

Impact of Improper Breastfeeding Postures on Acute Otitis Media among Children Attending the Otorhinolaryngology Clinic of a Tertiary Health Facility in Southwest Nigeria

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Abstract

Background: Acute otitis media (AOM) is one of the most frequent diagnosis among children. There has been controversies on the effect of breastfeeding postures on the incidence of AOM. This study looked into this relationship in our locality with an attempt at providing a primordial level of intervention and prevention of AOM among under 2 children.

Materials and Methods: This was a prospective cross-sectional study of children at 2 years and below who presented with features of AOM. Diagnosis was based on detailed history and examination findings. Investigator-structured proforma was used to obtain data which was entered into SPSS and analyzed using Fisher's exact test with significance level of $p < 0.05$.

Results: The findings revealed an age range of 27 days to 2 years old. The highest incidence of AOM was among infants with age ranging between 7-12 months. About 73% of mothers with no or informal education were full time house wives and 84% habitually breast fed in lying position. There was a statistically significant relationship between maternal occupation and breastfeeding in wrong postures as well as between awareness of proper posture during ANC attendance and breastfeeding lying down.

Conclusion and Recommendation: The high rate of breast feeding in wrong position is still raising concerns owing to the level of assimilation and effective application of the information received during antenatal clinic. Adaptation of a proper breastfeeding position remains an important factor to be considered in the prevention of AOM. Therefore, every woman in child bearing age should be well-informed.

Keywords: wrong breast feeding postures, acute otitis media, antenatal clinic visit, breastfeeding education

Introduction

Acute otitis media (AOM) is defined as a rapid onset inflammatory condition of the middle ear cleft with an infective origin within the period of 3 months.¹ This infection can be viral, bacterial or both and can spread through haematogenous, Eustachian tube and tympanic membrane (TM) perforations or grommets/tympanostomy tube. AOM is one of the commonest diseases of childhood that is often associated with otitis media with effusion (OME) and can also be synonymous to acute suppurative otitis media (ASOM).^{1,2}

It is one of the most frequent diagnosis in children presenting to the paediatric or otology clinic and the most common reason for antibiotics administration among them. It occurs at all ages but the prevalence is high among children.²

It accounts for a high incidence before the age of one, especially between ages six months and one year old. This is also a prognostic factor because the presence of the first episode of AOM before the age of 9 months signifies the likelihood of recurrent disease.¹ Allergy, Eustachian tube dysfunction, genetic, infectious, immunologic, environmental, and social factors have been implicated in the pathogenesis of acute otitis media. Risk factors that have also been associated with AOM includes male gender, young age, bottle feeding, otitis media among siblings, overcrowding, passive smoking, a variety of conditions associated with AOM such as immunodeficiency, cleft palate, ciliary dyskinesia, Down's syndrome, cystic fibrosis, etc.² Clinical symptoms associated with AOM include fever,

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otorrhea, irritability, holding, rubbing, or tugging of the pinna and crying inconsolably especially when the pinna is touched. The otoscopic examination of the TM shows evidence of acute inflammation which is essential for definitive diagnosis of AOM with resultant avoidance of unnecessary treatment modalities and treatment failures.^{3,4}

Different literatures^{3,5} have made attempts at expressing the relationship between AOM and breastfeeding. Findings have shown that breastfeeding is protective against AOM until 2 years of age with the greatest protection provided by exclusive breastfeeding within the first 6 months.³ However, there are still controversies pertaining to the effects of wrong posture while breastfeeding on the insurgence of AOM. While some studies have been able to associate inappropriate breastfeeding posture with increased risk of AOM, findings in other studies did not agree with such association.

The purpose of this study was to assess the association between the mothers and babies' positions during breast feeding positions and the occurrence of AOM in our locality. If the association is strong, this study will provide a baseline primordial level of intervention in preventing the risk factors of AOM among children and a resultant reduction in the socioeconomic burden of the disease in our health care system especially in the Lower Middle income Countries (LMICs). This will also serve as a primordial level of intervention in prevention of AOM among infants and resultant reduction in the socioeconomic burden of the disease in our health care system.

Materials and Methods

This was a prospective cross-sectional study of children of age 2 and below, brought to the Paediatrics

and Otorhinolaryngology clinics of Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife by their caregivers with complaints suggestive of AOM. Ethical approval was obtained and informed consent was taken from their caregivers prior to the study and anonymity was ensured. Our exclusion criteria includes presence of otorrhoea due to otitis externa, previous interventions in the ears, alternative feeding other than putting to breast, presence of impacted wax and children with congenital abnormalities like cleft lip and palate, cranio-facial anomalies. Diagnosis of AOM was based on detailed history and physical examination findings according to the World Health Organisation criteria and ICD 10 standard. An investigator-structured proforma was used to obtain the data regarding the age, gender, position among siblings, age of mother at the time of delivery of the child, the history of the ear infection and other ear nose and throat symptoms present at presentation, frequency and laterality of AOM, perinatal history and breastfeeding practices including frequency of breastfeeding and postures during mother and child during breastfeeding. A thorough physical examination of the ear, nose and throat was carried out. Findings on history and examination were noted and documented in the proforma. Statistical package for social sciences (SPSS) version 22 was used for data entry. The data was analyzed using Fisher's exact test with significance level of $p < 0.05$.

Results

A total of 346 new patients presented and diagnosed of AOM within the study period, 126 (36.41%) were 2 year old or less, out of which 72 (57.1%) were male and 54 (42.9%) females. The age ranged from 27 days to 2 year old with mean age (in months) of 11.11 ± 7.344 . The children were classified into four groups based on age range as outlined on Table 1. The highest incidence

Table 1: Sociodemographic characteristics of participants

Variable	Frequency	Percentage
Age range (months)		
≤ 6months	39	31.0
7 – 12	43	34.1
13 – 18	21	16.7
19 – 24	23	18.3
Total	126	100.0
Mean ± SD	11.11 ± 7.344	
Range	27 days – 2 years	
Sex		
Male	72	57.1
Female	54	42.9
Total	126	100.0
Regular wrong breast feeding posture		
Yes	106	84.1
No	20	15.9
Total	126	100.0

Table 2: Factors associated with wrong breast feeding posture

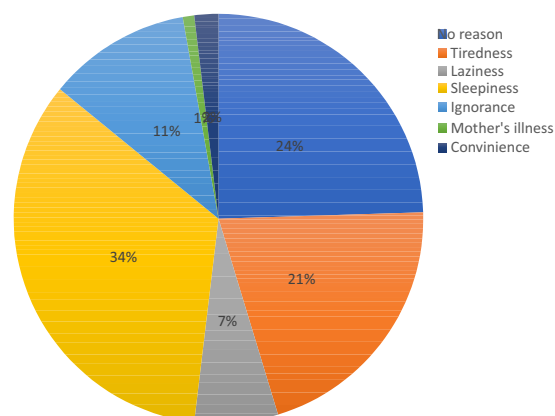
Wrong Breast Feeding Posture	Yes (%)	No (%)	Total (%)	χ^2	ρ
Age Groups (Months)					
≤ 6	36 (92.3)	3 (7.7)	39 (31.0)	8.852	0.031*
7 – 12	38 (88.4)	5 (11.6)	43 (34.1)		
13 – 18	17 (81.0)	4 (19.0)	21 (16.7)		
19 – 24	15 (65.2)	8 (34.8)	23 (18.2)		
Mothers' age at delivery (years)					
< 18	7 (100.0)	0 (0.0)	7 (5.5)	2.710 ^Y	0.608
18 – 24	30 (81.1)	7 (18.9)	37 (29.4)		
25 – 30	36 (81.8)	8 (18.2)	44 (43.9)		
31 – 36	28 (84.8)	5 (15.2)	33 (26.2)		
> 36	5 (100.0)	0 (0.0)	5 (4.0)		
Mothers' level of Education					
Informal	72 (85.7)	12 (14.3)	84 (66.7)	1.955	0.582
Primary	24 (85.7)	4 (14.3)	28 (22.2)		
Secondary	7 (70.0)	3 (30.0)	10 (7.9)		
Tertiary	3 (75.0)	1 (25.0)	4 (3.2)		
Mothers' occupation					
House wife	81 (85.3)	14 (14.7)	95 (75.4)	8.572	0.073
Trading	21 (91.3)	2 (8.7)	23 (18.3)		
Civil Servant	4 (50.0)	4 (50.0)	8 (6.3)		
Visit to ANC during pregnancy					
Yes	95 (84.1)	18 (15.9)	113 (89.7)	0.003	0.959
No	11 (84.6)	2 (15.4)	13 (10.3)		
Awareness of good breast feeding posture at ANC					
Yes	45 (73.8)	16 (26.2)	61 (48.4)	10.045	0.007*
No	56 (94.9)	3 (5.1)	59 (46.8)		
No ANC	5 (83.3)	1 (16.7)	6 (4.8)		

ANC: Antenatal clinic; χ^2 : Chi square test; ^Y: Yates corrected Chi square; *: p value <0.05 (i.e. statistically significant)

of AOM, 43 (34.1%) was among infants with age ranging between 7 to 12 months followed by those who are 6 months and below, 39 (31.0%). The study also outlined the child's position among sibling, maternal age at delivery, occupation types and level of education (Table 2). Occupation: Housewife 95 (75.4%), Trading 23 (18.3%), Civil Servant 8 (6.3%). Education: Illiterate or no formal education 84 (66.7%), primary education 28 (22.2%) Secondary education 10 (7.9%) and tertiary education 4 (3.2%). About 73% of illiterate mothers or with informal education were full time house wives.

Out of the 126 children, 106 (84.1%) were habitually breast fed in lying position, 20 (15.9%) were usually fed in upright position. Regularity of lying down to feed: less than 5 times in a day 45 (35.7%), five to ten times daily 32 (25.4%), more than ten times a daily 29 (23.0%) was found. Highest number of children, 72 (85.7%) were breastfed in supine position by illiterate

Reasons for wrong breast feeding posture

**Figure 1: Reasons for wrong breast feeding postures**

mothers or without formal education and highest number of children 81(85.2%) were breastfed in supine position by mothers who were full house wives. This association between maternal education level and position of breast feeding wasn't statistically significant

($\chi^2 = 8.794, p \text{ value} = 0.456$), but there was a statistically significant relationship between maternal occupation and breast feeding in wrong postures ($\chi^2 = 21.155, p \text{ value} = 0.002$).

As shown on table 2, out of the percentage of mothers who attended antenatal clinic 113 (89.7), only 61 (48.4%) were taught or aware of the proper posture of the mother and child during breast feeding. About 74% of those who are aware of proper BF posture during their ANC visit still breastfed lying down. The main reason identified for breast feeding while lying down include is sleepiness in 36 (28.6%) Other reasons identified were tiredness (17.5%), laziness (5.6%), ignorance (4.0%), convenience (1.6%) among others reasons. However, 20.6% of mothers in this study had no specific reason (Figure 1). The relationship between awareness of proper BF posture and regular ANC visit during pregnancy was statistically significant ($\chi^2 = 59.030, p \text{ value} < 0.05$). The relationship between awareness of proper BF posture during ANC attendance and breastfeeding lying down was also significant statistically ($\chi^2 = 10.045, p \text{ value} = 0.007$).

Discussion

Acute Otitis Media (AOM) occurs at all ages with high prevalence among children. Its prevalence among children of age 2 or less is not low in our locality and similar to the global picture.^{2,6} This raises concerns as breast milk is expected to serve as protection against infections in this age group if properly administered according to the breast feeding schedule.⁵ Exclusive breastfeeding is safe, it promotes sensory and cognitive development in children. It also contains immunoglobulins and biologically active substances like microbiota and human milk oligosaccharides that have the properties to significantly reduce the risk of common childhood illnesses like upper respiratory tract infections and acute otitis media. Breast feeding is said to be done in an appropriate posture when the head of the child is well supported in the mother's arm at a more horizontal height so that milk is prevented from flowing into the middle ear through the Eustachian's tube.^{5,7,8}

There have been a lot on controversies on the significance of breast feeding positions on the prevalence of AOM among children under the age of two. While a number of studies concluded that the incidence of otitis media was higher in children who were usually breast fed in wrong posture, that is, babies breastfed while lying down or in the faulty breastfeeding postures were more prone to developing AOM;^{2,3,9,10} some other studies did not see any relationship between the two.⁷ Majority of children in this study were usually breast fed in wrong postures (most commonly in supine position) with the likelihood of been breast fed in an appropriate posture as the child grows. Like other

studies,^{3,9} this study found higher incidence of AOM among infants especially between the ages of 7 and 12 months with gradual reduction in frequency as age increases. This might have to do with reduction in the rate of breast feeding in wrong position as the child grows and complies with other food items. In other words, this might not be unrelated with the risk factors including wrong posture during the period of exclusive breast feeding; that is, the first 6 months of life. Similar to our findings, Rasool et al³ found a statistically significant relationship between the different age groups of children and position of breastfeeding but the age of mother cannot determine whether her child or children will be breastfed lying supine or in upright position.

Mothers who were illiterate or with no formal education and those who were housewives had the highest frequencies. In fact, about 73% of the mothers who are housewives are either illiterate or with informal education. Previous studies^{11,12} have also related low socioeconomic status with increase rate of risk factors associated with poor health outcomes. It specifically contribute to lack of the scope and skills of understanding health issues and care, which is worsened by limited access to information and the content of quality health care system. Despite the high number of illiterate mothers in this study, the level of education or type of occupation could not be substantiated or does not have effect on the decision of mothers to breast feed in awkward positions. Many of them has attributed their reasons to convenience, ignorance, sleepiness, tiredness, illness etc. These complaints or excuses are not tenable or could justify wrong breast feeding postures. Although, Rasool et al³ revealed a statistically significant difference between mother's level of education and feeding postures, the strong determinant found in this study was whether they were properly informed during antenatal clinic (ANC) sections or not. Therefore, the link between lack of awareness, poor socioeconomic and educational status could have resulted into lack of capacity to understand health issues and ready access to resources needed to prevent diseases and promote quality health condition. More efforts should be put in place to educate parents especially women in the vulnerable groups on the benefits of breastfeeding and breastfeeding posture. It is believed that the more knowledge is impacted into mothers during antenatal visits and immediate postnatal period regarding proper breast feeding practices including correct posture of mother and baby's head during breast feeding, the more we will achieve a significant reduction in the incidence and prevalence of AOM among children under the age of 2 years.^{3,12}

Conclusion

In summary, the age distributions of children with AOM

clearly reflected the burden of wrong postural methods during the period of exclusive breast feeding. The high rate of breast feeding in wrong position is still raising a lot of concern owing to the level of assimilation and effective application of the information received during antenatal and postnatal clinics and not just about mere clinic attendance, age maturity or socioeconomic status of the mother. Adaptation of a proper breastfeeding position remains an important factor to consider in the prevention of AOM among children under the age of two years. In other words, teaching the mothers on the importance and how to breast feed their newborns with their head in an upright posture instead of positioning horizontally may be a simple and efficient way to protect the children from morbidity and mortality. Therefore, breastfeeding education should be extended beyond the four walls of the hospital. Every woman in the child bearing age group should be well informed.

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