Knowledge, Attitude and Utilization of Preventive Measures Against Mother-To-Child Transmission of HIV Among Positive Pregnant Women in Teaching Hospitals in Rivers State

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ABSTRACT
This study investigated the knowledge, attitude and utilization of preventive measures against mother-to-child transmission of HIV among positive pregnant women in teaching hospitals in Rivers State, Nigeria. A cross-sectional research design was used for this study with a sample size of 238 which was selected using the simple random sampling technique. The instrument for data collection was a self-structured questionnaire with a reliability coefficient of 0.81. Data was analyzed using percentage, mean, standard deviation, and simple regression at 0.05 alpha level. The findings of this study show that the level of knowledge of PMMTCT was high as majority (92.9%) of the respondents were knowledgeable about PMMTCT and also have a positive attitude towards it (\( \mu = 3.03 \pm 0.72 \)). The finding of the study also showed that 50.7% had adequate utilization of PMMTCT. There was a statistically significant high positive relationship between the utilization of PMMTCT and both knowledge of PMMTCT (\( r = 0.968; p<0.05 \)) and attitude towards PMMTCT (\( r = 0.983; p<0.05 \)). The study concluded that, the level of utilization of PMMTCT is not in commensurate with the knowledge and attitude towards PMMTCT exhibited by the HIV positive mother. It was recommended that, the management of the tertiary health institutions should strategize more measures to improve the quality of services rendered to women on PMMTCT.

Keywords: mother-to-child transmission, HIV, pregnant women

INTRODUCTION
Currently, HIV infection is incurable. However effective antiretroviral (ARV) drugs can control the virus and help prevent transmission. Also the risk of mother-to-child transmission (MTCT) can be reduced by interventions that include ARV prophylaxis given to women during pregnancy and labour and to the infant in the first weeks of life. The World Health Organization advised HIV-positive mothers to avoid breastfeeding if they were able to afford, prepare and store formula milk safely. With these interventions it is good news that new HIV infection among children were reduced by 58% from 2000-2014 in the western world (WHO, 2015; UNAIDS 2010). On the other hand, 95% of vertical transmission of HIV occurs in resource limited areas. According to Lala and Merchant (2010), every minute an infected infant is born in spite of the fact that vertical transmission is largely preventable, mainly because translating knowledge into practice is not always feasible. This has led to continuous growing numbers of children with HIV, thereby making pediatric HIV a looming problem rapidly draining the already burdened health care system of these countries.

The growth of AIDS cases among women has as consequence; the increase in mother-to-child transmission (MTCT) of HIV infection is considered the most common etiology for pediatric AIDS. Almost all AIDS cases in children under 13 years of age have vertical transmission of HIV as their source of infection as the rate of MTCT transmission of HIV, without any intervention, stands at around 25.5%, and it is possible to reduce this to levels between 0% and 2%, by means of preventive
interventions (Cruz, Rodrigues & Oliveira, 2013). Furthermore, the authors added that, without preventive interventions approximately one-third of infants born to HIV-positive mother’s contract the virus, becoming infected during their mother’s pregnancy, childbirth or breastfeeding. Thus, it becomes imperative that pregnant positive mothers utilize the preventive measures against mother-to-child transmission.

Pregnant women are regarded as a vulnerable group which must not be neglected in the fight against the HIV/AIDS pandemic due to their viability to transmit the virus to their babies either in utero, during birth or through breastfeeding. The National Aids Control Agency (NACA), (2010) asserted that, Mother-to-child transmission (MTCT) is believed to be responsible for more than 90% of these infections. Around two-thirds of MTCT occurs in utero and at delivery and one-third occurs during breast feeding. Without preventive interventions, most infants born to HIV-positive mothers will contract the virus. According to Dokiboeria and Kpe-Nobana (2016), unfortunately, in Nigeria and other countries with poor health systems, particularly poor maternal and child health programmes, this transmission route continues to cause great concern. Mother to child HIV transmission through breast milk, however, continues to increase, particularly in Africa, where strong cultural and economic factors favour breast milk feeding rather than expensive breast milk substitutes. Furthermore, employment of safe breast milk substitutes is complicated by the fact that many HIV-infected women lack access to clean water.

It is an accepted fact that availability and adequacy of resources are important in the utilization of PMTCT services. During the researcher’s clinical experience in UPTH, it was observed that despite the availability of prevention programme for HIV positive women, very few women utilized the services and children are being admitted with HIV positive related complications. There is no doubt that possibly, some women are either not aware or they do not have a positive attitude towards the programme. Hence, the researcher deems it necessary to investigate the knowledge, attitude and utilization of such service by HIV positive mothers the utilization of preventive measures against mother-to-child transmission of HIV among positive pregnant women becomes the most essential strategy to manage the pandemic among this vulnerable group.

Research Questions
The study provided answers to the following research questions:

1. What is the level of knowledge of positive pregnant women on preventive measures against mother-to-child transmission of HIV?
2. What is the attitude of respondents towards preventive measures against mother-to-child transmission of HIV?
3. What is the extent of utilization of preventive measures against mother-to-child transmission of HIV?

Hypotheses
The following hypotheses postulated were tested at 0.5 alpha level:

1. There is no significant relationship between knowledge of PMMTCT and utilization of preventive measures against mother-to-child transmission of HIV among respondents.
2. There is no significant relationship between attitude towards PMMTCT and utilization of preventive measures against mother-to-child transmission of HIV among respondents.

METHODOLOGY
The methods and procedure used in the study are described below:

Study Design: This study adopted the cross-sectional design. A cross-sectional study design is a type of observational study that analyzes data from a population, or a representative subset, at a specific point in time without manipulating any variable. This study examined the determinants of utilization of preventive measures against mother-to-child transmission of HIV among positive pregnant women in teaching hospitals in Rivers State, Nigeria without manipulating any variable or carrying out any intervention. Thus, the design was considered appropriate for use in this study.

Population for the study: The population for the study comprised of all positive pregnant women attending Antenal Clinic in Rivers State Teaching Hospital and university of Port Harcourt Teaching Hospital. One of the inclusion criteria is that the woman must be booked at early gestation (4-6weeks).
Sample and Sampling technique: The sample size for this study was 238 which was determined using Fisher’s Formula: \( n = \frac{z^2 \cdot pq}{e^2} \) where \( n \) = Sample size; \( z \) = confidence level taken as 95% = 1.96; \( p \) = proportion of the population with desired characteristics taken as 17% (Okoye & Tobin-West, 2011); \( q \) = proportion of the population without the desired characteristics = 1 – \( p \); and \( e^2 \) = Degree of precision taken as 5% (0.05). Adding 10% attrition rate, \( n = 238 \). The convenient sampling technique was adopted to select the respondents for the study.

Instrument for Data Collection: A semi-structured questionnaire which was drafted by the researcher was used for data collection. The questionnaire was developed from information available in the literature on factors affecting utilization of preventive measures against mother-to-child transmission of HIV. Section A elicited response on the socio-demographic characteristics of the respondents, section B was focused on the knowledge of preventive measures against mother-to-child transmission of HIV while section C was focused on the attitude of respondents towards preventive measures against mother-to-child transmission of HIV.

Validity of instrument: The instrument was constructed based on the variables of interest in the specific objectives and literature review. Furthermore, the instrument was given to two experts in the field of study for corrections. Finally, the instrument was given to the research supervisors for approval. Suggestion made was used to modify the instrument.

Reliability of instrument: A test-retest procedure was used. The answers were collected, and analysed using the Pearson Product Moment Correlation. The reliability coefficient of the instrument was 0.81. This certifies the instrument to be reliable for use in this study.

Data Collection Procedure: The researcher visited the study sites before the research date and early on the days of data collection to introduce herself and seek the consent of the positive pregnant women to participate in the study. Questionnaires were distributed and administered to the positive pregnant women at the teaching hospitals. The contents of the questionnaire were explained to the respondents in the language they understood to enable them respond appropriately. The questionnaires were retrieved at a spot immediately after completion.

Method of data Analysis: Completed questionnaires were collected, coded and entered into the computer using the Statistical Package for Social Science (SPSS) version 25.0. Statistical tools used include: percentage, mean, standard deviation and inferential statistics such as simple regression at 0.05 alpha level. The results were presented in charts and tables.

RESULTS
The results of the study are presented below in figures and tables:

![KNOWLEDGE OF PMMTCT OF HIV](image)

Fig 1: Pie chart showing the level of knowledge of respondents on PMMTCT of HIV
Fig 1 shows the pictorial presentation of the knowledge of PMMTCT among positive mothers in Rivers State. The result shows that, 92.9% of the respondents had high level of knowledge about PMMTCT while 7.1% had low knowledge level.

Table 1: Knowledge of PMMTCT of HIV among positive pregnant women in Rivers State

<table>
<thead>
<tr>
<th>SN</th>
<th>Items</th>
<th>Responses</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Correct F(%)</td>
<td>Incorrect F(%)</td>
</tr>
<tr>
<td>1</td>
<td>The use of ARTs is the major way of reducing MTCTs</td>
<td>224(99.6)</td>
<td>1(0.4)</td>
</tr>
<tr>
<td>2</td>
<td>Treatment of women and their children with antiretroviral during the course of pregnancy and breastfeeding can lower the risk of MTCT</td>
<td>225(100)</td>
<td>0(0.0)</td>
</tr>
<tr>
<td>3</td>
<td>Use of ART during pregnancy and breastfeeding can reduce transmission risk to less than 5% and child morbidity in general</td>
<td>223(99.1)</td>
<td>2(0.9)</td>
</tr>
<tr>
<td>4</td>
<td>Elective caesarean section (ECS) before the onset of labour has decreased the risk of HIV transmission by approximately 50%</td>
<td>185(82.2)</td>
<td>40(17.8)</td>
</tr>
<tr>
<td>5</td>
<td>ECS reduces MTCT rates by preventing the neonate from coming into direct contact with infected maternal fluids and secretions during labour</td>
<td>182(80.9)</td>
<td>43(19.1)</td>
</tr>
<tr>
<td>6</td>
<td>ECS is beneficial compared to vaginal delivery because the risk of transmission may increase during complicated vaginal delivery</td>
<td>176(78.2)</td>
<td>49(21.8)</td>
</tr>
<tr>
<td>7</td>
<td>Reducing the viral load in the vaginal canal during vaginal birth significantly reduces the risk of intra-partum transmission of HIV</td>
<td>222(98.7)</td>
<td>3(1.3)</td>
</tr>
<tr>
<td>8</td>
<td>Proper feeding techniques, management of complications such as subclinical mastitis as well as psychological support and coping strategies should be covered in these postnatal counseling sessions.</td>
<td>222(98.7)</td>
<td>3(1.3)</td>
</tr>
<tr>
<td>9</td>
<td>Breastfeeding is a possible period of transmission of HIV from mother to child</td>
<td>218(96.9)</td>
<td>7(3.1)</td>
</tr>
<tr>
<td></td>
<td>Overall</td>
<td>209(92.9)</td>
<td>16(7.1)</td>
</tr>
</tbody>
</table>

Criterion mean = 1.5. Grand mean = 1.9.

Table 4.1 shows the knowledge of PMMTCT of HIV among positive pregnant women in Rivers State. The result shows that overall 209(92.9%) of the respondents were knowledgeable about PMMTCT while 16(7.1%) were not. Therefore, the level of knowledge of PMMTCT among positive pregnant women in Rivers State was high.

Table 2: Attitude of positive pregnant women towards utilization of PMMTCT of HIV

<table>
<thead>
<tr>
<th>SN</th>
<th>Items</th>
<th>X</th>
<th>SD</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I cannot infect my baby because I can cure HIV using native remedies during pregnancy</td>
<td>3.44</td>
<td>.67</td>
<td>Positive</td>
</tr>
<tr>
<td>2</td>
<td>WHO recommended exclusive breastfeeding and I intend to follow it</td>
<td>3.40</td>
<td>.72</td>
<td>Positive</td>
</tr>
<tr>
<td>3</td>
<td>Preferred to have babies through normal delivery</td>
<td>2.60</td>
<td>1.06</td>
<td>Positive</td>
</tr>
<tr>
<td>4</td>
<td>Pregnant women deliver without infecting their child in TBAs place</td>
<td>1.73</td>
<td>.68</td>
<td>Negative</td>
</tr>
<tr>
<td>5</td>
<td>Preferred taking native medicines to ARV drugs during pregnancy</td>
<td>2.40</td>
<td>.56</td>
<td>Negative</td>
</tr>
<tr>
<td>6</td>
<td>Preferred TBAs because they give good antenatal care.</td>
<td>3.28</td>
<td>.67</td>
<td>Positive</td>
</tr>
<tr>
<td>7</td>
<td>Preferred TBAs because attitude of health workers towards HIV positive mothers.</td>
<td>3.32</td>
<td>.66</td>
<td>Positive</td>
</tr>
<tr>
<td>8</td>
<td>ARV drugs causes complications for mother and baby.</td>
<td>3.27</td>
<td>.66</td>
<td>Positive</td>
</tr>
<tr>
<td>9</td>
<td>TBAs have a way of curing HIV, so I prefer to use TBAs to ANC.</td>
<td>3.32</td>
<td>.69</td>
<td>Positive</td>
</tr>
<tr>
<td>10</td>
<td>Use of ART during pregnancy and breastfeeding can reduce transmission risk of HIV from mother to child.</td>
<td>3.54</td>
<td>.79</td>
<td>Positive</td>
</tr>
<tr>
<td></td>
<td>Overall</td>
<td>3.03</td>
<td>0.72</td>
<td>Positive</td>
</tr>
</tbody>
</table>

Criterion mean = 2.5
Table 2 shows the attitude of positive pregnant women towards utilization of PMMTCT of HIV. The result shows that the grand mean $= 3.03 \pm 0.72$ is greater than the criterion mean of 2.5 indicating a positive attitude. Thus, HIV positive pregnant women in Rivers State have positive attitude towards the utilization of PMMTCT of HIV.

![Bar chart showing the level of utilization of PMMTCT among positive mothers.](image)

**Fig 3**: Bar chart showing the level of utilization of PMMTCT among positive mothers.

Fig shows the pictorial presentation of the level of utilization of PMMTCT among positive mothers. The result shows that about half (50.70%) of the respondents utilized the PMMTCT services adequately, 43.10% had average level of utilization while 6.20% had inadequate level of utilization of PMMTCT.

Table 4: Regression analysis showing the relationship between knowledge of PMMTCT and utilization of preventive measures against mother to child transmission of HIV among respondents

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R square</th>
<th>Adjusted R square</th>
<th>B</th>
<th>P</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge</td>
<td>0.968</td>
<td>0.936</td>
<td>0.936</td>
<td>0.346</td>
<td>0.000</td>
<td>Rejected</td>
</tr>
</tbody>
</table>

Table 4 shows the regression analysis of the relationship between knowledge of PMMTCT and utilization of PMMTCT. The result shows a significant high positive relationship between knowledge of PMTCT and the utilization of PMMTCT ($r = 0.968; p<0.05$). Therefore, the null hypothesis which states that there is no significant relationship between knowledge of PMTCT and utilization of PMMTCT of HIV among positive pregnant women in Rivers State is rejected.

Table 5: Regression analysis showing the relationship between attitude towards PMTCT and utilization of preventive measures against mother to child transmission of HIV among respondents

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R square</th>
<th>Adjusted R square</th>
<th>B</th>
<th>P</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude</td>
<td>0.983</td>
<td>0.966</td>
<td>0.966</td>
<td>1.124</td>
<td>0.000</td>
<td>Rejected</td>
</tr>
</tbody>
</table>

Table 5 shows the regression analysis of the relationship between attitude towards PMMTCT and utilization of PMMTCT. The result shows a significant high positive relationship between attitude towards PMTCT and the utilization of PMMTCT ($r = 0.983; p<0.05$). Therefore, the null
hypothesis which states that there is no significant relationship between attitude towards PMMTCT and utilization of PMMTCT of HIV among positive pregnant women in Rivers State is rejected.

**DISCUSSION OF FINDINGS**

The findings of the study are discussed below:

The findings of this study show that the level of knowledge of PMMTCT among positive pregnant women was high as majority (92.9%) of the respondents were knowledgeable about PMMTCT. This finding may not be surprising because the study was carried out among positive pregnant women who probably have been taught several times about the preventive measures during their antenatal visits and were guided about it, thus the high level of knowledge found among them. The finding of this study corroborates that of Kifle and Dube (2016) whose study in Ethiopia on the utilization of Prevention of Mother-to-Child Transmission of HIV Services and Associated Factors showed a high knowledge of PMTCT among the respondents. The finding of this study is in line with that of Igbal, Maqsood, Zafar, Zakar, Zakar and Fischer (2019) on the determinants of overall knowledge of and attitudes towards HIV/AIDS transmission among ever-married women in Pakistan which showed that majority of the respondents had good knowledge of HIV/AIDS transmission. The finding of this study is also in support of the study of Dzah, Tarkang and Lutala (2019) carried out in Ghana on the knowledge, attitudes and practices regarding HIV/AIDS in Sekondi-Takoradi metropolis which also showed that majority of the respondents had good knowledge. The finding of this study is also in line with that of Goffery (2011) whose study in Malawi on low uptake of PMMTCT and knowledge on the risk of MTCT showed that majority (86%) of the respondents were knowledgeable. However, the findings of this study on the high level of knowledge about PMMTCT was different from that of Balogun and Odeyemi (2010) whose study on knowledge and practice of PMMTCT showed that only 8.3% of the respondents had good level of knowledge about HIV and PMMTCT. This variation might be due to the difference in the study location and sample size used in both studies.

The tested hypothesis shows a significant high positive relationship between knowledge of PMMTCT and the utilization of PMMTCT ($r = 0.968; p<0.05$). This finding is in line with that of Mustapha et al (2018) whose finding from a study on the utilization of prevention of mother-to-child transmission of HIV services by mothers in Uganda showed that the benefits of knowing HIV status (90.2%) was the commonest reported motivating factor for utilizing PMMTCT services. The finding is also in line with that of Balogun and Odeyemi (2010) which showed that, higher levels of knowledge positively influenced these practice significantly ($p<0.05$). The fact that the previous studies and the present one were all carried out among women, majority of who are antenatal attendees who probably were taught about PMMTCT during their clinic visits might be implicated for the similarity found between the different studies.

The findings of this study shows that HIV positive pregnant women in Rivers State have positive attitude towards the utilization of PMMTCT of HIV as the grand mean = 3.03±0.72 is greater than the criterion mean of 2.5 indicating a positive attitude. The result of the tested hypothesis shows a significant high positive relationship between attitude towards PMMTCT and the utilization of PMMTCT ($r = 0.983; p<0.05$). This finding might be due to the fact that the high knowledge of the respondents was expressed in their attitude towards PMMTCT. The finding of this study is also in support of the study of Dzah, Tarkang and Lutala (2019) carried out in Ghana on the knowledge, attitudes and practices regarding HIV/AIDS in Sekondi-Takoradi metropolis which showed that majority of the respondents had positive attitude. The finding of this study is in line with that of Igbal, Maqsood, Zafar, Zakar, Zakar and Fischer (2019) on the determinants of overall knowledge of and attitudes towards HIV/AIDS transmission among ever-married women in Pakistan which showed that majority of the respondents had positive attitude. The finding of this study corroborates that of Kifle and Dube (2016) whose study in Ethiopia on the utilization of Prevention of Mother-to-Child Transmission of HIV Services and Associated Factors showed that majority of the respondents had positive attitude towards PMMTCT. The fact that the previous studies and the present one were all carried out among women, majority of who are antenatal attendees who probably were taught about PMMTCT during their clinic visits might be implicated for the similarity found between the different studies.

The finding of this study shows that about half (50.7%) of the respondents utilized the PMMTCT services adequately, 43.1% had average level of utilization while 6.2% had inadequate level of
The finding of this study is in support of that of Wanyenze et al (2018) whose study on the utilization of prevention of mother-to-child transmission (PMMTCT) services among pregnant women in HIV care in Uganda showed that, 61.4% were on ART at baseline. The finding of this study is difference from that of Kifle and Dube (2016) on the utilization of Prevention of Mother-to-Child Transmission of HIV Services and Associated Factors among Antenatal Care Attending Mothers in Sebeta Town, Central Ethiopia where a higher percentage (89.9%) was reported for the utilization of PMMTCT service among ANC attendees. The finding of this study is at variance with that of Mustapha et al (2018) whose study on the utilization of prevention of mother-to-child transmission of HIV services by adolescent and young mothers in Mulago Hospital, Uganda showed that, optimal utilization of PMMTCT services among the mothers at 30% was low. The finding of this is also at variance with that of Balogun and Odeyemi (2010) whose finding shows inadequate practice PMMTCT among the respondents. These variations found between the previous studies and the present one might be due to the variations in the study location, sample size and the sampling technique adopted in the various studies.

CONCLUSION
Based on the findings of the study, it was concluded that, HIV positive mothers in Rivers State were knowledgeable about PMMTCT, possess a positive attitude towards PMMTCT but an average level of utilization which is not in commensurate with their knowledge and attitude towards PMMTCT.

RECOMMENDATIONS
Based on the findings of the study, the following recommendations were made:

1. The health care workers should not relent in their effort to give information about the PMMTCT to positive mothers to sustain the high level of knowledge found among them.
2. The government should sustain their effort in providing the ART for positive pregnant women.
3. The management of the tertiary health institutions should strategize more measures to improve the quality of services rendered to women on PMMTCT.

ACKNOWLEDGEMENT
The researcher hereby declares or acknowledged that there is no conflict of interest.

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