ORIGINAL ARTICLE

Duration of Breast Feeding and Outcome of HIV-Exposed Infants seen at a Tertiary Health Facility in Sokoto

Yusuf T, Jega MR

ABSTRACT

Background: Appropriate infant feeding is still a challenge to HIV-positive mothers especially in the developing world despite their desire to breast feeding beyond the WHO recommended 12 months' duration. **Objective: To** determine the duration of breast feeding and correlate with outcome of HIV-exposed infants in UDUTH, Sokoto. **Methods**: This descriptive observational study was conducted among HIV-exposed infants attending Paediatric ART(PMTCT) clinic, UDUTH, Sokoto. The demographics, infant post-exposure prophylaxis, duration of breast feeding and results of early infant diagnosis (EID) of the infants using HIV-DNA PCR machine; and maternal highly active antiretroviral therapy (HAART) history were documented. The data were analyzed using SPSS version 24.0. A p-value of ≤0.05 was taken as significant. **Results**: One hundred and sixty-three HIV-positive mother-infant pairs were studied, 103(61.7%) of the HIV-positive mothers were aged 25-34 years, 105(62.9%) were of lower socio-economic class and 94(56.3%) had informal education. One hundred and fifteen (62.5%) were on TDF/3TC/EFV and 143 (85.6%) were on HAARTs prior to the index pregnancy. One hundred and sixty-three of the HIV-exposed infants studied were breast-fed and 165 (98.8%) had nevirapine as infant PEP. The mean duration of breast feeding among HIV-exposed infants was 13.2(±3.5) months with a range 6 – 20 months. Ninety-eight (60.1%) infants were breastfed beyond 12months. All the HIV-exposed infants were not infected at the end of breastfeeding for 12 months or more. **Conclusion**: Majority of the HIV-positive mother's breastfed beyond WHO recommended 12 months and their infants were uninfected. This may support the upward review of the duration of breast feeding of HIV-exposed infants in our community.

Keywords: Duration, Breastfeeding, Outcome, HIV-Exposed, Infant.

[1]Department of Paediatrics, Usmanu Danfodiyo University Teaching Hospital, Sokoto, Nigeria

Corresponding Author: Dr Yusuf T, Department of Paediatrics, Usmanu Danfodiyo University, Sokoto. Email: dimeji74@gmail.com
Phone: +2348036087716

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Introduction

Optimal infant feeding practice includes exclusive breastfeeding for the first 6 months of life then appropriate, safe and adequate complementary feeding while breast feeding continues till 2 year of age or beyond.[1]It is an important determining factor of normal growth and development of a child. It poses a challenge to HIV-positive mothers especially in the resource constraint settings due to the risk of MTCT.[2-5]The risk of MTCT of the virus has denied the HIV-exposed infants of the benefits of optimal infant feeding practices. Appropriate infant and young child feeding

practices in the face of HIV needs to balance the risks of morbidity and mortality from undernutrition and infectious diseases such as pneumonia and diarrhoeal diseases; and transmission of HIV infection. The HIV transmission through breast milk was estimated to be responsible for a third of all paediatric HIV infection.[6]Though the challenge has persisted over the years but progress has been made with strategies employed to reduce the rate of MTCT and risks of undernutrition, diarrhoea and pneumonia. In 2010, WHO recommended that in the setting where undernutrition, pneumonia and diarrhoea are still common causes of childhood mortality, HIV-infected mothers whose infants are HIV negative or of unknown status to breastfeed exclusively for the first 6 months, then introduce complementary foods and continue to breastfeed for the first 12 months of life.[7] This was in view of the fact that there is reduced risk of mortality among young children after 12 months of age compared to the first 12 months of life and breastfeeding for longer periods has less impact on mortality in this later period.[8] Secondly, a nutritionally adequate diet based on family foods without breast milk can be provided for the growing child 12 months onward; and lastly, the possibility of significant adverse outcome from longer-term exposure to antiretroviral drugs through breast milk.[8]The recommendation has been domesticated in Nigeria and been implemented across the country, Usmanu Danfodiyo University Teaching Hospital (UDUTH), Sokoto inclusive with a success report. The striking observation among HIV-positive mothers is their desire to breastfeed beyond the WHO recommended 12 months despite adequate information and counselling received on the infant feeding options and HIV transmission. Although the guidelines noted that, for women living in food-insecure regions, continuing breastfeeding beyond 12 months may still be important for the child to achieve an adequate diet, but there is paucity of data on the outcome of extended duration of breast feeding of the HIV-exposed infants. This informed the need to conduct this study with the aim of determining the duration of breast feeding and correlate it with the outcome of HIV-exposed infants in UDUTH, Sokoto.

Methodology

This was a descriptive observational study conducted among the pair of HIV-positive mother and their HIV-exposed infants attending PMTCTclinic, UsmanuDanfodiyo University Teaching Hospital, Sokoto between 1st January, 2016 and 30th June, 2017. Approval for the study was obtained from the hospital's ethics and research committee and consent from the participating mothers.

The mother-infant pairs who consented to participate in the study were recruited consecutively as they presented to the clinic. In line with the 2014 National guidelines on PMTCT,[9] pregnant HIV-positive mothers received HAART and counseling on infant feeding options. HIV-Exposed infants received daily dose nevirapine for 6 weeks, then early infant diagnosis(EID)done by dried blood sampling for HIV-DNA assay using polymerase chain reaction machine from 6 weeks of life. Those exposed infants whose first EID result were negative and were on breastfeeding had a repeat test, at least, 6 weeks after cessation of breastfeeding and those who were negative were confirmed HIV-negative and discharged from the clinic from 18 months of age. The infants were seen on 1-3 monthly basis during which other services of HIV-exposed infant care such as

cotrimoxazole prophylaxis, growth monitoring, immunization, diagnosis and prompt treatment of other common childhood ailments and psychosocial support among others are offered in accordance to the National guidelines.[9] The demographics, infant post-exposure prophylaxis, duration of breast feeding and results of EID at or after 6 weeks of life and 6 weeks after cessation of breastfeeding using HIV-DNA PCR machine were documented. The demographics of the mothers and their drug (HAART) history were also documented. The socio-economic status of the infant was determined using Oyedeji's[10] socio-economic classification scheme and the infant's class was assigned to the mother.

The data were entered and analyzed using SPSS version 24.0. The results are presented in frequency tables and charts and test of significance among categorical variables was done using chi-square. A p-value of ≤0.05 was taken as significant.

Results

A hundred and sixty-seven HIV-positive mother-infant pairs were studied during 18 months' period with 85 males and 82 female infants. One hundred and three (61.7%) of the mothers were aged 25.1 -35.0 years, 94 (56.3%) had no formal education and 105(62.9%) of the infants were of lower socio-economic background as shown on Table I. One hundred and fifteen (68.9%) of the mothers were on tenovofir, lamivudine and efavirenz combination and 52 (31.1%) zidovudine, lamivudine and Nevirapine combination. One hundred and forty-three (85.6%) had been on HAARTs prior to the index pregnancy while 24 (14.4%) commenced HAARTS during the index pregnancy. One hundred and sixty-three (97.6%) of the HIV-exposed infants studied were breast-fed, while 4 (2.4%) were fed on high quality infant formula milk; and 165 (98.8%) had nevirapine as infant post-exposure prophylaxis for 6 weeks. The mean duration of breast feeding among HIV-exposed infants was 13.2(±3.5) months with a median and range of 13 months and 6 – 20 months respectively. Ninety-eight (60.1%) of the breastfed infants were fed beyond 12 months as depicted on Table II. Figure 1 shows the age at cessation of breastfeeding of the infants studied. Eighty-eight (89.8%) of the mothers who breastfed beyond 12 months were older than 25 years and 66 (67.3%) of the mothers were of lower socio-economic class as shown in Table III. All the HIV-exposed infants studied were discharged uninfected.

Table 1: Demographics of HIV-positives mothers and infants studied

Parameter	Number (%)
Maternal Age (years)	
15.1 – 25.0	29 (17.3)
25.1 – 35.0	103 (61.7)
>35	35 (21.0)
Maternal Educational Status	
None	56 (33.6)
Informal	38 (22.7)
Formal	91 (43.7)
Social-economic status	
Upper	22 (13.2)
Middle	40 (23.9)
Lower	105 (62.9)

Table 2: Duration of Breast feeding among HIV-exposed Infants in UDUTH, Sokoto.

Duration (Months)	Number (%)
≤ 12	65 (39.9)
13 – 18	89 (54.6)
19 – 24	9 (5.5)
Total	163 (100)

Table 3: Determinants of prolonged breast feeding among HIV-Positive mothers in UDUTH, Sokoto

Parameters	Duration of Breastfeeding in months			Total	χ^2	p-value
	≤12	13 – 18	>18			
Maternal age					**10.5**	**0.03**
15.1 – 25.0	18	**8**	**2**	**28**		
25.1 – 35.0	33	**63**	**5**	**101**		
>35.0	14	**18**	**2**	**34**		
Maternal Educational Status					**4.9**	**0.09**
None	24	42	3	69		
Informal	9	15	1	25		
Formal	32	32	5	69		
Socioeconomic status					**10.8**	**0.03**
Upper	13	6	-	19		
Middle	14	23	3	40		
Lower	38	60	6	105		

Discussion

Breastfeeding is a cornerstone to infant nutrition and it is associated with challenges in the presence of maternal HIV-infection.[1,6] It is a recognized cultural practice among women of reproductive age group in sub-Saharan Africa as it gives fulfillment of motherhood. The study has shown the duration of breastfeeding among HIV-exposed infants and their outcome with respect to MTCT transmission of HIV infection in a tertiary health institution in Sokoto, Northwest Nigeria.

The use of antiretroviral among the pregnant women to prevent transmission of HIV infection to their infants is a cornerstone in the PMTCT of HIV infection. In 2010 and more recently, WHO recommended lifelong antiretroviral drugs for pregnant and breastfeeding HIV-positive mothers in order to reduce the rate of MTCT of HIV infection.[7,8]In this study all the mothers were on lifelong antiretroviral drugs, majority had been on the drugs prior to the pregnancy of the paired infants in consonance with the provisions of the WHO and National guidelines on the PMTCT.

Almost all the infants had nevirapine for 6 weeks as post-exposure infant prophylaxis. An effective antiretroviral drug combination or regimen lowers the viral load and the pregnant or breastfeeding woman becomes virally suppressed.[3,4]This lowers the risk of

transmission or prevents the transmission of the virus to the unborn child in-utero, during labour and delivery and breastfeeding. And for PMTCT to be successful, there is need for availability of effective HAARTs and accessible to all pregnant and breastfeeding women living with HIV infection.[4,7,8]

Nutrition is an important component of strategies employed in the prevention of MTCT of HIV-infection.[4,7-9] Breastfeeding is recommended as option of infant feeding by WHO especially in developing countries.[7-9] Almost all the mothers in this series opted for breastfeeding as an option of infant feeding but majority of the infants were breastfed beyond the recommended 12 months. The high prevalence of breast-feeding practice is similar to the observations in the general population in the locality, National level and other earlier reports among HIV-positive mothers.[11-18]This may be related to the cultural practices of the inhabitants and its acceptability and affordability among mothers in this locality. Breast feeding is common but replacement milk feeding with high quality infant milk is less affordable for most of the families involved in this study and the community at large as demonstrated in the study. However, the finding was in contrast to the reports from Ibadan, Benin and Enugu, Southern Nigeria, Ghana and Ethiopia from where the majority of the HIV-positive mothers were reported to have opted for replacement milk feeding.[16,18-22]This may be related to the potential risk of HIV transmission through breastmilk and perhaps, the affordability of breastmilk substitutes in the study areas being more affluent than our study area, as the rate of poverty is observed to more in the northern part of the country.[12]

In 2010, WHO recommended that HIV-infected mothers can breastfeed exclusively for the first 6 months, then introduce complementary foods and continue to breastfeed for the first 12 months of life.[7] In this study, it was observed that majority of the HIV-positive mothers who opted to breastfeed, breastfed beyond the recommended 12 months period. This is similar to the findings of studies reported from Ethiopia.[6,18,19]However, this is in contrast to the observation reported earlier in the literatures which showed that, probably in compliance with the earlier guidelines, majority of the HIV-positive women had stopped breastfeeding by 12 months after delivery.[15-17,24] The practice of breastfeeding beyond the first 12 months of life was observed in this study to be common among older HIV-positive mothers who had been on HAARTs for long and were of lower socioeconomic background. It was also observed that none of the infants studied in this series acquired HIV infection after the cessation of breast feeding. Effective HAART lowers the viral load in pregnant or lactating mothers, thus reducing the transmission rate of HIV.[25,26]In the setting of safe and effective maternal HAARTs, extending the period of breastfeeding beyond 12 months is not likely to be associated with HIV infection among HIV-exposed infants. These findings support the WHO recommendation in 2016 which recommends that HIV-positive in settings where malnutrition, diarrhoea and pneumonia are prevalent cause of child's mortality can exclusively breastfeed for the first six months then introduced appropriate and adequate complementary food while breastfeeding continues for up to 24 months or more while the mother is on lifelong effective antiretroviral drugs.

In conclusion, the majority of the HIV-positive mothers breastfed beyond 12 months and their infants were uninfected. This may support the

upward review of the duration of breast feeding of HIV-exposed infants to beyond 12 months in our community provided the mother is adherent to her effective antiretroviral drugs. This also underscores the need for the availability of effective antiretroviral combinations in our ART centres or clinics and increased uptake of PMTCT services in our community. This perhaps may improve the nutritional status and extend the period of protection of breastfeeding against infections such as diarrhoeal diseases, pneumonia among this group of children, therefore, improving the HIV-free survival rate and child health indices in our community.

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