

Appropriate Infant Feeding: A Survey of Mothers' Practices in Magboro, Ogun State.

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ABSTRACT

Background: The practice and transition from exclusive breastfeeding to family foods is a vulnerable period in every child's life. Poor breastfeeding and complementary feeding practices have been widely documented in the developing countries. Only about 39% of infants in the developing countries, and 25% in Africa are exclusively breastfed for the first six months. Up to 6% of infants in developing countries are never breastfed.

Objective: The study aims to determine what mothers in Magboro, Ogun state know about infant feeding and its practices.

Method: This was a descriptive cross sectional study among one hundred and seventy four mothers of under-five children selected by multistage sampling in Magboro Ogun State. Data were collected about knowledge, attitudes and practices of exclusive breastfeeding (EBF) and complementary infant feeding (CIF), and the sociodemographic correlates using interviewer-administered questionnaires. Data were analysed with Epi info ver 6, results presented as frequencies and associations tested statistically with Chi-square at a significance level of 0.05.

Results: Correct knowledge of breastfeeding and complementary feeding was reported by 73.6% and 76.4% of mothers respectively. Exclusive breastfeeding for 6 months was done by 29.9% of mothers, 49.4% introduced complementary feeding at 6 months and 24.1% commenced before 6 months. There were statistically significant associations between the age of mothers, monthly household income, and exclusive breastfeeding for 6 months.

Conclusion:

This study confirms there are a few knowledge gaps concerning exclusive breastfeeding and complementary feeding, however, a significant knowledge-practice gap exists regarding EBF and CIF. The authors recommend that more community-based educational support is introduced. Further research on appropriate channels of health education is needed

Key words: Infant feeding, complementary infant feeding, exclusive breastfeeding, Nigeria

INTRODUCTION

The World Health Organization defines malnutrition as "the cellular imbalance between supply of nutrients and energy and the body's demand for them to ensure growth, maintenance, and specific functions."¹ It is a spectrum that ranges from over nutrition to severe under nutrition, including micronutrient deficiency. Malnutrition has been cited by the World Health Organization as the greatest single threat to the world's public health, with one in five people in developing countries suffering from chronic undernutrition.² The proportion of undernourished people remains highest in sub-Saharan Africa, at 30%.² Close to 9.4 million people in Nigeria are undernourished.³ Children are the most visible victims of under nutrition.

Poor nutrition plays a role in at least half of the 10.9 million child deaths each year.² Under nutrition magnifies the effect of every disease, including measles and malaria. The estimated proportions of deaths in which under nutrition is an underlying cause are roughly similar for diarrhoea (61%), malaria (57%), pneumonia (52%), and measles (45%).^{4,5} Poor nutrition has been linked to prenatal factors of poor maternal nutrition and has consequences on the national development through the propagation of learning disabilities, mental retardation, poor health, blindness and premature death.⁶ Added to this is the shift in the prevalence of obesity and related morbidities.^{7,8}

In infants, artificial feeding has been shown to stimulate a higher postnatal growth velocity and adiposity; the adverse long-term effects of which emerge as fundamental in later incidence of overweight and obesity and with it, increased risk of heart disease, hypertension, stroke, diabetes and certain cancers.⁹ Mothers are critical to the well-being of households and communities, responsible for the nutritional status of children from birth through to school-age.¹⁰ Knowledge of key nutritional practices such as exclusive breastfeeding, complementary infant feeding and components of a balanced diet has long term effects on the nutritional status and development of children as well as development of good nutritional habits in the subsequent generation.^{11,12} Research has documented that timeliness in the initiation of complementary feeding is poor in mothers who have lower education, live in non-urban areas and deliver outside of a health facility.^{13,14} This paper looks at the correlates of appropriate infant feeding practices among mothers in Magboro, Ogun state.

MATERIALS AND METHODS

Study area

Magboro is a town within Ofada ward of Obafemi Owode local government area of Ogun State. It is also known as Magboro Akeran. It is a large town that shares boundaries with Ifo Local Government and Ibafo. It has a registered population of 138,848, comprising of farmers, traders (wholesale and retail), serving and retired civil servants and industrialists. The major ethnic group is Yoruba but the proximity of Magboro to Lagos – the commercial nerve centre of Nigeria – makes it a heterogeneous peri-urban area.

Study design and sampling method

This was cross-sectional descriptive study to determine the correlates of appropriate infant feeding practices among mothers of children aged at least six months to five years, who had been resident in the area for more than 12 months and whose last confinement was six or more months previous. A sample size of 200 was calculated using Cochran's formula for populations over 10,000 at confidence interval set at 1.96 for 95% confidence level; using a proportion in target population estimated to have adequate practices of infant feeding of 0.13¹⁸ and scaled up by 15% to account for unusable data.

Using a multi-stage sampling technique, five community development areas (CDAs) were selected from a total of fifty-five CDAs. In each of the selected CDAs, 5 out of 8 to 10 streets were chosen by simple random sampling and one household on each selected street was similarly selected by balloting. Within the household, a mother who met the inclusion criteria was interviewed and where no such mother resided, the next household to the left was selected.

Data collection and survey tool

Data were obtained using a semi-structured interviewer-administered 40-item questionnaire adapted from literature.¹⁶⁻¹⁹ Sociodemographic characteristics of the mothers obtained were their age at last birthday, number of children and number under 18 years, religion practised at home, ethnicity, educational level and occupation as well as the estimated household monthly income. Occupations were classified as professional (junior, intermediate or senior) for all occupations that require post-secondary education; semi-skilled which referred to all the artisans who undergo apprenticeship; and unskilled.

Study variables and operational definitions

The main outcome variable was the proportion of mothers who demonstrated good practices of appropriate infant feeding. Exclusive breastfeeding was understood to be when the mother gives the child only breastmilk and nothing else (not even water). Complementary feeding was defined as the introduction of other foods at or shortly after 6 months.

Knowledge of appropriate infant feeding was determined using 15 items, which assessed knowledge of proper initiation of breastfeeding, exclusive breastfeeding practices and complementary feeding. The total score for knowledge was 15, and knowledge was scored as 'good' for 8 or more correct responses, and poor for 7 or less correct responses.

Good exclusive breastfeeding practices were determined based on the time breastfeeding was initiated after birth of the last child, duration of breastfeeding in months, type of breastfeeding, whether exclusive or not in the first six

months. Good complementary feeding practices were determined by responses to time of initiation of complementary feeding, nature of food used for complementary feeding and hygienic food preparation practices.

Data management and analysis

Data were checked for incompleteness, inconsistency, edited and coded. Data were then entered and analyzed using Epi-info ver 7. Descriptive statistics were used to determine the level of knowledge of, attitudes to, and practices of proper initiation of breastfeeding, duration of exclusive breastfeeding and timeliness of initiation of complementary feeding. Bivariate analysis was used to determine association of the outcome variable with independent variables. The outcome variables examined were the initiation and duration of exclusive breastfeeding as well as timely initiation of complementary feeding. The main independent variables were age of the respondents, their educational level, occupation, household incomes and the number of children aged under 18 that they had. Statistical associations were declared at 95% confidence level and p value <0.05 .

Ethical approval

Ethical approval was obtained from the Health Research and Ethics Committee of Lagos University Teaching Hospital. Permission was also obtained from the chairman of the town. The respondents were assured of total confidentiality and their right to withdraw from the study at any time without consequence, and their individual verbal consent was obtained.²⁰

RESULTS

Two hundred questionnaires were distributed across the selected 5 CDAs in Magboro. One hundred and seventy four were completely filled and submitted for analysis yielding a response rate of 87%. Mothers had a mean age of 30.1 \pm 6.7 years, were married (94.8%), mostly Christian (66.1%), Yoruba (75.3%) with secondary (48.3%) and post-secondary education (44.3%). Fifty three percent of mothers were in professional occupations. About a quarter of mothers reported average household monthly incomes less than or equal to N10,000, which is equivalent to less than or equal to \$2 a day. The majority of mothers (80.5%) had between 1 and 3 children aged under 5 years (Table 1).

Mothers' knowledge of infant feeding

Almost three-quarters of mothers (73.6%) reported that the 'breast milk only' was the best food for the newborn, however, 42 (24.1%) said that water needs to be given and 4 mothers reported breast milk and infant formula is the best food. Almost all the mothers (98.3%) knew that breastfeeding should be initiated within 30 minutes of birth. The correct duration of exclusive breastfeeding for 6 months was reported by 68.4% of mothers, the rest reporting durations of 3 to 5 months (20.7%) and over 6 months (10.9%). Total duration of breastfeeding was reported as less than the stipulated twenty-four months by 60.3% of mothers. Correct knowledge of what constituted complementary feeding was reported by 76.4% of mothers, with 73% of them knowing the correct time to institute complementary feeding. However, only 46.2% of mothers knew that complementary feeding should continue until the child's second birthday.

There were knowledge gaps of best practices of infant feeding reported. Forty two percent of mothers did not know

that children with diarrhoea should continue to be breastfed and only 16.7% of mothers knew that breastfeeding can transmit disease to the baby (Figure 1). Overall, 51.7% of mothers had a good knowledge score. Fifty and 34 mothers, (28.7% and 19.5%) had fair and poor knowledge respectively of infant feeding. While majority of mothers knew that complementary feeding required hygienic preparation methods, only 11.5% reported that complementary feeding can also transmit disease (Figure 2).

Infant feeding practices

All the mothers reported that they had breastfed their children. The majority (98.3%) initiated breastfeeding within 30 minutes of birth and used the colostrum (96.0%). Almost half the mothers (48.6%) stopped breastfeeding their children between 10 to 18 months and only 20.2% of the mothers breastfed until the child's 2nd birthday. One hundred and seven mothers (61.5%) reported that they practiced mixed feeding in the first 6 months. Exclusive breastfeeding was reported among 29.9% of the mothers. Fifteen mothers (8.6%) exclusively breastfed for less than six months (Table 2). Initiation of complementary feeding was done before 6 months by 24.1% of mothers, at 6 months by 49.4% of mothers and over 6 months by 26.4% of mothers. Concerning the choice of foods used for complementary feeding and feeding patterns, 55.2% of the mothers used processed cereals (table 2). Almost a third, (60.3%) of mothers fed only at scheduled times. However, 92.5% did not add extra salt to the child's food and 79.2% used plate/cup and spoon over feeding bottles.

Bivariate analyses were done to determine the strength of association between the independent variables of mother's age, educational level, occupation, average monthly household income and number of children <18 years; and the outcome of exclusive breastfeeding for six months. There were positive statistically significant associations between the age of mothers and their average reported monthly household income, and whether or not they breastfed exclusively for 6 months. Older mothers ($P = 0.0004$, $\chi^2 = 18.2$), and those with higher monthly household incomes ($P = 0.006$, $\chi^2 = 14.5$) reported that they had breastfed exclusively for 6 months. However, there was no statistically significant relationship between correct exclusive breastfeeding practice and educational levels, occupation of the mothers or number of children aged <18 years ($P = 0.2$, $\chi^2 = 1.7$) (Table 3).

A similar trend was demonstrated in the bivariate analysis of socio-demographic characteristics of respondents and the initiation of complementary feeding. The age and occupation of the respondents had statistically significant associations with the timing of initiation of complementary feeding. Younger mothers and those with lower household incomes initiated complementary feeding before 6 months. Mothers with 4 or more children <18 years were also associated with initiation of complementary feeding before six months (Table 4).

DISCUSSION

Research has documented that babies nutritional needs in the first six months are adequately met with breast milk and that introduction of complementary foods before six months of age displaces breastfeeding and its attendant protective effects, without conferring any growth advantage on the child.^{21, 22} Successful EBF has been documented to be positively associated with mothers' age, education and

previous experience,²³ however, this study reported that increasing age of mothers was associated with lower rates of EBF to 6 months of age.

The timing of complementary feeding is important to the growth and development of the child if the maximum benefits of breastfeeding as well as the timely introduction of additional nutrients are to be made available to the baby.²⁴⁻²⁶ According to the new World Health Organization (WHO) indicators, the timeliness is determined as the child receiving semi-solid foods between 6 and 8 months regardless of the breastfeeding status and this study found that timely initiation was quite good among 75.9% of mothers.^{27, 28} The high proportion of mothers who initiated breastfeeding in the first 30 minutes of birth is likely to be the result of the spread of the Baby-Friendly Hospital Initiative (BFHI) in primary health care in Lagos. Although the proportion of respondents who reportedly breastfed exclusively was higher than the national average of 17% reported in the Nigerian Demographic and Health Survey²⁹, it is comparable to results obtained from other studies, and indicative of how little behavioural change has taken place over the years.³⁰⁻³⁴ The determinants of good practices concerning exclusive breastfeeding documented in literature, were the same as what this study found; that is more educated mothers were more likely to have breastfed exclusively,³⁵ paradoxically, in this study, maternal age was negatively associated with EBF.

Large scale breastfeeding promotion campaigns have been linked to improved rates of EBF, especially when rendered through peer educators and health talks during pregnancy.³⁶⁻³⁸ The results from this study indicate that there are important gaps in the knowledge of mothers regarding the importance of exclusive breastfeeding and timing of initiation of complementary feeding. These knowledge gaps often arise in mothers not exposed to formal health services and those with limited post-natal exposure to healthcare workers. This needs to be explored in the development of promotional information and education materials to improve infant feeding practices, because the knowledge of mothers does not necessarily translate to practice of exclusivity, but can be a significant predictor of good breast feeding practice.³⁹⁻⁴¹

Mothers with education about the benefits of exclusive breastfeeding are more likely to practice EBF for the optimal 6 months of the child's life. This knowledge was also associated with other best practices of child survival such as growth monitoring and immunization. Mothers who were more educated and had higher household incomes were also more likely to exclusively breastfeed for the recommended six months, which can be attributed to having better knowledge of the benefits of proper infant feeding and corroborates the findings from other places.⁴²

⁴³Findings from this study confirm that mothers' knowledge, attitudes and concerns about the adequacy of breast milk and breastfeeding have been shown to influence the early introduction of other feeds as well as determining good infant feeding practices.^{44, 45}

The influence of education on the development of health belief models has been well-documented and there is evidence from this study that the underlying educational level of the mother has a direct impact on the willingness and implementation of exclusive breastfeeding.^{46, 47}

The absence of a statistical association between timeliness

in the initiation of complementary feeding and the socio-economic status of mothers has implications for nutritional policy implementation. It indicates that there may be no fundamental difference in the mothers with better household incomes and the eventual nutritional status of their children. This corroborates what has been documented before and clearly demonstrates that there has not been any real change in almost a decade and this still continues to be an issue.^{48,49}

There is documented evidence that initiation of complementary feeding has been associated with introduction of inappropriate foods that increase the dangers of malnutrition. Especially important is the increased possibility of introducing high sugar foods.⁵⁰ The importance of educating mothers about appropriate infant feeding practices has been documented.⁵¹ This goes beyond the need for meeting goals or policies⁵², but must be instituted as a necessary foundation to ensuring national development.

Study limitations

Efforts have been made to ensure the highest quality of

data possible; however, the study is not free of limitations of recall bias as well as bias of information particularly as concerns monthly household income.

CONCLUSION

There is still a sizeable gap between the knowledge of mothers and their feeding practices. Evidence from this study suggests that educational levels related to socio-economic status has an inverse association with the proportion of mothers who implement exclusive breastfeeding. The immediate recommendation is for improved community-based educational support for mothers to improve their ability to implement good breast and complementary feeding practices. There is also a need to ensure that robust efforts are made to ensure that basic education curricula include teaching the importance of early infant nutrition as part of both general science and civic studies to inculcate an improved health belief model in potential parents from as early an age as possible. Further research into other effective channels of delivering health education is needed.

Table 1: Socio-demographic characteristics of mothers

Variable	Frequency n=174	Percentage (%)
Age		
<20	13	7.5
20 – 29	83	47.7
30 – 39	68	39.1
>39	10	5.7
Educational level		
No formal education	3	1.7
Primary	10	5.7
Secondary	84	48.3
Tertiary	77	44.3
Occupation		
Professional – Senior, Intermediate and Junior	92	52.9
Semi-skilled	61	35.1
Unskilled	21	12.1
Number of children under 18 years		
1 – 3 children	140	80.5
4 and more	34	19.5
Average household monthly income		
<N5,000	10	5.7
N5,001 – N10,000	36	20.7
N10,001 – N25,000	57	32.8
N25,001 – N50,000	30	17.2
>N50,000	41	23.6

Table 2: Infant feeding practices among respondents

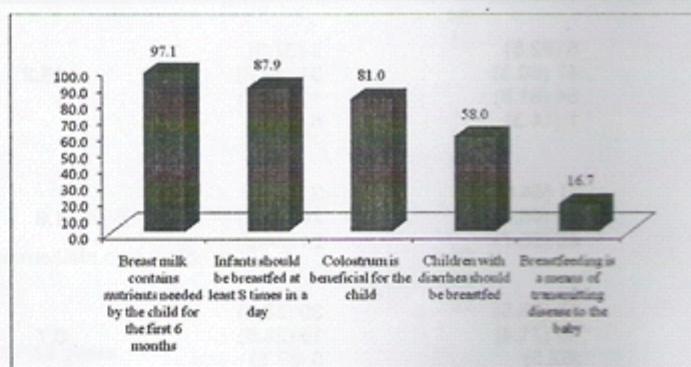
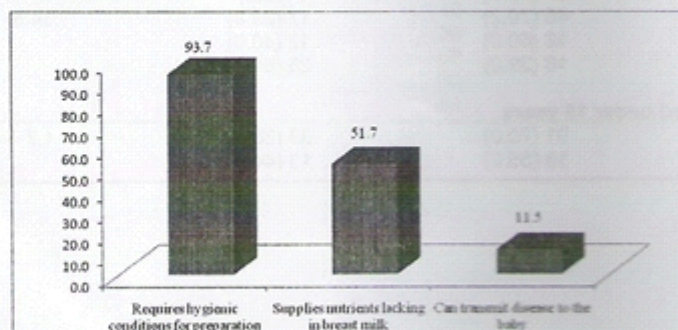
Feeding practices	Frequency	Percentage (%)
EBF <6 months	15	8.6
EBF 6 months	52	29.9
Mixed feeding in the first 6 months of life	107	61.5
Initiation of complementary feeding		
<6 months	42	24.1
6 months	86	49.4
>6 months	46	26.4
Duration of breast feeding of index child		
to 9 months	43	24.7
10-18 months	84	48.3
19-24 months	47	27.0
Food choices for complementary feeding		
Family food	78	44.8
Purchased food	96	55.2
Added salt/sugar to complementary feeds (n=78)		
Yes	13	16.7

Table 3: Association between socioeconomic characteristics and practice of exclusive breastfeeding for 6 months

Variable	<6 months (n=107)	6 months (n=52)	χ^2	P value
Age				
<20	5 (62.5)	3 (37.5)	18.2	0.0004
20-29	47 (60.3)	31 (39.7)		
30-39	54 (81.8)	11 (18.2)		
>39	1 (14.3)	6 (85.7)		
Education				
Primary	11 (84.6)	2 (15.4)	1.9	0.4
Secondary	50 (65.8)	26 (34.2)		
Tertiary	46 (65.7)	24 (34.3)		
Occupation				
Professional	57 (65.5)	30 (38.0)	0.7	0.7
Semi-skilled	40 (71.4)	16 (28.6)		
Unskilled	10 (62.5)	6 (37.5)		
Average monthly household income				
<N5,000	6 (60.0)	4 (40.0)	14.5	0.006
N5,001 – N10,000	27 (75.0)	9 (25.0)		
N10,001 – N25,000	40 (70.2)	17 (29.8)		
N25,001 – N50,000	18 (60.0)	12 (40.0)		
>N50,000	16 (39.0)	25 (61.0)		
Number of children aged under 18 years				
1 – 3	91 (70.0)	39 (30.0)	1.7	0.2
4 and more	16 (55.2)	13 (44.8)		

Table 4: Association between socioeconomic characteristics and initiation of complementary feeding

Variable	<6 months (n=42)	6 months (n=86)	>6 months (n=46)	χ^2	P value
Age					
<20	5(38.5)	5(38.5)	3(23.1)	19.9	0.01
20-29	27(32.5)	43(51.8)	13(15.7)		
30-39	7(10.3)	36(52.9)	25(36.8)		
>39	3(30.0)	2(20.0)	5(50.0)		
Education					
Primary	2(15.4)	9(69.2)	2(15.4)	2.7	0.6
Secondary	21(25.0)	42(50.0)	21(25.0)		
Tertiary	19(24.7)	35(45.5)	23(29.9)		
Occupation					
Professional	20(21.7)	46(50.0)	26(28.3)	20.5	0.0004
Semi-skilled	9(14.8)	36(59.0)	16(26.2)		
Unskilled	13(61.9)	4(19.0)	4(19.0)		
Average monthly household income					
<N5,000	4(40.0)	4(40.0)	2(20.0)	4.7	0.8
N5,001 – N10,000	9(25.0)	17(47.2)	10(27.8)		
N10,001 – N25,000	15(26.3)	25(43.9)	17(29.8)		
N25,001 – N50,000	6(20.0)	15(50.0)	9(30.0)		
>N50,000	8(19.5)	25(61.0)	8(19.5)		
Number of children aged under 18 years					
1 – 3	27(19.3)	74(52.9)	39(27.9)	9.2	0.01
4 and more	15(44.1)	12(35.3)	7(20.6)		

**Figure 1: Knowledge of appropriate breast feeding practices****Figure 2: Knowledge of appropriate practices for complementary feeding**

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