Original Research Article

Access to nutrition information: a key to improving nutrition status among under-five children in farming households of Oyo State, Nigeria

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Abstract

Attaining adequate child nutrition requires prompt access to relevant nutrition information. Present information reveals that the nutrition status of children younger than five years is threatened. In this study we sought to assess under-five nutritional status among farming households in Oyo State, Nigeria. A multistage sampling procedure was used to sample a total of 146 mothers as respondents. Data were collected using interview schedule and were analysed using percentage, mean, Chi-square and Pearson Product Moment Correlation (PPMC). Most respondents were married (89.9%), currently working (93.2%) and had an average age, household size and monthly income of $\bar{x}$ = 34.61, $\bar{x}$ = 6 and ₦11,530, respectively. The respondents were mostly aware that cowpea is a major source of protein ($\bar{x}$ = 0.99) and appropriate immunization of children is essential in aiding nutrition ($\bar{x}$ = 0.99). They mostly sourced information on child nutrition from radio ($\bar{x}$ = 0.87) and family and friends ($\bar{x}$ = 0.87). Child nutritional status was high (59.6%). A significant relationship exists between educational attainment (χ^2 = 10.781, P = 0.029), occupational status of the respondents (χ^2 = 8.553, P = 0.014), awareness of adequate nutrition (r = 0.166, P = 0.044), source of information (r = 0.137, P = 0.010) and the child nutrition status. Improvements in nutrition campaign using available medical outlets and radio are advocated.

Keywords: Under-five nutrition; interview; nutrition information; farming households; nutrition campaign; medical outlets; dietary assessment; educational attainment; awareness

INTRODUCTION

Reliable information has proven to be a contributory factor to good nutrition. Nutrition plays a major role in maintaining health and balance. However, there is prevalence of undernutrition in many developing countries affecting over 815 million people and causing more than one-half of child mortality in the region (Quadri and Ojure 2013). World Food Programme (2015) reported that at least one child out of three in developing countries is malnourished. Protein Energy Malnutrition (PEM), Iodine Deficiency Disorder (IDD), Iron Deficiency Anemia (IDA) and Vitamin A Deficiency (VAD) are the four nutritional problems confronting many under five children in Nigeria (Kuku-Shittu et al., 2016), especially in the rural areas. Ubesie and Ibeziakor (2012) opined that PEM is the most critical of these nutritional problems among the rural populace in Nigeria. Ubesie and Ibeziakor (2012) further stressed that PEM is rampant and often severe, it mainly affects poor women and their children and it is concentrated in the rural areas of Nigeria. Thus, malnutrition is still a devastating problem, the problem of malnutrition affects not only the people but create ripple effect on the security and economy of the citizens. Likewise, Ocheke and Thandi (2015) stated that malnutrition is the underlying cause in more than 50% of the prevalence of mortality rates of under-fives in Nigeria. However, optimal feeding practice was identified as a major determinant of high nutrition status (Lawan et al., 2014). This implies that the situation is avoidable with good feeding practice.

A major foundation for optimum child feeding is the exclusive breast-feeding for the first six months of life as recommended by World Health Organization (WHO) and United Nations Children's Fund, followed by adequate complementary feeding, and breast-feeding until the child is at least two years old. Despite the campaign, Lawan et al. (2014) posited that only 17% of infants younger than six months of age are exclusively breastfed in Nigeria.

The campaign for exclusive breast feeding, the school feeding in primary schools, eat an egg a day among many are just a few programmes invented

by the federal government to ensure good nutrition among children. However, despite the brilliant ideas and structures put into these programmes, Nigeria ranked second after India among countries worst affected by child deaths in 2017 (Burstein et al., 2019) and good nutrition still seems to be in mirage.

The total compliance to the recommended infant and young child feeding practices by WHO (2018) which include exclusive breast-feeding for the first six months and nutritionally adequate and safe complementary feeding starting from the age of 6 months with continued breast-feeding up to two years of age is depending on other external contributory factors.

Such factors include family size, maternal and paternal education, better household wealth, exposure to media, adequate antenatal and post-natal contacts, child's sex and age, institutional delivery, maternal occupation, urban residence, knowledge & frequency of complementary feeding and receiving feeding and immunization advice as determinant factors for appropriate complementary feeding (Kassa et al., 2016; Owais et al., 2019). In addition to these, World Bank (2002) identified poor maternal and child care practices, lack of awareness and education, family food insecurity, poor intra family food distribution, poor access to good quality health and sanitation services as major contributors to nutritional imbalances. Likewise, a stable household income was acknowledged by Babatunde and Qaim (2010) to contribute more to household food security in Nigeria.

Despite several years of campaign for exclusive breast-feeding and complementary feeding, Udoh and Amodu (2016) stated that over 50% infants are given complementary foods before six months and the frequency of feeding for the child after six months is usually low, whereas the quantities and qualities of foods given are usually less than that required for the ages of the child. Although food has been described as the main source of good nutrition for all ages that supplies with substances that are referred to as nutrients (Meludu and Ajibade, 2009), households in rural areas appear to be food insecure and nutritionally vulnerable and undernourished compared to their urban counterparts (Lawal and Samuel, 2010), which most often reflects on the nutrition status of their children.

There have been several attempts by organizations like National Agency for Food and Drug Administrative and Control (NAFDAC), the Global Alliance for Improved Nutrition (GAIN), major food manufacturers, United Nations Children's Fund (UNICEF) and other development partners to increase awareness on improved nutrition for under-five children and pregnant women in rural areas (Adepoju and Adejare, 2013). Such campaign emphasised nutrition information while utilising different communication medium such as individual teaching methods, hospital visits and many more to reach out to the beneficiaries which include the rural dwellers.

The recurrence of this menace despite all awareness strategies has been attributed to a lack of access to appropriate information regarding good nutrition. According to Hossain and Islam (2012) the women who live in villages lack access to information sources which hinders their development in all areas. The study further opined that the lack of adequate information regarding what constitutes good food, pre- and postnatal care and current immunization facilities for children is a major factor limiting adequate child nutrition. It is therefore important that communication media in all forms be used to enlighten parents and other stakeholders in the care of the wards of the need for proper feeding of children (Nsude and Nwancho, 2017).

This scenario thus indicates that attaining adequate nutrition status requires some exogenous factors which are all encompassed in access and use of available information. It is in the vein that this study intends to assess the nutrition status of under-five within farming households in Oyo state.

Objectives

- describe the personal characteristics of the respondents
- identify respondents' access to and possession of some socio-economic indices
- determine respondents' awareness of child adequate nutrition,
- identify respondents' sources of information for child nutrition; and
- determine the nutrition status of under-five children in the study area.

Hypotheses of the study

$H_0$1 – there is no significant relationship between personal characteristics of the respondents and child's nutrition status

$H_0$2 – There is no significant relationship between the sources of information for child's nutrition and the child's nutrition status.

$H_0$3 – There is no significant relationship between mothers' awareness of child adequate nutrition and child's nutrition status.

MATERIALS AND METHODS

Study area

The study was carried out in Oyo State, situated in the tropics, within the South western part of Nigeria. The state enjoys a tropical climate with prominent wet and dry season. It is characterised by a tropical rainforest in the south, but covered mostly by a derived savanna

in the north, which is largely the result of clearing and burning of the formal forest cover to provide land for civilization and agricultural activities. The economy is based mainly on agriculture and handcrafts, although agriculture is the main traditional occupation of the state. The population of the study comprised all mothers with under-five child in the farming rural households of the state.

Sampling procedure and sample size

Multi-stage sampling procedure was employed for this study, and the first stage involved the purposive sampling of 21 local government areas (LGA) which are relatively rural out of the 33 LGAs in the State. The second stage involved random sampling of six (6) of the 21 LGAs earlier sampled, which are Ido, Saki East, Ibarapa East, Akinyele, Atisbo and Orire. The third stage involved the purposive sampling of four core rural communities in each of the 6 local government areas earlier sampled (giving a total of 24 communities) using indicators of population density, proportion of households engaged in agriculture as primary occupation, and level of infrastructure development (Fadairo et al., 2018). At the last stage, purposive sampling technique was used to select all households having a woman with a child of 5 years and below in her care giving a total of 146 households across the 24 communities. All the women in the 146 households were thus sampled for the study.

Data collection

Primary data collection with the use of an interview guide was employed for the study. This process gave opportunity to women who could not read and write to express themselves freely on the issue raised. The interview guide comprised questions such as: personal characteristics, sources of information on nutrition, awareness of mothers on proper nutrition for their child, socio-economic status of household and the child's nutrition status as at the time of interview using dietary assessment scale.

Measurement of variables

Nutritional status of the child below five years of age was measured using the dietary assessment guide consisting of description of food, frequency and the type of food consumed a day before the interview was conducted. Scores obtained from these two variables were standardised and pooled together. The mean score was calculated and used in categorising the respondents into high or low nutritional status. Responses to access and possession of some socio-economic indices were obtained on a yes and no category while a list of information sources were presented for respondents to indicate their availability for nutrition information on a yes or no basis.

Data analysis

The data were summarised and described using means and percentages while Chi-square and Pearson Product Moment Correlation (PPMC) were used to determine the relationship between the independent variables and the nutrition status expressed by the respondents.

RESULTS AND DISCUSSION

Socio-economic characteristics of women

Table 1 reveals that the average age of the respondents was 34 ± 6.1 years. This depicts that the respondents are in their active years and are not likely to have challenges providing adequate nutrition for the child in their household. The findings from this study are consistent with Lawal and Samuel (2010) who reported that the age of nursing mothers in the farming household in Oyo State was between 30 and 39 years. The majority (89.9%) of the respondents were married. This suggests that the spouses may likely support each other concerning the provision of adequate nutrition for their under-five child.

Table 1 also reveals that most of the respondents had formal education, with 32.0%, 15.6% and 13.6% representing primary education, secondary education and tertiary education, respectively. Only 21.8% of the respondents had adult education. With a notable proportion acquiring education, they will appreciate the role of child nutrition and would likely practice the knowledge they have gained with respect to child nutrition. The average household size ($\bar{x} = 6.9 \pm 2.8$) of the respondents depicts a fairly large household size, this suggests that there is likelihood of competition for available resources in the home. Data in Table 1 also reveal that the majority (92.5%) of the respondents are currently working. Their engagement in income generating activities may not avail the respondents adequate time needed to sufficiently provide for child nutrition.

Possession and access to some socio-economic indices

Table 2 reveals that a significant proportion (61.6%) of the respondents had their main source of drinking water from motorized well. It was also acknowledged that 19.2% of the respondents sourced their water from a borehole. From the foregoing it can be established that the respondents had a clean source of drinking water. Suffice to say that these sources of water will contribute to good nutrition of the children. With availability of potable water, the respondents are not likely to be predisposed to water-borne illnesses. This view is in tandem with the findings of Popoola and Adeoti (2016) who reported that access to adequate water supply and adequate sanitation services have a direct influence

Table 1. Distribution of respondents based on their socio-economic characteristics (N = 146)

Variable	Frequency	Percentage	Mean
Age in years			
<30	27	9.5	
31–40	82	35.4	34±6.1
41–50	29	24.4	
51–60	6	15.0	
>60	2	15.9	
Marital status			
Single mother	4	2.7	
Married	132	89.9	
Widow	10	7.5	
Educational level			
No formal education	25	17.0	
Adult education	32	21.8	
Primary education	20	13.6	
Secondary education	46	32.0	
Tertiary education	23	15.6	
Household Size			
>3	2	1.39	
3–6	91	62.33	6.9±2.8
7–10	42	28.77	
>10	11	7.53	
Father occupational status			
Not working	2	1.4	
Currently working	144	98.6	
Mother occupational status			
Not working	10	6.8	
Currently working	136	92.5	

Source: Field Survey, 2018.

on children's health, education, wellbeing, and social development.

It is established that a significant proportion (92.5%) of the respondents live in brick houses; it should be noted here that what is referred to as brick house is a re-enforcement of the mud houses with brick. Because such buildings have more outward show of brick than mud, they are captured as brick. Although such buildings do not have the modern aesthetic designs, the children will be adequately shielded from the vagaries of weather. It further establishes that the children in the household are adequately sheltered. The role played by housing in ensuring adequate health care is supported by Owolabi (2014) who opined that housing forms one of the basic necessities of the life after food, and that a suitable housing, devoid of environmental hazards is inevitable to human existence.

Table 2 also reveals that the respondents earn ₦13,599 (37.77 USD) monthly and the average monthly income of the father was ₦23,969 (65.75 USD). With the above figures the ability of the respondents to provide good nutrition for their infants and entire household would be difficult considering the present economic indices and inflation in the country. It is noted that there are other activities that the respondents and their spouses will also channel their resources into thereby making it more difficult to adequately meet the nutrition needs of their household. The role of income in providing adequate nutrition for household is further buttressed by Babatunde and Qaim (2010) who reported that a stable income contributes more to household food security in Nigeria.

Awareness of adequate nutrition for under-five years' old child

Data in Table 3 reveal that with respect to respondents awareness of adequate nutrition, cowpea is a major source of protein ($\bar{x}$ = 0.99), appropriate immunization is essential in aiding child nutrition ($\bar{x}$ = 0.99) and exclusive breast feeding is a good start-up for child nutrition ($\bar{x}$ = 0.95) ranked highest as activities relating to adequate child nutrition that the respondents were aware of. It is observed that cowpea being a common staple that is rich in protein, the respondents are able to prepare several local dishes

Table 2. Distribution of respondents based on their access and possession of some socio-economic indices

Variable	Frequency	Percentage	Mean
Main source of water supply			
None	2	1.4	
Stream	6	4.1	
River	20	13.7	
Motorized well	90	61.6	
Borehole	28	19.2	
Type of houses the respondent live in			
Palm groove	1	0.7	
Mud house	10	6.8	
Brick house	135	92.5	
Average monthly income of respondent			
<₦10,000	80	54.8	$\bar{x}$ = 13,599 ±14,262
10,001–20,000	46	31.5	
20,001–30,000	11	7.5	
30,001–40,000	6	4.1	
> 40,000	3	2.1	
***Average monthly income of father in Naira**			
<₦10,000	29	19.9	$\bar{x}$ = ₦23,969±18,351
10,001–20,000	46	31.6	
20,001–30,000	40	27.4	
30,001–40,000	15	10.2	
>40,000	16	10.9	

Source: Field Survey, 2018.
* ₦363 exchange for 1 USD as at November 1, 2019.

Table 3. Distribution of respondentsaccording to their awareness of good nutrition for child

S/No	Mother Awareness	Mean	Rank
1)	Cowpea is a major source of protein in a child	0.99	1st
2)	Proper Immunization should be given to babies before age 5	0.99	1st
3)	Exclusive breast-feeding is the best for babies	0.95	3rd
4)	Good sanitation is essential for a child's development	0.92	4th
5)	A balance diet is introduce to child only at 6 months	0.85	5th
6)	A child with heavy stomach is malnourished	0.84	6th
7)	Junks are less healthy for children	0.84	6th
8)	Babies should be positioned to the mothers breast immediately after birth	0.83	8th
9)	Proteins deficiencies can cause kwashiorkor in children	0.80	9th
10)	Milk cheese and yoghurt are helpful for children development	0.75	10th
11)	Children need sufficient calories everyday	0.74	11th

Source: Field Survey, 2018.

from cowpea for child nutrition. The awareness of the role played by immunization and breast feeding in child nutrition can be attributed to the training they receive from medical personnel during prenatal care.

Also acknowledged as activities relating to adequate nutrition for the child is that clean environment is essential for the development of the child ($\bar{x}$ = 0.92) and infant supplements can only be given after six months of age ($\bar{x}$ = 0.85). This portrays that the respondents recognize the role the environment plays in enhancing child's nutrition. It is observed that children are highly susceptible to ailments and diseases which also come as a result of filthy environment. The awareness of the respondents on the appropriate time to introduce supplementary feed can be attributed to the increased appreciation of exclusive breast feeding by the respondents. This finding is encouraging but at variance with the findings of Ngwu et al. (2014) that many nursing mothers do not breastfeed their children up to 6 months of age or usually shy away from breast-feeding. However, it is noted that "children need sufficient calories every day" ($\bar{x}$ = 0.74) and "rice,

Table 4. Distribution according to the source of information on child nutrition

S/no	Source of information	Yes	No	Mean	Rank
1)	Radio	128 (87.7)	18 (12.3)	0.87	1st
2)	Friends and family	128 (87.7)	18 (12.3)	0.87	1st
3)	Maternity health center	122 (83.6)	24 (16.4)	0.83	3rd
4)	Hospital	115 (78.8)	31 (21.2)	0.78	4th
5)	Television	112 (76.6)	34 (23.3)	0.76	5th
6)	Posters	103 (70.5)	43 (29.5)	0.70	6th
7)	Family doctor	96 (65.8)	50 (34.2)	0.65	7th
8)	News letter	86 (58.9)	60 (41.1)	0.59	8th
9)	Food label	72 (47.9)	74 (50.7)	0.49	9th
10)	Patent drug store	62 (42.5)	84 (57.5)	0.42	10th

Source: Field Survey, 2018.

Table 5. Dietary assessment of under-five children in the study area

	Food description frequency					
Type of food	**Not at all**	**Very rarely**	**Once a week**	**Twice a week**	**Everyday**	**Weighted Mean**
Pap with milk	8 (5.5)	10 (6.8)	20 (13.7)	28 (19.2)	80 (54.8)	3.1
Egg custard	11 (7.5)	24 (16.4)	42 (28.8)	56 (38.4)	13 (8.9)	2.3
Yam	6 (4.1)	24 (16.4)	31 (21.2)	63 (43.2)	22 (15.1)	2.5
Cowpea	4 (2.7)	7 (4.8)	13 (8.9)	101 (69.2)	21 (14.4)	2.9
Rice & cowpea	5 (3.4)	0 (0.00)	21 (14.4)	62 (42.5)	58 (39.7)	3.2
Fish	3 (2.1)	14 (9.6)	39 (26.7)	59 (40.4)	31 (21.2)	2.7
Yam flour with jute mallow leaves	1 (0.7)	1 (0.7)	5 (3.4)	58 (39.7)	81 (55.5)	3.5

Source: Field Survey, 2018.

Table 6. Distribution of respondents according to protein in food consumed previous day to the day of research

Protein in meal	Frequency	Percentage	Mean±SD
No protein in 3 meals	45	30.8	
Protein in 1 meal	80	54.8	0.83±0.67
Protein in 2 meals	20	13.7	
Protein in the 3 meals	1	0.7	

Source: Field Survey, 2018.

Table 7. Categorization of under-five into nutrition status based on accrued scores from Tables 5 and 6

Nutrition status	Scores	F	%	Mean±SD	Min=24: Max=38
Low nutrition status	24–32	59	40.4	33±2.8	
High nutrition status	33–38	87	59.6		

bread, yam and potatoes are good sources of energy for children" ($\bar{x}$ = 0.71) ranked least as activities relating to adequate nutrition for children that the respondents were aware of.

Source of information on child nutrition

Table 4 reveals that radio ($\bar{x}$ = 0.87) and friends and family ($\bar{x}$ = 0.87) were the most acknowledged the sources of information on child nutrition. This further reiterates the high priority placed on radio as a main source of information by rural populace as described in literature (Meludu and Ajibade, 2009). Likewise, it will not be out of place to assume that the messages spread by friends and families were also received from the radio and communicated to friends and friends that were not opportune to listen to it firsthand. Maternity health center ($\bar{x}$ = 0.83) and established hospital were ranked third and fourth ($\bar{x}$ = 0.78). These data show that maternity health centres play an important role in infant/children nutrition information dissemination. The result clearly highlights the role played by available health facilities in rural areas in fulfilling the Sustainable Development Goals (SDGs). However, information was least sourced from drug kiosk ($\bar{x}$ = 0.42) and food label ($\bar{x}$ = 0.49). According to a report by Dada (2018), patronizing

Table 8. Relationship between personal characteristics, awareness of adequate nutrition, source of information and under five child nutritional status

Chi-square result of test of relationship between variables and nutrition status of under five		
Variables	χ^2	p
Educational attainment	10.781	0.029
Occupational status	8.553	0.014
PPMC result of test of relationship between variables and nutrition status		
Variables	r	p
Awareness of adequate infant nutrition	0.166	0.040
Maternity health center	0.166	0.040
Family Nurse/doctor	0.205	0.010
Hospitals	0.200	0.020

patent drug stores and other drug outlets has been publicly campaigned against by the National Agency for Food Drug Administrations and Control (NAFDAC) in Nigeria. On the other hand, inability of the women to receive nutrition information through food labels could suggest low level of literacy or complete ignorance of the available information on food packages.

Child nutrition status using dietary assessment

Table 5 reveals that Amala (Yam flour) and Ewedu (Jute mallow leaves) soup ($\bar{x}$ = 3.5), rice and beans ($\bar{x}$ = 3.2) and pap and milk ($\bar{x}$ = 3.1) were more frequently eaten than other types of food. One of the staple foods in Oyo State is amala and ewedu soup (Sanusi and Olurin, 2012). Likewise, the convenience of cooking and the wide acceptability of rice increases its use even among the very poor. It has also been documented that most women wean their babies with pap and milk and it has proved very effective (Aliyu et al., 2019). Table 6 also reveals that a notable proportion of the respondents had protein in one meal (54.8%) the previous day before the research which should have contributed to the nutrition status of the under-five child. Furthermore, Table 7 gives the summary of the nutrition status of the child as accrued from the scores of food description frequency and protein in food consumed previous day to the research in the study area. The table reveals that a moderately high (59.9%) percentage of the infants had a high nutrition status while 40.1% had low nutrition status.

The relationship between variables as revealed in Table 8 shows a significant relationship between educational attainment of mothers (χ^2 = 10.781, P = 0.029), occupational status of mothers (χ^2 = 8.553, P = 0.014) and the child's nutrition status. It could be inferred that the respondents' education could have spurred the practice of relevant activities that are related to child nutrition. Odelola and Adedini (2015) reveal that maternal education is a major factor influencing child's stunting. The relationship established between the respondents occupational status suggests that the respondents are likely to cater for the nutritional needs of their wards owing to their occupation; this may be done by making adequate preparation for the infants which may likely be administered through a care giver or a relative. The relationship between mother's awareness of adequate nutrition (r = 0.166: P = 0.04), and the child's nutritional status implies that with increased awareness of the respondents on activities relating to adequate nutrition, there will be further increase in the nutritional status of the under-five child.

Furthermore, a significant relationship between maternity health center (r = 0.166: P = 0.04), family nurse/doctor (r = 0.205: P = 0.01) and hospitals (r = 0.200: P = 0.02) suggest that of all the available sources of information for the women, only maternity health center, family nurse/doctor and hospitals contributes significantly to information received on child nutrition. Although radio and television have been acclaimed by several authors to be more effective in the dissemination of information to the rural populace (Nnenna, 2013; Age et al. 2012), this study shows that these tools are not as effective for nutrition information dissemination among rural dwellers compared to information from medical outlets. The reason for this is not farfetched as health cases/emergencies are not reported to either radio or television but to available medical services, which thereafter will provide necessary information for the situation. This therefore implies that a short fall in the services rendered by these medical outlets will reduce child nutrition status significantly. It is plausible to note that the respondents have put the relevant information they received concerning infant nutrition to use which must have translated to the high nutritional status achieved.

CONCLUSION AND RECOMMENDATIONS

The study concludes that the respondents had a fairly large household size that was managed with low monthly income. Mothers in the rural

communities were aware of the importance of exclusive breastfeeding and the need to include protein in infant's daily diet. The nutrition status of under-five children in the household was high for more than an average of the population. Information sources utilised by the mother of an under-five child for nutrition information was mainly one-on-one basis such as nutrition instructions in maternity and community health centers. Thus increased availability of these outlets as modes of communication to rural women for nutrition information is a major prerequisite for maintaining a good and balance diet. The study therefore recommends that nutrition campaigns in rural areas should explore outlets such as the maternity health centers and nearby hospitals than using conventional sources, and that with much emphasis on under-five child nutrition. Such nutrition campaigns should project low cost quality diets for households. Effort should also be put by relevant agencies at ensuring that community health officers are readily equipped with relevant nutritional information for easy access by rural women.

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