status reported getting get help in terms of material and practical support. The majority reported that they had been assisted financially and their drugs collected when they were unable to go to the hospital. One of them confessed that *"…the moment I knew I was HIV-positive, I had to convince my husband to get tested too. Therefore, I told my mother about our condition since she had been so supportive. When I cannot collect the pills myself, she was prepared to do so for me…"*

Cost incurred as a result of receiving ART

Sixty-two percent of the respondents reported that they incurred no cost as a result of receiving ART, due it's to availability and being close to the health facility. However, 38.3% of the respondents reported to have incurred some costs on transport and food bought while waiting for the service, as they lived a long way from the health facility. One respondent reported that *"...before I was divorced by my husband, I used to be near the hospital. But after the divorce I had to go back home to my parents, which was very far from the hospital, and so in order to reach it, I had to take a motorbike, which was very expensive..."*

Measures used to increase knowledge of ART

The results revealed that the majority of the respondents (91.7%) were aware of the availability of measures to increase their knowledge of ART, such as leaflets about HIV/AIDS, health education (adherence counselling), regular visits to villages by healthcare providers and psycho-social groups that were formed to share various information about ART. During FGDs, the discussants said that health education focused on the dos' and don'ts of receiving ART. Safe sexual practices, seeking immediate help if their health deteriorates, advice on nutrition and general information about ART were also reported to be covered during health education sessions.

Institutions improving women's knowledge concerning ART

It was revealed that different institutions improved the knowledge of women receiving ART, namely the hospital itself, through healthcare providers, and the health education they received when collecting their pills. Religious institutions, i.e., churches and mosques, had influenced them to be faithful, while in school they were taught about HIV/AIDS and how to prevent its transmission from one person to another, ART being one of the interventions. Non-governmental organizations also provided seminars and education sessions for people living with HIV/AIDS.

Resources required to enable women to receive ART

The study found that 80% of the respondents required more resources to receive ART, while 20% were satisfied with what they were getting. The respondents revealed that they received money to encourage them to receive their treatment, as sometimes they were given 10,000-15,000 shillings for transport so that they did not miss any monthly treatment. However, most of the respondents revealed that, despite the fee they received for transport to ensure they were treated each month, more healthcare facilities and healthcare providers were needed to ease the service, and so they proposed that this service should be provided in every village to cut the cost of those having to travel to a healthcare facility far from where they live.

3.3 Reduced transmission of HIV from mother to child

The study found that mothers receiving ART reduced the transmission of HIV to their child (table 5). It was further found that the percentage of children born with HIV was only 1.4% to 2.5% when mothers had received ART, while 25%–45% of children were infected in the absence of the ART intervention (Cock *et al*., 2017). ART also reduced the occurrence of illness in mothers, helped restore their health after an illness, gave them increased levels of energy and enabled them to be involved in work activities again.

Furthermore, during an interview, the District Reproductive Child Health Coordinator stated that:

> *…Women benefited the most when receiving antiretroviral therapy because the number of HIV transmissions from mother to child was reduced. However, the number of children who tested positive was either because the mothers delayed going to the clinic and taking ARVs, or because they were tested positive after giving birth and had been breastfeeding without taking the necessary precautions…*

The above findings are supported by the Dried Blood Sample (DBS) test quarterly report found in the District Health Information Management System (DHIMS) of 2019-2021, which showed that the number of HIV transmissions from mother to child had been reduced. The test was conducted at three different times, i.e., at 4-6 weeks after birth, 3 months after breastfeeding and at 18 months as a confirmatory test.

Table 5: Dried Blood Sample (DBS) positive from Mother-to-Child Transmission quarterly report

Year	1st test (at 4-6 weeks)	2nd test (3 months after breastfeeding)	3rd test (confirmatory test at 18 months)	Total tested	Total positive	% of total tested
2019	802	273	249	**1324**		
Tested positive	29	1	5		**35**	**2.6**
2020	852	247	343	**1442**		
Tested positive	19	1	0		**20**	**1.4**
2021	870	200	316	**1386**		
Tested positive	15	4	15		**34**	**2.5**

Source: DHIMS 2019-2021

4.0 Conclusions and Recommendations

It was learnt that women who attended the antenatal clinic were rich in knowledge about HIV/AIDS regarding its modes of transmission, symptoms, effects, treatment and preventive measures. The women also knew about ART and testified to receiving it. The length of treatment differed among the women living with HIVAIDS, as some of them thought about stopping the treatment, which reduced the transmission of HIV from mother to child by mothers who were receiving ART. It also reduced the occurrence of illness, increased the level of energy and enabled them to be involved in work activities. Different measures used to increase women's knowledge concerning ART and its effectiveness were identified, including the influence of different institutions.

It is recommended that more community sensitization sessions on HIV/AIDS about changing behaviour should take place, clinics should be made more user-friendly, and women living with HIVAIDS should be provided with more knowledge on ART and its benefits. Different institutions should assist women receiving ART in meeting their daily needs.

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