

Determinants of breastfeeding patterns among mothers in Anambra State, Nigeria

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Objectives. Exclusive breastfeeding for the first 6 months of life is still rare among nursing mothers. This study aimed to identify the factors influencing breastfeeding practices among mothers in Anambra State, Nigeria.

Methods. A prospective cohort study was conducted in three comprehensive health centres of Nnamdi Azikiwe University Teaching Hospital (NAUTH), Anambra State, between September 2006 and June 2007. The breastfeeding practices of 228 nursing mothers were assessed at enrolment when attending the maternal and child welfare clinics for BCG immunisation, and at follow-up visits at 6, 10, 14, 20 and 24 weeks. In addition, four focus group discussion sessions (one in each centre) were held, involving a total of 35 nursing mothers.

Results. Most mothers 190 (83.3%) were aged between 20 and 34 years. The majority (208, 91.2%) had good or very good knowledge of breastfeeding. The main source of breastfeeding education was government health facilities (80.85%), but only 110 mothers (48.2%) initiated breastfeeding immediately (<1 hour) after delivery. The exclusive breastfeeding (EBF) rate fell from 143 (62.7%) at birth to 85 (37.3%) at 24 weeks. EBF was significantly associated with older maternal age, higher parity, delivery at a government facility, a positive family attitude towards EBF, and breastfeeding education from a government health facility ($p < 0.05$). Focus group discussion showed that mothers believed that adequate nutrition and physical, financial and emotional support to them would increase EBF practice.

Conclusion. The rate of EBF was low among the mothers, and the factors identified that may influence its practice have important implications for breastfeeding intervention programmes. Activities to promote EBF should be focused on specific groups of women and locations in which it is poorly practised. In addition, support to the mothers is necessary.

Adequate nutrition in the early years of life is necessary for children to grow and develop to their full potential.¹ The World Health Organization (WHO) recommends exclusive breastfeeding (EBF) as the optimal feeding method for the first 6 months. This provides valuable benefits to the infants as well as to mothers and the nation as a whole.^{2,3} It has also resulted in an overall decrease in infant morbidity and hospitalisation rates.⁴ However, statistics indicate that most mothers do not practise optimal breastfeeding, and EBF for the first 6 months of age is a rare practice in a number of countries.^{4,5} Early introduction of mixed feeding is still very common.

Poor breastfeeding practices are a major cause of neonatal and infant mortality. In Nigeria, 52% of childhood deaths are attributed to the effect of malnutrition on disease.⁶ Similarly, 21% of infant deaths in the country result from poor breastfeeding practices.⁷ Although breastfeeding is universal in the country, the trend is towards giving other feeds in addition to breastmilk.⁸⁻¹⁰ Reports show that the rate of EBF in the first 6 months of life is as low as 17%.^{7,11} This has been attributed to several socio-economic and cultural factors.^{12,13} However, these factors are still not adequately defined. In Anambra

State, the prevalence of HIV is high (4.1%) compared with the national prevalence of 3.1%.¹⁴ To the best of our knowledge, no similar study on determinants of breastfeeding has been carried out in the state. To promote and support EBF, there is a need to identify the factors that influence mothers' decisions on breastfeeding. The findings of this study will help in designing appropriate interventions to overcome the barriers to EBF for the first 6 months.

Materials and methods

A prospective cohort study was carried out in three comprehensive health centres of Nnamdi Azikiwe University Teaching Hospital (NAUTH), Anambra State. The services provided at the health centres include antenatal care, health education, routine immunisations, management of childhood illnesses and growth monitoring. The teaching hospital commenced comprehensive HIV services, including programmes related to prevention of mother-to-child transmission, in 2001; however, during the period of this study, these services were not yet available in the health centres owing to inadequate trained manpower and logistical challenges.

A total of 240 mother-neonate pairs attending the maternal and child welfare clinics for BCG immunisation were recruited by a systematic sampling method. On each day of BCG immunisation, the list of mother-neonate pairs was obtained from the immunisation register. Using a sampling fraction of 1 in 3, each third mother-neonate pair that met the inclusion criteria was enrolled. This was done consecutively for 10 weeks until the required sample size was obtained. Mothers and babies who resided outside the host communities or defaulted at follow-up for two or more consecutive visits and could not be traced to their homes were excluded, leaving 228 subjects.

Five research assistants (female nurses) were trained for 3 days on translation of the questionnaire from English into vernacular.

EBF was defined as giving only breastmilk to the infant without the addition of any other liquids or solids, except for drops or syrups consisting of vitamins, mineral supplements or medication (nothing else),¹⁵ while non-EBF included giving other liquids and/or solids in addition to breastmilk.

A semi-structured, interviewer-administered questionnaire was used to obtain information on the subjects' socio-demographic and birth-related characteristics, knowledge, attitudes and practices related to breastfeeding, sources of breastfeeding education, and perceived family attitude towards EBF. In addition, four focus group discussion (FGD) sessions (one in each centre) involving a total of 35 nursing mothers were held to collect information on knowledge of and attitudes towards breastfeeding, factors influencing breastfeeding pattern, and what could be done to encourage optimal breastfeeding practices. Specific questions were asked on beliefs and practices concerning colostrum, attitudes of husbands and other family members towards EBF, and ways to improve the practice of EBF. Subsequently, during follow-up visits at 6, 10, 14, 20 and 24 weeks, information on mothers' breastfeeding practices was obtained. Based on their practices, the mothers were grouped into EBF and non-EBF mothers.

Ethical clearance was obtained from the ethics committee of the NAUTH. The concept of the study was explained to the participants and their written consent was obtained.

Data entry and analysis were carried out using the SPSS computer package version 11.0 and Epi Info version 3.2.2. Data generated were summarised using tables. Frequency distribution of relevant variables was made. The chi-square test was used for comparing percentage distribution. Mothers' knowledge on breastfeeding was assessed using four tested and scored questions, i.e. (i) what is exclusive breastfeeding? (ii) when should a mother start to breastfeed after delivery? (iii) what are the advantages of breastfeeding? (at least one correct answer); and (iv) if you have to stay away from your baby for long, what food should you give him/her? Each correct answer scored one point.

The FGD findings were analysed thematically and quotes were used to illustrate the opinions expressed by the participants.

Results

As shown in Table I, the majority of the mothers (190, 83.3%) were aged between 20 and 34 years. One hundred and thirty (57.0%) had between 2 and 4 children, and 152 (66.6%) had attended or completed secondary education. The mothers were mainly traders (86, 37.7%) and full-time housewives (66, 29.0%). One hundred and fifteen (50.4%) of their babies were boys and 113 (49.6%) girls, giving a male/female ratio of 1.02:1.00. More than half (52.6%) gave birth in a government health facility, and 79 (34.7%) in a private health facility; 29 (12.7%) were delivered at home by traditional or unskilled birth attendants. Ten (4.4%) deliveries were by caesarean section, and the rest (118, 95.6%) were normal vaginal deliveries.

One hundred and twenty-four (54.4%) and 84 (36.8%) of the mothers had good and very good knowledge of breastfeeding,

TABLE I. MATERNAL AND BIRTH-RELATED CHARACTERISTICS

| Characteristics | N (N=228) | % |
|----------------------------|-----------|------|
| Age (yrs) | | |
| <20 | 23 | 10.2 |
| 20 - 24 | 78 | 34.2 |
| 25 - 29 | 65 | 28.5 |
| 30 - 34 | 47 | 20.6 |
| 35 - 39 | 14 | 6.1 |
| 40+ | 1 | 0.4 |
| Parity | | |
| 1 | 63 | 27.6 |
| 2 - 4 | 130 | 57.0 |
| 5+ | 35 | 15.4 |
| Marital status | | |
| Single | 5 | 2.2 |
| Married | 222 | 97.4 |
| Separated | 1 | 0.4 |
| Educational level | | |
| No formal education | 2 | 0.9 |
| Primary | 43 | 18.9 |
| Secondary | 152 | 66.6 |
| Tertiary | 31 | 13.6 |
| Occupation | | |
| Full-time housewife | 66 | 29.0 |
| Trader | 86 | 37.7 |
| Artisan | 31 | 13.6 |
| Civil servant | 24 | 10.5 |
| Farmer | 21 | 9.2 |
| Gender of baby | | |
| Male | 115 | 50.4 |
| Female | 113 | 49.6 |
| Place of delivery | | |
| Home/TBA | 29 | 12.7 |
| Government health facility | 120 | 52.6 |
| Private health facility | 79 | 34.7 |
| Mode of delivery | | |
| Normal vaginal delivery | 218 | 95.6 |
| Caesarean section | 10 | 4.4 |

TBA = traditional birth attendant.

respectively. Similarly, in the FGDs most mothers knew that EBF means giving the baby breastmilk only for the first 6 months of life, and many mentioned disease prevention and healthy growth of the baby as the benefits of EBF.

Government health facilities served as the main source of breastfeeding education for the mothers (178, 55.2%). Only 5 (2.3%) received breastfeeding education from the media. Concerning the time of breastfeeding education, 122 (55.2%) and 80 (36.2%) of the mothers received education during antenatal and postnatal visits, respectively (Table II).

Table III shows the attitudes of the mothers towards breastfeeding. The majority (166, 72.8%) agreed that breastmilk only is adequate in the first 6 months of life, though 74 (32.5%) were of the opinion that the practice is time consuming and demanding. Most (127, 55.7%) were also of the opinion that babies should be given fluids before being put to the breast. 'While waiting for the breastmilk to flow, it is good to give baby water or glucose water, after all water is the life of a fish', said a 26-year-old participant in one of the FGD sessions. Another participant said, '... it is good to give water so as to sustain the baby before breastmilk starts to flow'.

Less than half, 110 (48.2%) of the mothers initiated breastfeeding immediately (<1 hour) after delivery. Breastfeeding the baby on demand was more popular than timed breastfeeding (92.5% v. 7.5%).

TABLE II. DISTRIBUTION OF MOTHERS ACCORDING TO THEIR KNOWLEDGE AND MAIN SOURCE OF BREASTFEEDING EDUCATION

| | N | % |
|--|-----|------|
| Knowledge of breastfeeding (N=228) | | |
| Very poor | 3 | 1.3 |
| Poor | 17 | 7.5 |
| Good | 124 | 54.4 |
| Very good | 84 | 36.8 |
| Main source of breastfeeding education (N=221) | | |
| Friends/relatives | 10 | 4.5 |
| Govt health facility | 178 | 80.5 |
| Private hospital | 22 | 10.0 |
| Mission hospital | 2 | 0.9 |
| Media (TV, radio, etc.) | 5 | 2.3 |
| Other | 4 | 1.8 |

One hundred and eighty-eight mothers (82.5%) gave their babies colostrum, and 59 (25.9%) gave prelacteal feeds (Table IV).

Almost all the participants in the FGDs agreed that colostrum was good for the baby. A 29-year-old mother in the FGD said that *'Colostrum is good because it helps the child to know the taste of breastmilk and will make the baby to always demand for it.'* *'The first breastmilk brings the initial contact between the mother and her baby and it helps baby to be strong and grow healthier,'* mentioned another participant.

Only 85 (37.3%) breastfed exclusively for 6 months. The ability of mothers to practise EBF was linked to adequate feeding and fluid intake. *Adequate feeding and fluid intake, especially tea by a nursing mother, will enable her breast to pump enough milk that will satisfy her baby,'* a participant noted, while another said, *'What the mother eats is what the baby gets in breastmilk.'* At the same time, the majority of the focus group discussants were unaware of their HIV status and had limited information on WHO recommendations on infant feeding options for HIV-positive mothers. Among those who had information, there was concern about the reaction of their husbands and fear of stigma and discrimination if they were to deviate from the usual breastfeeding practice. *If I choose not to breastfeed, my husband and people around me will be suspicious,'* said a participant. *If I don't breastfeed, people will start asking questions and may suspect that I have HIV and will never buy from me or even come near me again,'* another complained.

EBF was practised more frequently by mothers aged 35 - 39 years compared with those less than 20 years old ($\chi^2=9.89, p=0.0042$). Also, mothers who exclusively breastfed appeared to have more children than those who breastfed non-exclusively ($\chi^2=11.43, p=0.003$).

Similarly, infants delivered in government health facilities were significantly more likely to be breastfed exclusively than those

TABLE IV. DISTRIBUTION OF MOTHERS REGARDING BREASTFEEDING PRACTICE

| Parameter | N (N=228) % | |
|--|-------------|------|
| Time mother initiated breastfeeding after delivery | | |
| Immediately (<1 h) | 110 | 48.2 |
| 1 - 24 h | 92 | 40.3 |
| >24 h | 26 | 11.5 |
| Frequency of breastfeeding | | |
| On demand | 211 | 82.5 |
| Timed | 17 | 17.5 |
| Colostrum feeding | | |
| Yes | 188 | 82.5 |
| No | 40 | 17.5 |
| Prelacteal breastfeeding pattern | | |
| Yes | 59 | 25.9 |
| No | 169 | 74.1 |
| Breastfeeding practice at 24 wks | | |
| EBF | 85 | 37.3 |
| Non-EBF | 143 | 62.7 |

delivered in private health facilities ($\chi^2=7.02, p=0.030$). It is worth noting that all babies delivered by caesarean section were breastfed non-exclusively, as shown in Table V.

The rate of EBF was higher among mothers with a good knowledge of breastfeeding (41.9%) compared with those with poor knowledge of breastfeeding (29.4%), although this difference is not statistically significant. Breastfeeding education received from government health facility was significantly associated with a higher rate of EBF ($\chi^2=9.92, p=0.002$). However, no statistical association was found between time of breastfeeding education and breastfeeding pattern ($\chi^2=0.49, p=0.493$).

The rate of EBF was significantly higher among mothers from families with a positive attitude towards EBF than among mothers from families with a negative attitude ($\chi^2=4.86, df=1, p=0.028$) (Table VI).

Discussion

The extent of mothers' knowledge about breastfeeding in this study was high. Findings of the FGDs showed that the mothers were familiar with the term 'exclusive breastfeeding' as it relates to duration and use of foods other than breastmilk. This finding differs from the poor knowledge of breastfeeding reported among mothers in Nsukka¹⁶ and Enugu.¹⁷ The reason for these differences may be that this study was conducted in a baby-friendly health facility where most of the respondents had received the current breastfeeding education; it is also likely that awareness of EBF is better now than when those studies were carried out.

Government health facilities served as the main sources of breastfeeding education, similar to what has been reported in Saudi Arabia¹⁸ and Botswana.¹⁹ The role of the mass media in breastfeeding

TABLE III. ATTITUDES OF MOTHERS TOWARDS BREASTFEEDING

| Parameter | Agree | | Disagree | | Not sure | |
|--|-------|--------|----------|--------|----------|-------|
| | N | (%) | N | (%) | N | (%) |
| Breastmilk only is adequate in the first 6 months | 166 | (72.8) | 58 | (25.4) | 4 | (1.8) |
| EBF babies grow healthier than formula-fed babies | 211 | (92.5) | 12 | (5.3) | 5 | (2.2) |
| EBF is time-consuming and more demanding | 74 | (32.5) | 154 | (67.5) | - | - |
| Colostrum should be given to infant | 170 | (74.6) | 45 | (19.7) | 13 | (5.7) |
| Babies should be given other fluids, e.g. water, glucose water, etc. before putting them to breast | 127 | (55.7) | 95 | (41.7) | 6 | (2.6) |
| Mothers can breastfeed exclusively even when they resume work | 143 | (62.7) | 85 | (37.3) | - | - |

TABLE V. PATTERN OF BREASTFEEDING ACCORDING TO MATERNAL AND BIRTH-RELATED CHARACTERISTICS

| Parameters | Breastfeeding pattern | | | | χ^2 | p-value |
|-------------------------|-----------------------|-------|-----------------|------|----------|---------|
| | EBF (N=85) | | Non-EBF (N=143) | | | |
| | N | % | N | % | | |
| Mother's age (yrs) | | | | | | |
| <20 | 5 | 21.7 | 18 | 78.3 | | |
| 20 - 24 | 35 | 44.9 | 43 | 55.1 | 9.89 | 0.042 |
| 25 - 29 | 25 | 38.5 | 40 | 61.5 | df=4 | |
| 30 - 34 | 12 | 25.50 | 35 | 74.5 | | |
| 35 - 39 | 8 | 57.1 | 6 | 42.9 | | |
| 40+ | - | - | 1 | 100 | | |
| Mother's education | | | | | | |
| None | - | - | 2 | 100 | | |
| Primary | 14 | 32.6 | 29 | 67.4 | 5.20 | |
| Secondary | 56 | 36.8 | 96 | 63.2 | df=2 | |
| Tertiary | 15 | 48.4 | 16 | 51.6 | | |
| Occupation | | | | | | |
| Full-time housewife | 25 | 37.9 | 41 | 62.1 | | |
| Trader | 32 | 37.2 | 54 | 62.8 | 0.97 | 0.913 |
| Artisan | 13 | 41.9 | 18 | 58.1 | | |
| Civil servant | 7 | 29.2 | 17 | 70.8 | | |
| Farmer | 8 | 38.1 | 13 | 61.9 | | |
| Parity | | | | | | |
| 1 | 14 | 22.2 | 49 | 77.8 | 11.43 | 0.003 |
| 2 - 4 | 52 | 40.0 | 78 | 60.0 | | |
| 5+ | 19 | 54.3 | 16 | 45.7 | | |
| Baby's gender | | | | | | |
| Male | 41 | 35.7 | 74 | 64.3 | 0.26 | 0.608 |
| Female | 44 | 38.9 | 69 | 61.1 | | |
| Place of delivery | | | | | | |
| Home/TBA | 10 | 34.5 | 19 | 65.5 | | |
| Govt health facility | 54 | 45.0 | 66 | 55.0 | 7.02 | 0.030 |
| Private health facility | 21 | 26.6 | 58 | 73.4 | | |
| Mode of delivery | | | | | | |
| Normal vaginal delivery | 85 | 39.0 | 133 | 61 | - | - |
| Caesarean section | - | - | 10 | 100 | | |

TABLE VI. PATTERN OF BREASTFEEDING ACCORDING TO MOTHERS' PERCEIVED FAMILY ATTITUDE TOWARDS EXCLUSIVE BREASTFEEDING

| Perceived family attitude towards EBF | Breastfeeding pattern | | | | χ^2 | p-value |
|---------------------------------------|-----------------------|------|-----------------|------|----------|---------|
| | EBF (N=85) | | Non-EBF (N=143) | | | |
| | N | % | N | % | | |
| Negative | 29 | 28.7 | 72 | 71.3 | 4.86 | |
| Positive | 56 | 44.1 | 71 | 55.9 | df=1 | 0.028 |

education is dismal. The rural nature of the communities, as well as the time women generally devote to media such as radio and television, may be accountable for this finding. Mothers exposed to mass media have been reported to have increased awareness and use of health intervention strategies.²⁰ The use of radio and television should be encouraged among mothers as an additional means of disseminating health information, because of their wide coverage.

The observed EBF rate of 37.3% at 6 months is better than has previously been reported in Nigeria.¹¹ This may be because of the country's adoption of the baby-friendly hospital initiative (BFHI)

programme. Before adoption of the programme, formula milk was freely advertised and used by nursing mothers. However, there is a clear need for additional intervention to achieve a higher rate of EBF during the first 6 months of life, since the BFHI programme is mainly applied in government health facilities, and a number of our mothers still do not have access to these facilities for antenatal care and delivery. In addition, the high rate of mixed feeding poses serious implications for mother-to-child transmission of HIV and therefore calls for urgent action to counsel and support mothers in making decisions that will promote the health of their babies.

The rate of EBF was highest among older mothers and those of higher parity. It is probable that mothers acquire experience and confidence in good child care practices such as breastfeeding with time. This is supported by a report that older women probably know more about the benefits of breastfeeding and have more realistic outcome expectations.²¹ Also, babies delivered in government health facilities tend to breastfeed exclusively more than babies delivered at home and in private health facilities ($\chi^2=7.02$, $p=0.030$). The importance of medical and paramedical personnel providing correct information to mothers about proper feeding of infants has been emphasised.²² Traditional birth attendants and private health facilities need to be actively involved in programmes aimed at promoting EBF.

Neither the mother's education or occupation nor the baby's gender had any statistically significant relationship with the pattern of breastfeeding. Durongdej *et al.*²³ in their study noted that mothers' age, education and occupation played very important roles in determining breastfeeding practices among primiparas in urban Bangkok, while a study at Enugu²⁴ reported the mother's occupation as the only statistically significant factor associated with infant feeding method. The difference in these studies may be accounted for by family influences or degrees of support received by the mothers.

Although the mothers showed a good knowledge of breastfeeding, there was no significant association between their knowledge and practice of EBF ($\chi^2=3.32$, $p=0.14$). This demonstrates that the mothers knew what was the correct thing to do and might have been willing to do so, but probably had other negative influences. Findings of the FGDs showed that many participants reported insufficient breastmilk and poor feeding by mothers as important reasons why babies received something in addition to breastmilk before the age of 6 months. *'Mother may not be eating enough to get the required energy to do exclusive breastfeeding.'* a mother said. Good maternal nutrition increases the probability of children being fully breastfed for a long time.²⁵ On the other hand, a mother's feeling that she does not have enough milk could be due to lack of confidence or poor breastfeeding technique²⁶ and could therefore be prevented by education and practical and emotional support during pregnancy and lactation.

Mothers whose families have a positive attitude towards EBF had a better chance of breastfeeding exclusively than mothers whose families have a negative attitude ($\chi^2=4.86$, $p=0.028$). This finding is supported by the FGDs, in which some of the participants noted that they were forced or almost forced to introduce additional feeds by their family members: *'My grandmother insisted that she would give my baby water, according to her, no person eats without water,'* a mother said. Another participant reported that *'At the early stage my husband agreed on EBF, but after 3 months he said our baby was losing weight and therefore asked me to add artificial milk to help her.'* A study among breastfeeding mothers in Nigeria¹⁰ showed that 26.1% of the neonatal feeding observed was recommended by mothers-in-law. The influence of family attitudes towards EBF opens a whole new dimension of maternal and child care. It supports the need for breastfeeding education to be targeted not only at mothers but also at other individuals such as husbands and mothers-in-law, and underlines the importance of support from families to nursing mothers in promoting EBF.

Conclusion

The rate of EBF was low among the mothers in our study, and the factors identified to influence its practice have important implications for breastfeeding intervention programmes. Activities to promote EBF should therefore be intensified and focused on specific groups of women or locations in which poor breastfeeding practices exist. Support for the mothers is also necessary.

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