ECRONICON OPEN ACCESS

EC NUTRITION
Research Article

Assessment of Knowledge, Attitudes and Practices of Complementary Feeding among Nursing Mothers Attending a Millennium Development Goal Primary Health Centre in an Urban Community in Enugu State, Nigeria

Laura C Okpala[1,2]*, Henry C Uro-Chukwu[1,3] and Chigozie J Uneke[1,4]

[1]Centre for Clinical/Public Health Nutrition, Nutraceutical Research and Development, Ebonyi State University, Abakaliki, Ebonyi State, Nigeria

[2]Department of Food Science and Technology, Ebonyi State University, Abakaliki, Ebonyi State, Nigeria

[3]Department of Community Medicine, Ebonyi State University, Abakaliki, Nigeria

[4]African Institute for Health Policy and Health Systems, Ebonyi State University, Abakaliki, Nigeria

***Corresponding Author:** Laura C Okpala, Centre for Clinical/Public Health Nutrition, Nutraceutical Research and Development, Ebonyi State University, Abakaliki, Ebonyi State, Nigeria.

Received: July 18, 2020; **Published:** August 29, 2020

Abstract

Background: One of the specific objectives of the National policy on Infant and Young Child Feeding in Nigeria, is to promote the timely introduction of appropriate and adequate complementary foods while continuing breastfeeding up to 2 months and above.

Objectives: The objective of this work was to assess the knowledge and practices of mothers as this will not only help in evaluating the effectiveness of the policy but also help in planning interventions to improve feeding practices.

Methods: The study design was a cross sectional study and was done at the Immunization Clinic of a millennium development goal primary health care centre located in an urban community located in Enugu State, Nigeria. Questionnaires were used to assess the knowledge, attitudes and practices of the nursing mothers.

Results: A total of 59 nursing mothers participated in the study. The mean ratings (MNRs) of participants' knowledge regarding complementary feeding ranged between 2.20 and 4.27 on a scale of 5. The MNRs for attitudes of mothers towards complementary feeding ranged from 2.07 to 4.60. The MNRs for complimentary feeding practices of the mothers ranged from 1.27 - 4.84.

Conclusion: Results from the study suggest that there is a need for development of advocacy strategies to ensure that mothers not only receive education on appropriate complementary feeding practices but also to ensure that there is a behavioural change among the mothers.

Keywords: *Complementary Feeding; Infant and Young Child Feeding; Millennium Development Goals; Mothers*

Introduction

When an infant reaches six months of age, the needs for nutrients and energy begin to exceed what is supplied by breast milk and so a need arises for other major sources which includes infant formula, milk and fortified foods which in some cases are homemade [1]. Such

additional sources of nutrient and energy given to fill the gap created by growth are called complementary feeding [2]. Dev., *et al*. [3] have defined complementary feeding as the provision of nutrient containing foods or liquids other than breast milk and that includes both solid foods and semisolid foods. Complementary foods should have relatively low calories and high vitamins and mineral content [4]. This type of food is called nutrient-dense and it is recommended because infants have a small stomach capacity but their rapid growth requires high nutrient foods to support it. Homemade complementary foods usually have poor dietary quality [5,6]. The World Health Organization has recommended that infants should be breast fed exclusively for the first six months of life and complementary feeding added at six months with continued breastfeeding till at least two years of age [7,8]. The introduction of complementary foods before the age of six months has been reported to have the potential of displacing breast milk and increasing the risk of infections such as diarrhoea which could contribute to weight loss and malnutrition [9]. Poor complementary feeding practices and breastfeeding, together with high rates of infectious diseases have been identified as the major immediate causes of malnutrition during the first two years of life [10]. The period of birth to 2 years of age has been recognized as a critical period during which adequate nutrition must be provided in order for the child to achieve optimum development and full potential [11]. Malnutrition has been reported to be the underlying factor leading to different childhood killer diseases such as malaria, diarrhoea, pneumonia, etc [12]. Childhood malnutrition can have a detrimental effect on cognitive function and this could contribute to poverty by impeding the child's ability to live a productive life which could ultimately slow down national development. This suggests that adequate and timely complementary feeding practices not only regulate growth and functional development of a child, but also appear to play a pivotal role in lifelong programming effects that regulate health, mortality risks, disease, behaviour and neural function as well as the quality of childhood life [13].

Aggarwaal., *et al*. [14] reported that inadequate knowledge about prevalent feeding practices and appropriate foods are often greater determinants of malnutrition than the lack of food. Good complementary knowledge and practices among nursing mothers will therefore go a long way in preventing the consequences of malnutrition thereby allowing children to receive appropriate nutrition and consequently achieve their full potentials.

Appropriate complementary feeding is very important in economically developing countries. Research has shown low level of complementary feeding knowledge and inappropriate practices in many developing countries. Olatona., *et al*. [12] reported that only 14.9% of mothers interviewed in Eti-Osa, Lagos State, Nigeria had good knowledge of complementary feeding while the level of complementary feeding practices was also low (47%). While assessing complementary feeding practices among children aged 6 months to 1 year, Guguloth., *et al.* [15] observed that in Khammam, India, only 42% of mothers started complementary feeding at the right age of 6 months while just 45% were giving at the right frequency. They concluded that not only were the complementary feeding practices inappropriate, but the knowledge was also inadequate in majority of the mothers studied. Many other studies have reported both early and delayed start of complementary feeding than the recommended 6 months [3]. The effect of all these poor knowledge and practices are various forms of malnutrition including underweight of the child [16]. The fact that the population of children with stunted growth increases from 27% in children at 6 months of age to 50% at 23 months of age, in Nigeria [17], shows the extent of this poor knowledge and practice among caregivers and mothers.

Infant and young child feeding (IYCF) is an integral part of the overall objective of ensuring the socio-economic well-being of all Nigerians. The overall goal of the National Policy on Infant and Young Child Feeding in Nigeria 2010 is to ensure the optimal growth, protection and development of the Nigerian child from birth to the first five years of life. One of the specific objectives of the policy, is to promote the timely introduction of appropriate and adequate complementary foods while continuing breastfeeding up to 2 months and above [11]. However, practical implementation of this policy by health care providers appears to be inadequate, since complementary feeding practices by nursing mothers seem not to follow national guidelines. Appropriate complementary feeding depends on accurate information and skilled support from the family, community and healthcare system.

Purpose of the Study

The purpose of this study was to assess the knowledge, attitudes and practices of complementary feeding among nursing mothers in a primary health care centre located in Enugu town - the capital of Enugu State, Nigeria. Assessment of the knowledge and practices of mothers will not only help in evaluating the effectiveness of the policy but also help in planning interventions to improve feeding practices.

Materials and Methods

Study design

The study design was a cross sectional study and was done at the Immunization Clinic of a Millennium Development Goal (MDG) primary health care centre located in Enugu, the capital of Enugu State, Nigeria. Mothers who had children between the ages of 6 and 24 months who visited the health centre were interviewed using the questionnaires. This age range of children was chosen based on WHO recommendations for complementary fed children [8]. A total of 59 mothers took part in the study.

Ethical approval

Ethical approval to carry out the study was obtained from the University Research Ethics Committee, Ebonyi State University, Abakaliki, Nigeria. The purpose of the study was explained to the participants, they were informed that their participation was voluntary and that they could decline and stop the interview anytime they desired. Utmost confidentiality of information obtained was ensured by maintaining participants' anonymity.

Description of the data collection tools and process

Pre-tested, semi structured questionnaires were used to assess the knowledge, attitudes and practices of the nursing mothers. The questionnaires were divided into 4 parts namely: the socio-demographic characteristics, knowledge, attitudes and practices. All the mothers were interviewed and the questionnaires were filled by either the researchers or trained research assistants. The interview was conducted in English or the native language of the mother depending on the language the participant was more fluent in.

Analysis of questionnaires

The data obtained were analysed based on methods developed at McMaster University, Canada by Johnson and Lavis [18]. The analysis was based on the mean rating (MNR), median rating (MDR) and the range. For instance, the figures represent Likert rating scale of 1 - 5 points, where 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree and 5 = strongly agree.

The mean was calculated as the numbers chosen from the response scale divided by the total number of responses to the question. The range was recorded as the range of values represented by the lowest value chosen from the response scale and the highest (e.g. 3-5). The median was obtained by arranging the values chosen from the response scale in ascending order [19]. In terms of analysis, values of 3 points and below were considered as low while values of 4 points and above were considered high.

Results

Socio-demographic characteristics

The socio-demographic characteristics of the study population are presented in table 1. Approximately 46% of the children were within the ages of 6 - 8 months of age while only 1.7% of the children were within the age range of 12 - 17 months. Sixty one percent of the mothers were between the ages of 21 - 30 years of age while only 1% of the mothers was above 40 years. All the respondents had a minimum of secondary school education while 40% of the mothers were involved in one form of business or the other. All of the mothers were married and 91.5% of them lived within Enugu town.

Attributes of the participants	Frequency (N = 59)
Age of child	
6 - 8 months	27 (45.8%)
9 - 11 months	17 (28.8%)
12 - 17 months	1 (1.7%)
18 - 23 months	14 (23.7%)
Mother's age group	
< 20	0 (0%)
21 - 30	36 (61.0%)
31 - 40	22 (37.3%)
> 40	1 (1.7%)
Mother's highest level of education	
Primary	0 (0%)
Secondary	26 (44.1%)
Post –Secondary	33 (55.9%)
None	0 (0%)
Marital status	
Married	59 (100%)
Separated/Divorced	0 (0%)
Widowed	0 (0%)
Single	0 (0%)
Number of children	**N = 60**
1	10 (16.7%)
2	20 (33.3%)
3	16 (26.7%)
4	8 (13.3%)
> 4	6 (10.0)
Residence	
Within Enugu town	54 (91.5%)
Outside Enugu town	5 (8.5%)
Sex of baby	
Male	31 (51.7%)
Female	29 (48.3%)
Occupation of mother	
Artisan	11 (18.6%)
Business	24 (40.7%)
Public/ Civil Servant	11 (18.6%)
Unemployed	13 (22.0%)

Table 1: *Socio-demographic characteristics of the study population.*

Mothers' level of knowledge regarding complementary feeding

Presented in table 2 are the results showing the level of knowledge of mothers regarding complementary feeding. The mean values showing the level of knowledge of when complementary feeding should start, the frequency of giving meals, the age at which breastfeed-

ing should stop etc. ranged between 2.20 and 4.27 on a scale of 5. Knowledge of when breastfeeding should stop was low among the mothers (2.2) while they had good knowledge of the consistency of foods to be given to children. Knowledge of the minimum frequency of giving complementary foods in a day was also poor.

Knowledge	Mean	Median	Range	Total
Age to introduce complementary feeding	3.74	5	1 - 5	59
Correct age to stop breastfeeding	2.20	2	1 - 5	59
Minimum frequency of giving complementary food in a day to 6 - 8 months child	2.70	2	1 - 5	59
Minimum frequency of giving complementary food in a day to 9 - 11 months child	2.86	3	1 - 5	59
Correct consistency of food for 6 - 8 months child	3.27	4	1 - 5	59
Correct consistency of food for 9 - 11 months child	4.16	4	2 - 5	59
Correct consistency of food for 12 months child	4.27	4	1 - 5	59

Table 2: *Mothers' level of knowledge regarding complementary feeding.*

Attitudes of mothers towards complementary feeding

The attitudes of mothers towards complementary feeding is shown in table 3. The results showed that the means ranged between 3.80 and 4.60. Generally, the mothers had good attitudes towards complementary feeding.

Attitudes	Mean	Median	Range	Total
Attitude towards starting complementary feeding at 6 months	3.80	5	1 - 5	55
Attitude towards breastfeeding during complementary feeding	4.60	5	1 - 5	55
Attitude towards the importance of consistency of complementary food	4.34	4	1 - 5	55

Table 3: *Attitudes of mothers towards complementary feeding.*

Complementary feeding practices among nursing mothers

The self-reported practices of the nursing mothers is presented in table 4. The results revealed that mean values generally ranged from 1.27 - 4.84. The median rating for starting complementary feeding at 6 months was 3.00 while the mean rating was 3.30. The range of responses on the practice of breastfeeding while giving complementary foods was 4 - 5. The mean response on the minimum frequency of giving complementary foods was however low for both of the age ranges given.

Discussion

The results revealed that the mothers had a fair knowledge of when to introduce complementary foods but their knowledge of when to stop breast feeding was low. The mean value of 2.20 suggests that there is a great need for intervention in order to improve the knowledge of the mothers with respect to correct time to stop breastfeeding. The World Health Organization recommends that breastfeeding should continue with appropriate complementary feeding from 6 months to 2 years and beyond [8]. The knowledge of the mothers on the correct time to introduce complementary feeding was higher than the practice of introducing the complementary foods at the correct time. The median value for their practice of introducing complementary feeding at the correct time was low (Likert median scale = 3.00). This value also suggests that there is need for intervention in order to improve their level of practice. Many of the respondents when interviewed said that they knew that complementary feeding should start at 6 months, however they had to either initiate feeding earlier

Practices	Mean	Median	Range	Total
Starting of complementary feeding at 6 months of age.	3.30	3.0	1 - 5	54
Starting of complementary feeding at less than 6 months of age.	2.93	2.0	1 - 5	58
Starting of complementary feeding at more than 6 months of age.	1.27	1.0	1 - 4	58
Breastfeeding child and giving complementary feeding	4.84	5.0	4 - 5	59
Correct minimum frequency of feeding 6 - 8 months old child	2.67	2.0	1 - 5	59
Correct minimum frequency of feeding 9 - 11 months old child	2.75	2.0	1 - 5	56
Correct consistency of food for 6 - 8 month old child	3.44	4.0	1 - 5	56
Correct consistency of food for 9 - 11 month old child	4.18	4.0	1 - 5	56
Correct consistency of food for 12 month old child	4.08	4.0	1 - 5	59

Table 4: *Complementary feeding practices among nursing mothers.*

or later than the 6 months. Various reasons given for early initiation of complementary feeding included that the mothers had to return to work after the maternity leave and as a result would have to leave their babies with day care attendants. This according to them forced them to initiate complementary feeding earlier than the recommended time of 6 months as they were not close to their babies to breast-feed them. Other mothers complained that their breast milk was insufficient to meet the demands of their children and saw continued exclusive breastfeeding of the child as a form of punishment for the child. Some mothers felt it was necessary to introduce complementary feeding early in order to ensure that the children would have no difficulty in transiting from baby foods to adult foods. Reasons given for delayed introduction of complementary feeding included that the child had poor health condition which necessitated the need to delay introduction. Many of the respondents felt that breast milk was still sufficient for the baby after 6 months while others felt that delayed introduction of complementary feeding would ensure proper development of the brain.

Results also showed that the mothers' knowledge and practices of the minimum frequency of feeding the child were low. Olatona., *et al*. [12] also observed that mothers in Lagos had poor knowledge of the minimum frequency of feeding a child. In a study in Cross River State, Nigeria, only 36.7% practiced the minimum frequency meal, with wasting common among children who did not receive minimum meal frequency [16]. The World Health Organization has recommended that children be fed at least twice a day at 6 - 8 months of age and at least 3 times for children between 9 - 12 months and older than 12 months [20]. It was observed that the levels of knowledge and practices on the correct consistency of food meant for 6 - 8 months children were lower than their attitude towards the importance of the consistency of the food. The consistency of complementary food contributes to minimum acceptable diet and in some studies, only 7.3% rate of minimum acceptable diet was recorded [16], thereby collaborating the poor rate also found in this study. This therefore implies that there is need for intervention at both the knowledge and practice levels. The levels of knowledge and practices towards the consistency of food for children above 6 - 8 months was however high.

Limitation of the Study

This study had its limitations. The study focused on only 59 mothers who attended the health care centre. Therefore, the results may not give an adequate representation of what actually obtains in the facility. Also, despite the appeal for the mothers to be honest while answering the questions on their practices, the risk that respondents will not over-report desired practices cannot be eliminated.

Conclusion

In conclusion, knowledge of when to stop breastfeeding as well as the level of knowledge and practices of the correct minimum frequency of feeding children within the ages of 6-8 months were not optimal when compared with the recommendations of WHO. There

was inadequate level of practice when it came to initiation of complementary feeding. It was interesting to note that in the healthcare centre, different posters with the aim of educating mothers on complementary feeding practices could be seen. This suggests that there is a need for development of advocacy strategies to ensure that mothers not only receive education on appropriate complementary feeding practices but also to ensure that there is a behavioural change among the mothers.

Declaration of Conflict of Interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

Bibliography

1. Fox MK., *et al*. "Sources of energy and nutrients in the diets of infants and toddlers". *Journal of the American Dietetic Association* 106.1 (2006): S28-S42.

2. Dewey KG and Brown KH. "Update on technical issues concerning complementary feeding of young children in developing countries and implications for intervention programs". *Food and Nutrition Bulletin* 24.1 (2003): 5-28.

3. Dev M., *et al*. "Knowledge of Complementary Feeding of mothers having infants younger than 2 years of age- A community based approach". *Pakistan Pediatric Journal* 37.3 (2013):149-155.

4. Dewey KG. "The challenge of meeting nutrient needs of infants and young children during the period of complementary feeding: An evolutionary perspective". *Journal of Nutrition* 143 (2013): 2050-2054.

5. Kreb NF., *et al*. "Complementary feeding: a global network cluster randomized controlled trial". *BMC Pediatrics* 11.4 (2011).

6. Dewey KG and Adu-Afarwuah S. "Systematic review of the efficacy and effectiveness of complementary feeding interventions in developing countries". *Maternal and child Nutrition* 4 (2008): 28-85.

7. World Health Organization (WHO). "The optimal duration of exclusive breast feeding: A report of an expert consultation". (WHO/FCH/CAH/01.24). Geneva (2001).

8. World Health Organization (WHO). "Global Strategy for infant and young child feeding". Geneva. WHA55/2002/REC/1 Annex 2 (2002).

9. Kavitha S., *et al*. "Study of complementary feeding practices among mothers of infants aged six months to one year". *Healthline* 5.2 (2014): 29-35.

10. Sanusi RA., *et al*. "Mothers' knowledge and practice of breastfeeding and complementary feeding in Enugu State, Nigeria". *Journal of Research in Nursing and Midwifery* 5.1 (2016): 21-29.

11. Federal Ministry of Health (FMoH). National Policy on Infant and Young Child feeding in Nigeria. (2010).

12. Olatona FA., *et al*. "Complementary feeding knowledge, practices, and dietary diversity among mothers of under-five children in an urban community in Lagos State, Nigeria". *International Journal of Maternal Child Health and AIDS* 6.1 (2017): 46-59.

13. Metzger MW and McDade TW. "Breastfeeding as obesity prevention in the United States: a sibling difference model". *American Journal of Human Biology* 22.3 (2010): 291-296.

14. Aggarwaal A., *et al*. "Complementary feeding- Reasons for inappropriateness in timing, quantity and consistency". *Indian Journal of Pediatrics* 75 (2008): 49-53.

15. Guguloth A., *et al*. "Assessment of complementary feeding practices among children aged 6 months – 1 year". *Journal of Science* 6.5 (2016): 239-243.

16. Udoh EE and Amodu OK. "Complementary feeding practices among mothers and nutritional status of infants in Akpabuyo Area, Cross River State, Nigeria". *Springerplus* 5.1 (2016): 2073-2081.

17. National Population Commission (NPC) Nigeria, ICF Macro Nigeria Demographic and Health Survey 2008. National Population Commission and ICF Macro, Abuja (2009).

18. Johnson NA and Lavis JN. Procedures Manual for the "Evaluating Knowledge-Translation Platforms in Low- and Middle-Income Countries" Study. Hamilton, Canada: McMaster University Program in Policy Decision-Making (2010).

19. Uneke CJ., *et al*. "An assessment of national maternal and child health policy makers' knowledge and capacity for evidence-informed policy-making in Nigeria". *International Journal of Health Policy and Management* 6.6 (2017): 309-316.

20. World Health Organization (WHO). The World Health Report: Shaping the Future. Geneva (2003).

Volume 15 Issue 9 September 2020