



# Knowledge and Practice of Prevention of Mother-To-Child-Transmission of HIV/AIDS among Antenatal Attendees at University of Calabar Teaching Hospital, Calabar, Nigeria. A Cross-sectional Study

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**Abstract:** *Introduction: Nigeria still accounts for 210,000 new HIV infection annually and two-third of all new infection in West and Central Africa. In 2017 alone, Nigeria accounted for half of all children and adolescents living with HIV in the region. Objective: The study was carried out to assess knowledge and practice of prevention of mother-to-child-transmission (PMTCT) of HIV/AIDS among antenatal attendees at University of Calabar Teaching Hospital, Calabar, Cross River State Nigeria. Method: A descriptive cross-sectional study design was used for the study and simple random sampling technique was used to select 165 ANC attendees to participate in the study. Quantitative data was collected using a semi-questionnaire which was self-administered to the respondents after ascertaining its reliability and validity. The data elicited from the respondents were subjected to descriptive statistics and results were presented in frequency tables and chart. Chi-square was used to test for association between variables at 0.05 alpha level. Results: The results showed that 65 (39.4%) had good knowledge of PMTCT while 100 (60.6%) exhibited poor knowledge. With regards to practice of PMTCT, 115 (69.7%) of the women indicated that they practice PMTCT while 50 (30.3%) do not practice PMTCT. It was also observed that age ( $\chi^2= 30.04$ ;  $p= .000$ ), education ( $\chi^2= 11.66$ ;  $p= .000$ ) and knowledge of PMTCT age ( $\chi^2= 3.094$ ;  $p= .000$ ) were statistically significantly associated with practice of PMTCT of HIV/AIDS among ANC attendees. Conclusion: PMTCT should be an inclusive component of maternal education and prioritised during antenatal clinic. This approach will boost knowledge level on PMTCT and as well continually and consistently increase the uptake of PMTCT especially among HIV positive mothers.*

**Keywords:** HIV/AIDS, PMTCT, Antenatal Care Attendees, UCTH

## INTRODUCTION

Even though HIV remains an intractable public health problems in high burden countries, tremendous advances have been made over the past decades to reduce the rate of HIV new infection by 50% globally (UNAIDS, 2016). In Low and Middle Income Countries (LMICs), statistics have shown that approximately

36.7 million people are currently living with HIV worldwide in 2015, of which 1.8 million were children under 15 years of age and 110 000 children die from AIDS-related illness due to lack of access to HIV treatment (UNAIDS, 2016). This is linked to the fact that HIV/AIDS is still a major cause of child morbidity and mortality in HIV endemic regions. Sub-Saharan Africa is still regarded as the worst hit region for HIV/AIDS endemicity which currently accounts for 66% (150 000 children under 15 years of age) of new HIV infections globally in 2015 (US Department of Health & Human Services, 2016).

The vast majority of HIV infections in children (0-15 years) is largely transmitted vertically (Mother-to-Child-Transmission). Children can get infected with HIV principally during pregnancy, childbirth and breastfeeding. Statistics have confirmed that the chance of transmitting HIV from mother to child is between 15% to 45%, but if the infected woman promptly commences antiretroviral treatment (ART), the risk can effectively be mitigated below 5% (WHO, 2018).

PMTCT programmes provide a range of services to women and infants. These include preventing HIV infections among women of reproductive age (15–49 years), preventing unwanted pregnancies among HIV positive women, providing HIV positive women with lifelong ART to maintain their health and prevent transmission during pregnancy, labour and breastfeeding, provide support for safe childbirth practices and adopt appropriate infant feeding method (WHO, 2018).

The adoption and implementation of PMTCT approach over the years has demonstrated strong impact in reducing HIV spread. Statistics from UNAIDS showed that between 2010 to 2018, about 1.4 million HIV infections among children were averted and enrollment of HIV positive women in ART drastically increased from 51% to 80% as at 2017 (UNAIDS, 2018). As at 2016, further analysis by the UNAIDS showed that 740,000 women of reproductive age were diagnosed HIV positive despite the tremendous progress made. Around 73% of these women are residents in 23 countries and a greater proportion of them domicile in sub-Saharan Africa (UNAIDS, 2017). There is currently global effort to mitigate HIV spread to 5% or less among breastfeeding women and to 2% or less among non-breastfeeding women by 2020 (UNAIDS, 2017).

In 2016, 23 countries including; Angola, Botswana, Burundi, Cameroon, Chad, Côte d'Ivoire, the Democratic Republic of the Congo, Ethiopia, Ghana, India, Indonesia, Kenya, Lesotho, Malawi, Mozambique, Namibia, Nigeria, South Africa, eSwatini, Uganda, the United Republic of Tanzania, Zambia and Zimbabwe accounted for 81% new HIV infection among adolescent girls and young women, 87% of newly infected children and 87% of all children and adolescents living with HIV globally (UNAIDS, 2017).

There is a new global commitment to reduce HIV new infection fewer than 40,000 by 2018 and fewer than 20,000 by 2020 and fewer than 100,000 among adolescents and young women (UNAIDS, 2017). The commitment also includes providing HIV treatment to at least 1 million children by 2020 and ensuring 95% HIV positive pregnant women access HIV treatment by 2018 (UNAIDS, 2017). These targets can effectively be achieved by prioritizing and expanding access to PMTCT services in regions where coverage is low.

In Nigeria, according to Nigeria HIV/AIDS Indicator and Impact Survey (NAIIS) findings, there have been notable decline in national HIV prevalence from 2.8% to 1.4%. Despite this achievement, only 32% of HIV positive pregnant women receive HIV treatment and 34.7% test for HIV as part of their antenatal care. Consequently, Nigeria accounts for 22% of all cases of MTCT (UNAIDS 2017).

Maternal knowledge on mother-to-child-transmission is a corner stone of effective implementation of the World Health Organization (WHO) recommendation of the four-pronged approach to reduce mother-to-child transmission of HIV. As stated by Chouquet, Burgard, Richardson, Rouzioux and Costagliola (2013), the prevention of Mother-To—Child-Transmission (MTCT) of HIV is dependent on the knowledge of the mothers of the timing of possible transmission periods. However, knowledge of women on transmission periods of HIV from mother to child varies from country to country. Hence, since PMTCT is one of the HIV prevention measures, assessing the knowledge level of PMTCT and PMTCT uptake among ANC attendees is highly essential to identify and address existing gaps as well as improve maternal, newborn and child health. This

study was aimed at determining the knowledge and practice of prevention of mother-to-child-transmission of HIV/AIDS among antenatal attendees at university of Calabar Teaching Hospital, Calabar, Nigeria.

## Methodology

The study area was University of Calabar Teaching Hospital, Calaba. The facility is bounded to the north by Odukpani Local Government Area, east by Akpabuyo Local Government Area, and West by Cross River which empties into the Atlantic Ocean. It is a tertiary health facilities that provides highly specialised health care services which is funded and managed by the Federal Government of Nigeria (Eko, 2017). The design adopted for this study is a descriptive cross-section study design. The population of the study comprised all antenatal attendees in Antenatal Clinic, UCTH, Calabar. Taro Yamane's formula was used for sample size determination which is expressed as follows;

$$n = \frac{N}{1 + N(e)^2}$$

Where n = sample size

N = population size=280

e = level of precision = 0.05

$$n = \frac{280}{1 + 280(0.05)^2}$$

$$= 165$$

Simple random sampling technique was used to select 165 ANC attendees via the lottery method. Data were generated using a semi-questionnaire which was self-administered to the respondents after ascertaining its reliability and validity. The questionnaire was subjected to face validation and a test-retest method was used to obtain a reliability index of 0.81 indicating that the instrument is appropriate for use.

The data elicited from the respondents were entered and analysed using SPSS (version 20.0) and subjected to descriptive statistics. Results were presented in frequency tables and charts. Chi-square was used to test for association between variables at 0.05 alpha level. Informed consent was duly sought and obtained from the study participants verbally. Participants who showed enthusiasm to participate in the study were selected and interviewed. Anonymity and confidentiality of information generated from the respondents were maintained throughout the period of survey.

## Results

### Socio-demographic characteristics of respondents

Results in Table 1 shows that 54 (32.7%) were between 27 – 32 years, 133 (80.6%) were married, 118 (71.5%) were Christians, 79 (47.9%) had attained tertiary level of education and 80 (48.5%) were mainly engaged in trading/business. With regards parity of the women, 91 (55.2%) were nullipara, 48 (29.1%) were multipara and 26 (15.7%) were grand multipara. Ninety-seven (58.1%) respondents have attended ANC during their last pregnancy of which 83 (50.3%) indicated that they have visited ANC clinic just once, 32 (19.4%) have visited the clinic twice, 11 (6.7%) have visited the clinic three times and 39 (23.6%) have visited 4 times and above.

**Table 1:** Socio-demographic characteristics of respondents (n=165)

Variable	Frequency	Percentage (%)
<b>Age:</b>		
15 – 20 years	11	6.7
21 – 26 years	50	30.3
27 – 32 years	54	32.7

33 – 38 years	32	19.4
39 – 44 years	18	10.9
<b>Total</b>	<b>165</b>	<b>100</b>
<b>Marital status:</b>		
Single	29	17.6
Married	133	80.6
Separated	3	1.8
Divorced	0	0.0
Widow	0	0.0
<b>Total</b>	<b>165</b>	<b>100</b>
<b>Religion:</b>		
Muslim	11	6.7
Orthodox	32	19.4
Protestant	25	15.2
Catholic	18	10.9
Pentecostal	43	26.1
Others (not specified)	36	21.7
<b>Total</b>	<b>165</b>	<b>100</b>
<b>Educational status:</b>		
No formal education	0	0.0
Primary	14	8.5
Secondary	72	43.6
Tertiary	79	47.9
<b>Total</b>	<b>79</b>	<b>100</b>
<b>Occupation:</b>		
Farmer	11	6.7
Trader	80	48.5
Civil servant	24	14.5
House wife	50	30.3
<b>Total</b>	<b>165</b>	<b>100</b>
<b>Parity:</b>		
Para	91	55.2
Multipara	48	29.1
Grandmultipara	26	15.7
<b>Total</b>	<b>165</b>	<b>100</b>
<b>Attend ANC during last pregnancy:</b>		
Yes	97	58.8
No	68	41.2
<b>Total</b>	<b>165</b>	<b>100</b>
<b>Number of ANC visit on current pregnancy</b>		
1	83	50.3
2	32	19.4
3	11	6.7
4 and above	39	23.6
<b>Total</b>	<b>165</b>	<b>100</b>

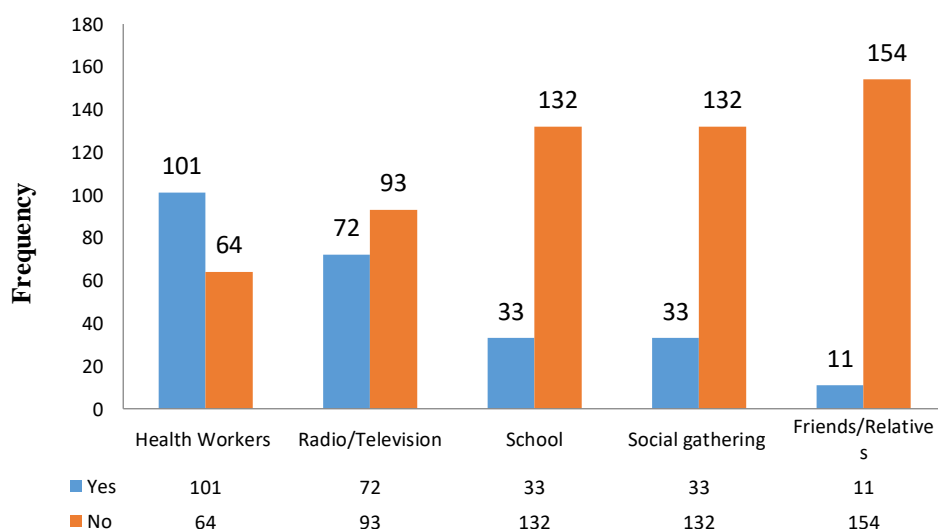
### Respondents' knowledge on PMTCT

Results in Table 2 shows that all respondents 165 (100%) affirmed that they have heard about HIV/AIDS, out of which 129 (78.2%) respondents agreed to the fact that they know that HIV can be transmitted from HIV

positive mothers to their unborn babies. Sources of Information about PMTCT were mainly from health workers 101 (61.2%), radio/television 72 (43.6%), school 33 (20.0%) and social gathering 33 (20.0%) (Figure 1). With regards to route of HIV transmission from HIV positive mothers to their babies, 72 (44.2%) affirmed that it can be transmitted during pregnancy, 110 (85.3%) indicated breastfeeding and 33 (25.6%) indicated during labour. All respondents 129 (100%) indicated that it is possible to prevent MTCT of HIV/AIDS by basically using condom 50 (38.7%) and delivering at the health facility 72 (55.8%). On appropriate infant feeding options for HIV positive mothers, 77 (46.7%) respondents indicated infant formula without breast milk and 33 (20.0%) indicated feeding babies with breast milk only for 6 months. On the average, 65 (39.4%) demonstrated good knowledge of PMTCT while 100 (60.6%) recorded poor knowledge of PMTCT.

**Table 2:** Respondents' knowledge of PMTCT (n = 165)

Variables	Option		
	Yes	No	Total
Ever heard about HIV/AIDS	165 (100%)	0 (0.0)	165 (100%)
Have knowledge that HIV can be transmitted from HIV positive mothers to their babies	129 (78.2%)	36 (21.8%)	165 (100%)
Route of HIV transmission from HIV positive mother to unborn babies			
a. During pregnancy	72 (44.2%)	57 (55.8%)	129 (100%)
b. During labour	33 (25.6%)	96 (74.4%)	129 (100%)
c. During breast feeding	110 (85.3%)	19 (14.7%)	129 (100%)
Possible to prevent mother-to-child transmission of HIV	129 (100%)	0 (0.0%)	129 (100%)
Methods of PMTCT			
a. ART use	28 (21.7%)	101 (78.3%)	129 (100%)
b. Use of condom	50 (38.7%)	79 (61.3%)	129 (100%)
c. Family planning	3 (2.3%)	126 (97.7%)	129 (100%)
d. Delivery at health facility	72 (55.8%)	57 (44.2%)	129 (100%)
e. HIV counselling/testing	17 (13.2%)	112 (86.8%)	129 (100%)
Appropriate feeding options			
a. Infant formula, no breast milk	77 (46.7%)	88 (53.3%)	165 (100%)
b. Cow's milk, no breast milk	0 (0.0)	165 (100%)	165 (100%)
c. Breast milk only for 6 months	33 (20%)	132 (80.0%)	165 (100%)

**Figure 1:** Respondents' sources of information on PMTCT

**Respondents' practice of PMTCT**

Result presented in Table 3 shows that 154 (93.3%) respondents indicated that they have tested for HIV during pregnancy while 11 (6.7%) have not. Of the 154 (93.3%) that have tested for HIV, 48 (31.2%) tested three months ago, 31 (20.1%) tested six months ago, while 22 (14.3%) tested one year ago, and 53 (34.4%) tested during their recent pregnancy. A reasonable proportion of the respondents 138 (83.6%) affirmed that they will disclosure the result to their partner if they are diagnosed HIV positive. Of the 22 (13.3%) respondents who indicated that they would breastfeed their baby if they were HIV positive, 15 (9.1%) believed that HIV does not pass through breast milk. On duration of breast feeding practice for HIV positive mothers, 18 (10.9%) affirmed that it should be six months only and 4 (2.4%) indicated 1 year. A larger proportion of the respondents 121 (73.3%) indicated that they would encourage HIV positive mothers to take pre and post counselling services while 138 (88.6%) affirmed that they would encourage their spouse to use condom. On the average, 115 (69.7%) of the women practice PMTCT while 50 (30.3%) do not practice PMTCT.

**Table 3:** Respondents' practice of PMTCT (n = 165)

Variables	Option		
	Yes	No	Total
Ever tested for HIV during pregnancy	154 (93.3%)	11 (6.7%)	165 (100%)
Duration of test			
a. Three months ago	48 (31.2%)	106 (68.8%)	154 (100%)
b. Six months ago	31 (20.1%)	123 (79.9%)	154 (100%)
c. One year ago	22 (14.3%)	132 (85.7%)	154 (100%)
d. On my recent pregnancy	53 (34.4%)	101 (65.6%)	154 (100%)
Would share HIV-test result with your husband if the result comes out positive	138 (83.6%)	27 (16.4%)	165 (100%)
Would breastfeed my child even if am HIV positive	22 (13.3%)	143 (86.7%)	165 (100%)
Reasons for breastfeeding			
a. To avoid stigmatization	6 (3.6%)	159 (96.4%)	165 (100%)
b. Cultural reasons	1 (0.6%)	164 (99.4%)	165 (100%)
c. HIV does not pass through breast milk	15 (9.1%)	150 (90.9%)	165 (100%)
Duration for breast feeding practices			
a. 6 months	18 (10.9%)	147 (89.1%)	165 (100%)
b. 1 year	4 (2.4%)	161 (97.6%)	165 (100%)
c. 2 years	0 (0.0%)	165 (100%)	165 (100%)
Would encourage HIV positive mothers to take pre and post counselling services	121 (73.3%)	44 (26.7%)	165 (100%)
Would encourage my spouse to use condom	138 (83.6%)	27 (16.4%)	165 (100%)

**Test of association between age, education and knowledge of PMTCT and practice of PMTCT among ANC attendees**

Results in Table 4 showed that that age ( $\chi^2 = 30.04$ ;  $p = .000$ ), education ( $\chi^2 = 11.66$ ;  $p = .000$ ) and knowledge of PMTCT age ( $\chi^2 = 3.094$ ;  $p = .000$ ) were statistically significantly associated with practice of PMTCT of HIV/AIDS among ANC attendees. Hence, the null hypotheses were rejected and the alternative hypotheses were accepted which states that there is a significant association between age, education and knowledge of PMTCT and practice of PMTCT among ANC attendees at 0.05 alpha level.

**Table 4:** Test of association between age, education and knowledge of PMTCT and practice of PMTCT among ANC attendees at UCTH using Chi-square analysis

Variables	Practice of PMTCT		Total	Chi-square	p-value
	Practice PMTCT	Do not practice PMTCT			
<b>Age</b>				30.04	.000*
15 – 20 years	2 (18.2%)	9 (81.8%)	11 (100%)		
21 – 26 years	33 (66.0%)	17 (34.0%)	50 (100%)		
27 – 32 years	33(61.1%)	21(38.9%)	54 (100%)		
33 – 38 years	30 (93.8%)	2 (6.2%)	32 (100%)		
39 – 44 years	17 (94.4%)	1 (5.6%)	18 (100%)		
<b>Total</b>	<b>115 (69.7%)</b>	<b>50 (30.3%)</b>	<b>165 (100%)</b>		
<b>Education</b>				11.66	.002
Primary	9 (64.3%)	5 (35.7%)	14 (100%)		
Secondary	41 (56.9%)	31 (43.1%)	72 (100%)		
Tertiary	65 (82.3%)	14 (17.7%)	79 (100%)		
<b>Total</b>	<b>115 (69.7%)</b>	<b>50 (30.3%)</b>	<b>165 (100%)</b>		
<b>Knowledge</b>				3.904	.000*
Good knowledge	51 (78.5%)	14 (21.5%)	65 (100%)		
Poor knowledge	64 (64.0%)	36 (36.0%)	100 (100%)		
<b>Total</b>	<b>115 (69.7%)</b>	<b>50 (30.3%)</b>	<b>165 (100%)</b>		

0.05 level of significance

### Discussion of findings

From the results, it was observed that all respondents 165 (100%) affirmed that they have heard about HIV/AIDS, out of which 129 (78.2%) respondents knew that HIV can be transmitted from HIV positive mothers to their unborn babies. This outcome is not surprising considering the increasing global and local effort in mitigating the spread of HIV/AIDS among high risk populations. Regular ANC attendance, access to reproductive health information and regular hospital consultation may largely account for the high awareness level on HIV/AIDS and MTCT. This finding is congruent with that of Umeobika et al (2013) where a high level of awareness about HIV/AIDS was documented. Sources of Information about PMTCT were mainly from health workers 101 (61.2%), radio/television 72 (43.6%), school 33 (20.0%) and social gathering 33 (20.0%) (Figure 1). This results corroborates with that of Kayima et al (2013) where the hospital was reported as the main source of information on PMTCT for mothers. The reliance on service providers for information on HIV and MTCT may be centered on the belief that service providers will provide correct and factual information to their clients based on a mix of trainings, experiences and medical practices which is often evidence-based. The health facility also provides the opportunity for mothers to interface with service providers so as to extract more reliable information which will help debunk any widely held myths or misconception about HIV and/or MTCT. Also, while the electronic media is useful in reaching a larger population of women especially those who rarely visit the clinic, information on PMTCT in school can be disseminated in symposia, workshops, seminars, lectures, etc.

With regards to route of HIV transmission from HIV positive mothers to their babies, more than two third of the respondents knew that HIV can be transmitted during pregnancy, breastfeeding and during labour. Similar results were also reported by Atwiinea et al (2013) where pregnancy, breastfeeding and during labour/delivery were identified as the route for HIV transmission from mother to child. Regular hospital consultation and ANC attendance may significantly account for the high knowledge level on the route of HIV

transmission. Only 28 (27.1%) knew that using ART is a suitable method for PMTCT and 33 (20.0%) knew the appropriate feeding option for infants

On the average, 65 (39.4%) demonstrated good knowledge of PMTCT while 100 (60.6%) recorded poor knowledge of PMTCT. This finding is in accordance with a Ugandan study where poor knowledge of PMTCT was documented, but contradicts a study conducted in South Africa where more than two-third of the study participants had adequate knowledge of PMTCT (Useh et al, 2013). For ANC attendees, lack of knowledge about PMTCT could be attributed to late ANC attendance, low risk perception of HIV/AIDS especially among HIV negative women and other form of misconceptions. It is possible that women who miss ANC or attend ANC late could miss out from some essential information regarding PMTCT.

With regards to practice of PMTCT, majority of the respondents 154 (93.3%) acknowledged that they've tested for HIV during pregnancy. This results is congruent with that of Kayima et al (2013) where over two-third of the respondents reported to have been tested for HIV. In recent times, HIV Counselling and Testing (HCT) has been integrated into Maternal, Newborn and Child Health (MNCH) services. This approach became essential to basically help mothers know their HIV status, promptly identify HIV positive mothers and enrol them in HIV treatment and care. Today, all ANC enrolees are subjected to HIV Counselling and Testing (HCT) which largely account for the high uptake of HCT during pregnancy in the current study. Of the 154 respondents that have tested for HIV, only a third of the respondents 48 (31.2%) tested for HIV three months ago and 53 (34.4%) acknowledged that they tested for HIV during their recent pregnancy. The global standard requires that HCT should be done every three months to know one's HIV status especially during pregnancy. This is because HCT has been identified as a gateway to HIV prevention, care and treatment. Most respondents 138 (83.6%) affirmed that they will disclosure the result to their partner if they are diagnose HIV positive. This disclosure is probably geared towards preventing the spread of HIV to their partner by applying globally accepted preventive measures. Of the 22 (13.3%) respondents who indicated that they would breastfeed their baby if they were HIV positive, 15 (9.1%) believed that HIV does not pass through breast milk. Exclusive breastfeeding is highly recommended for HIV positive mothers (at least 6 months) in as much as the mothers adhere to their drug regimen and are consistent in taking antiretroviral drugs. This is to reduce the risk of HIV transmission from mother to child. However, it becomes worrisome where 9.1% still doubt the possibility of HIV transmission via breastmilk. This belief system may still be responsible for increase rate of infant and child mortality. This can truly be address via maternal education where HIV and breastfeeding is discussed as an essential topic during ANC. Only 18 (10.9%) knew that breastfeeding of babies by HIV positive mothers should be at least six months. This clearly indicates deficiency in knowledge about the intricacies of breastfeeding practice amongst HIV positive mothers. It is therefore recommended that breastfeeding practice by HIV positive mothers should be emphasized so an impetus to debunk any misconception or erroneous beliefs regarding breastfeeding. Nearly two-third of the respondents 121 (73.3%) indicated that they would encourage HIV positive mothers to take pre and post counselling services while 138 (88.6%) affirmed that they would encourage their spouse to use condom. The consciousness of reducing the risk of HIV transmission to either their children or partners as well as promoting and improving health may largely account for the positive perception of respondents regarding the practice of PMTCT.

On the average, 115 (69.7%) of the women practice PMTCT while 50 (30.3%) do not practice PMTCT. This results corroborates with Tesfaya et al (2015) where most respondents practice PMTCT, but contradicts Varga (2008) findings where a significant proportion of the women were less likely to practice PMTCT. The differential in the practice of PMTCT documented in these studies may be attributed to their level of access to correct and factual information on HIV and PMTCT. Is is evident in Table 4 where knowledge of PMTCT has significant influence on practice. Access to reproductive health information including HIV is pivotal to mitigating the spread of HIV from mother to child.

## Conclusion and recommendations

Combating HIV especially in high burden countries such as Nigeria have been prioritized globally. The emergence of PMTCT strategy was principally to mitigate HIV spread and simultaneously maintain healthiness both for the mother and the child. However, findings in the current study showed that most respondents exhibited poor knowledge of PMTCT but demonstrated reasonable level of PMTCT practice. It was also observed that age, education and knowledge of PMTCT age were statistically significantly associated with practice of PMTCT of HIV/AIDS among ANC attendees. Based on the findings in this study, it is therefore recommended that while ANC remains a suitable platform to dissemination information on PMTCT to attendees, expanding access to PMTCT services would significantly address the gap in knowledge and consolidate on the level of PMTCT practice documented in the current study.

## Implication to Nursing

Knowledge of HIV/AIDS enables the nurse as a health educator to demystify HIV/AIDS. This will in turn encourage more people to test for HIV so as to know their HIV status. The nurse with knowledge of HIV/AIDS progression can identify the pathological changes a patient undergoes thereby rendering holistic care to the patient. It is evident that most children get infected with HIV during pregnancy, labour, delivery and breastfeeding. This will guide the nurse on the type of information that should be given to an expectant mother as regards the type of delivery and breastfeeding pattern. It is also possible for the nurse to get infected during the course of providing care to her patient, hence the need to observe and adhere strictly to universal precautions.

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