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The Impact Of Anti – Retroviral Treatment on the Prevention of Mother to Child Transmission of Human Immunodeficiency Virus among Children Seen At the Dalhatu Araf Specialist Hospital Lafia North-Central Nigeria.

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Abstract
Background
The Prevention of mother to child transmission of HIV has proven to be of public health importance since more than 90% of HIV infections in children are gotten via vertical transmission. This study set out to determine the prevalence of post natal HIV, the impact of PMTCT on the post natal HIV and the risk factors.
Methods*: The study was a retrospective cross sectional study done between January 2015 to December 2017 at the Anti-retroviral Treatment Clinic of the Dalhatu Araf Specialist Hospital Lafia.*
Results: *A total of 579 Dried Blood Spot (DBS) sample were taken and sent for Polymerase Chain Reaction (PCR) within the period. Four hundred and forty nine results were gotten as at the time of compiling this result (others are being awaited). The prevalence of postnatal HIV was 2.7%. Only one out of the twelve positive results partook in the PMTCT program.*
Conclusion: *The PMTCT program is an effective means of eliminating vertical transmission of HIV, breastfeeding is the predominant feeding practice among HIV infected mother, there are more females than the males, developing HIV through maternal to child transmission.*
Recommendation: *Efforts should be made to sustain and improve on PMTCT awareness and use among HIV infected mothers.*
Key words*; antiretroviral, impact, post natal HIV, prevention of mother to child transmission.*

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I. Introduction

The Human Immunodeficiency Virus (HIV) is the cause of Acquired Immunodeficiency Syndrome (AIDS).[1] It has become one of the world's most serious health and developmental challenges with its biggest burden in sub-Saharan Africa.[1,2] The sero-prevalence of HIV in 2014 in Nigeria was 3.0%.[3] Globally, approximately 2.1 million people were newly infected in 2013, with children accounting for 240,000 of these.[4] There are evidence on the effects of adult HIV on children one of which is through the mother to child transmission of HIV.[5] Mother to child transmission (MTCT) of HIV accounted for most cases of HIV infection among children.[6]

Children are more vulnerable to the impact of HIV with about 50% of HIV infected children at risk of not living to celebrate their second birthday and the mortality increase to 80% by 5 years.[7,8] Efforts and emphasis are being channelled to the early commencement of highly active anti retroviral therapy to ensure the prevention of maternal transmission of HIV.[6] Factors such as the gestational age of commencing ART, the mode of delivery and gender have been reported to influence this outcome.[9,10] There have being remarkable improvement in PMTCT since 1994 when evidence for the use of antiretroviral drugs for PMTCT was first reported.[11] It has resulted in reduction from 25 – 40% without intervention to less than or equal to 1% in developed countries.[6] Imade *et al*[10] at the University of Benin Teaching Hospital in 2010 reported a prevalence of 16.98% of postnatal HIV among 318 children whose parent had enrolled into their PMTCT program.

To this end, this study seeks to evaluate the effect of PMTCT program in our centre and to know the prevalence of MTCT. The study will also highlight the possible risk factors to the above. The outcome of this study may strengthen our PMTCT program and may guide us on areas to improve on.

Aims And Objectives

General objective

1. To determine the impact of PMTCT program on postnatal HIV among HIV exposed children at the Anti-retroviral Treatment Clinic of the Dalhatu Araf Specialist Hospital (DASH), Lafia.

Specific objectives

1. To determine the prevalence of postnatal HIV among HIV exposed children seen at the Anti-retroviral Treatment Clinic of DASH.
2. To determine the associated factors such as maternal use of Antiretroviral drug for prevention of mother to child transmission of HIV, gender and feeding options (if any) for the HIV prevalence among HIV exposed children in DASH.

II. Methodology

STUDY DESIGN

A retrospective study

STUDY AREA

The study was carried out at the Anti-retroviral Treatment Clinic at the Dalhatu Araf Specialist Hospital (DASH) between January 2015 to December 2017. The state is located in the North Central Geo-political zone of the country. It shares border with Kogi, Benue, Taraba, Plateau and Kaduna States as well as the Federal Capital Territory (FCT) Abuja. The major occupation of the people is farming and trading.

STUDY POPULATION

The study was done among HIV exposed children aged between six weeks to two years. The clinic is supported by Institute of Human Virology Nigeria (IHVN) and other Non Governmental Organisation (NGO) like SMILE.

Ethical approval

Ethical clearance was sought and obtained from the Dalhatu Araf Specialist Hospital Ethics Review Committee. Patient records and other sensitive data obtained from folder were and will be kept with utmost confidentiality.

Subject recruitment

All HIV exposed babies aged between six weeks to two years were recruited for the study. Diagnosis of HIV for children less than eighteen months are based on a positive polymerase chain reaction (PCR) from dried blood sample (DBS) taken from the heel of the foot from six weeks of life or a positive serial antibody testing using the Rapid Kit (Determine®, Stat Pak®or Unigold®) sequentially at 18months to 24months. A negative test to Determine®kit (the preferred because of its sensitivity) implies HIV negative. A positive Determine® test is confirmed with either the Stat Pak® or Unigold®. A discordance of results will be confirmed with a third kit to serve as a tie-breaker.[12]

Funding of research

The researchers provided the funds necessary for the study

Data collection

The anthropometric parameters such as the weight and length / height were gotten from patient's folders and records.

III. Results

A total number of five hundred and seventy nine HIV exposed infants had their Dried Blood Spot (DBS) samples taken for polymerase chain reaction done over a three year period (from January 2015 to December 2017). Males were 309 (53.4%) while female were 270 (46.6%). Four hundred and forty nine results were available as at the time of compiling these study. One hundred and thirty (22.5%) polymerase chain reaction results were still being awaited. Of the 449 results available, twelve (2.7%) were HIV positive with a M:F of 1:1.4. There was a significant difference between the males and females with positive and negative HIV results respectively (***p = 0.0001***). **Table I**

Table I: Characteristics of recruited patients by gender

	MALE n (%)	FEMALE n (%)	TOTAL N (%)	χ^2	***p value***
Patients recruited	309 (53.4)	270 (46.6)	579 (100)	257.3180	**0.0001**
Positive results	5 (41.7)	7 (58.3)	12 (100)		
Negative results	192 (43.9)	245 (56.1)	437 (100)		
Awaiting results	58 (44.6)	72 (55.4)	130 (100)		

All the mothers enrolled during the study period, opted for breast feeding as their preferred feeding option.

Table II

Table II: Feeding practices of the HIV infected mothers

Feeding options	Total n (%)
Breastfeeding	449 (100)
Breast milk substitute	0 (0)
Others	0 (0)

Most (74.4%) of the subjects have their polymerase chain reaction done at 6 weeks which is the recommended time based on National guidelines. Nine out of the twelve positives had their test done beyond six weeks. There is a statistically significant difference between the polymerase chain reaction results of children whose DBS sample was taken at six weeks and those after six weeks (***p = 0.0001***). **Table III**

Table III: Age distribution of subjects

Age (weeks)	Number of Positive n (%)	Total number N (%)	χ^2	*p value*
6	3 (25)	431 (74.4)	800.175	**0.0001**
>6 – 12	0 (0)	59 (10.2)		
>12	9 (75)	89 (15.4)		

Of the twelve subjects with positive HIV result, only one had PMTCT program (***p = 0.0001***). **Table IV**

Table IV: Effects of PMTCT on the HIV positive results

PMTCT	n	Percentage	χ^2	*p value*
PMTCT				
Yes	1	8.3	702.760	**0.0001**
No	11	91.7		

IV. Discussion

Prevention of mother to child transmission of HIV which is the predominant means of transmitting HIV among children was shown in this study like the earlier ones before it, to be an effective program towards eliminating the scourge of HIV/AIDS. The prevalence of post natal HIV was 2.7% in this study, which is similar to the 3.2% reported in the Brazil (2005 – 2011).[13] The reason for the similarity may be due to timing. This is different from the 16.9% and 11.8% reported by Imade et al[10] in Benin Nigeria and an earlier study in Brazil[13] (1998 – 2004) respectively. The difference may be due to the larger sample size used in this study. The time difference with those studies done over a decade ago may also be responsible for the findings.

Non participation in PMTCT program is an important risk factor for transmitting HV as only a child was positive to HIV among those that partook in PMTCT program. This is similar to earlier report from other studies.[6,13] The reason for this finding may be due to a possibly high viral load, non adherence to anti-retroviral drugs, length of use of ant-retroviral drugs or treatment failure in the mother of the child. There was a clear difference in the genders of children that acquired HIV in this study, similar to earlier report in Benin.[10] Other studies however reported no gender difference.[14,15] The exact reason for these findings are not well understood.

V. Conclusions

1. Prevention of mother to child transmission of HIV program is effective and efficient in preventing HIV transmission from mother to child in our facility
2. Gender is significantly associated with HIV transmission from mother to child
3. The prevalence of postnatal HIV in our facility is 2.7%.
4. Breastfeeding is the predominant feeding practice in our center.
5. More than 90% of postnatal HIV recorded in our centre were from mothers who did not partake in the PMTCT program

VI. Recommendation

Efforts should be made to improve PMTCT awareness and its use among HIV infected mothers.

Authors contributions

BSO; Conceptualisation, execution of study, collation and interpretation of data and preparation of final manuscript, **AES;** Partook in conceptualization, execution of study, interpretation and preparation of manuscript, **OH;** Partook in conceptualization, execution of study and preparation of final manuscript.

Conflict of interest; None

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