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Knowledge, Attitude and Practice toward Nutrition among Communities in Southern Senatorial Zone of Borno State

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Abstract

Nutrition is a key element of health promotion, prevention, and management of diseases. The study was aimed at assessing the nutritional knowledge, attitude, and practice of communities and to determine factors influencing the nutritional knowledge, attitudes, and practices of these communities. A cross-sectional study was conducted among 10 communities. Multistage sampling was used to select the sample size of 1000 individuals. The study utilized both primary and secondary data through journals and administration of a self-developed structured interviewer questionnaire and focus group discussions. The data was analyzed using statistical package for social science (SPSS v20). Results were presented using descriptive statistics and Chi-square. The findings of the study revealed that communities have little or no knowledge about nutrition despite the availability of different sources of nutritional information, majority of communities have a negative attitude towards the importance of nutrition because of their Cultural beliefs. Moreso, majority communities do not prepare balanced family meals. The result from chi-square analysis shows that age and source of nutritional knowledge are the main factors influencing nutritional knowledge and education level, marital status, and sources of family income are the main factors influencing nutritional practices among communities. Base on the findings of the study it was recommended among others that there is need to increased public awareness and enlightenment to improve the attitude and practice of communities, community leaders and health workers to promote good dietary habits and consumption of good indigenous food to motivate practice among communities.

Keywords: *Attitude, Communities, Knowledge, Nutrition, Practice.*

Introduction

According to the world health organization report [1] nutrition is a key element of health promotion and contributes to the prevention and management of many diseases. Through different stages of the human life cycle, such as preconception, pregnancy, lactation, childhood, adolescence, menopause, and old age humans need to give special attention to nutrition [2]. Knowledge of nutrition is crucial for encouraging and maintaining healthy eating habits [3]. In developing countries such as Nigeria, nutritional involvement in the care process is often ignored, despite a vast deterioration in the multiple burden of, undernutrition, overnutrition, Non-

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Communicable Diseases (NCDs) and related comorbidities [4].

However, knowledge of nutrition alone may not be sufficient to improve dietary behaviors; there is also a need to promote a positive attitude towards healthy eating habits [5]. With the current shift towards the western diet and eating patterns due to globalization, there is an even greater need to empower people with accurate knowledge and attitudes for choosing appropriate food preferences [6].

Nutrition is a significant element in good and healthy living, it plays a vital role in the prevention and management of diseases thereby reducing the mortality rate the world over because of malnutrition. that are responsible for higher rates of morbidity and mortality worldwide [4]. In Nigeria, malnutrition is a major public health problem with an estimated 60% of the rural population undernourished, which affects physical growth, intelligence and behavior of these population and impacts on their physical and work performance [7]. Recent studies from Nigeria have revealed a high prevalence of both under nutrition and over nutrition, as well as nutrient deficiencies, including iron, folate, vitamin D and vitamin A, which results in health conditions such as hypertension, anemia, neural tube defects, night-blindness, and low birth weight during childbirth [8]. Knowledge of nutrition is one of the factors that shape the nutritional behaviors of individuals, as well as communities [9]. Individuals and communities' attitude towards nutrition and nutrition-related activities are influenced by their knowledge of nutrition. As a result of the insurgency an estimated 2.5 million people were affected in Borno state, through food insecurity due to livelihood disruption from missed harvest season and increased food prices. Boko Haram related insurgency has led to significant population displacements in state and kept many farmers away from their usual livelihood activities (mainly agricultural activities).

This has led to significantly below-average household production stocks for households in these areas thereby affecting their nutritional status [10]. However, it seems malnutrition is generally due to lack of nutritional information rather than food deficiency. Therefore, good nutritional knowledge and attitude is needed to improve the nutritional status of this communities.

In many developing countries including Nigeria, there is a dearth of information as well as epidemiological data on the knowledge, attitude, and practice toward nutrition among communities as a result, studies regarding the knowledge, attitude, and practice (KAP) of nutrition are limited and isolated. Studies on children particularly infants and women which are just part of the communities appears to be more common than studies on the whole communities which include both men and the women, the old and the young and other categories of individuals who are equally as vulnerable to changes in social and economic conditions. In view of this, this study is carried out to assess the knowledge, attitude, and practice toward nutrition among communities in Southern Senatorial Zone of Borno State, Nigeria as well as determine factors influencing the nutritional knowledge, attitudes, and practices in those communities. It is expected that the study will further bridge the information gap and promote good nutritional attitude and practice among the communities.

Methods

A descriptive cross-sectional design was used for this study which aimed at determining the knowledge, attitudes, and practices towards nutrition at a specific point in time. Primary data was collected through interview of study participants using questionnaire and focus group discussions (FGDs). Secondary data was collected through journals, textbooks, and other relevant materials. The purpose of the FGDs was to supplement the responses from the questionnaires.

Selection of Respondents

The research was conducted in southern senatorial district of Borno state. There is a total of 9 local governments in southern Borno senatorial district, which are Askira/Uba, Bayo, Biu, Chibok, Damboa, Gwoza, Hawul, Kwaya-Kusar, and Shani local government area. The total number of households in the 9 local governments in southern Borno senatorial zone is 325,432 households (IOM 2020). Multistage sampling technique was used in selecting the sample size.

In the first stage, five (5) local governments were selected out of the 9 local governments, in the second stage two (2) communities were selected each from the five (5) selected local governments making up ten (10) communities. In the third stage, 50 Households were selected from each community using simple random sampling techniques making a total of 500 households. In the final stage 2 individuals were selected from the selected households which gave a total number of 1000 individuals for the study.

Inclusion Criterion

The respondents must be residents of the selected communities from the Five (5) selected local government areas between the ages of 15-60 years old.

Exclusion Criterion

Those that were excluded from the study were those who are not residents of the selected communities, males, and females not between ages 15-60 years old.

Data Collection

Data was obtained through a structured questionnaire and focus group discussion.

Structured Questionnaire

A structured interview questionnaire with open and closed ended questions was administered to two selected individuals from the selected households by the researcher assisted by trained research assistants. The questionnaire included items on nutritional knowledge, items on attitudes and items on nutritional practices. All the questions on nutrition knowledge were open ended and multiple choices was provided to guide the research assistants in selecting the correct response. A 4- point Likert Scale using items rated as “strongly disagree”, “disagree”, “agree”, and “strongly agree” will be used to measure attitudes towards nutrition. The nutritional practices section included questions to assess nutrition promoting practices.

Focus Group Discussion (FDG)

Focus Group Discussion guide was used by the facilitator and detailed notes taken by the note recorder. One FGD’s was conducted in each selected community with 8 participants in each group. The FGD’s included both male and female participants.

Data Analysis

The data collected from respondents were analyzed using statistics and statistical package of social sciences (SPSS v.20). Through descriptive statistics while also Chi-square analysis was used to test the hypothesis formulated. Knowledge scores was determined by taking the number of correct responses by each respondent out of the total number of questions that will be asked and expressed as a percentage. All correct answers received a score of 2 while wrong answers got a zero score. The percentage scores were graded as follows to determine the nutrition knowledge levels: 70% - 100% (High), 40% - 69% (Average), 0% - 39% (Low). The attitudes of the respondents towards nutrition were determined using the Likert scale [16]. The responses were grouped into four categories: strongly disagree, disagree, agree, and strongly agree. And Each attitude statement was analyzed individually and rated as positive or negative. Moreso, nutritional practices were determined by analyzing responses to questions on nutrition promoting practices.

Results

The results on knowledge, Attitude and Practice toward Nutrition among Communities in Southern Senatorial Zone of Borno State are discussed under this section. The analysis was done based on descriptive Statistics and inferential statistics. The descriptive statistics was used to describe the demographic factors, socio-economic factors, nutritional knowledge, attitudes, and practices while the inferential statistics was used to test for associations between variables. The Chi square test was used to test for relationships between categorical variables while Pearson's Correlation test was used to test for associations between non-categorical variables. The knowledge scores were determined by taking the number of correct responses by each respondent out of the total number of questions asked and expressed as a percentage. Correct answers were given a score of 2 points while wrong answers were given a score of zero. The percentage scores were graded as follows to determine the nutrition knowledge levels: 70% - 100% (High), 40% - 69% (Average), 0% - 39% (Low). The attitudes of the respondents towards nutrition were determined using the Likert scale [16]. The responses were divided into four categories: strongly disagree, strongly disagree, disagree, agree, and agree strongly. Each attitude statement was evaluated the mean score for attitude statement was used to categorized attitude into two categories, scores less than the mean score was considered a negative attitude while scores greater than the mean scores were considered positive attitude as adopted from [17]. It is imperative to state here that a total of 1000 questionnaires were distributed to individuals from the 10 communities from the 5 selected local government areas, 916 were duly completed which gives a response rate of 91.6%.

As shown from Table 1 majority (58%) of the respondents are female which implies that there are more females than males in the research. Majority (74.8%) of the respondents were married while the rest are either single, divorced or separated as a result of insurgency. 28.3% of the respondents have attained non-formal education, 23% had primary education, 15% had attained tertiary education while majority (33.7%) of the respondents had secondary school level of education. Majority (35.8%) of the respondents are farmers while others are either health workers, business men and women, students and civil servants. Majority (32.5%) of the respondents are a family size of 6-10 members. Majority (34%) of the respondents depend on Government and non-governmental organization as their source of family food, while others depend on sources like own production (22.5%), purchase (20.5%) while food aid and barrowing is (11.1%) and (11.9%) respectively as shown in Table 1.

Table 1. Demographic Information of the Respondents. n=916

Characteristic		**Total n=916**
Gender	Male	386 (42%)
	Female	530 (58%)
Age	Modal Age (Years)	41.07
Marital Status	Single	109 (11.9%)
	Married	685 (74.8%)
	Separated/ Divorced/ Widowed	122(13.3%)
Level of Education	Non-Formal Education	259 (28.3%)
	Primary	211 (23%)
	Secondary	309(33.7%)
	Tertiary	137 (15%)

Occupation	Civil Servant	222 (24.2%)
	Farmer	328 (35.8%)
	Businessmen/ women	121 (13.2%)
	Youth/Student	192 (21%)
	Health Worker	53 (5.8%)
Number of Household Members	1-5	234 (25.5%)
	6-10	298 (32.5%)
	11-20	256 (27.9%)
	21 and above	128 (14%)
Main Source of Family Foods	Own production	206 (22.5%)
	Borrowing	109 (11.9%)
	Purchase	188 (20.5)
	Food aid / in kind sources	102 (11.1%)
	Government/ NGOs	311 (34%)
Source of Family Income	Farming/Farm produce	252 (27.5)
	Casual farm labour	115 (12.6%)
	Casual non-farm labour	98 (10.7%)
	Salary	110 (12%)
	Family Business	102 (11.1%)
	Remittances	32 (3.5%)
	None	207 (22.6%)

(Source: Field Survey, 2022)

Frequency of Food Purchase

Figure 1 shows the frequency of food purchase by households, it shows that households were able to provide different categories of food by relying on markets in addition to food distributed by government, NGOs as well as their own production. The nutrition strategies used by these households in the selected communities shows the importance of dietary diversity in achieving food and nutrition security. The interventions by governments and non-governmental organization in the selected communities was aimed at promoting agricultural production, greater diet diversity and enhanced livelihood security to address longer-term nutritional needs.

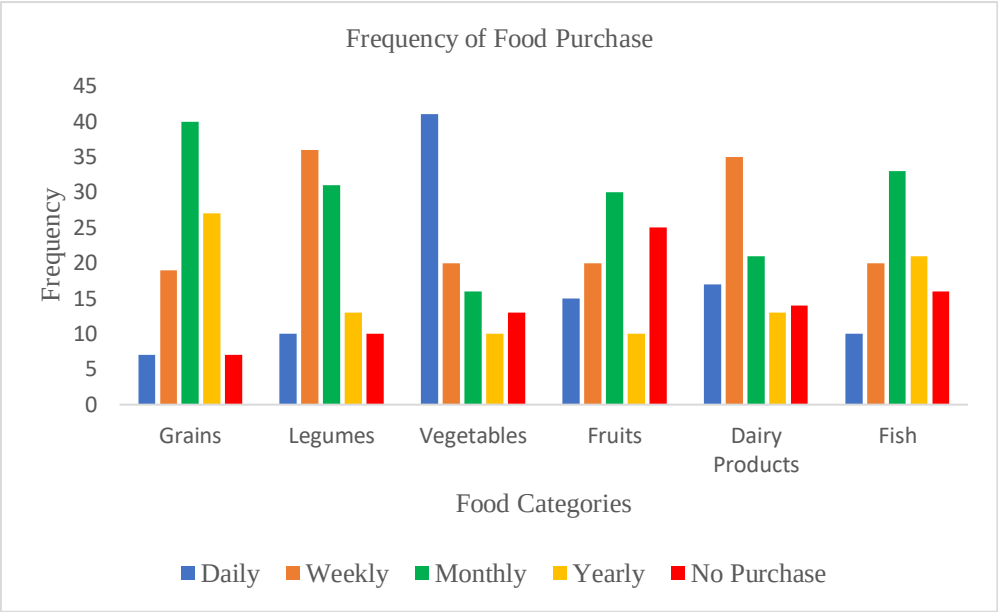

Figure 1. Frequency of Purchase of Main Food Categories by Households

Source of Nutritional Information

Figure 2. showed that hospital had the widest reach (39%) among the respondents, followed by mobile health team/community health worker 20.4% then information from mass media (television and radio)17.6%, internet 5.3%, TBAs 8%, and religious/traditional leaders 8.7%. This was also similar to the previous study carried out in Maiduguri, Borno State where more than half of the respondents got their knowledge from antenatal clinic but it was followed by information from home and friends [18].

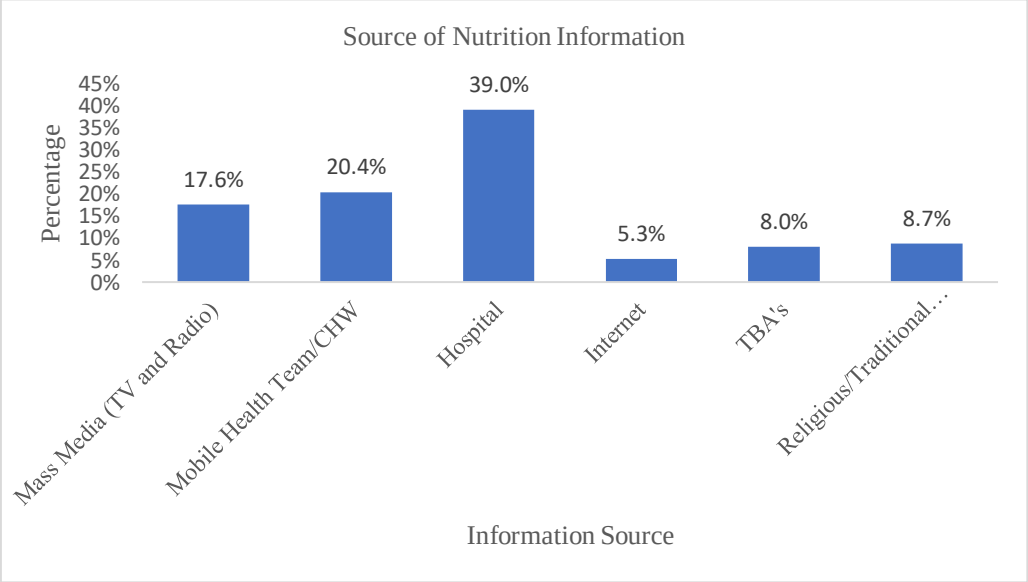

Figure 2. Source of Nutritional Information

Nutritional Knowledge

The knowledge score was 45% with a mean score of 4 indicating a low level of nutritional knowledge. Almost (67%) of the respondents answered the ten questions wrongly while only 33% did answer the questions correctly. Overall, 33% of the respondents had a high knowledge level (70-100%), twenty two percent had an average (40-69%) and 45% had low knowledge

level (0-39%). This finding indicates that majority (45%) of the respondents had little or no knowledge about the nutrition topics assessed. This finding was in in line with a similar study by [19] where it was found that the mean knowledge of the rural mothers expressed as percentage of maximum obtainable scores in general nutrition varied from 25 to 37. Only 4% of the rural mothers had high level knowledge, 25% had medium level while majority (71%) had low level of knowledge. Which might be because of poor awareness on nutrition in the rural areas as well as poor education background.

Healthy Eating

Forty nine percent and fifty two percent of the respondents had corrected knowledge on healthy eating and balanced diets respectively. This finding shows that the respondents were more knowledgeable on balanced diets compared to healthy eating. Balanced diet constituents listed included the three basic food groups comprising of carbohydrates, proteins, vitamins/minerals. Healthy eating was defined as eating balanced meals in a day and not necessarily the required number of main meals as revealed by FGDs. Must of the households are encourage by the community health workers to eat foods containing the basic classes of food which is carbohydrates, protein, and vitamins.

Importance of Basic Food Groups

Thirty percent of respondents had the right knowledge on importance of carbohydrates, 29% on proteins and 31% on vitamins. This finding shows that the respondents were not knowledgeable on the three classes of food listed. The importance of a food was related to its known/perceived benefits to the body. Foods such as maize, rice, sweet potatoes, cassava, sorghum, and millet were commonly consumed as they provided energy required to carry out day to day activities such as farming. Beans, fish, milk, soya beans, eggs and meat were important in body building while fruits and vegetables helped in the prevention of disease and recovery from illness, however, must of the households from the communities assessed do not have access to most of the body building food listed because of low family income. This may be the likely reason for the higher gap in knowledge as compared to other food groups.

Nutritive Value of Local Foods

Sixty three percent of the respondents had the right knowledge on local foods rich in carbohydrates, 47% on vitamins and 31% on proteins. This finding shows that the respondents were more knowledgeable on the local food's rich in carbohydrates that vitamins and proteins. Carbohydrate foods listed included maize, sorghum, cassava, rice, and millet. Protein foods included beans, beef, and eggs while vitamin foods included oranges, bananas, mangoes, and guavas. The respondents who lacked knowledge on the nutritive value of some local foods were not aware of the importance of the foods as revealed by FGDs.

This finding was similar to a study to determine the Knowledge, Attitude, and Practice of Adolescent Girls towards Reducing Malnutrition in Maiduguri Metropolitan Council, Borno State, Nigeria [15]. The results from the study showed a gap in knowledge on nutrient rich foods among the adolescent girls in Maiduguri. Most respondents (451, 80.2%; 322, 57.3%) had poor knowledge and attitude towards nutrient rich food which helps in reducing malnutrition.

Sources of Vitamin A, C, and Iron

Twenty one percent of the respondents had right knowledge on sources of Vitamin C, 25% on Iron sources and 19% on sources of Vitamin A. This finding shows that the respondents were not knowledgeable on sources of Vitamins. Food sources of Vitamin C listed included oranges, and guavas while vitamin A sources were pawpaw, mango. Iron rich foods included liver, fish, green leafy vegetables, nuts and pulses. Knowledge on micronutrient rich food sources

was also linked to knowledge on importance of micronutrients as revealed by FGDs. Health workers encouraged the consumption of vitamin C rich foods to aid in quick recovery from illness and iron rich foods for pregnant women. However, some of respondents were not aware of specific vitamins and this is the likely reason for the differences in knowledge level pertaining to the vitamins. The study findings are like another study on nutritional knowledge, attitudes, and practices by urban primary school children in Nairobi City, Kenya [6]. The results revealed low levels of knowledge regarding vitamin A among urban primary school children. It was recommended that educational interventions should focus on basic vitamin-A knowledge regarding sources as well as symptoms of deficiency.

Iron Deficiency Anaemia

Fifty-two percent of the respondents had right knowledge on signs of iron deficiency anaemia while 48% lacked correct knowledge. This finding shows that majority of the respondents were knowledgeable on Iron Deficiency anaemia. Dizziness and fainting were the most common signs mentioned by the respondents. The awareness on iron deficiency was linked to involvement in a community nutritional survey and health facility visits as revealed by the FGDs. Messages on iron deficiency were during communicated during ante natal clinic visit, well baby clinic visits and household visits by CHWs. This is the likely reason for the high knowledge levels as the information was widely available. This finding was like that of [20] on Knowledge, Attitude and Practices Regarding Nutrition among Adolescent Girls in Dhaka City, the result showed that most of the respondents are aware of the causes of iron deficiency in the body.

Nutritional Attitudes

Table 2 shows the frequency and percentage of the respondents' attitude scores towards nutrition for each item. Majority of respondents 489 (53.4%) had a negative attitude towards the importance of nutrition because of their Cultural beliefs, in the FGDs some of the respondents stated that most of their forefathers have little knowledge of nutrition and still lived a healthy and normal life. The nutritional knowledge given during the FGDs helped to dispel those belief as well as to upgrade the knowledge of community members with little or no knowledge on nutrition and promote healthy eating.

Table 2. The Distribution of Responses to Attitude Statements on Nutrition

Attitude towards Nutrition	Strongly Disagree	Disagree	Agree	Strongly Agree
	n (%)	*n* (%)	*n* (%)	*n* (%)
Nutritional knowledge is required to achieve healthy eating.	273 (29.8%)	386 (42.1%)	140 (15.3%)	117 (12.8%)
Take breakfast before going to work, school or farm.	234 (25.5%)	337 (36.8%)	167 (18.2%)	178 (19.5%)
Consume vegetable every day.	175 (19.1%)	158 (17.2%)	289 (31.6%)	294 (32.1%)
Avoid fast food or street food.	108 (11.9%)	245 (26.7%)	245 (26.7%)	318 (34.7%)
Wash hands with soap and water before and after eating.	177 (19.3%)	190 (20.7%)	301 (32.9%)	248 (27.0%)
Eat egg every day.	246 (26.9%)	323 (35.3%)	209 (22.8%)	138 (15%)
Drink eight glasses of water	261 (28.5%)	308 (33.6%)	235 (25.7%)	112 (12.2%)

for good health.				
Negative Attitude towards nutrition	-	-	489 (53.4%)	-
Positive Attitude towards nutrition	-	-	427 (46.6%)	-

Nutritional Practices (Quality of Family Meals)

Figure 3 shows that majority 549 (60%) of the respondents do not prepare balanced family meals while 367 (40%) prepared balanced family meals. Breakfast consisted of mainly of maize, leftover foods from yesterday, vegetable soup, and beans. Lunch and evening meals consisted of mixture of maize, rice, beans, millet, casava with mostly vegetable soup and occasionally with fish or beef. Some of the respondents relied on government supplies and non-governmental organizations intervention of food items like maize, eggs, millet, and cooking oil. Other respondents relied on the markets. The markets provided a sustainable supply of foods to meet family needs as well as food deficits as revealed by FGDs but due to low income must of the respondents could not afford to buy from the markets. The respondents (59%) said they use traditional flavours in preparing their meals while (41%) do not use traditional flavours in meal preparation.

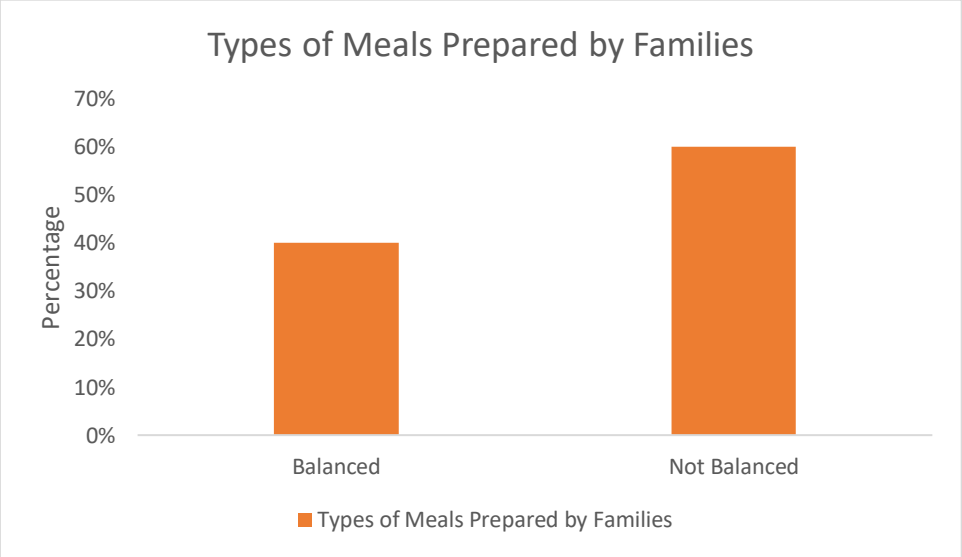

Figure 3. Types of Meals Prepared by the Respondents

Nutritional Practices (Preferred of Food Purchase by the Respondents)

Figure 4 shows the preferred food purchased by the respondents, majority (43.6%) of the respondents preferred to buy fresh food, 35.1% buy processed food while 21.3% buy anything that comes their way. On the eating pattern of the respondent's majority (39.1%) of them indicated that they eat twice a day, while others (28%) eat at least thrice (breakfast, lunch, and dinner) and others shuffle between the breakfast, lunch, and dinner.

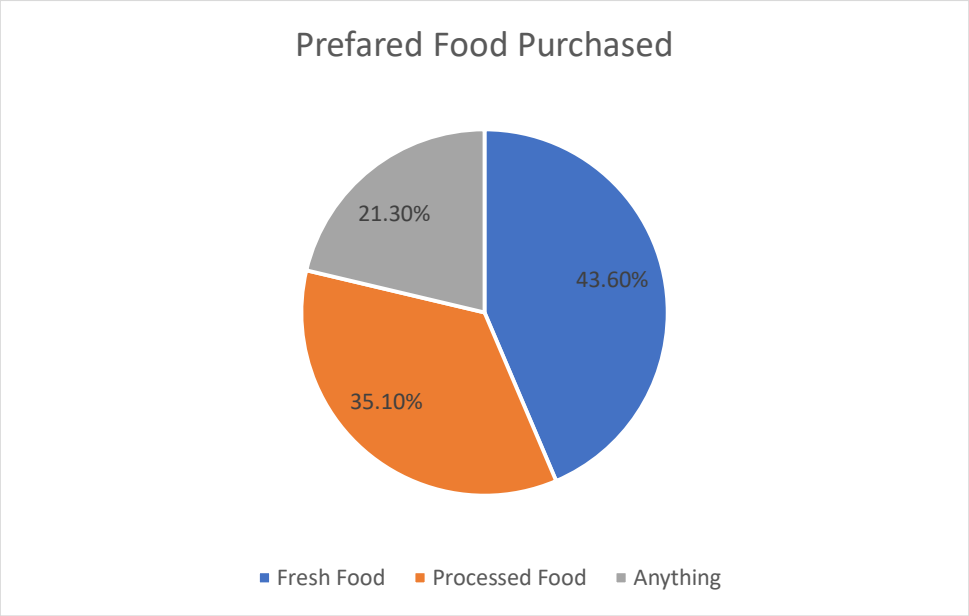

Figure 4. Preferred Food Purchased by Respondents

Figure 5 shows the eating habits of respondents, majority (53.2%) of the respondents preferred to eat with a family member, 21.2% eat while watching television while 25.6% prefer to eat on the way.

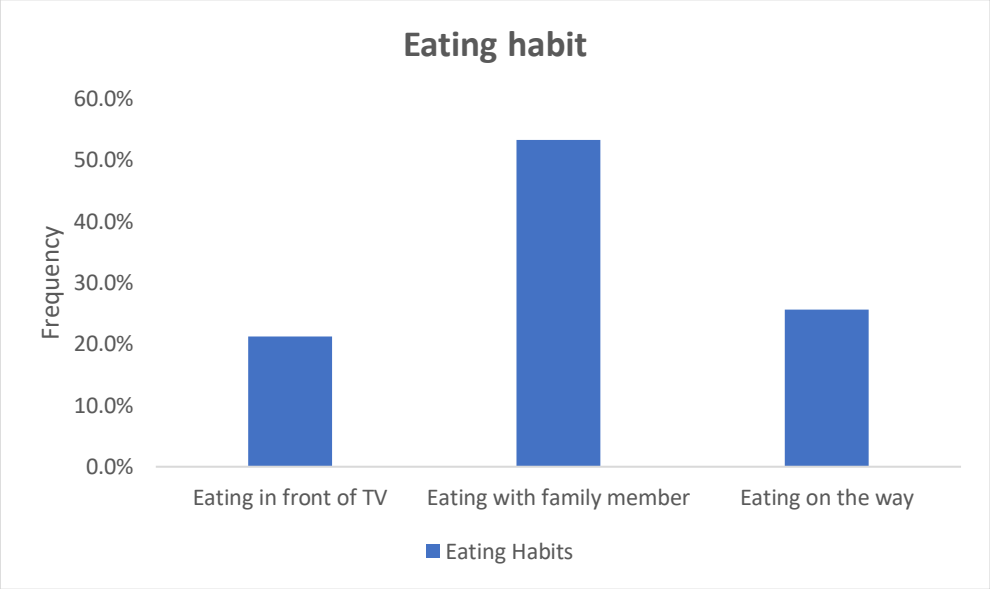

Figure 5. Eating Habit of Respondents

Factors Influencing Nutritional Knowledge, Attitudes, and Practices

The relationship between nutritional knowledge, attitudes, practices of communities and associated demographic factors was also assessed.

Factors Influencing Nutritional Knowledge

Age: The respondents' age ranged from 15 to 60 years with a mean age of 41.07 (SD 13.7). seventy two percent of the respondents were within the reproductive age group (15-50 years) while the remaining 28% were the elderly (above 51 years). Age of the respondent had a

weak negative correlation with knowledge score *(r =- 0. 342, n = 916, p = 0.05)*. This finding suggests that the nutritional knowledge scores decreased with increasing age of the respondents. The older respondents were mainly grandmothers with little or no education as revealed by the FGDs.

Education level: A Pearson chi square test revealed no significant association between nutrition knowledge level and the education level of respondents at 0.05 level of significance *(χ^2=5.398, df =2, p=0.05)*. About half (51%) of the respondents with low knowledge level had education while (49%) of the respondents had no education as shown in Table 3.

Table 3: Cross tabulation of two variables: Nutrition Knowledge level against education level.

The finding was in contrast with that of [10] in Turkey who found out that people with a university or post-graduate degree performing much better than people completing primary or high school, which showed a positive correlation between the level of education and the nutrition knowledge of the respondents. Higher education levels lead to increased nutrition knowledge levels as the nutrition messaging is more comprehensive as compared to lower education levels.

Table 3. Nutrition Knowledge Level Against Education Level

	Nutrition Knowledge Level			
Education level	High	Average	Low	**Total**
No education	15	43	201	**259**
Education (primary, secondary, tertiary)	288	162	207	**657**
Total	**303**	**205**	**408**	**916**

(χ2= 5.398, df=2, p=0.07)

Cross Tabulation of Two Variables: Nutrition Knowledge Level against Source of Nutrition Information

The sources of nutrition information relied on by the respondents were hospital (39%), followed by mobile health team/community health workers (20.4%) then information from mass media (television and radio) 17.6%, internet 5.3%, TBAs 8%, and religious/traditional leaders 8.7%. A Pearson Chi-square test showed that there is an association between the source of nutrition information and the knowledge level at the 0.05 level of significance *(χ2 = 13.87, df =5)*. Majority (64%) of the respondents with low nutrition knowledge level relied on traditional birth attendants, religious and traditional rulers, and mass media while those with high nutritional knowledge relied on information from hospitals, mobile health workers, and internet as shown in Table 4. This finding is in line with a study by [12] on the determinants of nutrition knowledge, attitude, and practices of adolescent sports trainees. It was found out that the knowledge levels of trainees had a positive correlation with level of exposure to information from hospitals, mass media, and internet. The use of various channels to communicate nutrition messages increased the chances of reaching the target audience. The respondents found community health workers and mobile health teams to be more reliable as revealed by focus group discussions carried out. The sources provided focused messages and allowed for interactions with resource persons. Community Health Workers were part of the mobile health team and were charged with responsibility of promoting good nutrition at household.

Table 4. Source of Nutritional Information against nutritional Knowledge

Source of nutritional information	Nutrition Knowledge Level		Total
	High	Low	
Mass Media	76	85	**161**
Hospital	183	175	**358**
Internet	40	9	**49**
Religious and Traditional Leaders	17	63	**80**
Traditional Birth Attendants	12	69	**81**
Mobile Health workers	123	64	**187**
Total	**451**	**465**	**916**

($\chi 2 = 13.87$, df =5)

Factors Influencing Nutritional Practices

Education Level: A Pearson chi square test revealed a significant association between education level of respondents and the quality of family meals at 0.05 level of significance *(χ^2=6.56, df=2, p=0.01)*. Majority of the respondents whose family meals were not balanced had attained non formal education and primary education while those that had balanced family meals are mostly those with secondary or tertiary education as shown in Table 5.

Cross Tabulation of Two Variables: Family Meals Prepared in a Day against Education Level

The findings of the study shows that family quality of meals was influenced by education level of the respondents. Higher education levels influenced the nutrition knowledge levels as they equipped one with proper information to make right food choices. However, nutrition knowledge alone was not sufficient if the right foods were not available and affordable. The finding is similar to that of [21] which showed a positive correlation between education level and nutrition practices of breast-feeding mothers in Kano state, Nigeria.

Table 5. Family Meals Prepared in a Day against Education Level

Education level	Family meals prepared in a day		Total
	Balanced	**Not balanced**	
Non formal Education	12	247	**259**
Primary	22	189	**211**
Secondary and Tertiary	323	123	**446**
Total	**357**	**559**	**916**

(χ^2= 6.56, df=2, p=0.01)

Marital Status: A Pearson chi square test revealed a significant association between quality of family meals and the marital status of respondents at 0.05 level of significance *(χ^2=6.769, df=2, p=0.02)*. Majority (38%) of the respondents who prepared balanced family meals were married while the 2% were either single, separated, divorced or widows as shown in Table 6 The marital status of the respondents influenced the available family resources as married respondents were more likely to have higher family income than divorced, separated, widows or singles. Widows and separated family had to provide for their basic family needs given the limited resources, providing a meal was more important than quality of meal as found out during FGDs.

Table 6. Cross Tabulation of Two Variables: Family Meals Prepared in a Day against Marital Status

Marital Status	Family meals prepared in a day		Total
	Balanced	Not balanced	
Single	5	104	**109**
Married	352	333	**685**
Separated/Divorced/ Widowed	10	112	**122**
Total	**367**	**549**	**916**

($\chi 2$=6.769, df=2, p=0.02)

Source of Family Income

A Pearson chi square test revealed a significant association between source of family income and quality of meals of respondents at 0.05 level of significance *(χ^2=13.769, df=2, p=0.02)*. Majority (27.5%) of the respondents who prepared balanced family meals were farmers, salary earners (12%) and business men/women (11.1%) as shown in Table 7. A Pearson Chi-square test showed a significant association between quality of family meals and the source of family income at the 0.05 level of significance (*$\chi 2$ = 13.54, df =6, p=0.02)*. This finding is in line with that of [22] who found out that Higher income households in Minneapolis, Minnesota, USA spent significantly more dollars per person per month from both home and eating out sources compared with lower income households. As revealed by the FGDs carried out rural farming communities had better access to food thereby reducing reliance on income to provide family meals.

Table 7. Cross Tabulation of Two Variables: Family Meals Prepared in a Day against Source of Family Income

Source of Family Income	Family meals prepared in a day		Total
	Balanced	Not balanced	
Farming/Farm produce	130	122	**252**
Casual farm labour	36	79	**115**
Casual non-farm labour	22	76	**98**
Salary	93	17	**110**
Family Business	78	30	**102**
Remittances	5	27	**32**
None	03	204	**207**
Total	**367**	**549**	**916**

($\chi 2$=13.54, df=6, p=0.02)

Discussion

The findings of the study revealed that communities in southern senatorial zone in Borno state have little or no knowledge about the nutrition despite the availability of different sources of nutritional information available in those communities. Communities in southern senatorial zone in Borno state were not knowledgeable on the three classes of food. The importance of a food was related to its known/perceived benefits to the body. Foods such as maize, rice, sweet potatoes, cassava, sorghum and millet were commonly consumed as they provided energy required to carry out day to day activities such as farming. Beans, fish, milk, soya beans, eggs and meat were important in body building while fruits and vegetables helped in the prevention of disease and recovery from illness, however must of the households

from the communities, assessed do not have access to most of the body building food as a result of low family income, which resulted in high gap in knowledge as compared to other food groups. majority of communities in southern senatorial zone in Borno state have a negative attitude towards the importance of nutrition as a result of their Cultural beliefs.

Moreso, the results of the findings also shows that majority of the communities in southern senatorial zone in Borno state do not prepare balanced family meals. Breakfast consisted of mainly of maize, leftover foods from yesterday, vegetable soup, and beans. Lunch and evening meals consisted of mixture of maize, rice, beans, millet, casava with mostly vegetable soup and occasionally with fish or beef, while others relied on government supplies and non-governmental organizations intervention of food items like maize, eggs, millet and cooking oil. that age and source of nutritional knowledge are the main factors influencing nutritional knowledge of communities in southern senatorial zone of Borno state. that, education level, marital status, and sources of family income are the main factors influencing nutritional practices among communities in southern senatorial zone of Borno state.

Conclusion

From the foregoing results, it can be concluded that access to knowledge, attitude, and practice towards nutrition among communities in southern senatorial zone of Borno state was poor. Communities in the southern senatorial zone had little or no knowledge about nutrition, which translated to a negative attitude, nutritional and dietary practice in these communities. Age and source of nutritional information were the main factors influencing nutritional knowledge in the communities and educational level, marital status and sources of family income are the main factors influencing nutritional practices among communities in southern senatorial zone of Borno state. Lack of nutritional knowledge results in negative attitude and practices. It was recommended among others that there is need for increased effective public awareness and enlightenment campaigns which will improve the attitude and practice of communities towards nutrition. Community leaders, health workers and the government should intensify awareness on good dietary habits, as well as consumption of good indigenous food which will motivate practice among communities.

Communities in Southern senatorial zone should invest more in agriculture to enable, increase in access to fresh agricultural products such as fruits and vegetables which promote good dietary conditions. Government and community leaders should organise nutrition programmes aimed at addressing the factors influencing nutritional knowledge, attitudes, and practices to ensure high nutrition knowledge levels, positive attitudes and adoption of healthy eating practices among communities and lastly UNICEF Health and Nutrition unit should collaborate with the State Government in improving knowledge, attitude and practice at the southern senatorial zone of the state.

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Competing Interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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