



UNIVERSITI PUTRA MALAYSIA

***PREDICTORS OF MALNUTRITION AMONG UNDER-FIVE CHILDREN IN
INTERNALLY-DISPLACED PERSON CAMPS OF ADAMAWA AND YOBE
STATES, NIGERIA***

FATIMA DAHIRU MELA

FPSK(m) 2021 13



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By

FATIMA DAHIRU MELA

**Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia,
in Fulfilment of the Requirements for the Degree of Master of Science**

October 2020

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Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirement for the degree of Master of Science

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October 2020

Chairman : Associate Professor Nor Afiah binti Mohd Zulkefli MD, PhD
Faculty : Medicine and Health Sciences

Introduction: Malnutrition was described as imbalances, excesses, or deficiencies in the intake of nutrients by an individual. Globally, malnutrition is the key factor of disease burden among under-five children. In Africa, malnutrition in under-five children showed 59 million as stunted 14 million as wasted, and 10 million were overweight. Nigeria is among the six countries of the world where half of all the death among under-five children was due to malnutrition. In addition, the failure to have adequate dietary intake was borne out of demolition of farming activities, as well as inability to reach good health care services, water supply. It is against this background that lead to rise in the rate of malnutrition among children in the IDP camps. Based on literature searched, there was no study conducted on predictors of malnutrition among under five children in the IDP camps of Adamawa and Yobe States, Nigeria hence the need to conduct the research. **Objective:** To determine the predictors of malnutrition (stunting, wasting and underweight) among under-five children in IDP camps of Adamawa and Yobe states, Nigeria. **Methods:** An analytical cross-sectional study was conducted among 807 children aged 6 to 59 months from the three IDP camps from September 2018 to January 2019. A probability proportionate to size was used to select the sample size from each IDP camp, after which a single random table number was used to select the participants from the list of under-five children. A self-guided structured questionnaire was administered to collect information on sociodemographic characteristics, parental factors, child information, food consumption, environmental factors as well as the anthropometric measurement of both the children and caregivers. Descriptive analysis, chi-square test statistics, simple and binary logistic regression analyses were used, and the level of significance was set at $p < 0.05$. **Result:** The overall prevalence of stunting, wasting, and underweight were 17.1%, 40.9%, and 29.7% respectively. The predictors of stunting were age of the child (AOR=3.275; 95% CI=1.954-5.489, $p < 0.001$) and symptoms of watery stool in the last 2 weeks (AOR=0.648; 95% CI=0.429-0.979, $p = 0.039$). For wasting the predictors are mother's occupation (AOR=1.494; 95% CI=1.101-2.026, $p = 0.010$), age of the child (AOR=2.359; 95% CI=1.699-3.275;

p<0.001), gender of the child (AOR=0.667; 95% CI=0.491-0.905; p=0.009), symptoms of watery stool in the last 2 weeks (AOR=0.467; 95% CI=0.283-0.773; p=0.003). Whereas the predictors of underweight were mother's occupation planning (AOR=0.708; 95% CI=0.511-0.983; p=0.039), age of the child (AOR=1.458; 95% CI=1.008-2.108; p=0.045), gender of the child (AOR=1.983; 95% CI=1.430-2.748; p<0.001), symptoms of watery stool in the last 2 weeks (AOR=1.811; 95% CI=1.271-2.582; p=0.001), weight of the mother (AOR=0.714; 95% CI=0.515-0.990, p=0.043), household income (AOR=0.712; 95% CI=0.510-0.994; p=0.046), birth weight of the child (AOR=1.685; 95% CI=1.031-2.755; p=0.038). **Conclusion:** The study found that socio-demographic characteristics of the caregivers, parental factors, child information, and environmental factors were significantly associated with stunting, wasting, and underweight among under-five children in the IDP camps. It, therefore, needs a multi-sectoral collaboration such as ministry of agriculture, health, education, and finance to address the malnutrition in the IDP camps of Nigeria, and the identified predictors of malnutrition among the under-five children should be included in the future programs that would address all the three indices of malnutrition.

Keywords: Predictors, Malnutrition, Under-Five Children, IDP camps, Nigeria.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Master Sains

**RAMALAN MALNUTRISI TERHADAP KANAK-KANAK BAWAH UMUR
LIMA TAHUN DI KEM ORANG PELARIAN DALAMAN DI DAERAH
ADAMAWA DAN YOBE, NIGERIA**

Oleh

FATIMA DAHIRU MELA

Oktober 2020

Pengerusi : Profesor Madya Nor Afiah binti Mohd Zulkefli, MD, PhD
Fakulti : Perubatan dan Sains Kesihatan

Pengenalan: Malpemakanan disifatkan sebagai ketidakseimbangan, berlebihan, atau kekurangan dalam pengambilan nutrien oleh seseorang individu. Secara global, malpemakanan ialah penyumbang utama penyakit dalam kalangan kanak-kanak bawah lima tahun. Di Afrika, malpemakanan dalam kalangan kanak-kanak bawah lima tahun menunjukkan 59 juta sebagai terbantut kekal, 14 juta kesusutan berat badan, dan 10 juta berat badan berlebihan. Nigeria merupakan salah sebuah negara antara 6 buah negara di dunia di mana separuh daripada semua kematian antara kanak-kanak bawah lima tahun adalah disebabkan malpemakanan. Sebagai tambahan, kegagalan pengambilan dietary yang mencukupi disebabkan daripada pemusnahan aktiviti penternakan, serta ketidakupayaan mencapai perkhidmatan penjagaan kesihatan yang baik, dan bekalan air. Ia juga mengakibatkan latar belakang yang menjurus kenaikan dalam kadar malpemakanan di kalangan kanak-kanak dalam di kem IDP. Berdasarkan pencarian kesusasteraan, tiada kajian dikendalikan mengenai penyebab malpemakanan dalam kalangan kanak-kanak bawah lima tahun di kem IDP di Adamawa dan Yobe States, Nigeria oleh yang demikian keperluan untuk menjalankan penyelidikan adalah diperlukan. **Objektif:** Untuk mengenal pasti penyebab malpemakanan (terbantut, susut, dan kurang berat badan) dalam kalangan kanak-kanak bawah lima tahun di kem IDP di Adamawa dan Yobe, Nigeria. **Kaedah:** Satu analisis kajian keratan rentas dijalankan antara 807 orang kanak-kanak berusia 6 hingga 59 bulan dari tiga buah kem IDP mulai September 2018 hingga Januari 2019. Kebarangkalian yang seimbang kepada saiz yang digunakan untuk memilih saiz sampel daripada setiap kem IDP, selepas sebuah nombor rawak digunakan untuk memilih peserta dari senarai kanak-kanak bawah lima tahun. Borang soal selidik berstruktur diberi untuk mengumpul maklumat tentang ciri-ciri sosio-demografik, factor ibu bapa, maklumat kanak-kanak, pengambilan makanan (pengambilan diet), faktor persekitaran serta ukuran antropometrik bagi penjaga dan kanak-kanak. Analisis deskriptif, statistik ujian khi-kuasa dua, analisis ringkas, dan regresi logistic perduaan analisis telah digunakan, dan tahap keertian telah ditetapkan pada $p < 0.05$. **Keputusan:** Kelaziman terbantut, penyusutan berat badan, dan kurang

berat badan ialah 17.1%, 40.9%, dan 29.7%. Penyebab kepada terbantut ialah umur kanak-kanak (AOR=3.275; 95% CI=1.954-5.489, $p<0.001$) dan gejala najis berair dalam 2 minggu terakhir (AOR=0.648; 95% CI=0.429-0.979, $p=0.039$). Bagi kesusutan berat badan pula adalah pekerjaan ibu (AOR= 1.494; 95%CI=1.101-2.026, $p=0.010$), umur kanak-kanak (AOR=2.359; 95% CI=1.699-3.275; $p<0.001$), jantina kanak-kanak (AOR=0.667; 95% CI=0.491-0.905; $p=0.009$). gejala najis berair dalam 2 minggu terakhir (AOR=0.467; 95% CI=0.283-0.773; $p=0.003$). Manakala penyebab kekurangan berat badan adalah perancangan kerjaya ibu (AOR= 0.708; 95% CI=0.511-0.983; $p=0.039$), umur kanak-kanak (AOR=1.458; 95% CI=1.008-2.108; $p=0.045$), jantina kanak-kanak (AOR=1.983; 95% CI=1.430-2.748; $p<0.001$), gejala najis berair dalam 2 minggu terakhir (AOR=1811; 95% CI=1.271-2.582; $p=0.001$), berat ibu (AOR=0.714; 95% CI=0.515-0.990, $p=0.043$). pendapatan isi rumah (AOR=0.712; 95% CI=0.510-0.994; $p=0.046$), berat kanak-kanak sewaktu lahir (AOR=1.685; 95% CI=1.031-2.755; $p=0.038$). **Kesimpulan:** Kajian mendapati ciri-ciri demografi sosio penjaga, factor ibu bapa, maklumat kanak-kanak, dan faktor persekitaran mempunyai kaitan signifikan yang nyata sekali dengan kebantutkan, kesusutan berat badan, dan kekurangan berat badan dalam kalangan kanak-kanak bawah lima tahun di kem IDP. Oleh itu, kerjasama dari pelbagai sektoral seperti kementerian pertanian, kesihatan, pendidikan, dan kewangan adalah penting dalam menangani isu malpemakanan di kem IDP Nigeria. Program yang akan datang perlu mengetengahkan penyebab -penyebab malpemakanan yang telah dikenal pasti ini bagi kanak-kanak bawah lima tahun dalam mengutarakan ketiga-tiga indeks malpemakanan.

Katakunci: Penyebab, Malpemakanan, kanak-kanak bawah lima tahun, kem IDP, Nigeria

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This thesis was submitted to the Senate of the Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of Master of Science. The members of the Supervisory Committee were as follows:

Nor Afiah binti Mohd Zulkefli MD, PhD

Associate Professor
Faculty of Medicine and Health Sciences
Universiti Putra Malaysia
(Chairman)

Nurul Husna Mohd Shukri, PhD

Senior Lecturer
Faculty of Medicine and Health Sciences
Universiti Putra Malaysia
(Member)

ZALILAH MOHD SHARIFF, PhD

Professor and Dean
School of Graduate Studies
Universiti Putra Malaysia

Date: 09 September 2021

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Name and Matric No: Fatima Dahiru Mela, GS49034

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Signature: _____

Name of Chairman
of Supervisory
Committee:

Associate Professor
Dr. Nor Afiah binti Mohd Zulkefli

Signature: _____

Name of Member
of Supervisory
Committee:

Dr. Nurul Husna Mohd Shukri

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LIST OF ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
AMDR	Acceptable Macronutrient Distribution Range
AOR	Adjusted Odds Ratio
BMI	Body Mass Index
CIFF	Children's Investment Fund Foundation
CKD	Chronic Kidney Disease
CI	Class Interval
CMAM	Community Management of Acute Malnutrition
CRD	Chronic Renal Disease
DDS	Dietary Diversity Score
DFID	Department of International Development
ENA	Emergency Nutrition Assessment
FAO	Food Agricultural Organization
HAZ	Height-for-Age Z score
HIV	Human Immunodeficiency Virus
ICRC	International Centre for Red Cross
IDP	Internally Displaced Person Camp
IOM	International Organization for Migration
IQR	Interquartile Range
IYCF	Infant and Young Child Feeding
MAM	Moderate Acute Malnutrition
MDG	Millennium Development Goal
MUAC	Mid Upper Arm Circumference

n	Number
N	Sample
NCHS	National Center for Health Survey
NEMA	National Emergency Management Agency
OR	Odds Ratio
P	Significant level
PHC	Primary Health Care
SAM	Severe Acute Malnutrition
SD	Standard Deviation
SEMA	State Emergency Management Agency
SPSS	Statistical Package for the Social Sciences
UK	United Kingdom
US	United States
UNICEF	United Nations Children Education Fund
WAZ	Weight-for-Age Z score
WHO	World Health Organization
WHZ	Weight-for-Height Z score
YBC	Yobe Broadcasting Corporation
χ^2	Chi-square

CHAPTER 1

INTRODUCTION

This chapter describes the background of the study area, problem statement, objectives of the study, research questions, hypotheses, and significance of the study as well.

1.1 Background of the study

Conflict forced people to flee and leave their places of residence to a safer place due to the fear of destruction of homes, loss of lives, injuries, and properties. Currently, there are about 6.1 million people who are affected by conflict and need lifesaving assistance from both national and international organizations (Forum 2019).

Internally displaced people (IDP) are people who were strained to run away from their original residence to other places for their safety but still remain within their nation's boundaries (International Center for Red Cross, [ICRC], 2010). The United Nations, International Guiding Principle described an internally displaced person camp as: "Group of people who were forced to leave their residence involuntarily, to keep away from the effect of hostility, violation of human rights, or human-made disasters (ICRC, 2010).

Malnutrition denotes as insufficiencies, extremes, or inequalities in the consumption of energy and nutrients foods by an individual (World Health Organization [WHO], 2017). It affects all categories of people, but its impact is more severe among under-five children. The greatest period of a child's dietary requirements is the first 1,000 days of life, that comprises of gestational period to the child's second birthday (United Nations International Children Fund [UNICEF], 2013). At this age, the child is more susceptible to infections and therefore has an increased need for nutrition to support rapid growth and development (Gul and Kiramat 2012; UNICEF 2013). It is the primary cause of infant mortality, accounting for about 11.5% of the total death rate and contributes significantly to the overall disease burden (Jelle, Eternod, Bidgoli, King and Cassy, 2017). It poses threat to both long and short-term effect to the child, families, communities, and nations at large (UNICEF-WHO-World Bank Group 2015). Malnutrition, if left undetected or untreated, may lead to harmful disease processes, increased susceptibility to infection, delayed wound healing, and reduced response to therapy (Robert and Suskind, 2016).

Malnutrition can manifest in numerous ways, but the constraint and occurrence are virtually the same. Children affected by stunting may not necessarily attain their desired height, and their brains may never develop to full reasoning capacity (UNICEF / WHO / World Bank Group 2019). Wasting among under-five children is a life-threatening

outcome of inadequate nutrient intakes and disease. Wasted children mostly have weakened immune systems, vulnerable to infections with increased threat to death, most notably when the wasting is severe (UNICEF / WHO / World Bank Group 2019).

About 159 million children are stunted as a result of insufficient dietary intake during childhood (UNICEF-WHO-World Bank Group, 2015). In 2018, over 49 million children below five years old were wasted, and almost 17 million were severely wasted (United Nations-World Health Organization-The World Bank Group 2019). Presently, there are over 40 million children who were overweight internationally with an increase of 10 million since year 2000 (United Nations-World Health Organization-The World Bank Group 2019). In Africa, the prevalence of malnutrition among under-five children is about 59 million stunting, 14 million wasting, and 10 million overweight (UNICEF-WHO-World Bank Group 2015).

Half of all children deaths worldwide are attributed to malnutrition of which Nigeria is inclusive (WHO, 2020). In 2018, about 5.3 million children below five years old died before celebrating their fifth birthday, 45% of them die due to malnutrition and other preventable and treatable diseases (UNICEF/WHO/World Bank Group 2019). The prevalence of child malnutrition differs considerably across the six geopolitical zones in Nigeria (National Population Commission, 2013). Children living in the northwest and the northeast are particularly disadvantaged in which the rate of stunting in northwest and northeast is 55% and 42% as against 29% in North Central, 18% in the South-South and 22% South West, and 16% in the South East (National Population Commission, 2013), as shown in

Figure 1.1.

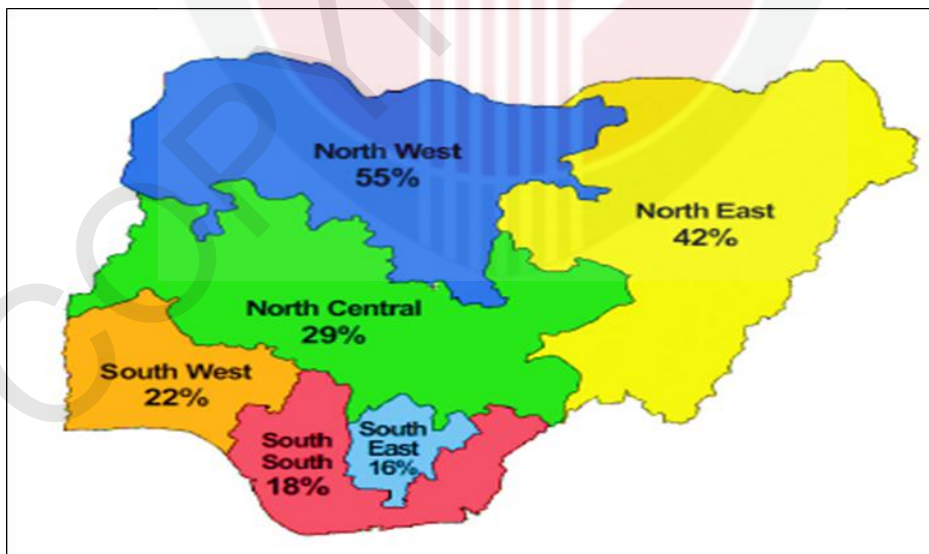


Figure 1.1 : Percent of Children Stunted Under Age 5 by Region, 2013
(Source: National Population Commission, 2013)

Adamawa State is located within the North-East part of the country, Nigeria. It incorporates a prevalence of 37.3% stunting, and 5.6% are acutely malnourished (UNICEF., 2015). Yobe is also one of the States located within the northern part of Nigeria.

Studies have shown that Yobe state has the highest cases of malnourished children in Nigeria (FAO., 2019). According to the World Food Program, the global acute undernourishment in children in Yobe state was 11.4% in 2017 compared to 5.6% in Adamawa state (FAO., 2019). The prevalence of underweight among children is 39.6%, while stunting was estimated at 57.2%, respectively (FAO., 2019).

1.2 Problem statement

Since 2009 to date, the activities of Boko Haram (BH) have rendered Nigeria most especially the Northeast region that include Adamawa, Borno, and Yobe states and other parts of neighboring countries like Chad, Niger Republic, and Cameroun are unsecured. Millions of human lives and properties were lost, and the most affected victims were women and children (Ali et al., 2018).

Majority of the national and international industries in the affected places have run down, and most of the women were separated from their husbands and children, which has a direct or indirect effect on the lives of the women and children (Ali et al., 2018).

Displacement of people incorporates a negative effect on the individual, family, community, and the nation in general. Malnutrition is widely spread in the IDPs, which are attributed to insufficient food intake, and preparation of the food (UNICEF., 2013). About 450 children died of malnutrition, 6,444 cases severely malnourished, and 25,511 were moderately malnourished within the IDP camps (Adamu., 2017).

According to the internal displacement monitoring center, 56% of the total populations of IDP camps in Nigeria are children of which over half of them are <5 years old (Internal Displacement Monitoring Centre., 2016). Over 100,000 children in the IDP camps of Adamawa and Yobe states were reported to be at risk of acute malnutrition (UNICEF, 2015). Malnutrition in IDP camps were observed to be higher compared to non IDP camps (Guerrier et al. 2009). The failure to have adequate dietary intake was borne out of demolition of farming activities, parting away of relatives, the collapse of societies, dislocation of the people, as well as a deficiencies in reaching to good health services, water supply and clean environment as a result of insurgency which lead to the rise in the rate of malnutrition among under five children in the IDP camps (Oluwatosin, Tosin, and Michael 2019). In IDP camps, the caregivers depend solely on what has been given to them by the government or international organization. While those in non IDP camps, the caregivers can seek for a job that can earn them money which they can use to buy varieties of food for the family to use (Guerrier et al. 2009). Most of the food shared in

the IDP camps were carbohydrate with no varieties. (Oluwatosin et al. 2019). Besides, the food is not adequate as seen and testified by some caregivers in the IDP camps during data collection thus, predisposing them to all forms of malnutrition (Oluwatosin et al. 2019). The most vulnerable people affected by malnutrition were women and children (Oluwatosin et al. 2019). This could be due to inadequate access to food by the children as required, inadequate intakes of vitamins and fruits, repeated outbreaks of diseases, worsened condition by the overcrowding in the IDP camps, poor environmental hygiene, food preparation and socio-economic status of the caregivers have contributed to the malnutrition among the under five children in the IDP camps (UNICEF, 2013). Research has shown that one out of every three under five children (10.5 million) are stunted, while 2.5 million have severe acute malnutrition (UNICEF 2017) and the crude mortality rate of under five children was 2.08 deaths per 10,000 per day (CI 95% [1.59-2.57] (Borno 2017).

In 2012, an estimated 2,800 people lost their lives as a result of the Boko Haram insurgency (Cook., 2011). By the end of 2018, about 541,000 people were internally displaced newly due to the insurgence (United States Agency for International Development [USAID], 2018). Nearly 12 million people in Africa were displaced by armed conflict and violence, and thousands of individuals displaced by natural disasters (Owoaje, Uchendu, et al., 2016). Based on literature searched, there was no study conducted on predictors of malnutrition among under five children in the IDP camps of Adamawa and Yobe States, Nigeria hence the need to conduct the research.

Table 1.1 shows that the global trends of malnutrition among under five children indicates that the prevalence of stunting and wasting among the under five children in Nigeria were higher than that of the Northeast region, West and Central Africa and the world. Whereas the prevalence of underweight among under five children in Northeast region was higher than that of Nigeria, West and Central Africa and the world. However, the prevalence of underweight in Nigeria, was in consistent with the result obtained in the current study.

Table 1.1 : Global trend of Malnutrition

Forms of Malnutrition	Nigeria	Northeast Region	West and Central Africa	World
Stunting	37%	29.5%	36%	25%
Wasting	18%	9.8%	11%	8%
Underweight	29%	35%	23%	15%

(Source: Report from State of the world's children UNICEF, 2015 and The Nutrition and Health Situation of Nigeria UNICEF., 2014)

The quality of food a child used in the first 1000 days of his life determines his future. It starts immediately after conception to about two years of the child's birth. Lack of adequate nutrients at this particular period may result in permanent damage (National Bureau of Statistics., 2018). Some studies conducted in 10 countries in 2013 revealed that a child with illnesses of stunting, wasting, and underweight have a high risk of death than a child with no nutritional deficit (National Bureau of Statistics., 2018). Figure 1.2 shows trends of malnutrition in the northeast region.

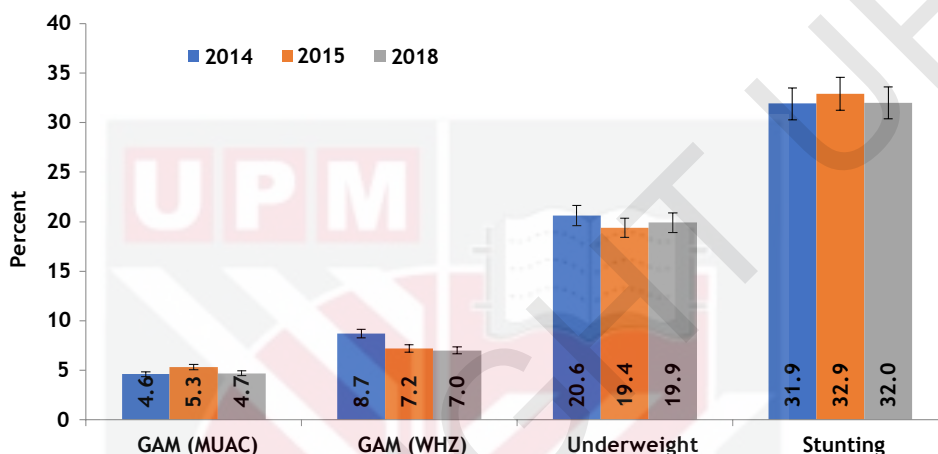


Figure 1.2 : Trends of Malnutrition in Northeast
(Source : National Bureau of Statistics, 2018)

About half a million of children dying annually are attributed to malnutrition, which imposes an amazing cost to the nation (Federal Ministry of Health Nigeria 2013). The spread of stunting among children in Nigeria is about 2 in 5, varying from region to region. Underweight among Nigerian children is almost 30 percent (National Bureau of Statistics., 2018). Wasted children are gradually growing bigger in percentage over the last decade, with an increase of 10% in 2011 to 18% in 2013 (Amugsi, Mittelmark, and Lartey., 2013). Underweight was steady within 2007- 2011, 25%, with a small increase to 29% in 2013 within the north-eastern region of the country with Adamawa and Yobe inclusive. The cost of treating a malnourished child is about US \$160 (₦48, 000) and Nigeria loses about US \$1.5 billion of its gross domestic product (GDP) to the treatment of malnutrition annually (UNICEF., 2015).

Few studies were conducted on nutritional status and its determinants among under-five children in IDPs camps in other parts of the globe like Ghana (Mzumara et al. 2018) Somalia (Hussien 2015); Ukraine (Nidzvetska et al. 2017); Iraq (Lafta et al. 2017), Pakistan (Gul and Kiramat., 2012). The researchers, however, did not look at predictors of malnutrition among under-five children in the IDP camps, with the geographical location and the settings as a result of the limited method. Studies conducted in Nigeria focused mostly on food consumption patterns, nutritional status among under-five children within the rural and urban settlement. Others are prevalence and determinants

of malnutrition among under-five children of farming households, and the incidence of malnutrition among pre-school children within the south-east (Akorede and Abiola 2013; Babatunde et al. 2011; Manyike et al. 2014; Unaeze 2013). These are few among other studies but didn't evaluate the predictors of malnutrition among under-five children in IDP camps. Furthermore, no such study was done in the north-east part of the country hence the necessity to conduct the research.

1.3 Significance of the Study

Findings from this study would provide an insight into the predictors of malnutrition among under-five children in IDP camps of Adamawa and Yobe States, Nigeria.

It would also provide useful information to the Government and policymakers such as the National Emergency Management Agency (NEMA), State Emergency Management Agency (SEMA), health institutions, and international organizations in terms of planning intervention to target mothers and caregivers of under-five children in the IDP camps.

It assists in developing health promotion and intervention based on the predictors of malnutrition and add new knowledge to the field of nutritional studies on predictors of malnutrition among under five children especially in internally displaced person camps. It would serve as a relevant resource for future research in the field of public health and it would reduce the health expenditure of the country.

The results of the study would help the caregivers to know the signs, and symptoms of malnutrition, improvement in hygiene practices and food preparation thus, make recommendations to the relevant authorities to promote and reduce ignorance on malnutrition.

1.4 Research Questions

1. What are the socio-demographic characteristics of the caregivers in the IDP camps of Adamawa and Yobe state, Nigeria?
2. What is the prevalence of malnutrition status among under-five children in internally displaced person camps of Adamawa and Yobe state, Nigeria?
3. What are the factors associated with socio demographic characteristics of the caregivers such as (age of the caregivers, mother's level of education, occupation, household income, family size, source of family income, medical condition), parental factors such as (visit to antenatal clinic, family planning usage, interest in family planning, mother's weight, height and BMI), child information such as (age of the child, gender, birth weight, birth order, number of siblings, immunization status, diarrhea/infectious disease and history of

breastfeeding), food consumption such as (energy and macronutrient intake), duration in IDP camp, number of people in tent, washing hand before feeding the child, washing child's hand after using toilet, source of drinking water, type of toilet and waste disposal among under-five children in internally displaced person camps of Adamawa and Yobe state, Nigeria?

4. What are the predictors of malnutrition status among under-five children in internally displaced person camps of Adamawa and Yobe state, Nigeria?

1.5 Objectives of the Study

1.5.1 General Objective

To determine the prevalence and predictors of malnutrition status among under-five children in internally displaced person camps of Adamawa and Yobe state, Nigeria.

1.5.2 Specific Objectives

1. To determine the prevalence of malnutrition status among under-five children in internally displaced person camps of Adamawa and Yobe state, Nigeria.
2. To determine the socio-demographic characteristics of the caregivers, parental factors, child information, food consumption (such as mean, energy and macronutrient intake, dietary diversity), environmental factors, and malnutrition among under-five children in internally displaced person camps of Adamawa and Yobe state, Nigeria.
3. To determine the association between socio-demographic characteristics of the caregivers (such as age, level of education, occupation, household income, family size, source of family, medical condition), parental factors, child information, food consumption (food consumption such as (energy and macronutrient intake, dietary diversity), environmental factors, and malnutrition among under-five children in internally displaced person camps of Adamawa and Yobe state, Nigeria.
4. To determine the predictors of malnutrition status among under-five children in internally displaced person camps of Adamawa and Yobe state, Nigeria.

1.6 Alternative Hypotheses

H_A: There is a significant association between socio-demographic characteristics of caregivers and malnutrition (stunting, wasting and underweight) among under-five children in internally displaced person camps of Adamawa and Yobe state, Nigeria

H_A: There is a significant association between parental factors and malnutrition (stunting, wasting and underweight) among under-five children in internally displaced person camps of Adamawa and Yobe State, Nigeria.

H_A: There is a significant association between and child information and malnutrition (stunting, wasting, and underweight) among under-five children in internally displaced person camps of Adamawa and Yobe state, Nigeria.

H_A: There is a significant association between food consumption and malnutrition (stunting, wasting and underweight) among under-five children in internally displaced person camps of Adamawa and Yobe state, Nigeria.

H_A: There is a significant association between environmental factors and malnutrition (stunting, wasting and underweight) among under-five children in internally displaced person camps of Adamawa and Yobe state, Nigeria.

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BIODATA OF STUDENT

The student Mela Fatima Dahiru was born on the 5th of October 1966. She secured her first leaving certificate from Jankai primary school; after which she undertook her secondary education at Government Girl's Secondary School, Bauchi, Nigeria. She subsequently secures her West African Examinations Council (WAEC). She secured admission into school of Nursing Bauchi from 1985-1988. She worked in General Hospital Shira-Yana from 1988-1990. She proceeded to Post Basic Midwifery from 1991-1992. She worked at Specialist Hospital Bauchi from 1992-1995. In 1996, she secured admission into Post Basic Ophthalmic Nursing Program and completed in 1996. She worked in Ministry of Health Gombe from 1997-2003. In 2003, she secured admission into Ahmadu Bello University Zaria to study Community Health Officers course and graduated in December 2003. She secured admission into Shehu Idris College of Health Sciences from 2010-2012. Where she obtained her higher National Diploma in Public Health (HND). Furthermore, she secured admission into Novena University where she obtained her Bachelor of Science (Public and Community Health) (Second class upper division) at Novena University, Ogume, Delta State, Nigeria in the year 2016. She worked as a Public Health Officer in the State Ministry of Health Gombe from 2016-2017 before joining University Putra Malaysia for Master of Science in Public Health Program in 2017 in the Faculty of Medicine and Health Sciences, University Putra Malaysia under the supervision of Associate Professor Madya (Dr) Nor Afiah Binti Mohd Zulkefli and Co supervisor Dr. Husna Mohd Shukri.

The student can be contacted at email: *****@gmail.com

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