





Strategies of Reducing Malnutrition by Caregivers amongst Children 0-5 Years in Opiro Community

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Abstract	Article History
<p>Malnutrition in children is common globally and results in both long-term and short-term irreversible negative outcomes including stunted growth, development defect, underweight and wasting. This study investigated strategies of reducing malnutrition by caregivers amongst children 0-5 years in Opiro community. The objectives of this study are: to assess the management of malnutrition among children 0-5years, to identify the measures taken to reduce malnutrition among children, 0-5 years by caregivers and 'to identify the factors influencing the prevalence of malnutrition among children 0-5years in Opiro Community. Related literature was reviewed. Abraham Maslow hierarchy of human needs was adopted in this study. A cross-sectional descriptive design was used for this study. Ninety-two (92) was determined as the sample size using the Taro Yamen formula from a target population of 114. A purposive sampling technique was used. A self-developed questionnaire consisting of two sections was used. Section A consists of personal data of the respondents, section B consists of 11 items on variables of the study. Face and content validity of the instrument was done by the research supervisor. A test-retest method was used to measure the reliability. Pearson product-moment correlation coefficient was adopted to analyse the result which yielded was 0.85. The data were analysed using frequency, percentages, mean and presented on tables. Findings revealed that the majority of the respondents adopt adequate breastfeeding and balanced diet in the management of malnutrition, early diagnosis of any lag in growth and adequate environmental and personal hygiene are measures taken to reduce malnutrition and also poverty is one of the leading factors influencing the prevalence of malnutrition. The following recommendations were made; caregivers should be properly health educated on the importance of adequate breastfeeding, nurses and other health workers should educate caregivers on the causes and prevention of malnutrition etc.</p> <p>Keywords: <i>Malnutrition, Malnutrition in children, Undernutrition, Overnutrition, Nutritional deficiencies</i></p>	<p>Received: 07 Jan 2022 Accepted: 12 Feb 2022 Published: 16 Feb 2022</p> <p>Scan QR code to view*</p>  <p>License: CC BY 4.0*</p>  <p>Open Access article.</p>
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1. Introduction

Malnutrition in children is common globally and results in both short and long term irreversible negative health outcomes, including stunted growth, development defects, underweight and wasting (Bhutta *et al.*, 2012). According to Hopkins (2017), malnutrition sets in when the body lacks vital nutrients such as minerals, vitamins and other nutrients that are needed for the maintenance of health tissues and organ.

Malnutrition is estimated to be responsible for 54 percent of child mortality worldwide, or nearly one million children, according to the World Health Organization (WHO, 2012). According to another WHO estimate, childhood underweight is the cause of roughly 35% of all fatalities in children under the age of five years in the world. The main causes are contaminated water, poor sanitation or hygiene, a societal and poverty-related factor, disease, maternal factors, gender concerns, and in overall poverty (Bhutta *et al.*, 2012). Malnutrition in children can be detected using three different signs/measures. They are: Stunting (very low height for age), underweight (extremely low weight for age), wasting (extremely low weight for height) etc. These nutritional indicators are linked, however, research for the World Bank concluded that only 9 of them are. Swollen hands and feet are common in

children with severe acute malnutrition, making the interior abnormalities more visible to health care providers. Children who are severely malnourished are particularly vulnerable to infectious diseases (World Bank 2008).

Malnutrition affects children's motor development and exploratory behavior by causing direct anatomical damage to the brain. Children who are malnourished before the age of two and gain weight rapidly later in childhood and adolescence are at a higher risk of developing chronic nutrition-related disorders. Malnutrition and child mortality have been linked in numerous studies (Duggan, 2010). Duggan pointed out that while appropriate growth is an indicator of health once hunger is cured, children who suffer from severe malnutrition can stay stunted for the remainder of their lives. He also found that modest malnutrition doubles the risk of death from respiratory, diarrheal, and malaria diseases. In more severe situations of malnutrition, the risk is considerably raised. Girls who are malnourished grow into short adults.

In 2008, the World Health Organization (WHO) reported that low food consumption, unclean water, inadequate sanitation, and insufficient hygiene were responsible for half of all cases of malnutrition in children under the age of five. This relationship is frequently established as a result of persistent diarrhea and intestinal worm infestation as a result of poor sanitation. In almost

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all nations, however, the relative contribution of diarrhea to malnutrition and, as a result, stunting remains debatable; the lowest quintile of children has the highest rate of malnutrition. Inequalities in malnutrition between children from poor and wealthy households vary by nation, with significant disparities in Peru and extremely minor differences in Egypt, according to studies (Watkins, 2010).

Low birth weight is found in infants born to young mothers who are not fully developed. The size and composition of newborns can be affected by maternal diet during pregnancy. Iodine deficiency in mothers frequently causes brain damage in their offspring and some cases produce endemic physical and mental disability (Hassan et al., 2020) (Hassan et al., 2020). This has a negative impact on the children's capacity to reach their full potential (Wagstaff & Naoke, 2009). According to UNICEF, 30 percent of households in developing countries do not consume iodized salt, resulting in 41 million infants and newborns who are at risk of iodine deficiency. Intrauterine growth retardation is more likely when maternal nutrition supplies are low (IUGR). Measurement of a child's growth, on the other hand, provides crucial information for determining whether or not there is a problem.

The World Bank found that the number of malnourished children in developing countries like Nigeria reduced by 20% between 1970 and 2000 as a result of measures implemented to prevent malnutrition among children aged 0 to 5. Trials of iodine supplementation in pregnant women have shown that progeny fatalities during infancy and early childhood are reduced by as much as 29%. Universal education and micronutrient-fortified dietary supplements, on the other hand, have resulted in a 10% reduction in the prevalence of stunting in children aged 12 to 36 months. Children's diarrhea was reduced by 18% when they drank zinc and iron-fortified milk.

1.1 Statement of the problem

Malnutrition among children between 0-5 years has continued to be a public health issue in developing countries like Nigeria. The increased mortality rate in children under the ages of five which occur as a result of malnutrition is about 50% of the citizens of Nigeria who are low-income earners. Some of the problems of malnutrition among children 0-5 years are in the areas of lack of iodine intake by pregnant mothers before childbirth, lack of minerals, calcium and vitamins (nutrition), inadequate sanitation, unsafe water, maternal factor has been seen to be a major clog on the wheels of child growth and development (World Bank, 2008; Hassan *et al.*, 2020).

In Nigeria today, there is a lack of nutritional education in most health facilities to educate pregnant mothers on how to feed before childbirth. The researcher observed that the major cause of malnutrition among children 0-5 years in Opiro community is the inability of the caregiver of these children to maintain an adequate balanced diet, choice of food and ways of preparing the food. This spurred the researcher to carry out the study on identifying measures of reducing malnutrition among children 0-5 years by caregivers in Opiro Community.

1.2 Research Questions

1. How do caregivers manage malnutrition among children 0-5 years of age?
2. What are the measures taken by caregivers to reduce malnutrition among children 0-5 years?
3. What are the factors influencing the prevalence of malnutrition among children 0-5 years?

1.3 Objectives of the Study

The specific objectives of the study are;

1. To assess the management of malnutrition among children 0-5 years by caregivers in Opiro community.
2. To identify the measures taken to reduce malnutrition among children 0-5 years by caregivers in Opiro community.
3. To identify the factors influencing the prevalence of malnutrition among children 0-5 years in Opiro community.

1.4 Significance of the Study

Findings from this study will be of immense benefit to caregivers in Nigeria and Opiro community as it will educate them on the effect of malnutrition in child growth and development. It will also be used by policymakers and stakeholders in the health sector to educate the community members on how to prevent and manage malnutrition among children 0-5 years effectively.

1.5 Scope of the Study

This research project was carried out in Opiro Community, Etche LGA, Rivers State. It focused on the management, measures taken to reduce malnutrition

and identification factors influencing the prevalence of malnutrition among children 0-5 years of age.

1.6 Operational Definition of Terms

- **Management;** this refers to the type of treatment and care given by a caregiver to children suffering from malnutrition.
- **Measures of reducing malnutrition;** this refers to the ways and steps taken to reduce malnutrition among children 0-5 years.
- **Factors;** these are constraints or challenges that are responsible for the prevalence of malnutrition among children 0-5 years e.g., poverty, poor hygiene, illiteracy, unsafe drinking water and ignorance.
- **Malnutrition;** lack of adequate diet or nourishment which is evidenced by thin or bloated and weakened immune system.
- **Prevalence of malnutrition;** this refers to frequent occurrence of malnutrition among children 0-5 years of age.
- **Strategies;** These are plans of action designed to achieve a long-term or overall aim.
- **Caregivers;** are people who provide for the needs of children or of people who are ill or cannot provide for their own needs.

2. Literature Review

2.1 Conceptual Review

2.1.1 Concept of Malnutrition

Malnutrition is a disorder that arises when the body does not obtain the correct quantity of vitamins, minerals, and other nutrients it requires to maintain healthy tissues and organ function, according to the Medical Dictionary (2011). Malnutrition is described by the World Health Organization as a shortage of necessary nutrients that leads to poor health as a result of a variety of events or circumstances. Malnutrition is defined by Barbara (2012) as a lack of necessary or appropriate food substances, but it includes both under and over nutrition in practice.

According to Lonendrew (2014), malnutrition is a condition that results from eating a diet in which nutrients are not enough or are too much such that it causes health problems. He also stated that malnutrition is often used to refer to under-nutrition where they are not enough calories, protein and micronutrients. Malnutrition occurs when all individuals is deficient in nutrients necessary for life or excess nutrients in the tissues causing diseases (Onu, 2017).

According to United Nations World Food Programme, there are two (2) types of malnutrition which are;

- Protein-energy malnutrition results from a deficiency in any or all nutrients.
- Micronutrient deficiency results from a deficiency of specific malnutrition.

Protein-energy malnutrition (also known as starvation) is defined as a diet with insufficient amounts of all the major macronutrients such as protein, carbohydrates and fats (United Nations World Food Programme). There are three (3) types of protein-energy malnutrition in children, they are;

- Acute malnutrition which cause acute inadequate nutrition leading to rapid weight loss or failure to gain weight normally.
- Chronic malnutrition; which cause inadequate nutrition over a long period of time leading to failure of linear growth.
- Acute and chronic malnutrition; which is a combination measure, therefore it could occur as a result of wasting, stunting or both.

Micro-nutrient Deficiency; which results from a deficiency of specific micronutrients, they include:

Iron deficiency; which is a mineral that helps red blood cells transport organs from the lungs to rest of the body. An iron deficiency diet can result in anaemia, a condition in which the body does not make enough red blood cells (Akram *et al.*, 2020).

Vitamin A deficiency; vitamin A most important function is as a building block in the structure of the eye. According to Merck (2010) and Akram *et al.* (2020), the symptoms of deficiency include seeing poorly at night, blindness, dry skin, respiratory infections and impaired immune system.

Iodine deficiency: Iodine is a chemical that the thyroid gland uses to produce hormones that regulate body metabolism. Iodine deficiency leads to impaired thyroid function and mental retardation (Merck, 2010; Hassan *et al.*, 2020).

Zinc deficiency: The mineral zinc, is necessary for the proper function of the immune system. Zinc also helps cells to divide and grow and assist the body in healing wounds (Akram *et al.*, 2020). Deficiency symptoms include frequent infections, hair loss, poor appetite, problems in tasting and smelling and long healing time for wounds (Merck, 2010; Akram *et al.*, 2020).

According to Barbara (2012) the causes of malnutrition among children 0-5 years include; poor diet, digestive disorders and stomach condition, lack of breastfeeding, illiteracy and lack of nutrition in the part of the mother, food shortage in some countries and mobility problems.

Poor diet: when a child does not get an adequate supply of nutrients through food, the child encounters the condition of malnutrition. Poor diet makes children suffer from nutrient deficiency. As a result, the child may experience terrible health diseases and face difficulty to live a healthy life, being a victim of dysphagia (swallowing difficulties) can also lead to malnutrition, the child find it difficult to swallow food and cannot get the essential nutrients. (Barbara, 2012).

Digestive disorders and stomach condition: Due to digestive conditions, a child's body cannot absorb the nutrients, and the child experiences malnutrition. If the child is a victim of Crohn's disease or ulcerative colitis, the child's chances of malnutrition are high. If the child is gluten intolerant and suffers from celiac disease, the child's lining of the small intestine can get damaged. The body of the child cannot absorb the food nutrients and thus suffer from nutritional deficiency. On the other hand, the child will lose vital nutrients (Barbara, 2012).

Illiteracy and lack of knowledge of malnutrition in the part of the mother: If the mother lacks knowledge and she is not educated, on the method of food preparation with adequate nutrients, this can result in malnutrition (Barbara, 2012).

Lack of breastfeeding: Breastfeeding helps infants to stay healthy and disease-free. Sometimes mothers can deprive their child of breast milk for an array of reasons which may be recommended by the doctor. However, lack of adequate breastfeeding can make the child unhealthy and with age contacts malnutrition (Barbara, 2012).

Food shortage in some countries: In poor developing nations, malnutrition occurs due to a shortage of food supply. The country cannot produce enough amount of food supplies for its population. They lack agricultural resources, technology, fertilizers and other vital things. As a result, underprivileged families and children experience the condition of malnutrition (Barbara, 2012).

Motility problem: People with motility problem may suffer from malnutrition simply because they either cannot go out to buy food or find it difficult to prepare them (Barbara, 2012).

2.1.2 Management of Malnutrition in Children 0-5 years

According to national health policy (2005-2009) the management of malnutrition depend on the underlining conditions and treatment, these includes:

In children with vitamin A and other vitamin deficiency, food rich in vitamin A and adequate nutrient should be given. In most cases vitamin A supplement is given.

In children with abdominal or helminthic infection, Albendazole or Mebendazole syrup should be given orally to the child.

For children with chronic diarrhea, proper hydration with intravenous fluid or oral rehydration solution is given to replace electrolyte imbalance

In conditions with other infections or diseases like Crohn's disease, ulcerative colitis, prescribed drugs should be given for treatment of the infection or disease.

Iron supplement and multivite syrup should be given to stimulate appetite in children whose cause of malnutrition is due to loss of appetite. Vitamin C should also be given.

A dietician should be introduced to caregivers to help in prevention of malnutrition.

In children who cannot swallow food, an artificial feeding method (nasogastric tube feeding) should be done.

In cases of maternal factors like disease of the mother or death and the child cannot breastfeed adequately, supplementary feed should be given to the child. Children should be fed with adequate balanced diet meals like beans & plantain, fruits and vegetables, oils, meat etc.

2.1.1 Strategies of reducing malnutrition among children 0-5 years

Strategies of reducing malnutrition are grouped into three (3); primary, secondary and tertiary strategies. (Robin, 2013).

Primary strategies, these include:

Health-promotion; health education of caregivers about good nutrition and food hygiene, distribution of supplements like iron, vitamin A supplement, promotion of breastfeeding, family planning and birth spacing, environmental & personal hygiene.

Specific protection; specific protein diet e.g. eggs, milk, fish etc. fortification of food and immunization

Secondary strategies; they are:

Adequate treatment, periodic nutritional, surveillance, early diagnosis of any lag of growth, early diagnosis and treatment of infections like diarrhea, developing supplementary feeding programme during epidemics and regular deworming of children.

Tertiary strategies; are:

Nutritional rehabilitation, nutritional rehabilitation services, hospital treatment, follow up cases, increase in the government budget for ministries of agriculture and health.

2.1.3 Factors influencing the prevalence of malnutrition amongst children 0-5 years

According to Jellife (2009), the factors are grouped into three (3) parts, they are socio-cultural and economic factors, physical factors and psychological factors.

Socio-cultural and economic factors;

Poverty; it limits purchasing power, it affects transportation to and fro the market and it affect amount of education (Johns, 2010).

Habits and cultural taboos: Some beliefs forbid women from eating certain food like snail, okro, pork etc. during pregnancy, in most cases children are not given enough meat, it is believed that meat is for adults especially fathers (Johns, 2010).

Polygamy/religion: Many wives with many children while in religion, some prevent the consumption of certain foods, some prevent mothers from taking it and also prevent them from giving it to their children e.g. eating of crayfish or snail by Adventists (Johns, 2010).

War: This does not give enough time to farm or even eat, women and children are usually in camps with poor food and poor environmental situation, farms may be destroyed in most cases (Johns, 2010).

Ignorance: Many people do not know the importance of food combination which is necessary for good health (Johns, 2010).

Poor preparation of food: Nourishing diets are not properly prepared, even the infant formula is not properly prepared or stored (Johns, 2010).

Physical factors:

Drought and pest: This can destroy fields of crops as well as cattle at an early stage.

Physical illness: Some illness affects malnutrition such as diarrhea, fever, measles and other childhood illness affect the child. Persistent vomiting as a result of physical stenosis. Malabsorption as a result of celiac disease or parasite may affect the child.

2.1.4 Caregivers roles in the prevention of malnutrition in children (According to Daminabo, 2012).

- Caregivers should maintain good personal and environmental hygiene.
- Caregivers should learn how to prepare food in their right proportions
- Caregivers should always monitor their children in order to detect any infection early.
- Caregivers should maintain good hygiene during food preparation
- Caregivers should give their children freshly prepared foods.
- On the side of the mothers especially, they should learn how to begin breastfeeding as soon as possible within the first half-hour or 30minutes after delivery.
- Exclusive breastfeeding should be practiced within the first six months.
- Mothers should meet the nutritional needs during lactation.
- Mothers should avoid abrupt weaning of infants.
- Mothers should continue breastfeeding until the second year of life.
- Mothers should make sure all the infants immunization is given to prevent the infant from childhood diseases.

The effect of malnutrition on a child's health includes changes in the body mass, poor wound healing, severe weight loss (cachexia), and organ failure among others; all of which are described below:

Poor wound healing: The body cannot heal when there is a protein, carbohydrate, or vitamin deficiency. Malnutrition not only increases the risk of infection, but it also slows and prevents the healing of common wounds. Poor wound healing is caused by a lack of oxygen in the tissues, as well as an inability to provide necessary nutrients and generate enough white blood cells, as well as increased tension at the wound's edges (National Health Policy, 2009).

Cachexia: Among the effect of malnutrition, this is perhaps one of the most evident ones. It is also very dangerous. Cachexia or wasting syndrome encompasses severe weight loss along with muscle atrophy, fatigue, weakness and loss of appetite. A child with cachexia typically looks like him/she have shrunk and withered. The skin loses its elasticity and becomes dry. Children with cachexia also lose some of the motor coordination thus being more prone to falling.

Sarcopenia: It is a progressive loss of lean body masses

Organ failure: Organs affected are the kidneys which can cause failure in the regulation of salt and fluid which in turn can trigger over hydration or dehydration

Brain: Mental health illness can cause malnutrition and malnutrition can be a decisive factor in the development of mental illness, such as apathy, depression, introversion, self-neglect and deterioration in social interaction. Also, the lack of iodine can also cause brain damage in children.

Impaired temperature regulation: seen especially in children with cachexia, children who endure severe weight loss due to under-nutrition find themselves unable to store body heat, which can lead to hypothermia.

There is no doubt that the effect of malnutrition can be severe and even deadly for the population at large. However, this issue is worse yet for newborns, small children and pregnant mothers.

The following are the complications of severe acute malnutrition, heart failure, hypoglycemia, bleeding usually purpura, severe anaemia, hypothermia, confusion, unconsciousness and sudden death.

2.2 Theoretical Review

The theoretical framework of this study is based on Abraham Maslow's Hierarchy of human needs (Fig. 1). This theory states that every individual or human has a basic need and that needs must be met before progressing to a higher level of needs (Propounded, 1954).

Safety and security

This is the means of eliminating from the environment those factors that threaten the body as well as life. The need for safety has both physical and physiological. This implies that the individual needs to feel safe within and out of the environment. The needs include: clothing, housing, freedom, stability etc. family members and significant others should also maintain good environmental hygiene to help prevent as well as eliminate the level of bacteria in the environment.

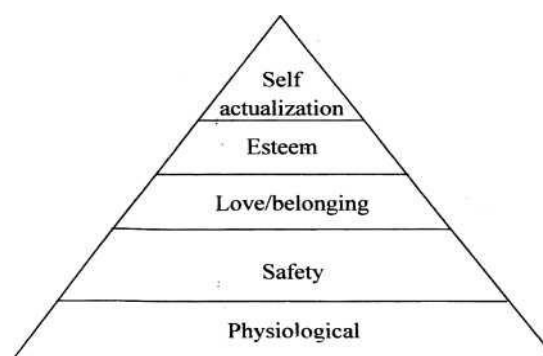


Figure 1: Pyramid of Abraham Maslow's hierarchy of human needs. These needs come from bottom to top.

Physiological needs

The physical requirements for human survival are known as physiological needs. The human body will not be able to function correctly if these requirements are not supplied, and it will eventually fail. The most significant requirements are regarded to be physiological, and they should be satisfied first. On the hierarchy of needs, this is the first and most basic need. Without them, the remaining requirements will be unable to be met.

These needs include; oxygen, fluid, temperature, nutrition, elimination, shelter, and rest. The children need to meet the need for food, fluid, temperature in equilibrium, failure of meeting these needs especially nutrition will definitely predispose the child to malnutrition. The knowledge acquired here will go a long way in educating caregivers on the importance of dietary management of malnutrition.

Love and belonging

Every individual needs to be loved and accepted in society, they need to feel accepted and loved by their families and significant others, so as to enable them to have a sense of belonging in society. Failure to meet these needs will make them feel rejected, isolated and inferior. Thus affecting their social life and sense of affection.

Self-esteem

Every individual desires to be respected and recognized in society. Parents should help to satisfy children's skills and abilities in their daily chores. They (parents) can also help fulfil this need by showing their children that their work is appreciated. Failure to do this will leave the children depressed and abandoned.

Self-actualization

When the need for self-esteem is satisfied, the individual strives for self-actualization which is the innate need to develop in life. If these goals are achieved, they bring joy and satisfaction to the family, failure to meet these goals brings about despair and sadness.

Application of theory to the study

Children alone cannot meet most of these needs mentioned in Maslow's Hierarchy of needs, caregivers should assist their children in meeting these physiological needs. Nutrition is essential for survival, children require adequate nutrition to carry out activities of daily living, promote wound healing and maintain wellness. Nutrition also promotes growth and development in children. Basically, nutrition is of great importance as far as the growth and development of a child is concerned, every child needs to meet the need of food and fluids in its desired amount as failure to meet this need predisposes the child to malnutrition which in turn alter the proper functioning of the growing child. It is crucial that caregivers strive to prevent malnutrition among children under 0-5years, however, when total prevention is not possible, it is expected that caregivers institute adequate and proper treatment to avert possible consequences such as retarded growth, stunting, underweight and wasting. Also, caregivers can collaborate with government agencies to adopt measures that will reduce malnutrition among children so that their physiological needs can be adequately taken care of and should be met first.

2.3 Empirical Review

In a study carried out by Mahgoub, Nnyepiti, and Bandake (2006), on the factors affecting the prevalence of malnutrition among children using a cross-sectional descriptive study in Botswana, this study was conducted to evaluate the level of malnutrition and the impact of some socio-economic and demographic factors of households on the nutritional statistics of children

under five (5) years of age in Botswana. 400 households and caregivers of children representing 23 health regions of the country participated in the study, results showed that the level of wasting, stunting and underweight has 4.4%, 38.7% and 15.6% respectively. It was also stilted that malnutrition was less prevalent among children whose parents worked in the agricultural sector than among children whose parents involves in formal business.

Similarly in a study carried out in the University of Gondar, Gondar Ethiopia, by Rebede (2013) conducted a study on factors affecting the prevalence of malnutrition among children using a cross-sectional descriptive study revealed that 47.6%, 30.9% and 16.7% of children were stunted, underweight and wasted respectively, he noted 'that the main associated factors of stunting were found to be child age, family monthly income and family planning, underweight was associated with a number of children in a household from the findings of this study, it is concluded that malnutrition is still an important problem among children 0-5years. Therefore special attention should be given to the intervention of malnutrition.

Zovoshy *et al.* (2012) conducted a study on measures of reducing malnutrition using a case-control study. The study was conducted on 2385 children of 0-5years old. The major number of children who participated in the study was at the age of 0-5years. 911(382%) in the girls group at the age of 3, 4 and 5 before the intervention, the mean of the weight was 14.23 ± 2.24 , 16.04 ± 2.36 , 17.79 ± 2.87 and 19.03 ± 3.65 kg respectively. The index was increased after intervention to 15.44 ± 2.34 , 17.23 ± 2.47 , 18.96 ± 3 and 20.31 ± 3.83 kg respectively. In the boys group of age 3, 4, 5 before the intervention, the mean of weight was 15.8 ± 2.35 , 16.68 ± 2.72 , 18.4 ± 3.11 and 19.10 ± 2.90 kg respectively, after intervention to 16.33 ± 2.34 , 17.88 ± 2.87 , 19.64 ± 3.26 and 20.28 ± 2.90 kg respectively. They showed that intervention with a cooked meal significantly increased the weight of the girl group. The prevalence of mild, moderate and severe wasting in girls after the nutritional intervention was significantly reduced from 11.7, 4.1 and 0.7 to 9.8, 3.3 and 0.3% respectively. The overall prevalence of mild, moderate and severe wasting in boys after nutritional intervention was significantly reduced from 10.7, 2.5 and 0.8 to 9.3, 2.4 and 0.4% respectively, the overall prevalence of wasting boys after intervention was significantly reduced from 14- 12%. Generally, in the prevalence of wasting (mild, moderate and severe) from 15.2% - 13.1%.

Anane *et al.* (2010) conducted a study using a cross-sectional survey on the response to the management of malnutrition in southern Ethiopia. The study was conducted on 1659 children of 0-5years. They illustrated the complete participant flow from admission to four weeks of therapy in the hospital. Out of 1659 children admitted, 179 were excluded because ineligible and 355 because their nutritional status was not assessed within seven days of admission. After assessing the nutritional status of 1125 children, 77 children with missing key information at admission and 215 children with oedema were excluded from the analysis in the study. Out of 833 children who were followed for four weeks, 77 exited from the hospital before the fourth-week follow-up assessment by the study, 66 children with a complete follow-up at four weeks were included in the analysis, they compared the excluded group of children with that of children included in this study and found no significant difference in their ages or sex or in the caregivers and household characteristics of children. The background of household, caregiver and child characteristics of those who participated. Nearly three out of four households had a house with a thatched roof with wood and mud, grass walls, open-pit latrine and access to a protected source of drinking water. A majority of the mothers were married, aged between 20 and 29years and had at least some form of primary education. About 60% of the children were females and 70% were under two years of age.

2.4 Summary of literature review

The literature of this study was reviewed based on the concepts of the study which include: malnutrition (a condition of lack of essential nutrients resulting in poor health caused by a number of conditions). It has different types which are: protein-energy malnutrition which results from a deficiency in any or all nutrients, micronutrients disease which results from the deficiency of .specific micronutrients, kwashiorkor and marasmus which results from nutritional disorder, deficient in essential protein and insufficient food, it also focus on the management of malnutrition, strategies and caregiver: role in the prevention of malnutrition.

The theoretical framework adopted for this study is Abraham Maslow's hierarchy of human needs, this theory states that every human and individual have basic needs (physiological needs) and these needs must be met.

The empirical review of relevant studies were done, however, there were only few studies available, only two of the studies are recent, however, no study was carried out in Rivers State.

3. Methodology

3.1 Design

The design used in this study is a cross-sectional descriptive survey. Descriptive survey was used mainly to analyse, explain or summarize data in studies that make use of a questionnaire. This study is aimed at describing the measures used by caregivers in reducing malnutrition among children 0-5years in Opiro community.

3.2 Setting

This study was carried out in Opiro community. Opiro is a community in Etche L.G.A. in Rivers State, Nigeria with a population of about 1273 people, it is located on the northern part of the state. The community is comprised of five (5) villages, which include: Alabachi, Umuogum, Umuokwen, Umuerum and Umunwagu. They have good water supply and good roads, the major occupation of the citizens is farming and trading.

3.3 Target population

The population of this study is 114 caregivers of children 0-5years of age in all compounds in Opiro community, data was obtained through the chief of the community who gave an estimated number of caregivers in the five villages.

3.4 Sampling size determination

The Yaro Yamane formula was used to determine the sample size. A sample size of 92 was obtained from the calculation. (Please see the calculation in the appendix).

3.5 Sampling technique

A sample of 92 caregivers was selected from the target population using the purposive sampling technique which is a non-probability sampling technique. This technique was used because it involved a specific character to be studied. Inclusion criteria of caregivers and children between the ages of 0-5 years old residing in the five villages of the community.

3.6 Instrument for data collection

The instrument used for data collection is questionnaires which was developed by the researcher. It consists of two sections. Section A is designed to elicit information on demographic background of the respondent, while section B contained 11 items that elicited information on the three research questions.

3.7 Validity of the instrument

After developing the questionnaire, the researcher sent it to the project supervisor for face and content validity. Necessary corrections were made which ascertained the validity of the instrument before the instrument was administered to the respondent.

3.8 Reliability of the instrument

The reliability of the instrument was determined using the test-retest method, 10 copies of the questionnaire were given out to caregivers in Igwuruta town and 2 weeks later, the same questionnaire was re-administered to caregivers in Igwuruta community and the results were analyzed using Pearson product-moment correlation at the significant level of 0.05. The result obtained was 0.8.

3.9 Method of data collection

An introductory letter from the school was given to the chief who granted the researcher permission to carry out the study after obtaining verbal consent. Two weekends were used for the administration of questionnaires which were retrieved on the spot.

3.10 Method of data analysis

The data were analyzed using descriptive statistics such as frequency, percentages, means and presented using tables.

3.11 Ethical consideration

A recommendation letter from the principal of the school was issued to the community development chairman seeking permission to conduct the study in the various compounds in the community. Consent for the study was obtained from the respondents, anonymity was maintained and they were assured of the confidentiality of information.

4. Results

Section A: Demographic Data

4.1 Age of Caregivers

Table 1 shows that 12 (13%) of the respondents fell within the age of 15-22years, 19(21%) within 23-27 years, 23(25%) within 28-32years, 20(22%) within 33- 37years and 18(19%) 38 years and above.

Table 1: Age of caregivers

Age	Frequency	Percentage
15-22	12	13%
23-24	19	21%
28-32	23	25%
33-37	20	22%
38 and above	18	19%
Total	92	100%

4.2 Age of Children

Table 2 shows that 30(33%) of the children are between the ages of 0-1 years, 28(30%) are 2-4years and 34(37%) are 4-5years old.

Table 2: Age of children

Age	Frequency	Percentage
0-1	30	33%
2-4	28	30%
4-5	34	27%
Total	92	100%

4.3 Religion of respondents

Table 3 shows the various religions practiced by the respondents, 92(100%) of the respondents are Christians, no Muslim found, no African traditional practitioner found.

Table 3: Religion of respondents

Religion	Frequency	Percentage
Christian	92	100%
Muslim	0	0%
African traditionalist	0	0%
Total	92	100%

4.4 Marital status of respondents

Table 4 shows that 62(67%) of the respondents are married, 19(21%) are single, 6(7%) are divorced and 5(5%) are widows.

Table 4: Marital status of respondents

Marital status	Frequency	Percentage
Married	62	67%
Single	19	21%
Divorced	6	7%
Widow	5	5%
Total	92	100%

4.5 Educational background of respondents

Table 5 shows that 68(74%) of the respondent obtained secondary education 24(26%) obtained tertiary education, none of the respondents ended their education at the primary level.

Table 5: Educational status of respondents

Educational level	Frequency	Percentage
Primary education	0	0%
Secondary education	68	74%
Tertiary education	24	26%
Total	92	100%

4.6 Occupation of respondents

Table 6 shows that 22(24%) of the respondents are civil servants, 29(31%) work with private sectors, 23(25%) are self-employed, 8(9%) are unemployed and 10(11%) are students.

Table 6: Occupation status of respondents

Occupation	Frequency	Percentage
Civil servant	22	24%
Private sector	29	31%
Self-employed	23	25%
Unemployed	8	9%
Student	10	11%
Total	92	100%

Section B: Research Questions

Research Question 1: How do caregivers manage malnutrition?

Table 7 reveals that out of 92 respondents, 48 of the respondents strongly agreed that malnutrition is managed with proper and adequate exclusive breastfeeding and weaning diet with a weighted mean of 3.4.

43 of the respondents strongly agreed that regular deworming of children help in managing malnutrition with a weighted mean of 3.1.

35 of the respondents agreed that proper feeding of children with an adequate balanced diet helps in the management of malnutrition with a calculated mean of 3.4.

Table 7: How caregivers managed malnutrition

S/N	Items	S	A	D	SD	No. of Resp.	Total no of Resp.	Mean	Criterion mean
1.	Malnutrition is managed with proper and adequate exclusive breast feeding and weaning diet	48	34	5	5	92	309	3.4	2.5
2.	Regular deworming of children help in managing malnutrition	43	25	14	10	92	285	3.1	2.5
3.	Proper feeding of children with adequate balanced diet helps in the management of malnutrition	47	35	7	3	92	310	3.4	2.5
Total								10	7.5

Research Question 2: What are the measures taken to reduce malnutrition by caregivers?

Table 8, reveals that out of 92 respondents, 45 strongly agreed that adequate education and preparation of balanced diet among mothers/caregivers reduce malnutrition with a calculated mean of 3.2.

29 of the respondents agreed that any diagnosis of any lag in growth help in reducing malnutrition with a calculated mean of 3.2.

51 of the respondents strongly disagreed that periodic nutritional surveillance cannot reduce malnutrition with a calculated mean of 1.7.

43 of the respondents agreed adequate environmental/personal management help in the prevention of infectious diseases like diarrhea and cholera that can cause malnutrition with a calculated mean of 3.3.

Table 8: Measures taken to reduce malnutrition by caregivers

S/N	Items	SA	A	D	SD	No. of Resp	Total No of Resp.	Mean	Criterion mean
1.	Adequate education on preparation of balanced diet among mothers/caregivers reduce malnutrition	45	30	10	7	92	297	3.2	2.5
2.	Early diagnosis of any lag in growth help in reducing malnutrition	43	29	12	8	92	291	3.2	2.5
3.	Periodic nutritional surveillance cannot reduce malnutrition	7	11	23	51	92	158	1.7	2.5
4.	Adequate environmental/personal hygiene help in the prevention of infectious diseases like diarrhea and cholera that can cause	38	43	9	2	92	301	3.3	2.5
Total								11.4	10

Research Question 3: What are the factors influencing the prevalence of malnutrition?

Table 9, reveals that 43 of the respondents strongly agreed that poverty is one of the leading factors influencing the prevalence of malnutrition with a weighted mean of 3.3.

18 of the respondents agreed that cultural taboos and habits influence the prevalence of malnutrition with a calculated mean of 2.6.

11 of the respondents disagreed that communal crisis influences the prevalence of malnutrition with a calculated mean of 3.1.

41 of the respondents agreed that illiteracy and poor knowledge of mothers towards adequate nutrients can influence the prevalence of malnutrition with a weighted mean of 3.2.

5. Discussion

5.1 Key Findings of the Study

Research Question 1: How do caregivers manage malnutrition?

The result in Table 7 shows that the majority of the caregivers strongly believe that malnutrition can be managed by proper and adequate exclusive breastfeeding and weaning diet, proper feeding of children with an adequate balanced diet and regular deworming of children.

Research question 2: What are the measures taken by caregivers to reduce malnutrition?

The result in Table 8 shows that preparation of a balanced diet, early diagnosis of any lag in growth, and adequate environmental and personal hygiene are measures taken by caregivers to reduce malnutrition. Also, majority of the caregivers strongly disagreed that nutritional surveillance cannot reduce malnutrition.

Table 9: Factors influencing the prevalence of malnutrition

S/N	Items	SA	A	D	SD	No. of Resp.	Total No of resp.	Mean	Criterion mean
1.	Poverty is one of the leading factors influencing the prevalence of malnutrition	43	39	6	4	92	305	3.3	2.5
2.	Cultural taboos and habits influence the prevalence of malnutrition	29	18	22	23	92	237	2.6	2.5
3.	Communal crisis influence the prevalence of malnutrition	33	43	11	6	92	286	3.1	2.5
4.	Illiteracy and poor knowledge of mothers towards adequate nutrients can influence the prevalence of malnutrition	41	33	12	6	92	293	3.2	2.5
Total								12.3	10

Research Question 3: What are the factors influencing the prevalence of malnutrition?

The result in Table 9 reveals that the caregivers strongly agreed that poverty is one of the leading factors influencing the prevalence of malnutrition.

5.2 Implication of findings with literature support

Research question 1: How do caregivers manage malnutrition?

The result in Table 7 shows that majority of the caregivers strongly believe that malnutrition can be managed by proper and adequate exclusive breastfeeding and weaning diet, proper feeding of children with adequate balanced diet and regular deworming of children.

This implies that the caregivers in one way or the other are aware or have been taught in one health facility or another on ways they can manage or prevent malnutrition among their children. This result is supported with the studies of the National Health Policy (2005-2009). About the management of malnutrition.

Research Question 2: What are the measures taken by caregivers to reduce malnutrition?

The result in Table 8 shows that preparation of a balanced diet, early diagnosis of any lag in growth and adequate environmental and personal hygiene are measures taken by caregivers to reduce malnutrition and also the majority of the caregivers disagreed that periodic nutritional surveillance cannot reduce malnutrition. This implies that the caregivers also have been taught or are aware of the measures they can take to tackle malnutrition. This result is supported by the studies of Robin Elizabeth (2010) on the strategies of reducing malnutrition.

Research question 3: What are the factors influencing the prevalence of malnutrition?

The result in Table 9 reveals that the caregivers strongly agreed that poverty is one of the leading factors influencing the prevalence of malnutrition. This implies that the caregivers understand that poverty is one of the leading factors influencing the prevalence of malnutrition. This result is supported by the studies of Jellife (2009) on the factors influencing the prevalence of malnutrition.

5.3 Alignment of finding with finding of previous studies cited

The result in Table 7 shows that proper feeding of children with an adequate balanced diet is one of the ways caregivers manage malnutrition. This is in

line with the study carried out by Anane *et al.* (2010) on the management of malnutrition in southern Ethiopia

The result in Table 8 shows that the preparation of a balanced diet is one of the ways malnutrition can be tackled. This is in line with what was stated by Zovoshy *et al.* (2012) and Perez-Escamilla *et al.* (2018) on measures of reducing malnutrition.

The result in Table 9 reveals that poverty is one of the leading factors influencing the prevalence of malnutrition this is in line with the study carried out by Rebecca Mengitus (2013) in the University of Gondar, Gondar Ethiopia, on factors affecting the prevalence of malnutrition.

5.4 Implication to Nursing

From the data collected and analyzed, caregivers have an understanding of ways of managing malnutrition, measures they can take to reduce malnutrition and also factors that influence the prevalence of malnutrition. Irrespective of these caregivers having an idea or understanding about the study, nurses should also make it a priority to educate caregivers more on malnutrition in children and also the effect of malnutrition in children to avoid complications and consequences.

5.5 Limitations of the study

The researcher was limited by some factors during the course of the study which includes distance to the area of study to distribute the questionnaire although the researcher overcame the situation by spending the weekend at the study area for easy access to the respondents, reluctance of the caregivers to accept and fill the questionnaires, although this was resolved by the assistance of the two trained research personnel who helped and encouraged the respondents on filling the questionnaire respectively.

5.6 Summary

The study was cross-sectional descriptive survey research to determine the strategies of reducing malnutrition among children 0-5 years in Opiro community, Rivers State. The aims of the study include; to know how caregivers manage malnutrition, the measures taken by those caregivers to reduce malnutrition and factor that influence the prevalence of malnutrition. Related literature was sought, the theory of Abraham Maslow hierarchy of human needs was used as the framework and three research questions were drawn on the three objectives of the study.

5.7 Conclusion

The researcher concluded that malnutrition can be managed by proper adequate exclusive breastfeeding and weaning diet, regular deworming and proper feeding of children with an adequate balanced diet and also preparation of balanced diet, early diagnosis of any lag in growth and adequate environmental and personal hygiene are measures caregivers take to reduce malnutrition. She also concluded that poverty, cultural taboos and habits, communal crisis and illiteracy and poor knowledge of mothers/caregivers towards adequate nutrients are the major factors influencing malnutrition.

5.8 Recommendations

Based on the findings of the study, the following recommendations were made;

- Caregivers should be properly health educated on the importance of adequate breastfeeding.
- Nurses and other health workers should educate caregivers on the causes and prevention of malnutrition.
- Caregivers should be health educated on the importance of personal and environmental hygiene.
- Nurses should health educate mothers/caregivers on the importance of a balanced diet and how to prepare an adequate diet.

Nurses can use a day of the clinic days to demonstrate by cooking a balanced diet.

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