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Assessment of the Impact of Caregivers Complementary Feeding Knowledge on Undernutrition among Children 6 to 36 Months in Borno State, Nigeria

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Abstract

This paper is an assessment of the impact of Caregivers complementary feeding Knowledge on undernutrition among children 6-36 Months in Borno state. Large-scale renewables raise new challenges and provide new opportunities across Health systems. The paper considers the barriers faced by health workers and caregivers in Maiduguri Metropolitan Council in providing nutritional services to infants. We review the current state of knowledge in relation to nutrition. This paper then explores key issues in health and nutrition system structure, the main challenges to the uptake of renewables, and the various existing fiscal and policy approaches to encouraging health services. We also highlight possible ways of moving forward to ensure more widespread health management systems.

Keywords: *Caregivers, Feed Knowledge. Maiduguri Metropolitan Council, Undernutrition.*

Introduction

North-East Nigeria has been bedeviled with conflict owing to the Boko Haram conflict. Borno State has entered its 13th year into the conflict with a serious impact on youth and ageing populations. A lot of people have been displaced from their inhabitants due to insecurity resulting from frequent attacks from the Non-State Arms Groups (NSAG), leading to the settlement of Internally Displaced Persons (IDP) in various camps in the affected states. Their livelihoods have been destroyed thus making it difficult for the displaced population to feed due to food shortage. Borno State as one of the affected states has recorded a huge influx of displaced persons.

The displacement has resulted in a reduction in access to household food security and basic life- saving services including access to nutritious diet and medical facilities. This has called for large scale nutrition interventions by humanitarian agencies to address the nutritional needs of the affected population in Borno, Adamawa and Yobe (BAY) states especially the most vulnerable groups which include pregnant women and children under five years of age in emergency situations.

One of the nutrition-specific interventions is Infant and Young Child Feeding Practices (IYCF) to ensure optimal feeding for children 0-23 months and Pregnant and Lactating Women (PLW) who are highly vulnerable.

Nutrition-specific interventions are those types of interventions that address the immediate causes of undernutrition with the aim of reducing life-threatening consequences and complications.

Maiduguri Metropolitan Council have benefited from various humanitarian interventions including IYCF as a component of nutrition intervention. The big challenge is that caregivers do not practice appropriate complementary feeding to reduce the prevalence of Under nutrition among children 6-36 Months. This study is aimed at assessing the impact of caregivers Complementary Feeding knowledge on undernutrition among Children 6 to 36 months in Borno State, Nigeria.

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Conceptual Issues

Complementary Feeding

Complementary feeding is the feeding process which starts when breast milk alone is no longer sufficient to meet the nutritional requirements of infants and therefore other food and liquids are needed in addition to breast milk for optimal growth and development (WHO). Ideally, it begins at 6 months of age and continues to 24 months or beyond, reflecting the World Health Organization's recommendations for exclusive and continued breastfeeding [1].

"Complementary feeding" or "weaning" refers to all solid and liquid foods other than breast milk or infant formula. This definition has been adopted by the European Society for Paediatric Gastroenterology, Hepatology and Nutrition (ESPGHAN) and other international societies (The UK Scientific Advisory Committee on Nutrition (SACN), the United States Department of Agriculture (USDA) and the American Academy of Pediatrics (AAP) [2-5]. It is a critical period of growth during which nutrient deficiencies and illnesses contribute globally to higher rates of undernutrition among children under five years of age. The complementary feeding period occurs during a "window of opportunity" for the prevention of stunting and promotion of optimal growth, health and behavioral development [6] Complementary foods are often of lesser nutritional quality than breast milk and some of the nutrients may have low bioavailability and utilization. In addition, they are often given in insufficient amounts, and quality and if given too early or too frequently, they displace breast milk. Poor breastfeeding and complementary feeding practices, coupled with high rates of infectious diseases, are the principal causes of malnutrition during the first two years of life [1].

Nutrition

Nutrition is the science that interprets the interaction of nutrients and other substances in food in relation to the maintenance, growth, reproduction, health, and disease of an organism. It involves the physical intake of food substances, movement of these substances through the digestive tract, absorption, assimilation, biosynthesis, catabolism, and excretion. There are 2 main classes of nutrients in food components which are Macronutrients (Carbohydrate, Protein, Fat and oil and Water) and Micronutrients (Minerals and Vitamins). Diets taken by an individual must have the right quantity of each of these classes of food for the body to function properly. There are different energy requirements of the body that is highly dependent on so many factors including age, gender, height, weight, activity level and genetics that affect digestion and metabolic rates as well as the caloric intake which is the amount of food consumed via food and beverages.

The World Health Organization (WHO) defines malnutrition as "the cellular imbalance between the supply of nutrients and energy and the body's demand for them to ensure growth, maintenance, and specific functions." Malnutrition generally implies under-nutrition and refers to all deviations from adequate and optimal nutritional status in infants, children and in adults. In children, undernutrition manifests as underweight and stunting (short stature), while severely undernourished children present with the symptoms and signs that characterize conditions known as kwashiorkor, marasmus, or Marasmic-kwashiorkor. Malnutrition can be acute/chronic or a combination of both [7]. Malnutrition causes about 5.6 million of 10 million child deaths annually, with severe malnutrition contributing to about 1.5 million of these deaths [8]. The nutritional status of Children between 6-59 months is the best indicator of the wellbeing of children. Issues that cause a decline in the nutritional status of children are multidimensional and difficult to understand [9]. In South Africa, to ensure that all children can achieve optimal nutrition, and lower the incidence of infectious disease and malnutrition-related deaths in infants and children, it is thought that it is necessary to

understand the factors contributing to malnutrition [10]. The United Nations Children's Fund (UNICEF) conceptual framework of child Malnutrition shows three levels of causes and multiple levels of corresponding interventions that can reduce morbidity and mortality related to malnutrition. To prevent or treat malnutrition the factors causing the condition need to be evaluated. The different causes of malnutrition are interlinked and include immediate causes, underlying causes, and basic causes [11]. All these factors operate together and not independently.

[11] conceptual model has inadequate dietary intake and diseases as the immediate causes, insufficient household food, inadequate care and feeding practices and unhealthy household environment/inadequate health care are the underlying causes while political, cultural, religious, economic, and social systems influence are the basic causes of malnutrition. Poor complementary feeding practices as part of child feeding practices contribute to the underlying cause of malnutrition.

Impact of Health Workers Knowledge of Complementary Feeding on the Prevalence of Undernutrition

Traditionally, health workers particularly those in Primary Health care facilities carry out health promotion services through the provision of counselling services as part of their package to caregivers to improve household practices. Emergency Front Line Health Workers (FLHW) providing life-saving services also carry out nutritional counselling functions, especially for pregnant and lactating women who are among the vulnerable groups.

To promote IYCF practices, a number of strategies have been implemented in child health facilities, most particularly through the use of nutrition education and behavior change communication (BCC) approaches, which are mainly provided by health workers [12]. Generally, HWs have historically played a vital role in improving child and maternal health, and later life adult health [13-16].

Knowledge acquired by these health workers through regular training, refresher training or Continuing Education Program have a significant effect on the quality of IYCF services provided including complementary feeding practices. Evidence has been established that nutritional messages health workers share with caregivers during counselling or consultation sessions are effective in improving feed practices and the nutritional status of infants [17-19].

In other words, malnutrition in children can be reduced if knowledgeable health workers provide accurate, practiced, consistent, timely and updated dietary advice that is tailored toward the specific nutritional needs of children [20, 21].

In a descriptive cross-sectional study conducted to assess the nutritional knowledge levels of Health Workers on Infant and Young Child feeding practices in two predominant rural districts in Ghana, a self-administered questionnaire was used to obtain responses from 192 health workers from 21 health facilities [22]. From the analysis, 14.1% of the health workers did not know the appropriate age for introducing dairy foods to infants and 7.8% wrongly indicated that water should be introduced before 6 months of age. Only a small percentage of the HWs (6.8%) knew that non-breastfeeding children aged between 6 and 23 months should be fed 4 or more times daily with age-appropriate complementary foods. Only 22.9%, 25.0% and 10.9% were able to mention at least three iron, vitamin A and calcium-rich food sources respectively.

Overall, a higher proportion (52.4%) of the surveyed HWs had an average score ranging between 50% and 69% whereas, only 6.5% had a good score of > 70%. She concluded that this low level of knowledge jeopardizes the provision of high-quality nutritional support to caregivers.

Research Methodology

Maiduguri Metropolitan Council also known as Yerwa is the capital of Borno State and the largest city in North-eastern Nigeria. It was home to the Kanem-Bornu Empire for centuries. It is popularly called "Home of Peace". The city sits along the seasonal Ngadda River which disappears into the Firkin swamps in the areas around Lake Chad. Maiduguri was founded in 1907 as a Military outpost by the British and has since grown rapidly with a population exceeding one million. The region was home to the Kanem Borno Empire for centuries. Maiduguri consists of two cities, Yerwa to the west and Maiduguri to the east. Old Maiduguri was selected at approximately the same time alongside Shehu Garbai of Borno to replace Kukawa as the new traditional capital of the Kanuri people. Maiduguri is estimated to have a population of 1,197,497 (2006, Census). Its residents are mostly Muslims including Kanuri, Hausa, Shuwa, Bura, Marghi and Fulani ethnic groups. There is also a considerable Christian population. The area is chosen due to its high prevalence of undernutrition among children and its significant population of caregivers. Maiduguri Metropolitan Council represents an urban setting where various socioeconomic factors, cultural practices and displacement due to insurgency influence complementary feeding practices and child nutrition.

The study undertook a sequential mixed methods design, which consists of two phases of data collection namely quantitative survey followed by a qualitative [23].

The targeted populations for the study were households with children between 6 to 36 months of age who are residing in MMC. The study involved cross-sectional quantitative/qualitative data collection to obtain a reasonable estimate of complementary feeding knowledge and practices of caregivers and knowledge of health workers providing nutrition services. With the absence of standard census data for this location, the population data used in generating the sample was based on an estimated household census conducted by Action against Hunger in 2018. The primary source of data collection was the administration of household survey questionnaires to caregivers of children within 6 to 36 months of age. Weight and height/Length of children between 6-36 months in selected households were measured to determine their nutritional status. For the health workers' assessment of knowledge and practices, a self-administered questionnaire was used on the health workers who provide nutrition services in the camp to elicit responses.

Results

Table 1 shows the Complementary Feeding outcome in MMC. The proportion of infants 6–8 months of age who were receiving solid, semi-solid or soft foods was 83.4%. The rate of feeding children 6-24 months the minimum dietary diversity was 33.5%; this rate was lower for infants 6–11 months (24.6%) than older children aged 12–23 months (43.2%). The minimum meal frequency rate was 36.7%; higher among children aged 6–11 months (74.4%) compared with children aged 12–23 months (45.5%). The rate of minimum acceptable diet was 26.1%, which was lower at age 6–11 months (20.7%) compared to older children 12–23 months (22.2%). Bottle feeding rate during the previous 24 h as reported by caregivers was observed to be 34.1%, higher at age 6–11 months 40.5 % than at age 12–23 months 16.0%. Milk feeding frequency for non-breastfed children was 7.0% and also higher at the age 6–11 months than 12–23 months 7.5 and 6.7% respectively.

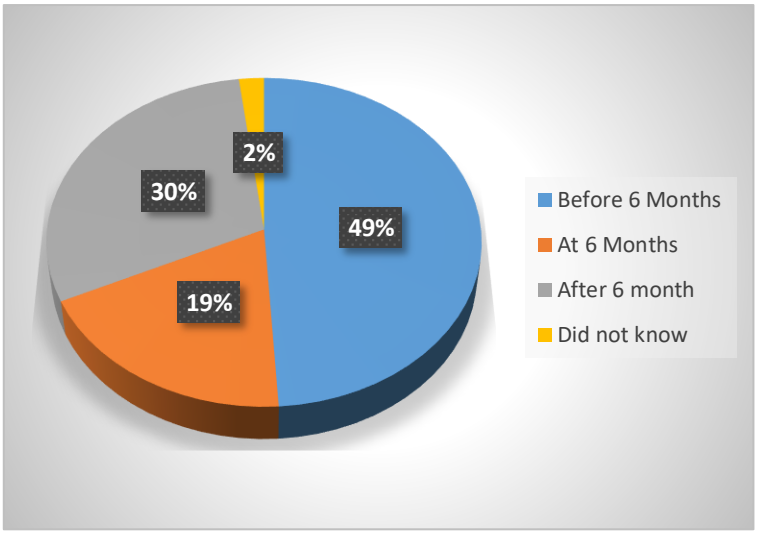

Figure 1. Data Analysis

Table 1. Complementary Feeding Indicators and Related Feeding Practices of Mothers in MMC

Characteristics	**N**	**%**
Introduction of solid, semi-solid or soft foods		
Met	110	83.4
Not met	22	16.6
Minimum dietary diversity		
Met	44	33.5
Not met	88	66.5
Minimum meal frequency		
Met	48	36.7
Not met	84	63.3
Minimum acceptable diet		
Met	34	26.1
Not met	96	73.9
Bottle feeding		
Yes	41	34.1
No	80	65.9
Milk feeding frequency for non-breastfed child		
Met	4	7
Not met	31	93
Still breastfeeding		
Yes	111	84.2
No	21	15.8
Age of introducing complementary food		
<6 months	63	49
6 months	24	19
>6 months	38	30
I don't Know	3	2
Washed Hands after cleaning defecated Child		

Yes	88	67.6
No	42	32.4
Reasons for starting complementary foods		
Hospital instruction	24	18.4
For good growth	11	8.2
Baby was not satisfied	41	30.7
Breast milk was not enough	8	5.8
Always crying	36	27
Others	12	9.4
First complementary food offered to child		
Infant formula	26	20
Custard	31	24.2
Guinea corn (Pap)	61	47.3
Other foods	11	8.5
Feeding the Child who refuses certain foods		
Force	28	21.5
Play with the baby and introduce slowly	82	62.3
Leave him/her alone	7	5.6
Get another food he/she likes	14	10.3
Feeding the Sick Child		
Increase the feeds	79	62
Decrease the feed	49	38
Hand washing with soap before feeding child		
Yes	68	52.3
No	62	47.7

Source: Field Survey,2022

A-third of the mothers (30.7%) believed their baby was not satisfied with breast milk hence the reason to start complementary food. Some mothers started complementary feeding because of instructions given in the hospital (18.4%), while 5.8% started complementary feeding because breast milk was not enough; 27.0% reported that the baby was always crying as such they began feeding the child with complementary foods. The most common first complementary foods mothers offered to their babies were guinea corn (pap, 47.3%) and custard (24.2%). About 20.0% of mothers gave infant formula as the first complementary feed.

With respect to feeding the Child who refuses certain foods, the majority of the mothers, 62.3% confirmed that they play with the child and introduce complementary feeds slowly while 21.5% of the mothers opined that they force the child when he/she refuses certain foods.

Regarding hand washing with soap and water before feeding the child, 52.3% of the respondents agreed that they carry out this practice while 47.7% of the mothers were not practising this during the survey.

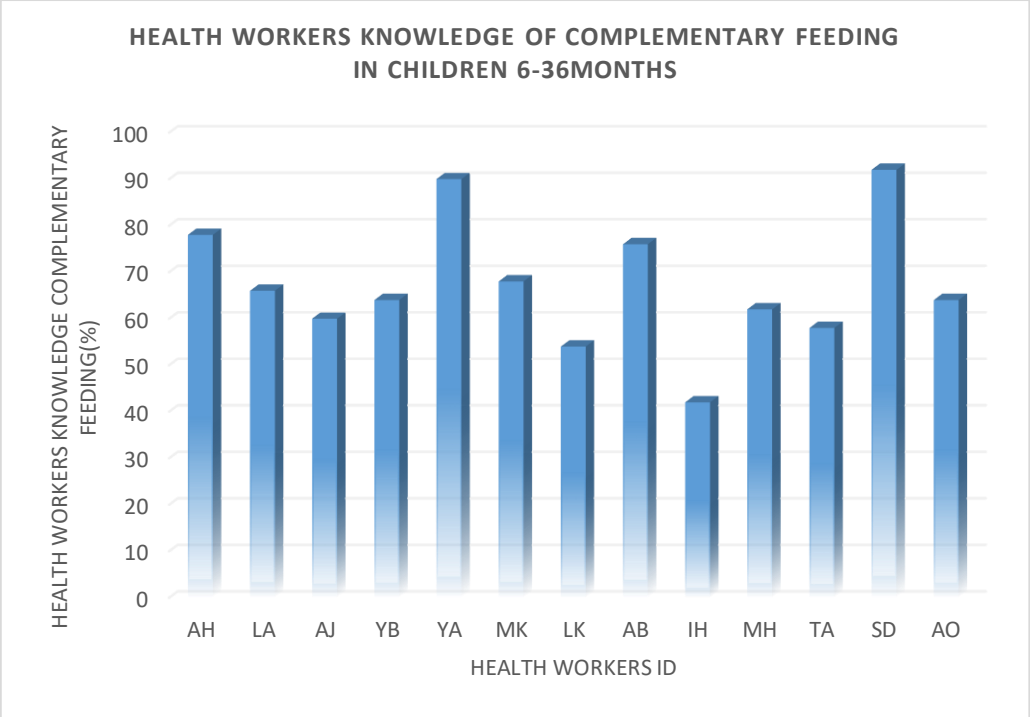

Figure 2. Health Workers Knowledge of Complementary Feeding Providing Nutrition Services in MMC, Brono State

The final scores of the HWs about their knowledge of complementary feeding activities and local food sources of the different nutrients were re-categorized into good (score of between 70% and 100%), average (score of between 50% and 69%) and poor (score of less than 50%). As shown in Figure 4, a high proportion (53%) of the surveyed HWs had an average score regarding complementary feeding knowledge. Regarding other classes of scores, 5(38%) and 1(7%) had good and poor scores respectively. It is important to note that a good proportion of the health workers had good knowledge of the following complementary feeding areas tested; training (Quest 4), good knowledge of key information to share with caregivers regarding complementary feeding (Quest 5), good knowledge of time of introduction of complementary feeding (Quest 7) and good knowledge of number of standard food groups needed for complementary feeding (Quest 8). In contrast, fewer health workers had poor knowledge of energy requirement from complementary food for infant 6-36 months per day with moderate breast feeding (Quest 12) and poor knowledge of complementary food nutrient content and recommendation (Quest 15). The mean of the score of health workers' knowledge regarding complementary feeding was 67.2 with a standard deviation.

Discussion and Conclusions

The findings of this study confirmed that inappropriate complementary feeding practices of infants and young children impact negatively their nutritional status. More so, the results also indicate that there are gaps in the complementary feeding knowledge of health workers offering nutrition services in MMC in Borno State and that their ability to provide skilled counselling to caregivers on recommended complementary feeding practices, particularly in the absence of optimal knowledge acquired through training reduces quality of care.

Recommendations

1. Government should improve their level of advocacy on the nutritional need for children. Government can achieve this by

using local dialects specifically in Hausa and Kanuri Languages.

2. To reduce childhood undernutrition attributable to poor complementary feeding knowledge, behavior and practices, due emphasis should be given in improving the knowledge and practice of parents of appropriate complementary feeding of infants and young children and knowledge of staff providing nutrition services assessing periodically the indicators for complementary feeding to know current statues through primary health care centres in MMC.

Conflict of Interest

There is no conflict of interest.

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