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Nutrition Education and the Nutritional Status of Children in Internally Displaced Persons Camps in Nigeria

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Abstract

Malnutrition remains a significant public health concern in Nigeria, particularly among children under five years old in Internally Displaced Persons (IDP) camps. This study aimed to assess the impact of nutrition education on the nutritional status of children in IDP camps in Nigeria. A cross-sectional study was conducted in three IDP camps in Abuja, Borno, and BayelsaStates; involving 1,420 children aged 6-59 months and their caregivers. The study employed a two-stage sampling technique, collecting data on anthropometric measurements, dietary habits, and care practices. Nutrition education was provided to caregivers, focusing on optimal breastfeeding, complementary feeding, and hygiene practices, and follow-up assessments were conducted after 8 weeks.The results showed significant improvements in exclusive breastfeeding (from 8% to 15%), timely initiation of complementary feeding (from 15% to 30%), deworming (from 16% to 57%), and immunization practices (from 39% to 61%). The prevalence of stunting, wasting, and underweight among children decreased significantly ($p<0.05$) from 43.2% to 35.1%, 21.5% to 17.3%, and 30.8% to 25.2%, respectively. The mean weight-for-age z-score (WAZ) and height-for-age z-score (HAZ) improved significantly ($p<0.05$) from -1.23 to -0.98 and -1.51 to -1.23, respectively.The study highlights the effectiveness of nutrition education in Improving care practices and reducing malnutrition among children in IDP camps. The findings recommend scaling up nutrition education

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programs in IDP camps, integrating nutrition education into existing healthcare services, and providing training and support to healthcare workers to deliver nutrition education effectively. This study contributes to the existing body of knowledge on the importance of nutrition education in improving the nutritional status of children in humanitarian settings, ultimately informing policies and interventions aimed at achieving Sustainable Development Goal 2 (Zero Hunger) and Goal 3 (Good Health and Well-being).

Keywords: *Nutrition Education, Nutritional Status, Camps, Malnutrition, Complementary Feeding.*

1. Introduction

Internally Displaced Persons are individuals or group of persons who leave their home due to persecution and have decided to settle in a temporary environment, ***(IDMC, 2006)***. The June 2007, of the Inter-Agency Standing Committee on nutrition meeting, the United Nations High Commissioner for Refugees **(UNHCR, 2001)** expressed concern on the high rate of child malnutrition in the refugees. The UNHCR identifies malnutrition as a physiological crisis and a human right challenge and issue. These refugees live in harsh and cruel situations that expose them to specific health needs that are not addressed. These needs can be medical or nutritional conditions, ***(IDMC, 2006)***.

Recognizing the challenges of malnutrition and addressing it among the children are important health and human right issues. If not well addressed can lead to impaired cognitive development and productivity in children. Previous emergencies have showed that conflict and displacement always result in the problems of nutritional status of the populations. During prolonged conflict, the affected population always become dependent on humanitarian support for food leading to reduced dietary diversity and meal frequencies, **(Rah, Akhter and Semba, et.al., 2010)**. Separating children from their caregivers because of the conflict and displacement affects the Infant and Young Children Feeding (IYCF) and nutrition practices. The lack of water, sanitation and health infrastructure can compound the effects of the crisis on nutrition **(Leidman, Tromble, Yermina, et, al., 2017)**.

The 2009 Syrian Family Health Survey (SFHS) and the 2006 Multiple Indicator Cluster Survey (MICS), rate of wasting in Syria was greater than 8%, this is poor according to the World Health Organization **(WHO, 2019)** Crisis Classifications. The level of stunting was higher than 20% in the two assessments, **(WHO, 2019)**. The displacement from Syria has contributed to concerns of the nutritional status of the displaced persons. Evaluation of Nutritional Interventions for the Children in the troubled and Conflict Zones noted that food and nutrition insecurity becomes increasingly worse in areas affected by armed conflict. Children affected by conflict, face the challenge of malnutrition and poor health outcomes, **(Kelati, Mengiste, and Alemayehu, 2014)**.

Nigeria is facing a series of economic and humanitarian crises which, if not resolved, this will affect basic life-support systems, and worsening the already existing security structures that would lead to underdevelopment and indebtedness in the country. The challenges of persons from their inhabitants from accessing the basic human needs like adequate food supply, good shelter and safe drinking water is increasingly difficult for the most of the displaced population. This reveals that the government need to change its policy orientation in addressing the issue of the IDPs, because of the negligence and insecurity of the IDPs and the implications of such policies on the persons, **(Abimbola, 2010)**. The displacement disrupts the people from their basic normal lives, inflicting untold suffering on them.

Internal displacement in Nigeria is a recurring issue and has affected the 36 states in the country. There have been many waves of displacement in Nigeria, caused by conflict, violence, natural disasters including human rights

violation. As at 2014, there was global forceful displacement of about 38 million people by armed conflicts, insurgence and generalized violence, in all Nigeria accounted for about one million of this figure, **(NEMA, 2015)**. In July to October 2012, National Emergency Management Agency **(NEMA, 2012)** estimate in their published report about 7.7 million people affected by the flood disaster in the country. Out of this, about 2.1 million people were internally displaced (IDPs); a total of 363 persons died in the process while 18,282 people were treated for different forms of injuries sustained. In January 2014, a total of 165,000 people were displaced by both floods and conflicts in IDP camps in Nigeria **(NEMA, 2016)**. Internally Displaced Persons are the most vulnerable populations displaced by the Boko haram in the North Eastern zone of Nigeria, while they face tremendous adverse effects; many of them are not with their families, most lack basic necessities of lives and other issues of concern.

Crisp, (2012), Fitzpatrick (2003) and Internal Displacement Monitoring Centre (IDMC 2013), **Amnesty International, 'Abused and Abandoned (2010)** affirmed the current status and obstacle facing IDPs in Nigeria and recorded that as at 2013, about 3.3 million people were displaced in Nigeria due to insurgency. **Amnesty International (2010)** estimates that at least 17,000 people were killed by Boko Haram insurgency in northern Nigeria in 2009. Boko Haram attacks on Borno towns and villages (Gwoza, Damboa, Askira Uba, Damboa and Chibok), Adamawa towns and villages (Madagali, Mubi, Gulak, Basa, Shua, and Michika), and Yobe and some of communal violence in parts of Taraba and Plateau states, millions of Nigerians have fled their homes and managed to make out a living in IDP Camps **(IDMC, 2013)**. Figures released by the Internal Displacement Monitoring Centre **(IDMC, 2013)** and the Norwegian Refugee Council **(NRC, 2002)**, an independent, non-governmental humanitarian organization as of April 2015, estimated that about 1,538,982 people that fled their homes in Nigeria were still living in internal displacement camps scattered across the country. In its 'Global Overview 2014 report', the Internal Displaced Monitoring Centre **(IDMC, 2016)** noted that Nigeria has Africa's highest number of persons displaced by conflict, ranking behind Syria and Colombia. The figure comprises people displaced as a result of the attacks by Boko Haram and militants in north-eastern Nigeria, there is the government-led counter-insurgence operations against the group, sporadic inter communal clashes and natural hazard-induced disasters to help reduce the attacks. Also the additional 47,276 IDPs in Plateau, Nassarawa, Abuja (FCT), Kano and Kaduna which was collated by Nigeria's National Emergency Management Agency **(NEMA, 2015)** and **(International Organization for Migration, 2014)**, the majority of IDPs identified in the above mentioned states have been displaced because of the insurgency (91.98%), some were forced to leave their place of origin because of community clashes (79.6%) and natural disaster (0.06%), **(IDMC 2013)**.

Studies in both the developed and developing countries have identified some poor dietary habit namely; skipping of meals, increased intake of high caloric snacks, eating outside the home, consumption of soft-drinks among adolescents and adults **(Lacaille, 2013)**. Dietary habit and choices of food influence nutrient and energy consumption which may relate to psychological, socio economic and physiological factors. Malnutrition especially stunting and wasting have been identified among Nigeria adolescents that usually skip meals **(Lacaille, 2013)**. There is inadequate number of study present in Nigeria to describe the association of nutritional status of the children and parents eating behavior.

According to **Smith, (2010)**, skipping meal poses many side effects on the body such as change in blood sugar level, digestive problems, metabolism and moodiness.

According to the International Organization for Migration/**NEMA, (2015)**, some of the populations are displaced in 2015 following the increase in violence in some states in Nigeria. Some of the IDPs live with host communities and some live in camps. But there are no identified camps in Yobe, Bauchi and Gombe. A large number of IDPs in north east Nigeria live with relatives and friends to survive. **Olukolajo, Ajayi and Ogungbenro, (2014)** noted that, Nigeria, particularly, has been finding it difficult in its task to manage its IDPs. The **(IDMC 2013)** stated that, women and children remain the most vulnerable to sexual abuse and gender based violence. There have been reported instances of rape, sexual harassment, forced marriage, infant marriage, sexually transmitted diseases and uncontrolled

birth leading to high infant and maternal mortality in the camps in Nigeria. The needs of children are highly disregarded in such situations and this is the case in the Nigeria IDP Camps. Children are being exposed to enhanced risk of abuse, forceful recruitment by insurgents as children soldiers, suicide bombers, sex slaves and abrupt discontinuation with their education. Their lives change towards a different direction of malnutrition and inadequate amenities needed for their survival.

United Nations Children's Fund, **(UNICEF, 2012)**, confirmed that, a rapid children protection assessment carried out in November 2012 found that sexual violence against children was on the increase with cases of their young girls and women being offered as prostitutes in exchange for food. Boys were also at risk of being forcibly recruited by armed groups. A lack of organized camp management makes abuses easier to be perpetrated. According to **NEMA (2012)**, most of the school aged children in Adamawa, Borno and Yobe have had their opportunities for schooling severely constrained. The destruction of schools and indiscriminate killing of students and teachers by Boko Haram insurgents has left many schools deserted and deprived children of their right to education. Most IDPs in Nigeria flee to neighboring communities that are safe and taking refuge in temporary shelters such as public buildings, schools and places of worship among others; having been deprived of their homes and sometimes their land and livelihoods **(Olukolajo, Ajayi and Ogungbenro, 2014)**. The same author also revealed that most IDPs have preferred seeking shelter with relatives rather than living in camps. The challenges such as government policies, sexual abuse, irregular medical care, bad terrain, insufficient food, lack of fund, poor living condition, corruption, exposure to violence among others affects thousands of women, children and their families at the IDPs camps. The majority of these children suffers from some level of malnutrition and are malnourished, **(Olukolajo, et, al., 2014)**.

According to **Olukolajo et.al., (2014)**, the government of Nigeria does not have adequate machinery in place to address IDPs issues and the organizations created by the government possess minimal capacity to handle IDPs related problems. He also noted that government aid such as money/relief materials gets diverted and never gets to the IDPs camps; there are also traced corrupt practices by the camp officials and leaders of IDPs who may also convert and sell commodities provided for IDPs.

According to the **Alozioenwu, (2012)**, failure to address past socio-economic and political imbalances, injustices and inequities across the federation, continues to cause internal displacement in Nigeria. Since January 2012, thousands of IDPs have reportedly moved away or separated from their families in order for women and children to flee to safer areas outside the troubled north-eastern States of Adamawa, Borno and Yobe **(Abubakar and Mohammed, 2010)**. Another trend of displacement is the fact that IDPs who return home soon after the event that made them flee their home are sometimes faced with the destruction of property, crops, infrastructure and acute ethnic and/or religious tensions, particularly in central and northern Nigeria. These adverse conditions prolong their situation of hardship, rendering them unable to access durable solutions following their displacement. According to **Owoaje, Uchendu, Ajayi, et, al., 2016)**, infections or chronic diseases, poor nutrition in terms of food and feeding behaviors, especially during the first two years of life can lead to low immunity, significant illness, late development and even death.

Nutrition education is used to improve the nutritional well-being of caregivers. The general objective is to enable the people make the best use of any existing food resources and to become familiar with food-based dietary guidelines for good health and nutrition, **(Leidman, Tromble, Yermina, Isokpunwu, et,al., 2017)**. The ultimate goal of nutrition education programs is to bring about appropriate and meaningful changes in knowledge, behavior, attitudes and dietary practices that result in improved nutritional awareness to the people, **(Leidman et.al., 2017)**.

The United Nations High Commissioner for Refugees, **(UNHCR, 2016)** summarized the Public health and nutrition intervention for the children as follows:

- Evidence-based: Activities should be planned and implemented, based on the findings of the nutritional assessments
- Needs-based: Interventions should be scaled up and resources should be allocated to meet the needs of the children.

- Technically sound: Services should be based on current scientific evidence and operational guidance and implemented by skilled staff.
- Impact oriented: Promotes the health care approach, which ensures that essential health services should address the health and nutrition needs of the entire children in the IDP camps.
- Priority-based: Emergency nutrition interventions and services should be prioritized to achieve maximum impact to all the children in the IDP camps. Interventions to address immediate health risks, such as disease outbreaks and malnutrition, must be priorities.
- Integrated: Avoid setting up costly parallel services, assist the national health system to extend its services to others in the IDP camps.

Nutritional assessment is the interpretation of anthropometric, biochemical (laboratory), clinical, dietary and environmental information to determine whether a person or group of people are well nourished, undernourished or over-nourished, **(UNICEF and World Food Program, 2013)**. The word anthropometry comes from two words: Anthropo means 'human' and metry means 'measurement' **(UNICEF and World Food Program, 2013)**.

Nutritional assessment can be done using the ABCDE methods. These refer to the following:

A. Anthropometry
B. Biochemical/biophysical methods
C. Clinical methods
D. Dietary methods
E. Environmental, Evaluation and Education (Assess the living condition, educational level and the ability of the person to purchase, transport and cook food. The person's weekly budget for food purchase

Anthropometry is the human measurements, which is derives from the Greek words "anthropos" meaning "human", and "metron" meaning "measure". Anthropometric measurements are used to assess the size, proportions and composition of the human body, **Woodruff and Duffield, (2016)**. It assess the growth in children, measurements include the length, height, weight and head circumference, as well as the fat mass composition of the human body to provide information about a person's nutritional status.

Acute malnutrition is a result of recent (short-term) deficiency of protein, energy together with minerals and vitamins leading to loss of body fats and muscle tissues. Acute malnutrition presents with wasting (low weight-for-height) and or presence of pitting oedema of both feet **(UNICEF, 2016)**. Screening for Acute Malnutrition should be done at any contact points; children wards, immunization points, camp out-reaches, Anti-Retroviral Therapy sites, young children clinics, counseling units, psycho social groups, etc. Camp-based service providers can also perform malnutrition screening provided that they are adequately trained and equipped.

Screening for acute malnutrition includes

- The use and interpretation of Mid-Upper Arm Circumference (MUAC) Tape
- Checking for bilateral pitting oedema, **(United Nation Children's Fund, 2013)**

The current study aimed to assess the impact of nutrition education and the nutritional status of children in Internally Displaced Persons Camps in Nigeria. The study hypothesized that nutrition education would improve nutritional status of children in Internally Displaced Persons Camps in Nigeria.

Methodology

Area of Study

This study was carried out in one Internally Displaced Persons camp each in Abuja, Borno and Bayelsa States. These States belong to three different geopolitical zones in Nigeria. Nigeria has six Geopolitical zones which are: North Central, North East, North West, South East, South South and South West Geopolitical Zones. The work was done in the following three geopolitical zones. North Central consisting of the following: Benue, Kogi, Kwara, Nasarawa, Niger, Plateau, Federal Capital Territory (Abuja). North East consisting of the following states: Adamawa, Bauchi, Borno, Gombe, Taraba, Yobe. South South Nigeria consisting of the following: Akwa Ibom, Bayelsa, Cross River, Delta, Edo, Rivers State

Abuja IDP Camp

Abuja is in the North Central Geopolitical Zone of Nigeria and is the capital of Nigeria, with a population of 3,464,123 and under five year old population of 692,825 **("World Demographics**

Profile, 2012). The IDP Camp selected for this project in the zone was the New Kuchingoro IDP Camp (caused by Boko Harm insurgence). The camp was purposively selected for this project due to accessibility and security reasons, the less than five year old population in the camp could not be ascertained.

The New Kuchingoro IDP Camp Abuja, North-Central Nigeria has a Geo coordinate of (9000'24"N 7027'19"E) 560m and it is situated at Housing society Kaura in Abuja. It is a suburb location in AMAC (Abuja Municipal Area Council) Local Government Area currently hosting over 1,723 Internally Displaced Persons (IDP), predominantly children. The persons were displaced in 2014 due to the insurgence in Borno. Although the village is an example of a settlement lacking in all the basic amenities needed for a modern living, it is one of the camps where most displaced persons across north east Nigeria take refuge.

Residents of the camp reported that promises made to them on the provision of health care facilities and education for their children is yet to be fulfilled. The residents of the New Kuchingoro Internally Displaced Persons camp claimed that FEMA had previously issued them letters indicating that they could access healthcare services at the Asokoro District Hospital. This promise according to the women leader of the camp reported that the hospital demand money from them and always turn them back if could not pay.

Borno IDP Camp

Borno is one of the states in the North Eastern Geopolitical Zones of the country Nigeria; its capital is the city of Maiduguri, with a population of about 5,860,200 with under five population of 1,172,040. Bakasi IDP Camp is situated in Borno due to the issues of Boko haram insurgence and Cameroun returnees, the under-five year old population in the Borno Bakasi Camp is about 1,200 children, **(Borno State overview Archived, 2012)**, the Camp was purposively selected for this project due to security reasons in the state. Borno State Bakasi IDP Camp Maiduguri, North-east Nigeria has a Geo coordinate of (11047'21"N 13006'59"E) 2.81 Km. The Borno State Bakasi Internally Displaced Persons camp is one of the old camps in Maiduguri, the state capital, the camp is located in Bakasi Housing estate, the site was originally built as the Borno State housing project. The camp houses residents from Monguno, Marte, Gwoza, Guzamala and Nganzai LGAs of the State. The first residents of the camp were 4,763 persons displaced from Monguno.

There were Internally Displaced Persons from the Government College Camp and Arabic Teacher's College Camp in Maiduguri who relocated to the Bakasi site for shelter. This raised the camp population to almost 34,232 individuals who were displaced **("Borno State, Population Statistics, Charts, Map and Location, 2016)**. In 2017, some of the residents that are indigenes of Gwoza returned to their communities. However, following an attack in Marte LGA in the early 2019, some 202 households from Gwoza and Marte moved back to the camp. In June 2019 about 2,000 IDPs from Guzamala LGA started returning home citing improvement in security in their area of origin. The security situation in the camp is relatively stable with the site secured by the military, police, immigration services and the Civilian Joint Task Force (CJTF). The camp has however previously suffered several attempted and successful attacks, (Report gathered at the site). Due to the security risks, the Bakasi camp in Borno was purposively selected for the study.

Bakassi Camp in Bayelsa State

The third camp visited was the Bakassi IDP Camp in Bayelsa State with a Geo coordinate of (4055'05"N 6017'47"E)39m located in the South South Geopolitical Zone of Nigeria in the Niger Delta Region it has a total population of 2,198,872 and under five population of 439,774 **(World Population Prospects, 2019)**, the Bayelsa Bakassi IDP Camp was caused by Cameroun Returnees, the under five year old population in the camp could not be ascertained. The camp was chosen because that was the largest and permanent IDP camp in the State, amongst the two other ones (ox-bow lake in Yenagoa and the Igbogene camp).

Bayelsa State Bakassi IDP Camp in the South Southern Geopolitical Zone in Nigeria

Bayelsa Bakassi camp was established in 2006 shortly after former President Olusegun Obasanjo ceded (surrender) the Bakassi Peninsular to the Cameroonian Government following a judgment by the **(Anyu, International**

court of justice and the border-conflict resolution in Africa, 2007). The ceding affected Bayelsa indigenes from different communities in the state, who were compelled to leave Bakassi and returned to Nigeria as refugees. The initial refugees were estimated to be about 8,000 and they were camped temporarily at the Samson Siasia Sports Complex in Yenagoa until those who could trace their communities returned home. Those that had no place to go were settled at a Bayelsa State Government land provided by the Okaka and Ekeki communities. At present the settlement has a population of over 1000 persons (State Emergency Management Agency, (2008).

Population of the Study

The study population for this research was children aged 6months to 5years in each household in the Internally Displaced Persons (IDP) Camps in the three selected camps in each of the selected camps in Abuja, Borno and Bayelsa States.

Sample Size Determination

The Yaro Yamane's statistical formula (1967), was used to determine the sample size for this study

The sample size was determined using the formula below

$$n = \frac{N}{1+N(e)^2}$$

Where n = sample size

N = total population,

e^2 = error margin = $\frac{5\%}{100}$

Calculation

Abuja under 5 total populations is 692,825

$$n = 692{,}825$$

$$n = \frac{692{,}825}{1+ 692825\ (0.05)^2}$$

$$n = \frac{692825}{1+692825\ (0.0025)}$$

$$= \frac{692825}{1+1733} = 399.7 = 400$$

The sample size of 400 respondents out of the entire population of 692,825 population size would be the lowest acceptable number of responses to maintain a 95% confidence level.

Borno State

$$n = 1{,}172{,}040$$

$$n = \frac{1{,}172{,}040}{1+ 1{,}172{,}040\ (0.05)^2}$$

$$n = \frac{1{,}172{,}040}{1+1{,}172{,}040\ (0.0025)}$$

$$= \frac{1{,}172{,}040}{1+2930}$$

$$= \frac{1{,}172{,}040}{2931} = 399.8 = 400$$

The sample size of 400 respondents out of the entire population of 1,172,040 population size would be the lowest acceptable number of responses to maintain a 95% confidence level.

Bayelsa

$$n = 439{,}774$$

$$n = \frac{439{,}774}{1+ 439{,}774\ (0.05)^2}$$

$$n = \frac{439{,}774}{1+439{,}774\ (0.0025)}$$

$$= \frac{439{,}774}{1+1099}$$

$$= \frac{439774}{1100} = 300.8 = 301$$

The sample size of 301 respondents out of the entire population of 439,774 population size would be the lowest acceptable number of responses to maintain a 95% confidence level.

Table.3.1: Population Sample for the Study household from each IDP

IDP Location	Total number of IDP Household	Total number of households selected	Total no of children 6 to 59 months
Bayelsa (Bakassi Camp)	280	117	355
Borno (Bakasi Camp)	260	158	460
Abuja (New Kuchingoro Camp)	300	171	605
Total	**840**	**446**	**1,420**

Source: *(DTM Round, 2014; IOM, 2016) (IOM-NEMA-SEMA 2014)*

Study Design

It was a cross sectional study, the objectives of this study was achieved through the following procedure

Sample Selection

A two-stage sampling technique was used to recruit participants into the study.

Stage 1: Three selected IDP camps of New Kuchingoro IDP camp in Abuja, Bakassi IDP Camp in Bayelsa and Bakasi IDP camp in Borno were identified and selected purposively by using a descriptive cross-sectional concept. All households with children aged 6 months to 5 years were selected and a random sampling was done on the households that had more than three children aged 6 months to 5years to select only three children from such households, this was done on the basis that not all the households had children of that age group, only 446 households had children aged 6 months to 5 years and 1,420 respondents were selected.

In the second stage, caregivers or mothers from the three selected IDP camps were gathered together in each of the camps, the study population were children aged 6 months to 5 years, but the caregivers or mothers of the children were the ones interviewed, while the anthropometric assessments was done on the children, the caregivers were those who have resided in the camps for a minimum of three years and were present in the camps at the time the study, but children and caregivers who just visited the camp at the time of this study were excluded.

There was a Preliminary visit: A preliminary visit to the camps was done a day before the study, to sensitize the caregivers and have a focus group discussion with them, also, an informed consent from the authorities in-charge of the camps was gotten, and the research assistants recruited and trained.

Recruitment and training of research assistants

Five health workers from nearby health facilities within proximity (Pearl Family Hospital, General Hospital in Munguno and Bayelsa Specialist Hospital for New Kuchingoro camp Abuja, Bakasi camp in Borno and Bakassi camp in Bayelsa respectively) who communicate effectively in English, Hausa and ijaw languages were recruited and trained as research assistants on the methods of the questionnaire administration. The training was on the procedure for the anthropometric assessment, filling of the questionnaire, and how to report on the 24 hour dietary recall.

Data collection and processing

The Data collection was in two phases.

Phase I was the baseline data collection on anthropometric measurements (weight, height, length and MUAC measurements), dietary habits and dietary diversity, while

Phase II include data collection from all of the above after nutrition education to improve on the eating pattern was administered.

The study as well as the nutrition education and the revisit lasted for a period of 9 months.

Phase I of the Study

Questionnaire Method

The questionnaire was pretested; it was a semi-structured, interviewer-administered questionnaire which was used to obtain the respondents information on their socio-demographic, child care practices, clinical and anthropometric characteristics of the children. Information on the presence of locally and internationally nutrition interventions was gotten. Child care practices were evaluated using infant feeding practices, immunization and deworming status of the selected children. The Validity and reliability of the questionnaires were pre-tested at the Ox-Bow lake IDP camp in Bayelsa State with 50 respondents and there was some amendments made to re-structure the questions the ambiguous aspect of the questionnaire for the respondents. A total number of 1,420 questionnaires were distributed and all retrieved. Then, they were, collated and sorted out for the accuracy and completeness before leaving the camp at the end of the day's work.

Anthropometric Measurements

Length measurement: Length measurements was carried out for children less than 2years (24mths), using the length board, the assistant supports the child's head with both hands so be sure that the head touches the base of the board, the assistant's arms were held straight and the eye of the child looking straight upwards, the child is made to lie flat on the board, the measurer places his/her hands on the child's knees to straighten the knees, the child's feet are

placed flat on the foot piece and the reading taking from the tape attached to the board, and was record, WHO, (2009).

Height measurement: Body height was measured for children aged 24months and above to the nearest one centimeter with aid of a stadiometer. The measurement was taken with the child in a standing position, while the head, shoulders, buttocks and the heels touching the vertical stand of the hitometer. The hand of the assistant is placed on the knees of the child to keep them close to the board, the child made to look straight ahead, the hands of the child placed by their side, the measurer's left hand placed on the child's chin and the child's shoulders leveled, the head piece of the hitometer is placed firmly on the child's head and reading taken to the nearest 0.1cm, WHO, (2009).

Weight measurement: An electronic body weighing scale was used to assess the weight of the children and recorded to the nearest 0.1kg. The weighing scale was adjusted to the zero point before each weighing and the functionality of the scale observed for its accuracy, then the children's heavy clothes and foot wears were taken off, the children's legs put together on the foot space of the scale and the reading recorded to the nearest 0.1 kg, the child is removed slowly, WHO, (2009).

Mid Upper Arm Circumference measurement (MUAC): The measurement of the mid-arm circumference point was done by measuring the distance between the tip of the shoulder to the elbow and dividing the measurement by two. The left hand of the child was exposed then an estimate of the middle between the tip of the shoulder and elbow of the left upper arm was taken and the arm straightened, and the Tape wrapped round the arm at the midpoint, ensuring that it was not too tight or too loose and the reading was taken, **WHO, (2009)**.

Food consumption pattern

In collecting data, the type of foods fed and quantity, as well as the recipe used to prepare the cooked foods at the different IDP camps were obtained and analyzed for their nutritive values for (protein, fat/oils, carbohydrate, energy, Vitamin A, Zinc, dietary fibre, ash, Iron and calcium). The respondents were interviewed on the type of the foods eaten, the way it was cooked and eaten (e.g. if meat, snacks, fruits/vegetables were consumed within the last 24 hours). Respondents provided descriptions of food and beverages consumed. The respondents were asked some questions to prompt them to remember any omitted eaten foods in the list and the specific food groups.

Chemical analysis: Food samples were collected from the caregivers with their consent, the samples were preserved in the freezer and later sent to the laboratory for analysis. One hundred grams of each sample were weighed for the analysis to determine the proximate and mineral analysis.

Proximate analysis: Proximate analysis is used for the estimation of the quantitative analysis of food substance include dietary fiber, moisture, total fat, crude protein and total carbohydrate.

Determination of Ash Content, using the AOAC, (2015) (Association of Official Analytical Chemists). One (1) gram of each of the food sample was taken and weighed into a crucible of a known weight, this was done in triplicates, the bunsen burner was ignited the ashed content was placed in a muffle furnace at 600^0C for 2hours. The crucible cooled, placed in desiccators and weighed, and percentage of the ash content calculated as;

$$\%\ AshContent = \frac{W_2 - W_1}{Weight\ of\ Sample}\ X\ 100$$

Where; W_1 = weight of empty crucible
W_2 = weight of crucible + Ash

Determination of Crude Fat Content, using the AOAC (2015) (Association of Official Analytical Chemists). The crude fat content was determined with the Soxhlet extraction method. The 250ml Soxhlet flask was weighed to ascertain the weight, this was washed and dried in the oven at 105^0c for 30minutes, it was later cooled in desiccators and then weighed again. About 10grams of each of the food sample was weighed into a clean extracting thimble, this was covered with cotton wool. The Soxhlet extractors were assembled and placed on a heating mantle. The fat extraction lasted for 3hours. After that, the extractor was disassembled and the solvent distilled off and recovered.

The remaining crude fat in the flask was dried in the oven at 100^0c for another 30minutes and placed in desiccator to cool to room temperature. The percentage crude fat content was thus calculated as;

$$\%\ FatContent = \frac{Weight\ of\ fat\ extracted}{Weight\ of\ food\ Sample}\ X\ 100$$

Determination of Crude Protein Content, using the AOAC (2015) (Association of Official Analytical Chemists). The percentage protein content of the food sample was computed as determined by the micro-kjeldahl method, this was multiplied by a conversion factor (AOAC, 2015). About 1gram of the food sample was weighed into an ash less filter paper, which was wrapped carefully and placed into a clean micro-kjeldahl digestion flask. About 20ml of concentrated sulphuric acid was added to the food sample. And a small quantity of copper sulphate was added as a catalyst. Then the flask was placed on a digestion mantle and gently heated until the frothing ceased. This was later heated vigorously with periodic shaking until a clear solution was gotten. This was cooled and washed into the kjeldahl distilling flask with about 100ml of ammonia, some free distilled water and anti-bumping granules added. The distillation apparatus was set, and the solution in the flask distilled in 10ml of 4% Boric acid solution that is containing three (3) drops of mixed indicator methyl-red and bromo-cresol green. About 50ml distillate, collected and titrated against 0.02 H_2So_4 solutions. The distillate process also was carried out on a blank sample. The end point of filtration was observed by the color change to point.

The percentage crude protein was thus calculated as;

The percentage crude protein was calculated using the formula:

$$\%\text{Crude Protein} = \frac{(V_E - V_B) \times N_a \times 0.0014 \times 6.25 \times 100}{M}$$

Where:

- **VEV_EVE** = Titre value for the sample distillate
- **VBV_BVB** = Titre value for the blank distillate
- **NaN_aNa** = Normality of the titrant (acid used)
- **0.0014** = Conversion factor for percentage nitrogen
- **6.25** = Conversion factor from nitrogen to crude protein
- **MMM** = Weight of the test sample (g)

Determination of Moisture Content, AOAC (2015). The percentage of the moisture content was determined by using the two-stage air-oven method. About 2grams of each sample was weighed and dried on aluminum crucibles of known weights (W_I and W_2) and these were then placed in air oven. The sample was heated and dried at about 130ºC for one hour. After the drying, the crucibles were cooled at room temperature and re-weighed again (W_3). The process was repeated until a constant weight was obtained. The percentage moisture content was thus calculated as;

$$\%\ MoistureContent = \frac{W_2 - W_3}{W_2 - W_I} x100$$

Where;

- WI= weight of empty crucible
- W2= weight of sample + crucible before drying
- W3= weight of sample + crucible after drying

Dietary fibre determination

The total dietary fibre (TDF), soluble dietary fibre (SDF) and Insoluble dietary fibre (IDF) were determined by using the enzymatic-gravimetric method described by (FAO/WHO, 2017).

The total dietary fibre was determined as follow:

About 10ml of distilled water were pipette into the 50mls beaker containing 1g of each defatted dried sample. The water content and the food sample contained in each 50mls beaker were stirred well to obtain a homogenous mixture. Some water was poured into a water bath and each of the sample placed on it, with the help of steam from the water bath, the starch in the samples gelatinized at 100^{0}C.

Determination of carbohydrate

The total carbohydrate of the samples was determined by using the difference as described by Wolever et al (2003) and was calculated as;

% glycemic carbohydrate = 100- [a + b + c + d+ e]

Where; a= % moisture content
b= % ash content
c= % crude fat
d=%protein
e=%dietary fiber

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Mineral Analysis determination **-** The method used in the determination of proximate compositions of the food samples is described in AOAC (2015). Mineral determination was done in line with AOAC (2015), 6g of each food sample which was accurately weighed and the samples introduced into a muffle furnace thermostated at 550^0C until most of the organic matter present were destroyed and a white- grey ash was gotten, the ash content was cooled. The analysis were carried out in two stages namely, preparation of ash and stock solutions. About 20ml and 10mls of distilled water and dilute hydrochloric acid ($HClO_4$) respectively was added to the ashed substance. This mixture was boiled and filtered into 250 ml volumetric flask, which washed with hot water, cooled and made up to volume. Stock solution of the elements was prepared by diluting the stock solution of the content which was boiled for 5min was placed on a hot plate in a fume cupboard.

Determination of Calcium

About 2 ml of the extracted sample with a 2 ml of prepared ash solution were placed in test tubes, and 2.0 ml of distilled water and 1.0 ml of 4% ammonium oxalate added, this was mixed allowed to stand overnight. The calcium was precipitated, centrifuged and removed from the supernatant fluid without disturbing the precipitate. About 3.0 ml of 2% ~ 9 ~ of the Pharma Innovation Journal ammonia added into the tube, mixed and centrifuged again. The supernatant fluid was poured off, and this was repeated until there was no more precipitate in the supernatant with calcium chloride solution. About 2.0 ml of 1N H2SO4 was added and the precipitate was placed in boiling water bath for a few minutes. The mixture was kept at 70–75^{o}C, and later titrated against 0.01 N KMnO4, a faint pink color was obtained, which persisted for about a minute. This was also titrated against 2.0 ml of 1N H2SO4 as blank to the endpoint. The differences in the titration gave the volume of 0.01N KMnO4 and this was recoded. The estimation was done in three places and the results expressed in mg/100g sample.

Determination of Iron

About 1.5 ml of extracted sample and 1.5 ml of prepared ash solution were placed test tubes that are containing 1.0 ml of 30% H2SO4 and 1.0 ml of 7% potassium per sulphate solution, about 1.5 ml of 40% potassium thiocyanate solution was added into it. The reading of the red color that developed was at 540 nm within 20 minutes. The standard aliquots with concentration to 10- 50µg were treated alongside. The estimation was done in triplicates and the results expressed in mg/100g sample.

Termamyl incubation

The starch was gelatinization and the samples ready for termamyl incubation, this was done at pH of 6.0 and this was used for the pH adjustment of the acetic acid. Also, about 2-3 drops of termamyl was added to the gelatinized samples, stirred and incubated at 100°C for 3mins for the starch degradation.

Neutrase incubation

For the termamyl incubation, the pH of the samples was adjusted to 7.5. Then an adjustment of the pH done by using 0.23M of Sodium hydroxide (NaOH) and the temperature reduced to 60°C, about 2-3 drops of neutrase enzyme was added to the samples and was stirred continuously and later incubated at 60°C for 30mins to ensure complete protein removal.

Amyloglucosidase incubation

For the neutrase incubation, the pH of the samples present in the beaker was readjusted to 4.5. The pH adjustment was done with the use of acetic acid. The temperature of each of the beakers was maintained at 60°C and 2-3 drops of amyloglucosidase added and stirred well. The incubated AMG was done at pH 4.5 for 30mins at 60°C. During the incubation period, there was continuous stirring to ensure complete hydrolysis of the starch content.

After the AMG incubation, the content in each beaker was washed samples were dried at 60-65°C for 5-6 hours to obtain the total dietary fibre.

$$\%TDF = \frac{Weight\ of\ remaining\ dried\ mass\ (g)}{Weight\ of\ initial\ dried\ mass\ (g)} x100$$

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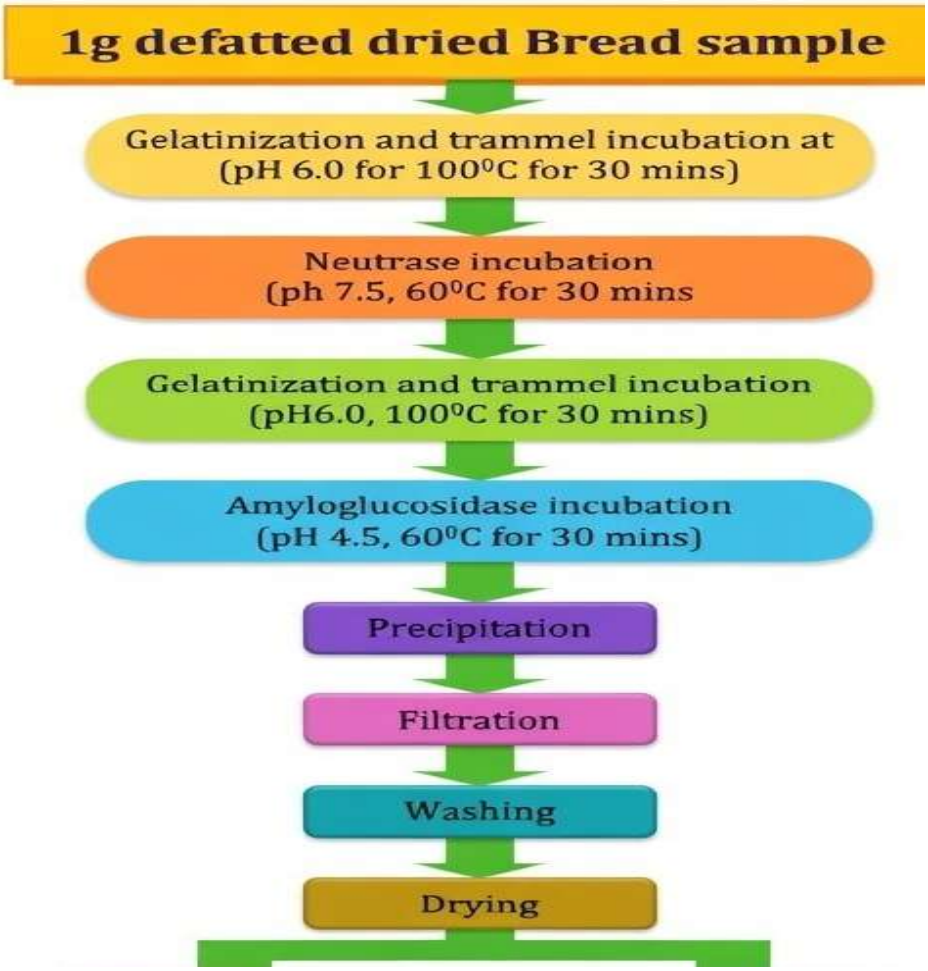

Figure 1: Flow chart for the determination of total dietary fibre (TDF), insoluble dietary fibre (IDF) and soluble dietary fobre (SDF)

Dietary Diversity (DD)

The information was collected by conducting an individual interview with the caregivers of the children aged 6-59 months. The caregivers were also asked the list of the meals the children ate the previous day while checking the meal composition (e.g. pap with or without sugar and milk) and if snacks were eaten and if fruits were included. The caregivers were asked which foods the children ate from the other food groups that were not mentioned (e.g. Did she/he eat any egg yesterday?) The number of consumed food groups, which is known as the Individual Dietary Diversity Score, this was counted and the total dietary diversity were summed up.

The diversity of the respondent's diet was graded as low when less than or 4 food groups were eaten, rated as medium when 4-5 food groups were eaten, and high when more than >5 food groups were consumed.

Table 1: Dietary diversity score

Low < 4 food groups	Medium 4- 5 food groups	High > 5 food
Cereals	Cereals	Cereals
Green leafy Vegetables	Green leafy vegetables	Green vegetables
Vitamin A Rich Fruits	Vit. A rich fruits	Vit. A rich fruits
	Oil	Oil Others vegetables/fruit Fish /Meat, Legumes, nuts, seeds

Source: *Mayhlis.razes@fao.org, 2007*

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Phase II of the study

Data collection was conducted at the initial visit to the camp as in the phase I and the baseline of the study and this was repeated 8 weeks after the first visit and after the Nutrition Education which is the end-line, this is to improve on the eating pattern of the children, while healthy nutrition and health messages were delivered to the children's caregivers.

Nutrition Education and Healthy Messages

Baseline information of the caregiver's nutrition knowledge was gotten from the questionnaire, while the end-line information was gotten 8 weeks during the revisit assessment. The Nutrition Education intervention creates an impact on the caregivers' attitudes towards nutrition and their practices towards child nutrition.

The following messages were administered to the caregivers

Table A: message on the best time to eat

Menu	**Ideal Time**
Breakfast – Feed the children within 1hour 30 minutes of their waking up.- Ideal time to have breakfast is about 8am. **Lunch** – Feed the children within 12.00 noon. Lunch should be eaten about four to five hours after breakfast e.g. if breakfast is eaten 8am, lunch should be eaten between 12pm Snacks: Feed the children at 3pm to 4pm with snacks in between	
Snack should be eaten in between breakfast and lunch if it is not possible to eat lunch until 2pm on a particular day. **Snacks –** There should be snacks given to the children between the breakfast and lunch **Dinner** – The ideal time to have dinner is before 7pm.	

Table B: message on what happens when you skip a meal

1. Avoid skipping meals
   i. When meals are skipped, the blood sugar decreases and the brain uses glucose
   ii. If there is not enough glucose for the brain to use it affects the performance of the body function
   iii. This can cause irritability, confusion and fatigue. The body increases the production of cortisol, which leads to stress and hunger (an adrenal-cortex hormone, hydrocortone that is active in carbohydrate and protein metabolism).

2. When meals are skipped frequently without eating regularly, the body goes into survival mode (the body will look for how to survive). This will cause the cells of the body to crave for food and this can lead to craving for unhealthy foods.

In summary skipping of meals;

a) Help to lower the body's metabolism
b) This leaves the body with little energy
c) Leaves the children irritable, confused, fatigued, sluggish and weak

Table C: message on strategies/tips to avoid skipping meals

1.	Feed the children small regular meals throughout the day to avoid skipping meals.
2.	Always feed the children with snacks until the next meal.
3.	Plan meals the previous day to be sure of the availability of food
4.	Try to meet up with the meal timing

Table D: message on children care practices

1. **Breastfeeding-** the message was on initiating babies to breastfeeding within 60 minutes of birth, then exclusive breastfeeding for 6 months and continued breastfeeding for 2 years **2. Complementary feeding-** is the introduction of the family food to the children from 6months of age 3. **Giving the children drinking water-** Introducing drinking water to the children should start at 6months during the complementary feeding period 4. **De-worming-** the children should be taken to the health facility for de-worming exercise every 6months 5. **Immunization-** all newborns should be taken to the health facility to receive the zero doses of vaccines and regular visit for the subsequent doses to achieve complete the full round of immunization, also to partake in the regular campaigns to receive the booster doses

The women/caregivers were monitored, through calls to follow up in most cases to remind them and to ensure that they comply with the messages given to them.

Statistical Analysis

In this study, the data entry and processing were done with the descriptive statistical analysis presented in frequency tables and percentages. Bivariate analysis was done with the Chi-square (X^2) test to determine the association between level of the nutrient intake of the respondents and the WHO/FAO Standard which shows that there is no association between the WHO/FAO daily nutrient requirement and the quantity consumed by the children. Students T-test was done to analyze the significance differences between the Nutrition educations on the Care Practices of the Selected Children before and after the Nutrition Education, as well as the two phases in the anthropometric measurements, food nutrient intakes, food proximate analysis as well and between the males and females children were done. An informed consent was gotten from the mothers and caregivers before the assessment. The method used in the determination of proximate compositions of the food samples is described in AOAC (2015) (Association of Official Analytical Chemists).

Results

Table 1 shows the socio demographic characteristics of the children. the age range of the children in this study shows that 20% were below 12 months of age, majority of the children 51% were between 12 to 36 months, 29% were between 37 to 59 months of age, 57.3% were males, while 42.7% were female. About 29% were born as first children of the family while 71% were 2nd to 4th born children of the family. Few, 11% were the first and only children of the family, 70% were born in less than two years interval between other siblings while 19% were born in more than two years interval between other siblings. About 35% were delivered at the health facilities while 65% were delivered at home.

Table 1: Socio-Demographic Characteristics of the Children in the Three Camps (n = 1420)

Variables	Category	Frequency	%
Age (months)	< 12	280	20
	12 – 36	728	51
	37 – 59	412	29
Gender	Male	813	57.3
	Female	607	42.7
Birth Order	1st	410	29
	2 – 4	1,010	71
Birth Interval	1st and only children	159	11
	< 2 years	994	70
	≥ 2 years	267	19
Place of Delivery	Health facility	504	35
	Home	916	65

Table 2 shows the socio-economic characteristics of the children's caregivers that are within five years in the three IDP Camps shows that 61% of the caregivers are literate. Fathers are the household heads of 49.9% of the respondents and 30% have their mothers as household heads. A total of 0.28% respondents had spent less than six months in the camps, while 99.3% have lived in the IDP camps for over two years, 0.4% of the respondents earn less than ₦10,000 monthly, while 58.1% earn more than N50,000 monthly. An estimated number of 0.2% children mortality rate could be recorded monthly in the three camps and 1.4% nutritional oedema was reported on the children in the camps.

Table 2: Socio-Economic Characteristics of the Children's Caregivers in the Three IDP Camps

Variable	Category	Frequency	%
Educational Background	Are you literate/educated	877	61.0
Household Head	Father	709	49.9
	Mother	422	30.0
	Relations	225	15.7
	Senior siblings	40	2.8
	Grandparents	24	1.6
	Total	**1,420**	**100**
Duration in the Camp	< 6 months	4	0.28
	6 months – 1 year	15	1.0
	> 2 years	1,401	98.72
	Total	**1,420**	**100**
Monthly Income Earning	< 10,000	5	0.4
	20,000 – 50,000	590	41.5
	> 50,000	825	58.1
	Total	**1,420**	**100**
Crude Mortality Rate of Children	Number of deaths per 1,000 per month	3	0.2
	Number of deaths per 10,000 per day	0	0
Health Condition	Presence of nutritional edema	20	1.4

Table 3 shows the Mid Upper Arm Circumference (MUAC) reading of less than 11.5cm (showing Red) were considered as Severely Malnourished (SAM), those with MUAC measurements between 11.5cm and 12.5cm (showing yellow) were considered Moderately Malnourished (MAM), while those with MUAC measurements from 12.6cm and above (showing green) were considered Normal.

The percentages of normal children for weight for age were 5.3% underweight for male, while 4.4% were underweight for female, 2.1% were severely underweight for males and 2.0% were severely underweight for female. For Height for Age index a total of 5.6% were stunted for male and 5.3% stunted for females, about 2.3% were severely stunted for male and 2.1% were severely stunted for female. For Weight for Height index 4.7% were wasted for male and 4.5% were wasted for females, 2.9% were severely wasted for male, and 2.8% also severely wasted for female. The result shows a negative z-score for all the variables under consideration which is an indication that the observations are below the mean for sample. Also, the standard deviation values for all the variables are less than their mean z-score which indicates that the observations are not widely dispersed.

Table 3: Prevalence of Malnutrition among the Children Before Nutrition Education (N = 1420)

Variables	Male n (%)	Female n (%)	Total n (%)	SD
WAZ (Underweight)	813 (57.2)	607 (42.7)	1420 (100)	0.49488
Normal (> -2.0 SD)	401 (28.2)	385 (27.1)	786 (55.3)	0.50021
Undernutrition (-2.0 to -3.0 SD)	76 (5.3)	63 (4.4)	139 (9.8)	0.49961
Severe Undernutrition (< -3.0 SD)	31 (2.1)	30 (2.0)	61 (4.1)	0.50408
HAZ (Stunting)	813 (57.2)	607 (42.7)	1420 (100)	0.49488
Normal (> -2.0 SD)	401 (28.2)	385 (27.1)	786 (55.3)	0.50021
Stunting (-2.0 to -3.0 SD)	80 (5.6)	76 (5.3)	156 (10.9)	0.50145
Severe Stunting (< -3.0 SD)	33 (2.3)	31 (2.1)	64 (4.5)	0.50371
WHZ (Wasting)	813 (57.2)	607 (42.7)	1420 (100)	0.49488
Normal (> -2.0 SD)	401 (28.2)	385 (27.1)	786 (55.3)	0.50021
Wasting (-2.0 to -3.0 SD)	68 (4.7)	65 (4.5)	133 (10.3)	0.50176
Severe Wasting (< -3.0 SD)	41 (2.9)	40 (2.8)	81 (5.7)	0.50308

Table 4 shows the percentages of children after 8weeks of the nutrition education were 56.5% males and 43.4% for females. The Weight for Age index showed that 2.1% were under nourished for male, while 1.5% under nourished for female, 1.4% were severely under nourished for males and 1.1% severely under nourished for female. After the 8 weeks of nutrition education the %age of severely underweight children dropped from 4.1% to 2.5% with the probability value of 0.05. For Height for Age index a total of 5.4% were stunted for male and 5.1% stunted for females, about 2.3% were severely stunted for male and 1.9% were severely stunted for female. After the 8 weeks of nutrition education the %age of severely stunted children remained the same with the probability value of 0.05. For Weight for Height index 1.7% were wasted for male and 1.5% were wasted for females, 1.5% were severely wasted for male, and 1.3% also severely wasted for female. After the 8 weeks of nutrition education the %age of severely wasted children dropped from 5.7% to 2.8%.

Table 4: Malnutrition Prevalence by Anthropometric indices of the Children (endline)

After the nutrition education (8wks after)				
Population Size (N=1380)	**Sex**		**Total**	**p-value**
Variables	**Male n (%)**	**Female n (%)**		
Weight for age	**710(51.4)**	**670(48.5)**	**1380(100%)**	
Normal (> -2.0 SD)	571(41.4)	430(31.1)	1001(72.5)	
Undernutrition (-2.0 to -3.0 SD)	28(2.0)	22(1.5)	50(3.6)	
Severe undernutrition (< -3.0 SD)	20(1.4)	15(1.1)	35(2.5)	0.05
Height for age	**710(56.5)**	**670(48.5)**	**1380(100)**	
Normal (> -2.0 SD)	571(41.4)	430(31.1)	1001(72.5)	
Stunting (-2.0 to -3.0 SD)	75(5.4)	70(5.1)	145(10.5)	
Severe stunting (< -3.0 SD)	33(2.3)	27(1.9)	60(4.3)	0.05
Weight for height	**710(56.5)**	**670(48.5)**	**1380(100)**	
Normal (> -2.0 SD)	571(41.4)	430(31.1)	1001(72.5)	
Wasting (-2.0 to -3.0 SD)	24(1.7)	21(1.5)	45(3.2)	
Severe wasting (< -3.0 SD)	21(1.5)	19(1.3)	40(2.8)	0.05

Table 5 shows that 1,420 children were assessed during the first assessment, about 55.3% children were normal, 9.8% undernourished and 4.1% severely undernourished. About 10.9% were stunted and 4.5% severely stunted. An estimated number of 7.3% were wasted and 5.7% severely wasted.

After the nutrition education (8wks): A total of 1,380 children were assessed due to non-availability of the children in the camps and death cases reported among the children, about 72.5%

children were normal, 3.6% undernourished and 2.5% severely undernourished. About 10.5% were stunted and 4.3% severely stunted (some of the stunted children were not seen at the time of revisit). An estimated number of 3.2% were wasted and 2.8% severely wasted. The chi-square analysis showed that the association between the anthropometric indices and nutrition education were significant (P-value do not show that they are underweight and severely undernourished).

Table 5: Chi-square analysis between the Anthropometric indices of the Children and nutrition education

Variables	Before nutrition education %	After nutrition education (8wks) %	Mean Z-Score	P-value	X2
Weight for age	**100**	**100**	-1.17197	0.450	
Normal (> -2.0 SD)	55.3	72.5	-0.59817		
Undernutrition (-2.0 to -3.0 SD)	9.8	3.6			
Severe undernutrition (< -3.0 SD)	4.1	2.5			7.042[c]
Height for age	**100**	**100**	-0.6167	0.450	
Normal (> -2.0 SD)	55.3	72.5			
Stunting (-2.0 to -3.0 SD)	10.9	10.5			
Severe stunting (< -3.0 SD)	4.5	4.3		0.010	6.627[e]
Weight for height	**100**	**100**	-0.75249		
Normal (> -2.0 SD)	55.3	72.5			
Wasting (-2.0 to -3.0 SD)	7.3	3.2			
Severe wasting (< -3.0 SD)	5.7	2.8		0.004	8.182[g]

Table 6 shows the mean Z-Score anthropometric indices of the children according to their sex. It also shows the mean anthropometric z-scores indices of the children were -1.553 for male and -1.198 for female weight for age index, -1.781 for height for age index for the males and -1.372 for weight index for the females. There was no significance difference between the male and female children in all the anthropometric Z-Score indices p- 0.05.

Table 6: Mean Z-Score Anthropometric Characteristics of the children

Variables	Mean (SD) Male	Mean (SD Female		P-value	
Weight for age	813	401			
	-1.553±1.01	-1.198±1.23		0.05	
Height for age	813	401			
	-1.781±2.10	-1.372±1.94		0.05	
Weight for height	813	401			
	1.113±2.41	1.010±2.20		0.05	

Before nutrition education: Table 7 shows the Comparison between the WHO/FAO daily nutrient requirement and the quantity consumed by the children per 100gm of food, the table shows that 228.4g of carbohydrate is the daily requirement for the respondent, while 114g was consumed, 67.5g of protein is required while 56gm was consumed, 34.5g of fat/oil is required, while 28g was consumed, 350kj of energy required while 280kj was consumed and 5.0mg of zinc is required, while 3.7mg consumed.

nutrition education (8wks): Table 4.4 also shows the Comparison between the initial daily nutrient consumption and the resent daily consumption and it was noted that there was an improvement in their daily nutrient consumption. The table shows that 124g of carbohydrate was consumed, 66g of protein was consumed, while 34g of fat/oil was consumed, 420mg of calcium was consumed and 8.0mg of iron. A total of 300kj of energy and 148µg of Vitamin A consumed, and 3.8mg of zinc while 15.2gm of dietary fiber was consumed.

The table also displays the standard deviation and the p-values of the daily nutrient requirements and the quantity consumed by the children's per 100gm of food. The result shows high values for all the variables which indicate high deviation from the mean of the sample except iron that shows zero dispersion. Also, for all the variables, the p-values are greater than 0.05 and indicates that the variables are insignificantly related in the before and after the nutrition education except calcium that is significantly related with p-value less than 0.05.

Furthermore, the table displays the p-values and t-test values of daily nutrient requirement and the quantity consumed by the respondents in 24 hours dietary. The result shows that for majority of the nutrients the p-values are greater than 0.05 which indicates that the nutrients are insignificantly related in the before and after nutrition education except Calcium (mg) which has lower p-values indicating a significantly relationship between before and after nutrition education. Also, the statistics validates the above finding as the calculated t-test values for Carbohydrate (g), Energy (kj), Protein (g), Zinc (mg), Iron (mg), Vitamin A (µg), and Dietary Fiber (gm) are greater than the tabulated t-test value of 12.71 at level of significance 0.05 with 1 as the degree of freedom (df), and this indicates an insignificant relationship between the before and after nutrition education. However, Fat/oil (g) and Calcium (mg) exhibit a significant relationship between the before and after nutrition education as their calculated t-test values are lower than the tabulated t-test value of 12.71 at 0.05 level of significance and degree of freedom (df) of 1.

Table 7: Mean Nutrient Daily Intake of the children expressed % met of WHO/FAO standard

	Before nutrition education		**After nutrition education**	**P-Value**	**t-test**
Nutrient	**Amount consumed in 24hr dietary recall**	**WHO/FAO daily Standard per 100gm**	**Amount consumed in 24hr dietary recall**	**0.05**	
Carbohydrate (g)	114 ± 0.501(49.9%)	228.4 g	124 ± 0.501 (54.2%)	0.517	23.800
Protein (g)	56 ± 0.500 (83.0%)	67.5 g	66 ± 0.500 (97.7%)	0.365	12.200
Fat/oil (g)	28 ± 0.502 (81.1%)	34.5 g	34 ± 0.502 (98.5%)	0.446	10.333
Calcium(mg)	350 ± 0.000 (60.0%)	583 mg	420 ± 0.000 (72.0%)	0.012	11.000
Iron (mg)	7.0 ± 0.516 (72.9%)	9.6 mg	8.0 ± 0.516 (83.3%)	0.796	15.000
Energy(kj)	280 ± 0.000 (80%)	350 kj	300 ± 0.000 (85.7%)	0.406	29.000
Vitamin A (µg)	142 ± 0.492 (85.5%)	166 µg	148 ± 0.492 (89.1%)	0.725	48.333
Zinc (mg)	3.7 ± 0.535 (74%)	5.0 mg	3.8 ± 0.535 (76.0%)	1.000	75.000
Dietary Fiber (gm)	14.2 ± 0.509 (81.6%)	17.4 gm	15.2 ± 0.509 (87.3%)	0.853	29.400

Table 8 shows the food consumption pattern of the children, 25.8% ate once daily. About 15.0% ate twice daily, while 7.6% do not, 29.2% ate three times daily, while 8.5% gave other foods like snacks during the day. About 6.0% did exclusive breastfeeding while 10.7% did not do exclusive breastfeeding, 11.8% gave breast milk on demand by the children. A total of 7.6% breastfed their babies up till 24 months of age. An estimated number of 10.6% gave drinking water at least 4 times daily. About 38.2% regularly skipped meals, 38.2% were restricted from eating some meals. Caregivers of 3.1% of the children refused eating certain food while 0.4% vomited most of the time.

Table 8: The feeding practices of the children

	Feeding Practices	**Yes**	**%**	**No**	**%**	**Total**	**%**
A	**Household meal frequency Number of meals eaten per day**						
	Once	82	5.8	138	9.7	220	15.5
	Twice	212	15.0	108	7.6	320	22.5
	Thrice	416	29.2	135	9.5	551	38.8
	Others (Snacks)	120	8.5	209	14.7	329	23.2
B	**Breastfeeding**						
	Exclusive breastfeeding	86	6.0	104	7.3	190	13.4
	No exclusive breastfeeding	152	10.7	146	10.3	298	21.0
	Breast milk given on demand	168	11.8	192	13.5	360	25.4
	Breast milk continued till 24 months	108	7.6	110	7.7	218	15.4
	Drinking of water at least 4 times daily	150	10.6	204	14.4	354	25.0
C	**Adequacy of seasonal foods**						
	During rainy season	418	29.4	312	22.0	730	51.4
	During dry season	402	28.3	288	20.3	690	48.6
D	**Eating Behavior**						
	Regular skipping of meal	542	38.2	88	6.2	630	44.4
	Restricting/restraining eating	432	30.4	112	7.9	544	38.3
	Refusing to eat certain type of food	140	9.9	50	3.5	190	13.4
	Refusing to eat or swallow any food	44	3.1	4	0.2	48	3.4
	Vomiting when eating	6	0.4	2	0.1	8	0.5

Table 9 presents the feeding practices of the under 5 children before the nutrition education. Analysis of the weekly consumption dietary recall shows that 58.8% of the children consumed cereals, 35.1% consumed roots and tubers, 48.1% consumed fruits and vegetables, 10.5% ate meat and poultry, 3.8% ate eggs, while 10.4% ate fish and sea foods, 12.0% ate pulses/legumes/nuts, while 3.2% ate milk and milk products, 6.0% consumed oils/fats while 16.5% consumed sugar.

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Table 9: Food Group consumption pattern of the children before Nutrition Education (n=1420)

Food groups	Male (freq %)	Female (freq %)	Total (%)
Cereals			
3-5 times	11(0.7)	9(0.6)	20(1.4)
1-2 times	390(27.4)	425(29.9)	815(57.3)
Total	**401(28.2%)**	**434(30.5)**	**835(58.8)**
Roots and tubers			
3-5 times	24(1.6)	20(1.4)	44(3.0)
1-2 times	230(16.0)	226(15.9)	456(32.1)
Total	**254(17.8)**	**246(17.3)**	**500(35.1)**
Vegetables/fruits			
3-5 times	33(2.3)	31(2.1)	64(4.5)
1-2 times	312(21.9)	309(21.7)	621(43.7)
Total	**345(24.2)**	**340(23.9%)**	**685(48.1)**
Meat/Poultry			
3-5 times	7(0.4)	8(0.5)	15(1.0)
1-2 times	69(4.8)	70(4.9)	139(9.7)
Total	**73(5.1)**	**78(5.4)**	**154(10.5)**
Eggs			
3-5 times	2(0.1)	5(0.3)	7(0.4)
1-2 times	18(1.2)	29(2.0)	47(3.3)
Total	**20(1.4)**	**34(2.3)**	**54(3.7)**
Fish and Sea foods			
3-5 times	30(2.1)	29(2.0)	59(4.1)
1-2 times	48(3.3)	51(3.5)	99(6.9)
Total	**78(5.4)**	**80(5.0)**	**158(10.4)**
Pulses/Legumes/Nuts			
3-5 times	6(0.4)	5(0.3)	11(0.8)
1-2 times	28(1.9)	32(2.2)	60(4.2)
Total	**34(9.4)**	**37(2.6)**	**71(12.0)**
Milk and Milk Products			
3-5 times	4(0.2)	6(0.4)	10(0.7)
1-2 times	31(2.1)	34(9.4)	65(4.5)
Total	**35(2.4)**	**40(2.8)**	**75(5.2)**
Oils/Fats			
3-5 times	7(0.4)	7(0.4)	14(0.9)
1-2 times	36(2.5)	37(2.6)	73(5.1)
Total	**43(3.0)**	**44(3.0)**	**87(6.0)**
Sugar			
3-5 times	22(1.5)	30(2.1)	52(3.6)
1-2 times	79(5.5)	104(7.3)	183(12.8)
Total	**101(7.1)**	**134(9.4)**	**235(16.5)**

Table 10 shows the food group consumption of the children after the nutrition education indicates that 68.6% of the children ate cereals, within the specified 24hrs, 41.0% consumed roots and tubers,

56.3% consumed fruits and vegetables. A total of 13.9% consumed meat and poultry, 6.9% consumed eggs, while 16.5% consumed fish and sea foods, 12.0% ate pulses/legumes/nuts, while 10.5% ate milk and milk products, and 11.7% consumed oils/fats while 27.9% consumed sugar.

Table 10: Food Group consumption pattern of the children after Nutrition Education (n=1380)

Food groups	Male (freq (%)	Female (freq %)	Total (%)
Cereals			
3-5 times	41(2.9)	40(2.8)	81(5.8)
1-2 times	440(31.8)	426(30.8)	866(62.7)
Total	**481(34.8)**	**466(33.7)**	**947(68.6)**
Roots and Tubers			
3-5 times	42(3.0)	37(2.6)	79(5.7)
1-2 times	252(18.2)	235(17.0)	487(35.2)
Total	**294(21.3)**	**272(19.7)**	**566(41.0)**
Vegetables/Fruits			
3-5 times	33(2.3)	31(2.2)	64(4.6)
1-2 times	366(26.5)	347(25.1)	713(51.6)
Total	**399(28.9)**	**378(27.3)**	**777(56.3)**
Meat/Poultry			
3-5 times	21(1.5)	23(1.6)	44(3.1)
1-2 times	80(5.7)	69(5.0)	149(10.7)
Total	**101(7.3)**	**92(6.6)**	**193(13.9)**
Eggs			
3-5 times	5(0.3)	9(0.6)	14(1.0)
1-2 times	36(2.6)	45(3.2)	81(5.8)
Total	**41(2.9)**	**54(3.9)**	**95(6.8)**
Fish and sea foods			
3-5 times	34(2.4)	25(1.8)	59(4.2)
1-2 times	94(6.8)	75(5.5)	169(12.2)
Total	**128(9.2)**	**100(7.2)**	**228(20.8)**
Pulse/Legumes/Nuts			
3-5 times	32(2.3)	27(1.9)	59(4.2)
1-2 times	56(4.1)	51(3.6)	107(7.7)
Total	**88(6.3)**	**78(5.6)**	**166(12.0)**
Milk and Milk Products			
3-5 times	24(1.7)	22(1.6)	46(3.3)
1-2 times	51(3.6)	48(3.4)	99(7.1)
Total	**75(5.5)**	**70(5.0)**	**145(10.5)**
Oils/Fats			
3-5 times	32(2.3)	24(1.7)	56(4.1)
1-2 times	56(4.1)	50(3.5)	106(7.6)
Total	**88(6.3)**	**74(5.4)**	**162(11.7)**
Sugar			
3-5 times	57(4.2)	44(3.1)	101(7.3)
1-2 times	144(10.4)	140(10.1	284(20.5)
Total	**201(14.5**	**184(13.3)**	**385(27.8)**

Table 11 shows the dietary diversity was analyzed from the 24hour dietary recall, this was done by summing up the number of the food groups consumed during the past 24 hours. The food groups were

considered were at a minimum of four food groups and a point was recorded to each food group that was consumed over the reference period and the sum of all the groups were summed up for the diversity of the children diet. The diversities were classified into low, medium and high respectively as shown below.

Table 11 also shows that 28.3% of the children consumed minimum of 4 food groups in the last 24 hours, 5.9% consumed about 4 - 5 food groups, while 35.8% consumed more than 5 food groups in the last 24hours.

Table 11: Diversity of the Children's Diet Before Nutrition Education

Dietary Diversity	Male (Freq)	Male (%)	Female (Freq)	Female (%)	Total (Freq)	Total (%)
< 4 (Low)	200	14.1%	203	14.2%	403	28.3%
4 – 5 (Medium)	252	17.7%	257	18.1%	509	35.9%
> 5 (High)	238	16.8%	270	19.1%	508	35.8%

Table 12 shows the dietary diversity of < 4 (Low) was insignificant (p-value = 1 > 0.05; $X^2 = 0.000$) which shows that the children's diet before and after the nutrition education was insignificantly related. Also, the dietary diversity of 4-5 (medium) was insignificant (p-value = 1 > 0.05; $X^2 = 4.086$) which shows that the children's diet before and after the nutrition education was insignificantly related and the diversity of >5 (High) was insignificant (p-value = 1 > 0.05; $X^2 = 4.086$) which shows that children's diet before and after the nutrition education was also insignificantly related.

Table 12: Comparison of the Dietary Diversity of Children's Diet Before and After Nutrition Education

Dietary Diversity	Before (Freq)	Before (%)	After (Freq)	After (%)	P-value	X^2
< 4 (Low)	403	28.3%	261	18.9%	0.05	0.000^{ac}
4–5 (Medium)	509	35.9%	547	39.7%	0.05	4.086^{r}
> 5 (High)	508	35.8%	572	41.5%	0.05	4.086^{r}

Table 13 shows that the poor sanitation and hygiene situation of the camp was high, about 88.4% of the respondents had while 11.6% did not have poor sanitation and hygiene situation. About 15.6% used tap water, there was no stream water in the three IDP Camps visited and about 22.4% used water from the well while 89.6% used water from the borehole. Most of the respondents 94.0% were affected by poor diet both in quantity and quality, while 6.0% were not affected. Most, 92.8% have low monthly cash income, and this affect their purchase of food and food items, 35.5% had poor medical accessibility which affects their health outcome.

Table 13 Causal factors of malnutrition and other risk factors

		Yes	%	No	%
a	**Direct Factors**				
	Environmental quality				
	Poor sanitation and hygiene	1255	88.4	165	11.6
	Sources of water supply				
	Tap	222	15.6	1198	84.4
	Borehole	1272	89.6	148	10.4
	Stream	0	0	1420	100.0
	Well	318	22.4	1102	77.6
b	**Food quality, quantity and variety are adequate**				
	Poor diet intake (Quality and quantity)	1335	94.0	85	6.0

	Lack of variety of food (scarcity of food)	1335	94.0	85	6.0
	Lack of appetite	61	4.3	1359	95.7
	Disrupted digestion	0	0	1420	100.0
c	**Economic/financial capability**				
	Maternal factor illiteracy	263	18.5	1157	81.5
	Low monthly cash income	1318	92.8	102	7.2
	Social inequality	209	14.7	1211	85.3
d	**Quality Health and medical**				
	Poor medical Accessibility	504	35.5	916	64.5
	Episodes of diarrhoea	124	8.7	1296	91.3
e	**Adequacy of infrastructure in IDP camps**				
	Clinic	1246	87.7	174	12.3
	School	546	38.5	871	61.3
	Toilets	1211	85.3	209	14.7
	Water				
	Presence of water	996	70.1	424	29.9
	Absence of water	424	29.9	996	70.1
	Electricity				
	Presence of electricity	664	46.8	756	53.2
	Absence of electricity	756	53.2	664	46.8

Table 14 shows that the nutritional interventions received at the camps, just satisfied the nutritional needs of 5.8%, while 94.2% are not satisfied, the feeding group most affected with the inadequate food are 93.2% children. The food availability in the camp is effective for 4.0% of the children, the assistance provided for the caregivers are totally free for them. There are teaching of skills for 37.5% of the caregivers while 62.7% do not have teaching skills, none of the respondents are marginalized.

Table 14: Adequacy of intervention Strategy

	Adequacy of intervention strategy	**Yes**	**%**	**No**	**%**
1	**Relevance**				
	Satisfies nutritional need	83	5.8	1337	94.2
	Feeding group most affected (children)	1324	93.2	96	6.8
	Addresses cause of malnutrition	57	4.0	1363	96.0
2	**Effectiveness of intervention strategy**				
	Provides food availability in the camp	57	4.0	1363	96.0
	Food provided is highly utilized	1335	94.0	85	6.0
3	**Sustainability:**				
	Brings diversification of sources of food and income	907	63.9	513	36.1
	Trains in skill acquisition	816	57.5	604	42.5
	Food security	0	0	1420	100.0
4	**Cost recovery**				
	Assistance totally free	1420	100.0	0	0
	Is there any payback recovery	0	0	1420	100.0
5	**Beneficial to host community**				

	Any teaching of skills to host community	532	37.5	890	62.7
	Any building of infrastructures	777	54.7	643	45.3
	Any empowerment/jobs given to host community	0	0	1420	100
6	**Gender issue/demography**				
	Marginalization of some groups	232	16.3	1188	87.7
	No marginalization	1188	83.7	232	16.3

Interventions Received at the Camps

The Government and several Non-Governmental Organizations (NGOs) have provided different forms of support to Internally Displaced Persons (IDPs) in the camps. However, respondents indicated that the nutritional support provided is still insufficient to meet the needs of the displaced populations. Below is a summary of some of the interventions received in the camps.

I. Federal Government Interventions

The Acting Director of the Humanitarian Affairs Department of the Ministry, Dr. Abubakar Suleiman, delivered relief materials to the Abuja IDP camps. These included both nutritional and non-nutritional items such as:

1. 50 bales of clothes
2. 20 cartons of body cream
3. 200 kegs of palm oil
4. 600 bags of rice (25 kg each)
5. 10 sacks of rubber slippers

During an assessment visit to the camp, the Minister called on well-meaning Nigerians to support the efforts of the Federal and State Governments in providing relief materials to displaced communities in the society (Federal Ministry of Culture and Information, 2021).

II. Nigerian Content Development and Monitoring Board (NCDMB)

The Nigerian Content Development and Monitoring Board donated relief materials to internally displaced persons in Bayelsa State in order to reduce the suffering of affected populations.

Items delivered to the IDP camps in Bakassi, Igbogene, and Oxbow Lake camps in Yenagoa and its surrounding areas included:

1. Bags of rice
2. Bags of garri
3. Cartons of spaghetti
4. Sugar
5. Salt
6. Palm oil
7. Groundnut oil
8. Mosquito nets
9. Mattresses
10. Other relief materials

The distribution of these materials formed part of the visit by the Minister of State for Petroleum Resources in 2017.

III. Food and Humanitarian Assistance

According to Save the Children (2017), the World Food Programme (WFP), and other humanitarian organizations, food commodities were identified as the most urgent needs of IDPs across the three Local Government Areas in Borno State. This was followed by health supplies, shelter, and potable water.

However, due to extreme hardship, some IDPs in Borno State, Northeast Nigeria, reportedly sell part of the food and non-food items donated to them in order to purchase other essential items. Information gathered from focus group discussions revealed that this situation is largely due to institutional challenges within humanitarian programmes, including misplacement of priorities and irregularities in the distribution of relief materials.

IV. Monthly Feeding Allowance

A monthly feeding allowance is provided for approximately 200 IDPs in camps and host communities across Borno and Adamawa States.

Non-Governmental Nutritional Interventions at the Camps

Several Non-Governmental Organizations have also provided support to improve food security and living conditions in the camps.

1. World Food Programme (WFP)

The World Food Programme provides support aimed at improving food security among IDPs in Northeast Nigeria. This includes the

distribution of fertilizers and seedlings to encourage agricultural production and self-sufficiency.

2. Cash-Based Transfers (CBTs)

United Nations agencies have gradually shifted from direct food donations to cash-based transfers. Beneficiaries are provided with cash or vouchers, typically about ₦17,000 per month per person, to enable them to purchase essential food and household items.

3. National Emergency Management Agency (NEMA) and National Commission for Refugees, Migrants and Internally Displaced Persons

These agencies provide various relief materials to IDP camps in Abuja and Borno State, including:

- Food items
- Detergents
- Clothes
- Wrappers
- Mattresses
- Other essential materials

Discussion

The age of the respondents for this study was children between the ages of 6months to 5years which was fitting for the purpose of this study which aims at evaluating the nutritional status of the displaced children at the three IDP camps studied. There were more male children (57%) than female (47%) who were within the age bracket used for this study. Most of the children in this study were still breastfeeding and some were already eating solid foods, hence their food samples were collected for food analysis. The order of their births and the intervals of the birth of the children had significant effect on the attention given to children, and this had an adverse effect on the child care practices and nutritional status.

In this study, about 62% of the children were between 2nd and 4th in birth order (that is 2nd, 3rd or 4th children of their parents). A recent study carried out by Mertens, Benjamin-Chung, Colford, et, al., (2020) reported that sex (gender), environment, number of births and birth orders affects the care practices of children and this adversely affects their nutritional status.

About 50% of the families in the three IDP camps had more than one child with over 23% of them having at least 5 children as most of these children were automatically inherited due to loss of their parents. This may therefore impart severely on the ability to provide the basic nutrition for the children, especially for those with low socioeconomic status, and unless the nutritional support at the camps are improved through interventions and healthier dieting, the children would likely suffer worse health conditions arising from malnutrition. All of these factors can increase risk of under-nutrition and malnutrition and this can contribute to the development of chronic diseases such as high blood pressure, cardiovascular diseases, diabetes and high cholesterol later in life. Birth interval is the length of time between the birth of two children, the previous and the subsequent birth. Birth intervals is important for the child's health and nutrition outcome. The longer the birth interval the better for the whole family because it is good for mother, children health, and nutritional outcomes. Short birth intervals can affect the child's health and put it at risk, and nutritional outcomes such as low birth weight, short birth intervals depletes mother's nutrient reserves, which leads to the increased risk of poor nutritional status and adversely affecting the children's nutrient stores at birth, **(IsratRayhan and Khan, 2006)**. Short birth intervals affects the mother's care for a new child, reducing the amount of time the mother devotes to care for the older children. The subsequent pregnancy may interfere with the care of the current child **(IsratRayhan and Khan, 2006)**.

The place of birth of infants affects their nutritional status due to poor knowledge, attitudes and practices of the mothers, mothers who delivers at home may not have been attending the antenatal clinics to listen to nutrition and health messages and would develop negative influence on the mother, infant and the young children nutrition outcomes as well as children health, **(Ngure, Reid, Humphrey, et. al., 2014)**. Lack of adequate infant and young child feeding (IYCF) knowledge and care practices directly affect the nutritional status of children and this affects child survival. Improving on feeding knowledge and care of children is therefore an important action towards improving child nutrition. In this study 65% were delivered at home. Child deliveries at

the health facility help to improve the health and nutrition care practice will ensure that the children's health and nutrition care is attended to, this sets the stage for children to thrive and develop well, in this study, and about 35% were delivered at the health facilities.

Good nutrition knowledge can also be determined by the level of education, personality and the amount of money as income in the family has direct impact on the nutrition of the family. According to **Ernst, Schlattmann, Waldfahrer and Westhofen, (2021)**, the measure of the level of individual and family's economic and social status most of the time is based on the occupation, education and the income of the family, these are strong factors of how healthy the individual and family can be. The study by **Arthur, Nyide, Soura, Kahn, et, al., (2015)** revealed that the level of education of occupation the caregivers is considered as a major reason for the poor food consumption of the children, thereby, exposing them to the risk of malnutrition. Most of the caregivers in this study are illiterate 61% which is capable of bringing negative effects on the feeding of the children. The High education level is always associated with better economic outcomes, as well as a better welfare of the family, **(Ernst, et,al, 2021)**. Income can be measured with the family source of livelihood, being able to withstand economic pressure and poverty thresholds, lack of income is always related to poor health and nutrition outcome, **(Mazzonna, 2014)**.

High income levels have been associated with provision of adequate health and nutrition for the family, **(Mazzonna, 2014)**; similarly, low levels of income bring about hardship, poor health and poor nutrition in the family. Individuals and families with high levels of education would most of the time have a good paying jobs, and good financial resources to improve the likelihood of adequate nutrition for the home and also enable the family access better health care, **(Mazzonna, 2014)**. In this study only 58.1% earn more than N50,000 monthly, which is very poor for the livelihood of the family.

Most belief system accepts that fatherhood is important, because a father's sensitivity early in a child's life can leads to fewer behavior issues of the children. **Boyce, Essex, Alkon, et,al., (2006)**, in a study on the Early father involvement moderates Biobehavioral susceptibility to Mental Health problems in Children, states that children have fewer emotional, health and behavioral issues, if their fathers are present in the home, but due to the challenges faced in the IDP camps most families lost their fathers thereby having their mothers, grandparents, siblings and other relatives as household heads, a total of 30% of the respondents in this study do not have their fathers as their household heads, most were separated from their fathers and do not even know if their fathers are still alive which is a very pathetic situation. A father is an essential figure to homes, the importance of a father can be seen physically, emotionally, mentally and spiritually in the family to support in improved welfare and nutrition, **(Boyce, et.al.,2006)**. The work of making a happy home does not only rest upon the mother, fathers have an important part to play.

An estimated number of 99% of the members in the camps have lived there for more than two years due to the challenges they faced in their homes. A study in Jos, Nigeria by **(Glew, Bhanji and VanderJagt, 2003)** on the Effects of displacement from ethnic and religious conflict on the growth and body composition of the Fulani children in northern Nigeria, observed that malnutrition cannot be avoided in emergencies without an adequate intervention or support services in place, it would help to alleviate the sufferings faced by the people, but inadequate nutrition interventions in IDP camps can lead to sufferings, malnutrition and growth failure among children. Undernourished children manifest with chronic and acute malnutrition, which exposes them to serious danger to their overall health and well-being. This study reflects the result of high burden and severity of malnutrition among children in the IDP camps due to their prolonged living in the camps without having their freedom. This indeed is so dehumanizing and frustrating.

The weight for age anthropometric characteristics (underweight) of the children as presented in Table 4.3a indicated that a good number of the children were under weight based on their weight-for-age Z-score, 57.2% males and 42.7% females which were studied to arrive at this data. According to **Bilukha, Jayasekaran, Burton, et,al., (2014)**, on the study on Nutritional status of women and children refugees from Syria: the Morbidity and **Mortality Weekly Report (2014)**, reveals that the children in the Internally Displaced Person's Camps are at risk of malnutrition due to some limiting factors such as

close birth intervals between the children, poor infant and young child feeding support, poor infants and young child care practices and inadequate coordination of humanitarian assistance. During the study, it was established that the amount of foodstuff supplied to the IDP Camps were small and grossly inadequate and not regular, leading to the undernourishment of the children. In the **Global Nutrition Report, (2021)**, there are some achievements in the standard of living in IDP Camps in some countries although the improvement was slow, especially in sub-Saharan Africa, the study estimated about 150 million (21.9%) children were stunted, 49.5 million (7.3%) wasted. This situation is even worse in Africa, where the prevalence of stunting is approximately 29%, which is higher than the global average of 21%, **(Global Nutrition Report, 2021)**. In comparison, with the study **of Gayawan, Adebayo and Waldmann, (2019)** on modeling the spatial variability in the spread and correlation of children malnutrition in Nigeria, about 7% of under-five children were wasted due to poor dieting and in refugee camps. In this study children that were under weighed for male were 5.3%, while 4.4% were under-weighed for female and 2.1% were severely under-weighed for males while 2.0% were severely under-weighed for female.

The weight for height anthropometry inadequated weight gain or growth failure. The leading cause of wasting in the children in this study was due to the food insecurity leading to the high burden of malnutrition. Wasting characteristics which is wasting, is a reflection of acute malnutrition and it is suggestive of in this study was 2.9% severely wasted for male and 2.8% severely wasted for female. There was a report on the prevalence of 58% underweight and 34.7% wasting in Sri Lanka relief camp in the Somalian IDP camps study **by (Kinyoki, Moloney, Uthman, et,al., (2017)**. **Olack, Burke, Cosmas, et,al., (2011)** reported on 11.8% prevalence of wasting among the informal urban settlement of Kenya, the reports shows that malnutrition among children is very common in IDP Camps.

Other factors that contributed to the poor nutritional status among the children in this study included poor exclusive breastfeeding practices and short breastfeeding duration and this is in agreement with the earlier studies that documented poor Infant and Young Child Feeding (IYCF) practices in displaced households by **Zakanj, Armano, Grguric, et,al., (2000)**, on the study on 'Influence of 1991-1995 war on breast-feeding in Croatia'. Poor IYCF practices can impair the child's body immunity and increase susceptibility to infections and illnesses. Clinical signs of malnutrition were noticed in this study population in the form of fluffy hair, oedema and discoloration of the hair which are suggestive of malnutrition, according to **Goldberg and Lenzy, (2010)**. The variation in the reports of malnutrition in the different studies reviewed could be due poor and inadequate feeding of the children. And the level of humanitarian aids received from the government, agencies and organizations are not adequate, due to their prolonged stay in the camps other morbidity and mortality conditions persisted in the camps.

Height for age (stunting) in this study was 2.3% severely stunted for male and 1.9% severely stunted for female, while the national average is 37% **(NPC, 2019)** and that which was reported in Afghanistan due to war was 39.9%, there were more males than females stunted in this study. The stunting prevalence and the national percentage shows that the poor nutritional status of the children in this study was similar to the general nutrition situation in the under-five children in IDP Camps. Table 4.3a presents the standard deviation values for all the variables are less than their mean z-score which indicates that the observations are not widely dispersed.

The study showed the association between the anthropometric indices and the nutrition education, evidenced by the percentage occurrence before and after the nutrition education which showed 4.1%, 4.5% and 5.7% for severely underweight, stunting and wasting respectively before the nutrition education. About 2.5%, 4.3% and 2.8% for underweight, stunting and wasting respectively at 8 weeks after nutrition education, but the P-value do not show that they are underweight and severely undernourished.

Nutrition education provides the information on the nutritional value, quality of foods eaten and making the best food choices for adequate nutrition. It creates the awareness on nutrition problems and the willingness of the individual to make positive changes. In this study, before the nutrition education was given to the caregivers, a baseline initial anthropometric assessment was carried out which recorded 4.1%

for severely underweight, 4.5% for severely stunted and 5.7% for severely wasted children, these records were attributed to poor dietary intake and undernutrition which deprived the children of fundamental nutrients in their body and rendered them more susceptible to malnutrition problems and not being able to meet the recommended standard dietary requirements. According to **UNICEF, (2014)**, most malnourished children are due to lack of food and poor dietary practices. Nutrition education strategies was implored to include educational strategies on how to improve their nutrition outcome, environmental education on the access to health services, water, sanitation and hygiene practices (WASH), food and nutrition security and care, because, if these are not taken care of, can lead to the risk of malnutrition, and these strategies should be designed to facilitate the voluntary adoption of positive food choices, food and nutrition-related behaviors that can improve their care practices. A study by **Contento, (2008)** on "Nutrition education: Linking research, theory, and practice" states that Nutrition Education also include issues like food security, food literacy, and food sustainability. Food and nutrition interventions in the IDP camps should be aimed to improve the immediate food security and the nutritional problems of the people in the camps, by addressing the immediate and underlying causes of malnutrition.

After 8 weeks of the nutrition education, the children were visited for an anthropometric re-assessment and there was an improvement on their nutritional status with 2.5% severely underweight, 4.3% severely stunted (stunting cannot be corrected and some of the children were not see during the revisit) and 2.8% severely wasted, these are some of the benefits of good nutrition education, which is important to improve the quality of life. The Epidemiological studies shows that the changes in lifestyle, should be on improving the nutritional habits, diet, type of food eaten, the cooking time and cooking methods, to improve nutritional outcome, poor dietary intake patterns and under-nutrition to prevent the complications of malnutrition, **(Vardanjani, Reisi, Javadzade, et,al., 2015)**.

Suggestions were given to the caregivers during the nutrition education on the following:

a. To ensure that they improve on the care practices of the children in order to prevent Moderate Acute Malnutrition (MAM)
b. To receive an appropriate treatment to prevent severe acute malnutrition (SAM) at the health facilities.
c. Ensure proper breastfeeding of infants and young children and encourage exclusive breastfeeding practices for 6 months in the subsequent pregnancies
d. Improve on the complementary feeding of the infants as from 6months of age
e. How to identify, manage and refer malnourished children to the health facility
f. Monitoring the nutrition situation in the camp.
g. Ensuring that they monitor the access to food within and outside the camp

Good nutrition positions the children for a healthy and successful life by raising their chances of survival and promoting cognitive development.

The result shows high values for all the variables which indicate high deviation from the mean of the sample except calcium and energy that shows zero dispersion, the p-values are greater than 0.05 for all the variables which indicates that the variables are insignificantly related in the before and after the nutrition education except calcium and energy that are significantly related with p-value less than 0.05. The study revealed the comparism between the WHO/FAO daily nutrient requirement and the quantity consumed by the children per 100gm of food in the last 24hours, this shows that 228.4g of carbohydrate is the daily requirement for the respondent, while 114g was consumed, 67.5g of protein is required while 56gm was consumed, 34.5g of fat/oil is required, while 28g was consumed, 350kj of energy required while 280kj was consumed and 5.0mg of zinc is required, while 3.7mg consumed. The daily nutrient intake of the children in the three IDP Camps was not adequate according to the result. A study on the Nutrient intake among Children aged 3-5years in Mateka, Western Kenya, stated that for children to achieve an improved growth and development standard, their feeding should be rich in quality, quantity and the diet should meet most of their nutrient intake. Some of the nutritional requirements and benefits in the diet of the children include: Protein, Iron, Vitamin A and Zinc deficiencies are most prevalent, all these affects children globally and it is important to establish the intake of these

nutrients in the diet of children to avoid deficiencies, **(Baeke, et.al., 2010)**. Eating variety of food and in enough quantities daily, provide benefits to the nutritional status of children, **(Baeke, et.al., 2010)**. Minerals are needed in small quantities to help in the transportation of nutrients, they are components of growth hormone, helps in the strengthening of bones, and for the normal transport of Haemoglobin (Hb). Fibre help to stimulate peristalsis, attracts water, increase bulk in food and prevents constipation, also present in fruits and vegetables **(Sun, Schutz, Maffeis and Obes Rev, 2004)**.

Most of the caregivers in the Camps were very busy with their menial jobs outside the camp and are not steady to attend to the feeding of the children and this have a negative effect on the nutrient intake and nutritional status of the children. The nutrient intake of the children did not meet up with the WHO/FAO standard, hence, the presence of malnourished children in the camps. But the good news is the improvement in the nutrient intake in the children's diet after the nutrition education. A re-assessment of the nutrient intake of the children was done (8) weeks after the initial assessment and it revealed that there was an improvement in their daily nutrient consumption. The table shows that 114g/124g of carbohydrate was consumed, 66g/67.5g of protein was consumed, while 28g/34g of fat/oil was consumed, 280kg/300kj of energy was consumed, 3.7mg/3.8mg of zinc before and after the nutrition education respectively.

The feeding practices of the children is grossly inadequate, and the implication is the high malnutrition rate recorded in the three IDP Camps. The major cause of most illnesses among the under-five aged children still remains Malnutrition and sometimes leads to deaths amongst children in the IDP Camp settings. Adequate Nutrition at this stage of the children's life is crucial for their growth and development; therefore, it is necessary to provide all the required food the children need. Globally and naturally, it is important to start the feeding of children with initiation of breastfeeding within one hour of delivery, then exclusive breastfeeding for 6months and breastfeeding continued for 2years, while adequate, rich complementary feeding starts at 6months of age, and breastfeeding given to the children on his/her demand, **UNICEF, (2019)**. In this study, most of the mothers did not follow the above rules, which may be the reasons for the level of malnutrition amongst the children. According to a study by, **Black, Allen, Bhutta, et,al., (2008)** on Maternal and child under-nutrition, Global and Regional exposures and health consequences, it was observed that poor food consumption, accounts for over half of all children's deaths, affecting them directly or indirectly, causing about 300,000 deaths each year Globally. A total of 47 million under 5 year children were wasted, 14.3 million were seriously wasted and 144 million stunted, while 38.3 million were overweight or obese **(Unicef/WHO/The World Bank, 2020)**. According to **Chiabi, Lebela, Kobela, et,al., (2012)**, about 6 in every 100 Cameroonian children under five were malnourished in 2012.

Adequate food consumption in infancy and early childhood is required to ensure adequate growth, health, and development of children to attain their full potential, while poor nutrition increases their risk of illnesses, and this is responsible for one third of the estimated 9.5 million deaths which occurred in 2006 in children below 5 years of **age (World Health Organization, 2008)** and **(Black, Allen, Bhutta, et,al., 2008)**. In this study 5.2% of the children eat once daily while 15.0% eat twice daily, which is not adequate for the nutrient intake of the children. Poor food consumption for the children are always linked to long-term impairment in their health and growth. Poor food consumption in the first 2 years of life lead to stunting and stunted adults **(Martin, Gunnell and Davey, 2005)**. To improve food consumption of children in the IDP camps, food interventions should be addressed also focusing on female empowerment and nutrition education programs, **(Moursi, Arimond, Dewey, et,al., 2008)**. According to **Erinosho, Dixon, Young, et,al., (2011)** it is noted that healthy eating during early childhood is important for growth and development.

There are other factors that lead to the high burden of malnutrition in this study, these include the skipping of meals by the children, 38.2% regularly skip their meals due to the unavailability of food, 38.2% were restricted from eating some meals due to food shortage and ignorance by the caregivers, other are the poor dietary diversity, monotony of their diets and poor diet quality. The causal problems of malnutrition in the camps need to be addressed and good infrastructures should be put in place to help protect and promote an

optimal growth and development of all children in the IDP camps. Also, caregivers of 3.1% of the children refused giving the children some certain foods like meat, eggs and banana because they felt the children are not matured enough to eat those foods, while 0.4% vomited most of the time, during the nutrition education, such caregivers were advised to access the health facilities with their children for de-worming.

The assessment of the 24 hour dietary recall showed the number of food groups consumed by the children, it revealed that only 10.4% ate meat and poultry, 13.4% ate eggs, while 11.1% ate fish and sea foods, these are inadequate for the nutritional requirements of the children. When the caregivers were interviewed it was observed that some of the foods were readily available in the locality and were not well utilized due to ignorance, the nutrition education created awareness to make them understand that those foods are good sources of food nutrients that will help prevent malnutrition in children if given to them regularly, but most of them do not possess the fund to purchase them. The ("USDA MyPlate and Food Pyramid Resources, 2013), stated that about 2 to 3 servings of protein rich foods should be consumed daily, because proteins are essential for the repair of the body cells, and to provide energy in the absence of carbohydrates and is converted to fat when eaten in excess and this will improve the nutritional status of the children. Fish, Meat and poultry supply protein, iron and zinc to the body **Sun, Schutz, Maffeis and Obes, (2004)**, the same author also stated that protein is necessary for the growing child daily, because lack of protein in the diet of children slows their growth, lower their immunity and reduce muscle mass, and this can lead to retarded growth, poor wound healing and reduced energy, **(Sun, et.al., 2004)**. According to **Baeke, Takiishi, Korf, et,al., (2010)**, vegetable and fruit consumption is a good practice and should be encouraged, fruits and vegetables are vitamins and minerals rich foods necessary in the diet for good health, also essential to maintain healthy tissues, cell respiration, absorption of nutrients, promotion of growth and help boost immunity. It is suggested in food guide pyramid that 3 to 5 servings of vegetables be consumed each day and 2 to 4 servings of fruit taken daily, "**USDA MyPlate and Food Pyramid Resources, (2013)**. Milk, milk products and eggs are good sources of protein and they provide vitamins and minerals to the body; which also suggests 2 to 3 servings each day. Cereals are an good sources of energy, and is good for the children, cereals are found at the base of the food guide pyramid and it is suggested that about 6 to 11 servings be consumed daily, **(USDA MyPlate and Food Pyramid Resources, 2013)**. But in this study, the children in this study could not meet up with the recommended number of daily servings, and this really affected their nutritional status, and this evidenced by the level of stunting, underweight and wasting reported.

After the nutrition education their food group consumption was improved, it was observed that 10.4%/13.9% ate meat and poultry, 3.8%/6.9% ate eggs, and 11.1%/16.5% ate fish and sea foods, while 3.2%/10.5 ate milk and milk products respectively for before and after the nutrition education. These led to the decrease in the rate of malnutrition reported at the week's anthropometric re-assessment. The result reveals that the association between the food group consumption and the p-values for the variables under consideration and the nutrition education were significant.

The diet was not well diversified among the 1,420 children used in this study. Also to note that poor dietary diversity is a challenge in meals, especially among children. A recent case study by **Gregory, McCullough and Ramirez-Zea et,al., (2008)**, in an urban area in Mali, revealed that cereal was well consumed, it was 100% while the other food group consumption were low including the animal protein, which led to a high rate of malnourished children in that study, though the condition were due to high daily consumption of rice based diet with reduced intake of other food groups. Also, a dietary intake assessment by **(Neves and Madruga, 2019)** on Complementary foods, the consumption of industrialized foods and nutritional status of children aged 3 years and below in Pelotas, Rio Grande do Sul, Brazil stated that the diversity of foods involving few food groups is poor, which led to the high rate of children malnutrition. Eating foods from different food groups help to provide adequate nutrition and is necessary for proper growth and development of children, it is also vital in the effort to address malnutrition. When the children do not get the necessary nutrients for their growth and development, it deteriorates their health, **(Neves and Madruga, 2019)**.

According to **Global Nutrition Report, (*2020)***, poor child dietary practices are prevalent among children in Cameroon, only about 20% attained a minimum dietary diversity while only 43% attained the minimum meal frequency. The nutrition education improved the diversity of their diet; the following is the information on the dietary diversity score before and after nutrition education respectively. A percentage of 28.3%/18.9% children ate less than 4 food groups in the last 24hours, 35.9%/39.7% consumed between 4 to 5 food groups, while 35.8%/41.5% of the children consumed more than 5 food groups in the last 24hours.

The p-values and chi-square values of the food diversity of the children result reveals that the chi-square values and p-values for all the variables are less than 0.05 which indicates that the variables are significantly related in the period before and after the nutrition education. The study shows that the dietary diversity of <4 (Low) was insignificant (p-value = 1>0.05; X2 = 0.000), the dietary diversity of 4-5 (Medium) was insignificant (p-value = 1>0.05; X2 = 4.086) and the dietary diversity of 5< (High) was insignificant (p-value = 1>0.05; X2 = 4.086).

The care practices of the children were observed, before the initial assessment it was observed that most of the caregivers do not show much concern to the care of the children, the caregivers go out for their daily menial jobs outside the camps, thereby neglecting the children at home. In this study, a total of 8% were exclusively breastfed and 92% were not exclusively breastfed. This has led to inadequate care practices and malnutrition of the children. In a study on "Exclusive breastfeeding in the first six months of a child's life and its associated factors among children aged 6-24 months in Burao district, Somaliland" it is revealed that globally it is about 40% of infants are exclusively breastfed expecting that it rises to 50% by 2025, **(Cai, Wardlaw and Brown (2012)**. Although in the past two decades the rates of Exclusive Breastfeeding have been increasing, for 100% global target coverage to be achieved a lot need to be done in awareness creation as recommended by UNICEF, especially in the IDP Camps **(Mensah, Acheampong, Anokye, et,al., 2017)**. Despite the World Health Organization recommendations and benefits only 39% of newborns are being initiated to breastfeeding within one hour of delivery, worldwide, and 37% of infants exclusively breastfed, **Reddy and Abuka, (2014)**.

From 6 months of age, an infant needs more energy and nutrients, these are provided by the breast milk and complementary foods, it is advised that these foods for children should be adequate to meet those needs. This transition to complementary feeding is important in the life of children, there is poor timing in the complementary feeding practices thereby introducing it too early or too late (that is introducing it before 6mths or still continuing on exclusive breastfeeding after six months). Irregular feeding and poor feeding methods, poor hygiene practices, poor nutrient quality of the complementary foods given to the children, there is also too little dietary variety; inappropriate consistency, (that is, the food is too thin or too thick), all these can lead to children malnutrition, **(Ng, Dibley and Agho, 2012)**. Complementary feeding should start at 6 months and not before or after 6 months; it should be adequate in amounts, consistency and frequency and in the diversity of their feeding, prepared in a safe and hygienic manner **(Monte and Giugliani, (2004)**. In this study about 85% of the caregivers started giving the children complementary foods before the age of 6months and 15% started from 6months, which is not appropriate for the infant, during this period poor nutrition in children has immediate consequences of increased morbidity, mortality and there is delay in the development of the brain and the nervous systems **(Krebs, Hambidge, Mazariegos, et,al., 2011)**.

Most of the children were not de-wormed, only few of the children were de-wormed in the past 6 months (about 16%), while 84% children were not de-wormed, in the preceding 6months. The World Health Organization recommends de-worming interventions for children which is aimed at improving the health and nutritional status of children through the periodic (six monthly) administration of a tablet (200mg dose) of albendazole or mebendazole and complete course of immunization, **(WHO, 2006)**, these interventions are highly effective, inexpensive and easy to implement. However, many children in the IDP camps do not have easy access to these interventions, **(Victora, Christian, Vidaletti, et,al., 2021)**. About 40% did not complete their immunization schedule. But there was an improvement in the de-worming and

immunization records after the nutrition education.

After the nutrition education, the caregivers attitude towards exclusive breastfeeding improved from 8% to 15% on the subsequent births and children, 57% caregivers took their children to the health facilities for de-worming, 32% caregivers had taken their children for the complete course of immunization. The association between the nutrition education and responses in respect to whether children have ever been breastfed, and the age when water and complementary feeding were introduced and whether immunization card was seen, exhibit an insignificant relationship as their p-values were consistently above 0.05 while responses in respect to whether children were exclusively breastfed and if children were de-wormed in the past 6 months and immunization status was based on if the immunization card were sited associated significantly.

Causal and other risk factors to malnutrition in the IDP Camps included poor sanitation and hygiene, poor sources of drinking water which can lead to infections, attacks by mosquitoes which can lead to persistent episodes of malaria, worm infestations due to poor environmental conditions, injuries, diarrheal conditions, ill health affecting the immunity, open defecation attracting bad odour, flies and rodents to the environment causing ill health and poor nutritional status of the children and deaths, about 88.4% of the respondents had poor sanitation and hygiene situation, 22.4% used water from the well where every dirty containers are used to fetch water from and 89.6% use water from the borehole. A study by the Ethiopian Public Health Institute **(EPHI) and ICF, (2019)** on Children Malnutrition and the Association with Diarrhea, Water supply, Sanitation and Hygiene Practices in Kersa and Omo Nada Districts of Jimma Zone, Ethiopia, and the results from the Ethiopia mini District Health Survey (DHS) revealed that the prevalence of wasting, stunting, and underweight were 37%, 7%, and 21%, respectively and as a result of the above factors. There was poor sanitation, water supply, and hygiene (WASH) interventions in the camps and this can cause a good environment for the development of infectious diseases linked to malnutrition, **(UNICEF 2015)**. The poor environmental conditions can affect the children's nutritional status through diarrheal diseases, worm infestation, and other environmental infections, **(Ziegelbauer, Speich, Mäusezahl, et,al., 2012)**.

Access to healthcare requires patients gaining access into the health-care system and receiving the required healthcare services, and finding healthcare worker that can meet their health needs and whom they can trust **(AHRQ, 2010)**. In this study 35.5% had poor medical accessibility which affected their health outcome, while 12.3%, 61.3% and 14.7% had challenges with adequacy of clinic, school and toilet infrastructure in the IDP camps respectively. Limited or poor access to education, healthcare services, health infrastructures and poor hygienic environment adversely affects the nutritional status of children, **(Clark, Coll-Seck and Banerjee, 2020)**. The burden of malnutrition in this study is as a result of inadequate poor infrastructure, humanitarian assistance, or health interventions from the Local, State and Federal Government or International humanitarian agencies in the sampled IDP camps. Because of this, it is reported that NEMA has positioned emergency food and non-food items in their warehouses situated in Adamawa, Borno, Gombe and Yobe states for distribution to the IDP Camps and their host communities, **(Muhammad, 2016)**. The Federal Government of Nigeria has also put in place some measures for reducing the effects of the burden of the Internally Displaced Persons. These include the Safe School Initiatives (SSI), the Presidential Initiative for the North-East (PINE) and the Victim Support Fund (VSF) amongst others, **(Muhammad, 2016)**.

The adequacy of the nutrition intervention strategies in the IDP Camps should include nutrition intervention support from the government, agencies and organizations, availability of food in the camps, utilization of the interventions and other assistance received. In this study the nutrition interventions received by the caregivers are not adequate, 94.2% are not satisfied with the interventions received, and the group most affected with the inadequate availability of food are the children. Appropriate legal frameworks for the IDPs and a specific institutional agency should be put in place to attend to the IDP's welfare, the roles and responsibilities of the authorities concerned should be well spelt out, this gap restrict the humanitarian efforts in their management

approach, (Shedrack and Nuarrual, 2016). UNICEF, through its integrated management of acute malnutrition (IMAM) programs in 57 local government areas and 399 sites in Borno, Adamawa and Yobe states, reached and managed only a total of 153,936 children with severe acute malnutrition (ICiR, 2017). Also a total of 137,962 children aged 6 to 23 months were given life-saving micronutrient powder in the three states (ICiR, 2017).

In the UNHCR 2020 midyear report; a total of 5.4 million persons were in need of support, only 2.5 million were targeted for the response, and 31% have been reached so far in Borno, Adamawa and Yobe states, (UNHCR 2020). When the people in the IDP Camps were interviewed, about 76% of the Internally Displaced Persons cited food as their unmet need.

Needed interventions by the IDPs:

- Agricultural inputs such as fertilizers, chemicals and seeds etc. should also be distributed in order to improve agricultural activities around the camps.
- Provision of medical supplies should be considered in order to ensure the delivery of a robust and sound healthcare system. This will go a long way in averting disease outbreak and health emergencies at the IDP Camps.
- Efforts should be outlined and implemented toward rescuing the dwindling educational sector, thereby absorbing the school drop outs from the streets
- International donor agencies, including the International Red Cross Society (IRCS) and others should intervene in the awful situation of the IDPs, especially in providing them with adequate shelter so as to reduce the population in their overcrowded settlements.
- "There should be transparency and openness in the distribution of relief materials to the vulnerable persons in the affected communities."

Limitations experienced in the study

- Most of the caregivers cannot give the true age history of their children, their stage of entry into the camps and length of stay in the camp, this could affect the result.
- Most respondents would refuse to release their food samples for analysis
- Most caregivers do not have enough food to release for analysis
- It was not easy preserving the food samples from the study area to Awka, where it was analyzed
- There could be potential biases, from measurement error which could have occurred during anthropometric assessment for uncompromising children
- Some of the caregivers were not steady during the procedure, some go out for their menial jobs outside the camp and we have to wait for their return, the movement tends to cause some distractions in the process
- There were security risks in the Bakasi camp in Borno and the New Kuchingoro camp in Abuja which limited our movements round the camps
- There was some restrictions in taking pictures in Bakasi camp Borno and the New Kuchingoro camp in Abuja
- There are challenges in mapping out the households for easy collection of data, some households are joined together, not easy to differentiate the mappings
- It was difficult to convince some caregivers about the study
- There was serious Financial constraints on the researcher
- Incomplete information of the 24hour dietary recall leading to potential bias, some caregivers could not give details of food eaten in the past 24hours

Findings

- The camps represented in this study was not be the true representation of all the IDP camps in the country
- The food samples collected from the individual caregivers from the different IDP Camps may not be a true representation for all IDP Camps in the country.

Strengths of this study

- The main strength of the study was the large sample size in all the camps, enough children to meet up with the study
- The incentives (Sachet Milo and Milk) provided, helped to bring together the

children and their caregivers for us to gain their attention
- The guidance from my dependable and reliable supervisors who were keeping in touch with the researcher even while in the field.

Conclusion

There are high death rate of children living in Internally Displaced Persons camps in Nigeria, this issue have been attributed to poor nutritional status which had led to high prevalence of stunting, wasting and underweight amongst the children. The poor nutritional status of the children was also attributed to the fact that most of the children skip meals due to unavailability of food present in the camps.

Malnutrition remains a major health problem among under-five children in internally displaced persons camps, in this study the prevalence of underweight, stunting and wasting was at 2.1% severely underweight for males and 2.0% severely underweight for female, 2.3% severely stunted for male and 2.1% severely stunted for female while 2.9% severely wasted for male, and 2.8% severely wasted for female. The children in the camps experienced lack of good foods, poor nutrient consumption, thereby exposing them to malnutrition, diseases and even deaths. Caregivers of the children are also vulnerable in the camps. Studies have shown that children (male and female) suffer most in a period of conflict and displacement (NAN, 2016).

It was also identified that there is elevated health problems among the children in the camps as well as in children. This indicates the need to consider the challenges on the health of people who have been internally displaced. Intervention studies are needed to shed light on approaches to improve the health of internally displaced children.

The nutrition education intervention implemented in this study was able to improve the knowledge of the caregivers such that they were able to make informed food choices in their eating habits after the intervention. It was observed that the level of awareness of the caregivers significantly affected their eating habits and the nutrition education helped the respondents to adopt positive behavior towards food-related interventions that will improve the overall health and well-being of the children, like cooking with more vegetables, boiling their drinking water, regular hand washing to prevent infections, feeding the children more often, improved awareness on purchasing more food items with their monetary gifts

Recommendations

- Measures should be taken towards addressing the malnutrition issues in the IDP Camps by the Government and International Organizations.
- Policies should be put in place which should be aimed at provision of adequate food, and improved diets for children in the IDP camps by the Government.
- Relevant stakeholders such as government, agencies, international, non-governmental organizations, United Nation agencies, and local partners should be involved in the support for nutritional interventions for children as children constitute the highest population and are most affected with malnutrition in the IDP Camps.

Suggestions for Further Studies

- There should be further studies on the effects of Nutrition education on the nutritional status and care practices of children in other internally displaced persons camps in Nigeria
- Similar studies should be conducted on other age groups in other states and other IDP camps in the country so as to bring about lasting solutions to the problem of the IDPs.

Contribution to knowledge

- This study revealed the burden and severity of malnutrition in children in IDP Camps
- This study also reveals that the under-five children are the most vulnerable group in internally displaced persons camps
- The study contributed to the existing body of knowledge in area of the key determinants of malnutrition among under-five children in IDP camps.
- It also explained the importance of Nutrition Education on the food intake and care practices of the children
- Nutrition education in IDP camps can positively impact children's nutritional

status and care practices by providing caregivers with knowledge about balanced diets, hygiene, and appropriate feeding practices, there's potential to improve children's overall health.

- Intervention Strategies- It would identify the interventions that can be implemented in IDP camps to improve children's nutritional status and care practices.
- This knowledge can inform future programs and policies.
- Provided valuable insights into the effectiveness of educational initiatives within the unique context of IDP camps.
- It explored the factors that contribute to or hinder the success of nutrition education programs in these challenging environments, considering socio-economic, cultural, and logistical aspects.
- It investigated the long-term effects of nutrition education, not only on immediate nutritional outcomes but also on the overall health and well-being of children.
- Provided evidence-based recommendations for policymakers to enhance nutrition education policies and practices in IDP settings, contributing to the development of more effective and targeted interventions.

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