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EXCLUSIVE BREASTFEEDING AND MALARIA IN EARLY INFANCY: EXPERIENCE FROM BENIN CITY, NIGERIA.

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Abstract

Malaria is a leading cause of morbidity and mortality in African children including infants while the roles of exclusive breastfeeding in the prevention of infections and protection against several common childhood morbidities are widely acknowledged. To study the role of exclusive breastfeeding on the incidence of malaria in early infancy, a facility based analytical case control study was carried out at the Paediatric facilities of the University of Benin teaching Hospital (UBTH) Benin City between August 2007 and September 2008. The study involved 399 mother/baby pairs. Two hundred and forty three (60.9%) of the 399 mothers practised exclusive breastfeeding as against 156 (39.1%) who did not. Only 41 (10.3%) of the 399 infants had malaria in early infancy. Of the 243 infants who were exclusively breastfed, 22(9.1%) had malaria in comparison with 19 (12.2%) of the 156 that were not exclusively breastfed that had malaria in early infancy. No significant association therefore existed between exclusive breastfeeding and incidence of malaria in early infancy. The incidence of malaria in early infancy is low but it is even lower in children exclusively breastfed. This coupled with other gains of exclusive breastfeeding. Its practice should be encouraged and strengthened.

Introduction

Exclusive breastfeeding (EBF) is when a child receives only breast milk with no other liquids or foods given from the mother or caregiver.[1] Exclusive breastfeeding for six months, followed by introduction of appropriate complementary foods and continued breastfeeding as recommended by the World Health Organization (W.H.O), are cornerstones in infant nutrition.[2-4] EBF has proven benefits for both mother and child. Some of its benefits to the infant include: protection against infection/morbidities (diarrhoea, Haemophilus influenza related infections, necrotizing enterocolitis, otitis media and respiratory infections).[5] enhances vaccine response, protection from allergies.[5]

To establish successful exclusive breastfeeding, no drink should be giving to the child before or after the first breastfeeding session including water, glucose water, herbal fluids or other fluids.

KEY WORDS: *Exclusive Breastfeeding, Early Infancy, Malaria*

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Malaria is the most important disease caused by protozoa in the tropics. It is prevalent in tropical and sub-tropical regions affecting about 300-500 million people per year. It kills more than one million persons annually, mostly children under the age of five years.[6-8] Of the over 270 million new cases of malaria seen each year worldwide, 80% are in tropical Africa.[9-11] Malaria contributes to one out of every ten infants' deaths.[12] Therefore any research endeavor that seeks to identify ways to reduce infant morbidity and mortality due to malaria is worthwhile.

The study therefore sought to establish if any relationship exists between exclusive breastfeeding and malaria in early infancy. Three hypotheses are plausible; EBF confers no protection against malaria or it confers some protection though insignificant against malaria or it confers significant protection against malaria during this period.

If the research effort shows the third scenario, then it would have identified an easy and cheap way to reduce infant morbidity and mortality in malaria endemic areas. It will further affirm W.H.O recommendations on infant feeding practices which advocate exclusive breastfeeding for the first six months of life.

PATIENTS AND METHODS

Study setting

The study was carried out at the University of Benin Teaching Hospital [Paediatric Out-Patient ward and General Practice Clinic (GPC)], Benin City. Benin City is located in Mid-western Nigeria and is Cosmopolitan.

Study design

A health facility based, analytical and descriptive study was done. Subjects who did not have malaria in the first six months of life served as controls and were compared with those who had malaria during the same period.

Study duration

The study was carried out between August 2007 and September 2008. Questionnaires were administered during consultation hours on working days at the health facilities on mothers who met the inclusion criteria and had children in late infancy.

Exclusion criteria

Mothers who declined to participate in the study and mothers with conditions acknowledged as contraindication to breastfeeding, for example, HIV/AIDS and use of cytotoxic drugs were excluded. Also, mothers with babies who had received blood transfusion, either exchange or straight forward transfusion, or had congenital malaria were also excluded from the study.

Ethical consideration.

Assurance of confidentiality of information provided by respondents was guaranteed and informed consent obtained before questionnaires were administered. Permission from UBTH Ethics Committee was obtained.

Sampling technique

Data were collected by the use of questionnaires that were administered by the researchers. The questionnaire contained both open and closed ended questions relating to the knowledge and

practice of EBF and occurrence of malaria and other illnesses in early infancy, amongst others. Mothers of the infants provided answers to the questions.

Data analysis

Data were entered into a spreadsheet on Microsoft Office Excel 2003 edition from where frequency and contingency tables were drawn. Arithmetic means and standard deviations were calculated and tests of association were performed using the chi-square test. P value less than 0.05 were considered significant.

RESULTS

Of the 399 infants involved in the study, 324(81.2%) were between 7-9 months of age while 75(19.8%) were between 10-12 months. The modal age bracket was 7-9 months of age.

Knowledge and practice of exclusive breastfeeding

Of the 399 respondents 378(94.7%) claimed to have heard of exclusive breastfeeding but only 342 (85.7%) had adequate knowledge of what it represents. Fifty seven (14.3%) had poor or no knowledge of exclusive breastfeeding. Sources of information on exclusive breastfeeding were mainly hospitals clinics336/421 (79.8%) responses; mass media, 32/421 (7.6%) and friends, 31/421 or7.4%. Others were relatives, 12 or 2.9% and schools, 10 or 2.4%. Two hundred and forty three (60.9%) out of the 399 mothers practiced exclusive breast feeding as against 156(39.1%) who did not.

Feeding practices of those that did not exclusively breastfeed.

The predominant feeds given by mothers who did not practice exclusive breastfeeding were breast milk and water 82(48%), followed by breast milk and infant formulae 56(32.7%), then breast milk and pap 31(18.1%). A mother gave breast milk and soya beans and the other infant formula alone to her infant. (Some mothers gave more than one form of feeds, this accounted for the disparity between 171 and 156).(Table I)

Reasons given by 145 mothers for not exclusively breastfeeding.

The most frequent reason for not exclusively breastfeeding was that breast milk was inadequate (27.6%), (Table II). Twenty-one (14.5%) mothers did not practice exclusive breastfeeding because they had a poor knowledge of what exclusive breastfeeding was all about. Eleven (7.6% mothers attributed inability to exclusively breastfeed their babies to the demanding nature of their jobs. Ten (6.9%) mothers did not practice exclusive breastfeeding because they were advised against it by relatives and friends while 9(6.2%) mothers said that it was too stressful to do so.

Incidence of malaria in early infancy.

Only 41(10.3%) out of 399 infants studied had malaria in early infancy while 358(89.7%) did not have malaria in the same period. Of the 41 infants that had malaria in early infancy, 34(82.9%) had only one episode while 7(17.1%) had two episodes of malaria within the same

Table I: Feeding practices of those that did not exclusively breastfeed.

Mode of Feeding	Frequency (%)
Breast milk and water	82(48.0)
Breast milk and infant formula	56(32.7)
Breast milk and pap	31(18.1)
Others	2(1.2)
Total	***171(100.0)**

(Some mothers gave more than one form of feeds, this accounted for the disparity between 171 and 156).

Table II: Reasons given by 145 mothers for not exclusively breastfeeding their babies.

Reason	Frequency (%)
Volume of breast milk is inadequate	40(27.6)
No/poor knowledge of EBF	21(14.5)
Baby needs water	20(13.8)
Job demand	11(7.6)
Influenced by others	10(6.9)
EBF is stressful	9(6.2)
Multiple birth	6(4.1)
Poor flow of breast milk	6(4.1)
Maternal ill-health	5(3.4)
Others	17(11.7)
Total	**145(100.0)**

(Of the 156 mothers who did not practice exclusive breastfeeding, 11 mothers said they had no reason for not doing it)

Table III: Exclusive breastfeeding and incidences of malaria and other febrile illnesses in early infancy.

	Exclusive breastfeeding				
Malaria	**Yes (%)**	**No (%)**	**Total (%)**	**X^2**	**p value**
Yes	22(9.1)	19(12.2)	41(10.3)		
No	221(90.9)	137(87.8)	358(89.7)	1.000	> 0.05
Other febrile illnesses					
Yes	78(32.1)	63(40.4)	141(35.3)		
No	165(67.9)	93(59.6)	258(64.7)	3.841	>0.05

Table IV: Educational status of mothers and practice of EBF.

	Educational status				
EBF	**1^0(%)**	**2^0(%)**	**3^0(%)**	**None (%)**	**Total (%)**
Yes	47(47.5)	122(65.2)	72(70.6)	2(18.2)	243(60.9)
No	52(52.5)	65(34.8)	30(39.4)	9(81.2)	156(39.1)
Total	**99(100.0)**	**187(100.0)**	**102(100.0)**	**11(100.0)**	**399(100.0)**

X^2 = 20.903: df = 3: p<0.05. (***EBF: Exclusive Breast Feeding,1^0 = primary level of education,2^0 = secondary level of education, 3^0 = tertiary level of education)***

period. All cases of malaria were diagnosed at competent health facilities.

Exclusive breastfeeding and incidence of malaria in early infancy.

No significant statistical association existed between exclusive breastfeeding and incidence of malaria in early infancy. Out of 243 infants who were exclusively breastfed, 22(9.1%) had malaria in comparison with 19(12.2%) of the156 who were not exclusively breastfed that had malaria in early infancy.(Table III)

Exclusive breastfeeding and incidence of other febrile illnesses in early infancy.

There was no significant statistical association between practice of exclusive breastfeeding and occurrence of other febrile illnesses outside malaria in early infancy. Seventy eight (32.1%) of the 243 infants who were exclusively breastfed as against 63 (40.4%) of the 156 that were not exclusively breastfed had febrile illnesses other than malaria.($X^2 = 3.841; df = 1; p>0.05$)

Educational status of mothers and practice of EBF.

There was a significant association between educational status of mothers and practice of exclusive breastfeeding such that the higher the level of education of the mothers, the more likely she is to practice exclusive breastfeeding. ($X^2 = 20.903: df = 3: p<0.05$).(Table IV)

DISCUSSION

The study revealed that 85.7% of mothers had good knowledge of what exclusive breastfeeding is all about and 70.8% got this knowledge from orthodox health facilities. This is probably because the study was a tertiary hospital facility-based study and health talks to nursing mothers on every morning of immunization day are always given.

The study also showed that there was relatively high literacy rate among the respondents as evidenced by the fact that over 45% of them had at least secondary level of education while those with no formal education accounted for only 2.8%. This probably may be occasioned by the existence of many secondary and tertiary institutions in and around the study locale.

The study also showed that greater percentage (60.9%) of the respondents practiced exclusive breast feeding, perhaps implying that most of the respondents believed in the benefits of exclusive breastfeeding. It may also have corroborated the effectiveness of health education at the health facility studied.[13] Although a higher percentage (85.7%) of the respondents had a good knowledge of EBF, as many as a quarter of them did not practice it.

According to the study, the prevalence of malaria in early infancy was 10.3%. This is in agreement with the findings in a study carried out in 2001 where the epidemiological evidence for resistance of young infants to malaria was reviewed using data on anti-malaria antibody levels and its association with protection from malaria infection by Riley, Wagner, Akamori and Koran.[14] Even among those infants that had malaria, 82.9% of them had only a single episode while 17.1% had two episodes.

Though there was no significant statistical association between exclusive breastfeeding and incidence of malaria in early infancy, the prevalence of malaria in exclusively breastfed infants of 9.1%, was slightly lower that the prevalence of

malaria in non-exclusively breastfed infants (12.2%). Nonetheless there was a significant association between educational status and practice of exclusive breast feeding. As it turned out the better the educational status of the mother, the more likely she would practice EBF.

Conclusively, the prevalence of malaria in early infancy is low and is even lower among the exclusively breastfed infants compared to those that were not exclusively breastfed. However, the extent to which exclusive breastfeeding influence incidence of malaria in early infancy is insignificant. This notwithstanding, EBF should continue to be emphasized granted its influences on other common childhood illnesses and improved mothers' education could serve as a vehicle for promoting it. A study involving a larger sample size is recommended to validate the result of this study.

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