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Assessment of the Strategies to Reduce Malnutrition among Children of 0-5 Years in Ikole Local Government of Ekiti State, Nigeria

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Abstract: A major factor in determining a child's survival is their health status, which is influenced by their nutritional status. Therefore, improving children's nutritional health boosts their odds of surviving and is thought to be a requirement for their ability to contribute to both individual and communal development.
This study's major goal is to evaluate the strategies of reducing malnutrition among children aged 0 to 5 years in Ikole LGA, Ekiti State, Nigeria.
The study used a quantitative descriptive design. It entailed conducting a quantitative survey using well-designed questions. Using the Korlik & Higgins (2015) formula, a sample size of 452 was chosen.
This research showed that:

- Majority of the 136 respondents (30.1%) were between the ages of 40 and 49 and 128 respondents (28.3%) were between the ages of 30-39. According to the results of the respondents' marital status, 276 (61.1%) of them were married, 128 (28.3%) were divorced, and 12 (10.6%) were widowed.
- The majority of the respondents, 316 (69.9%), believed that preventing malaria is one of the best ways to lower malnutrition. The majority of the respondents, 316 (69.9%) agreed that using portable water can help prevent and minimize malnutrition. 408 (90.3%) of the respondents concurred that good food hygiene can minimize malnutrition. Majority 437 (96.5%) of the respondents agreed that the practice of exclusive breastfeeding for the first six months helps to prevent malnutrition, and majority 240 (53.1%) of the respondents believed that earlier detection and treatment of diseases play key role in preventing malnutrition.

In conclusion, majority of the responders demonstrated above-average awareness of the tactics used to combat hunger. Even with this strong knowledge, the government must boost up its different actions to complement it in order to significantly lower the incidence of malnutrition among children aged 0–5. In order to increase this level of knowledge to an excellent level and to foster a more favorable attitude among nursing mothers and guardians towards the elimination of malnutrition among children aged 0–5 years, health practitioners must also boost up their health education programs.
Keywords: Strategies, Malnutrition, Children, Reduction

INTRODUCTION

It is well known that children under the age of five are weak and prone to many things, particularly when it comes to health issues. More children than any other group are typically affected by nutritional deficits and malnutrition. Both more affluent and developing nations around the world have poor nutrition (WHO Progress Report, 2019). According to the WHO Progress Report (2019), hunger and malnutrition continue to be the world's poorest and most desperate concerns.

There are up to 800 million malnourished people in the world. Malnutrition is a factor in more than half of children's deaths in underdeveloped countries (Benson, 2015). One or more of the numerous forms of malnutrition affects around 30% of the world's population (WHO, 2018).

Daelmeans and Saadeh (2015) emphasized the significance of tackling childhood malnutrition as a prerequisite for attaining internationally agreed-upon targets to reduce malnutrition and child mortality in a recent series of articles on child survival published in the Lancet. As a result, child growth is widely regarded as a significant public health indicator.

By 2015, the fourth Millennium Development Goal (MDG) aimed to cut under-five mortality by two-thirds. As a result, more comprehensive and integrated policies were created in order to maximize the advantages for the most vulnerable groups, particularly children. The most significant initiative in this area has been to create and promote exclusive breastfeeding as well as nutritionally sufficient foods for children under the age of five. In 2016, WHO and UNICEF suggested an exclusive breastfeeding (EBF) period of 4-6 months; however, in 2019, a WHO expert committee found that an EBF period of 6 months is required for a child to have the best possible nutritional status. According to field research, supplemental foods provided between four and six months of age only replace the nutrients from breastfeeding and have no positive effects on a child's growth or development (Dewey, 2016).

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As a result, UNICEF and Ghana's Ministry of Health advised exclusively breastfeeding a baby during the first six months of life. Currently, more than 95% of African children under the age of five are breastfed, but this number is sometimes insufficient since many parents supplement breast milk with water and other drinks. As a result, West Africa has one of the lowest rates of exclusive breastfeeding (Kolstern, et al., 2015).

The typical breastfeeding period lasts between 16 and 28 months. Prolonged nursing is common. According to statistics for Sub-Saharan Africa, 28% of infants breastfeed exclusively for the first six months of their lives; 65% of children get complementary feeding from six to nine months; and 38% of children under five have stunted growth. Different West African nations are seeing varying trends. In Burkina Faso, exclusive breastfeeding is just 6% common, compared to 10% in Cote d'Ivoire, 18% in Togo, and 17% in Nigeria. The prevalence of supplemental breastfeeding for infants between the ages of 6 and 9 months is 49% in Burkina Faso, 54% in Cote d'Ivoire, 65% in Togo, and 63% in Nigeria (UNICEF, 2015). Health Services and Teaching Hospitals in Nigeria are putting into practice a plan called High Impact and Rapid Delivery of Intervention under the guidance of the Ministry of Health (MOH). For children under the age of five, in particular, the interventions focus on ways to improve exclusive breastfeeding, supplemental feeding, and deworming practices (NHS, 2017).

It is impossible to overstate the importance of healthy diet for early childhood development. This is so that they can grow and develop normally, have healthy organ formation and function, have a strong immune system, and have normal neurological and cognitive development (Black, 2018). Populations that are well-nourished and capable of learning new skills, thinking critically, and contributing to their communities are necessary for economic progress and human development (Lui, 2019). The extent to which children acquire appropriate nutrients for future growth determines how their cognitive abilities develop. Studies have also revealed that undernutrition or malnutrition is to blame for more than one-third of fatalities in children under the age of five (Rice, 2015).

Statement of the problem

The majority of malnutrition-related deaths take place at home as a result of poor treatment. Even with hospital care, the anticipated value is between 30 and 50 percent, and by 2020, it is probably going to be 75 percent (WHO, 2019). Despite the high prevalence rate of severe acute malnutrition (SAM) in Nigeria, Antwi (2019) claims that most chances for such children to receive a clinical diagnosis are lost. Recent studies on the epidemiology of acute malnutrition in Sub-Saharan Africa show a rise in mortality rates among children who need medical care and hospitalization, such as those who have HIV or have been exposed to HIV (Aitpillah, 2015). Scholars claim that the shift can be attributed to the high number of children who are HIV-positive (20–50%).

Aitpillah (2015) and Heikens (2018) Additionally, over the past six years, the malnutrition rates in Nigeria for children under the age of five have gradually grown across all age categories. The 12- to 23-month-old age bracket is where it peaks, according to the NHS Annual Report (2018). In 2018, malnutrition was discovered in 7.8% of infants and toddlers aged 0 to 11 months. This demonstrates a consistent rise from the previous year's 4.1% to the current figure of 4.9%. 10.1% of children between the ages of one and twenty-three months had malnutrition in 2018, up from 8.2% in 2017. The Western region had the greatest rate, 28.2%, while the Eastern region had the lowest rate, 3.3%. Among children aged 24-59 months, the malnutrition rate increased from 6.2% in 2017 to 7.3% in 2018.

Justification of the study

The best possible physical, social, and intellectual development for children should be a top concern for society. Malnutrition is a global issue that has been addressed in a number of ways, but it persists. In fact, it still frequently kills millions of kids. Unraveling the intervention and hurdles in terms of caregivers' attitudes, perceptions of their children's nutritional status, and management options for malnutrition continue to be difficult. Understanding the caregiver's behavioral or sociodemographic influences on the child requires more complexity (Dewey, 2016).

Significance of the study

The results of this study will help with improved contextual planning and management of malnutrition in general, with a focus on 0–5-year-old children. It would offer the framework through which health managers and stakeholders may use particular indicators to gauge a child's risk of malnutrition and then implement the necessary controls and solutions. The study's findings would also provide policy makers and healthcare professionals with broad information on potential indicators that could direct the design and implementation of interventions to enhance efforts for reducing childhood malnutrition.

Causes of malnutrition among children 0-5 years

According to UNICEF (2015), the causes of malnutrition among children of 0-5 years are:

- Inadequate food intake is the leading cause of malnutrition worldwide, according to UNICEF (2015), and it affects children between the ages of 0 and 5. In impoverished nations, limited or improper food supplies or early nursing termination take precedence over inadequate food intake. Food traditions based on culture and religion might be important in some places. Children are also put in danger by poor sanitation, which raises their chance of contracting infectious disorders that worsen

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nutritional losses and change metabolic requirements.

- In modern nations, malnutrition is less frequently caused by insufficient food intake. Instead, the etiology of malnutrition is heavily influenced by illnesses, especially chronic ones. There are a number of factors that put children with chronic illnesses at risk for dietary issues, including the following:
  - Anorexia is common in children with chronic conditions, which results in insufficient calorie intake.
  - An increase in metabolic demands and inflammation load may lead to an increase in caloric need.
  - Any chronic condition that affects the liver or small bowel has a negative impact on nutrition by decreasing absorption and digestion.
- The following chronic conditions are frequently linked to nutritional deficiencies:
  - Chronic renal failure and cystic fibrosis
  - Obvious childhood cancers
  - Congenital cardiac condition
  - Muscular disorders
  - Long-term inflammatory bowel conditions
- Additionally, children are significantly more likely to experience nutritional deficits if they have one of the following conditions:
  - Prematurity
  - Delay in development
  - Exposure to toxins in utero (ie, fetal alcohol exposure)
- Due to rigorous dietary limitations, children with multiple food allergies face a unique nutritional problem. Patients with active allergy reactions can require more protein and calories.
- The American Academy of Pediatrics advises that when evaluating children who are malnourished, the pediatrician should assess how much juice is being drunk because excessive juice consumption may be linked to malnutrition (overnutrition and undernutrition).

Classifications of malnutrition in children less than 5 years

Malnutrition is described by the World Health Organization (WHO) (2018) as a cellular imbalance between the body's supply of nutrients and energy and its need for them to support development, maintenance, and particular functions. When it comes to newborns, children, and adults, malnutrition generally refers to any deviation from a sufficient and optimal nutritional status. The symptoms and signs of kwashiorkor, marasmus, or marasmic-kwashiorkor are seen in severely undernourished children. In children, undernutrition shows itself as underweight and stunting (short stature).

WHO (2018) explains the many types of malnutrition in children under the age of five in the table below:

Variables	Mild Malnutrition	Moderate Malnutrition	Severe Malnutrition
Percent Ideal Body Weight	80-90%	70-79%	< 70%
Percent of Usual Body Weight	90-95%	80-89%	< 80%
Albumin (g/dL)	2.8-3.4	2.1-2.7	< 2.1
Transferrin (mg/dL)	150 – 200	100 – 149	< 100
Total Lymphocyte Count (per µL)	1200 – 2000	800 – 1199	< 800

Measuring nutritional status of children less than 5 years

Anthropometric measurements are one of the most crucial predictors of a child's nutritional condition, according to UNICEF (2015). Height-for-age, weight-for-age, and weight-for-height are the three physical growth indices used to describe children's nutritional status when the infant's spine length, weight, and age data are combined. They are as follows:

- **Height-for-age:** An indicator of linear growth retardation is provided by this index. Stunted children are those whose height for age is less than minus two standard deviations (-2SD) from the reference population's median. Children who fall below the reference population median by three standard deviations (-3SD) are severely stunted. Inadequate nutrition over an extended period of time or the effects of recurring or chronic sickness can also cause stunting in children. Therefore, height-for-age represents a measure of the long-term effects of undernutrition in a community and does not significantly change depending on the season of data collection.
- **Weight-for-age:** this is an index that combines height-for-age and weight-for-age. Children are termed underweight for their age if their weight-for-height measurements fall below minus two standard deviations (-2SD) from the reference population's median, and seriously underweight if they fall below minus three standard deviations (-3SD). A child that is underweight for their age may be stunted, wasted, or stunted and wasted (WHO, 2015)
- **Weight-for-height (Body mass in relation to height):** This is measured by weight-for-height. Children who measure less than minus two standard deviations (-2SD) from the reference population's median weight for height are wasted or too small for their height, and those who measure less than minus three (-3SD) from the reference population are severely wasted (UNICEF, 2015).

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Maternal health care and child morbidity relationship with malnutrition

The only independent predictor of stunting, anemia, and iron deficiency was having malaria. In the examined communities, traditional complementary meals must be urgently improved with regard to their calorie density, amount of dietary fat, and bioavailability of macro and micronutrients (Mark, 2016). According to the NHS, measles, diarrhea, and malaria incidence all contribute to child mortality and malnutrition (NHS, 2017).

Feeding practices, water and sanitation and malnutrition

The way that children are fed has a big impact on their nutritional status. How children are fed is influenced by mothers' knowledge of nourishing meals. Adigrata (2018) reports that 31% of moms with infants aged 0 to 2 years think cow's milk is optimal for a child's development. Some mothers believe that breastfeeding is hazardous when women become pregnant (Wolde, 2019). When moms are aware of the benefits of exclusive breastfeeding, their supplemental feeding habits tend to improve (Lisa, 2018). An interventional study in India that involved providing mothers with nutritional education to increase their knowledge about infant feeding in the variety, quantity, quality, and consistency of complementary feeding revealed that 86% of mothers delayed complementary feeding practices that were insufficient in quality, quantity, frequency, and consistency and that 80% of mothers initiate breastfeeding after 3 days of birth (Sethi, 2019). In a related study conducted in south India, moms received advice regarding the selection of suitable supplemental foods and feeding frequency. The intervention group had better feeding habits, such as refraining from using feeding bottles and consuming more complementary foods (Hague, 2019). The type of supplemental food and the timing of its administration to an infant are crucial for the child's nutritional status.

According to current recommendations of WHO (2015), complementary feeding should be introduced into child's diet starting around the age of 6 months. Castle, 2019 observed, a strong association was found between age of introduction of complementary feeding and child nutritional status. Significantly more mothers of malnourished children (34%) introduced complementary feeding before 6 months of age than mothers of well-nourished children (5%). A scientific review on complementary feeding has revealed that porridge and other forms of food given to children less than five are inadequate (Brown, 2019).

The world through the MDG framework, have consented to the objective of halving the proportion of people without sustainable access to safe drinking water and basic sanitation by 2015. The Millennium Development Act, ACT 702, which establishes the framework and demonstrates political commitment for guaranteeing the achievement of the MDGs, including matters relating to access to water and improved sanitation, was passed by the Ghanaian government. To ensure that individuals in rural areas reach this objective by 2015, the Ministry of Works and Housing is executing a rural water and sanitation policy in conjunction with the Ministry of Local Government (UN, 2016).

In developing countries like Ghana, an estimated 50 to 75 percent of rural residents used improved drinking water sources as of 2017. (UN, 2016). Among the most crucial policy measures for enhancing nutrition are investments in sanitation and other social sectors, particularly with an emphasis on providing women and girls with access to these services and resources. Evidence comes from Zimbabwe, where after gaining independence in 2016 clear policies were implemented to address many areas' lack of access to essential amenities. 2016 World Bank

THEORETICAL REVIEW

Health Belief Model serves as the study's theoretical underpinning. A psychological model called the Health Belief Model (HBM) aims to explain and forecast health-related behaviors. The Health Behavior Model (HBM) is by far the most widely applied theory in health promotion and education (Glanz, Rimer, & Lewis, 2019). It was created in the 1950s as a theory to explain why the U.S. Public Health Service's medical screening programs, particularly for tuberculosis, were not very effective. The fundamental tenet of the original HBM is that individual beliefs or perceptions about a disease and the methods available to reduce its occurrence drive health behavior (Busayo & Phiri, 2021).

The Health Belief Model, according to Roth (2018), identifies four key perceptions that can affect adherence to regimens. By methodically applying the model's four constructs, providers may better tailor their approach to working with patients who are at risk for ESRD by first understanding the critical beliefs that patients have about their progress and the obstacles they perceive to stand in the way of it. Which are:

- **The perception of susceptibility:** One of the more potent ideas that influences people to adopt healthy behaviors is personal risk or susceptibility. The chance of participating in behaviors to reduce risk increases with perceived risk. This is what motivates the nursing mother to give her infant a healthy meal.
- • **Perceived Severity:** This refers to a person's perception of the seriousness of a condition. It might also result from a person's perceptions of the challenges a sickness might bring or its impact on their child. Stunted growth has the greatest detrimental effects on a person's health and negatively impacts a child's total physical development.
- **Perceived benefits:** This refers to an individual's assessment of the worth or utility of a new activity

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in reducing the chance of contracting a disease. A crucial component that affects health practices. Because benefits believed to result from actions, events, and activities in society tend to inspire people. When people think their new action may lower their risk of contracting an illness, they are more likely to adopt healthy habits. When it comes to the adoption of secondary preventive actions like screenings, perceived advantages are crucial.

- **Perceived Barriers:** An individual's perception of the barriers preventing them from acquiring a new behavior. The most important factor in determining behavior change is perceived barriers. A person must be persuaded that the advantages of the new behavior outweigh the negative effects of maintaining the old behavior in order for it to be accepted (Centers for Disease Control and Prevention, 2015).
- Incitations to Act: The HBM contends that in addition to the four beliefs or perceptions and moderating factors, cues to action also have an impact on behavior. Events, people, or things that compel people to alter their conduct are known as cues to action.
- **Self-Efficacy:** This is the conviction in one's own competence. In general, people won't try something new unless they believe they can succeed at it. If a person perceives a new action as beneficial (perceived benefit) but does not feel capable of engaging in it (perceived barrier), it is unlikely that they will try it.

Empirical review

In Ghana, especially in the north, many people hold the belief that symptoms and illness in children are a curse from the gods or a punishment from the ancestors. As a result, children are taken to traditional healers for spiritual intervention rather than medical care, according to a study conducted by UNICEF (2015). In accordance with results of another study conducted in Ghana's Upper East Region, the majority of mothers hold the view that malnutrition results from mothers' contempt for cultural norms and beliefs. According to them, traditional medicine should also be used in the treatment of malnutrition (Akpribo, 2015).

According to a Nepalese study, malnutrition is sometimes seen as a natural occurrence connected to the "strength" of the child's body at the moment of delivery. It was clarified that it was due to God's curse, a spirit posing a threat to the child, or "a wizard slowly consuming the youngster" (Kolstern, Lefevre & Lerude, 2015). Given the results of the studies mentioned above, one thing stands out: malnutrition is perceived as having a spiritual origin rather than a natural one, which has an impact on how people seek out health care.

Since women are the primary caregivers for children, studies by Oyekale & Oyekale (2015) demonstrated that education of women also has good effects on the quality of care provided to children. For instance, educated mothers are more likely to live in urban areas with functioning social infrastructure, have well-paying jobs that allow them to earn more money and provide for their children, have a commendable culture of hygiene needed to protect children from diseases, participate in child health-improving programs like immunization and child care talks, and be able to benefit the most from nutrition and other health-related programs. Education enhances the mother's capacity for information processing, skill acquisition, and positive conduct.

According to a 2017 study by FSAU, acute malnutrition, also known as "nafagodoro," is more common in Somalia where food quality and sanitation are poor. Giving the child additional food is one way to address malnutrition, which is caused when the two factors combine. During malnutrition treatment, no food is withheld. The accompanying diseases are treated with medicine. Kwashiorkor patients have their swollen limbs, stomachs, and faces burned in order to drain the fluid. According to the same study, treating evil eye also entails using ubuore plants, garlic, hyena skin, donkey hooves, elephant feces, and donkey hooves. These components burn, steaming the youngster in the process. The youngster shivers, sneezes, and a lot of liquid comes out of the nose throughout this process, which is a sign that the evil is emanating from the skull. It is thought that the child calms down and gets over the evil eye during the procedure (FSAU, 2017).

UNICEF works to Prevent and Treat Malnutrition

- **In the short term:** UNICEF works to address urgent needs to prevent a worsening of the situation and prevent mortality in young children by supporting early detection and care for children suffering from severe acute malnutrition and by providing ready-to-use therapeutic food for their treatment, according to UNICEF (2018). In addition, we help communities and health facilities have access to water, sanitation, and hygiene, and we instruct families on how to prepare and feed their kids healthful meals.
- **Longer term:** UNICEF works to improve health and other social services, as well as the availability, access, and use of local food resources. It also promotes the best infant and young child feeding practices so that households, communities, and national systems are better equipped to prevent and manage future shocks of this nature.
- **For a long-term solution to the malnutrition problem:** UNICEF campaigns for enhanced national commitments to nutrition financing and policy initiatives, such as incorporating the treatment of severe acute malnutrition into public health budget and response plans.

Strategies to prevent malnutrition and improve nutrition

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According to Busayo and Phiri (2021), there are two major approaches in addressing malnutrition.

- Nutritional planning
- Direct nutrition and health interventions

Nutritional planning

This involves political commitment by the government. A well planned and well executed long term project can accelerate the developmental process and the benefits can be rewarding and permanent. Nutritional planning involves formulation of a nutrition policy and overall long term planning to improve production and supplies of food, ensure its equitable distribution and programs to increase the purchasing power of people. This may include, land reforms, proper guidance in agriculture to help farmers to get better yields from their lands, help in proper marketing of farm produce. To help increasing the capacity of people to buy nutritious food in adequate quantity, income generating activities for the weaker sections of the community, making available good quality food in affordable prices through proper public distribution system, etc. are some of the plans for the government to implement.

Direct nutrition and health intervention

These include:

- **Improved health care system:** Infections like malaria, measles and diarrhea are prevalent in our society and they precipitate acute malnutrition among children and infants. A good health care system that provides immunization, oral rehydration, periodic deworming, early diagnosis and proper treatment of common illnesses can go a long way in preventing malnutrition in the society.
- **Nutrition education:** People can be educated on
    - The nutritional quality of common foods
    - Importance and nutritional quality of various locally available and culturally accepted low cost foods
    - Importance of exclusive breastfeeding for six months and continuing to breast feed up to two years or beyond.
    - Damage caused by irrational beliefs and cultural practices of feeding
    - Recipes for preparing proper weaning foods and good supplementary food from locally available low cost foods.
    - Importance of including milk, eggs, meat or pulses in sufficient quantities in the diet to enhance the net dietary protein value.
    - Importance of feeding children and adults during illness
    - Importance and advantages of growing a kitchen garden
    - Importance of immunizing their children and following proper sanitation in their day to day life.
- **Early detection of malnutrition and intervention**
    - The longer the developmental delays remain uncorrected, the greater the chance of permanent effects and hence intervention must occur during pregnancy and first three years of life.
    - A well recorded growth chart can detect malnutrition very early. Velocity of growth is more important than the actual weight at a given time
    - If growth of the child is slowed or is arrested as shown by flat curve on the growth card, physician should be alerted and any hidden infection or any reason for nutritional deficiency must be evaluated and taken care of.
    - If growth chart is not maintained, anthropometric indices like, weight, height mid arm circumference, and chest circumference etc. can be measured and used for evaluation of nutrition.
- **Nutrition supplementation**: Usually, biologically vulnerable groups like pregnant women, infants, preschool going and school going children are targeted by various welfare measures conducted by the government. Calories, proteins and micronutrients like iron, vitamin A and zinc can be supplemented.

Other strategies for preventing malnutrition

UNICEF (2018) adopted some strategies to prevent malnutrition, these are:

- **Biofortification:** Micronutrient malnutrition is often called hidden hunger and isa serious health problem throughout the world. Biofortification is the process of breeding; where the food crops which are rich in bioavailable micronutrients for example vitamin A, zinc, and iron etc. are “biofortified” by loading higher levels of minerals and vitamins in their seeds and roots during growth. Unlike common fortification which needs repeated addition of particulate nutrient, biofortification is a one-time investment in dissemination of nutrient-dense varieties and becomes self-sustaining. With the help of biofortification, scientists can provide farmers with crop varieties that provide essential micronutrients that can naturally decrease anemia, cognitive impairment, and other malnutrition related problems which have affected billions of people. For example, in Philippines a 9-monthfeeding trial of rice containing an additional 2.6 (PPM) of iron showed efficacy in improving body iron stores among iron deficient women. Likewise, a feeding trial of orange sweet potato with schoolchildren in South Africa showed improvements in their vitamin A status due to high beta-carotene
- **Probiotic foods:** In African continent the incidents of diarrhoea are high, which is a main cause of child mortality of less than five years old. The consumption of fermented foods containing probiotics will be one of the opportunity by which health of children may be improved. Fermentation is a preservation technique, hence can prevent postharvest losses, detoxifying the raw materials as

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well as increasing the intake of nutrients, thus alleviating malnutrition. However, for those trying to make a difference, solutions are slowly being explored. These include:

- The establishment of networks in which local people can set up their own kitchens and produce probiotic foods the isolation of African bacterial strains from traditional foods, and developing them for probiotic applications.
- Attempts to commercialize fermented food processing to account for regional variations in raw materials, recipes and production methods and starter culture technology.

- **Therapeutic diet strategies F75 and F100 or RUTF:** The major public health problem throughout the developing world, mainly in sub-Saharan Africa and South Asia is severe acute malnutrition (SAM). Approximately 20 million children million suffer from SAM. Commercially available remedial formulas to cure SAM are (F-75 and F-100) and ready-to-use therapeutic foods that meet specified standards with the WHO specifications are fortified with vitamin A. This has gained the central attention whether it is safe to give high dose of vitamin A to children with severe acute malnutrition, mainly those with oedema and hepatic dysfunction. Patients with no adequate appetite and/or have a major medical complication are initially admitted to in-patient facilities. The formula which is used at this stage is F75. It promotes recovery of normal metabolic function and nutrition electrolytic balance. At this stage rapid weight gain is precarious, that is why F75 is formulated so that patients do not gain weight during this stage. Once children with severe acute malnutrition are stabilized in inpatient care, it is recommended to change the therapeutic diet to F-100 or a ready-to-use therapeutic food. This enables the recovery of weight and lean body tissue loss.
  RUTF is a broad term including different types of foods, such as compressed or spreads products, purposely designed for the treatment of SAM. The energy density of RUTF is very high about 23 kJ/ g (5.5 kcal/ g). Generally, it consists of a mixture of milk powder, vegetable oil, sugar, peanut butter and a vitamin-mineral premix. Since bacteria growth in RUFT is limited and can be stored safely at home without refrigeration, it can be used even in areas where hygienic conditions are not optimal because it does not need water, utensils etc., before taking it. Considerable time, work, effort and money are saved in the care for SAM cases by using ready-to-use nature of the foods.
- **Food processing strategies:** Food processing has a main role and huge potential in both to increase dietary diversity and to enhance concentrations of micronutrients in frequently consumed foods.

RESEARCH METHODS

Study Design

This study was quantitative descriptive design to gather information about the strategies to reduce malnutrition among children from 0-5 years in Ikole LGA, Ekiti state.

Total population

The population of Ikole local government based on 2006 national census is 168,436. Under 5 children usually account for 17.6% of the total population of any demographic area. Therefore, the total number of under 5 children based on 2006 census is 29,645.

Inclusion criteria

The eligible group included in this research are mothers and caregivers of children 0-5 years in Ikole LGA, Ekiti state.

Exclusion criteria

The non-eligible group excluded in this research are non-nursing mothers and caregivers of children above 5 years in Ikole LGA, Ekiti state.

The sample size was determined by using the statistical formula of Fisher (Korlik & Higgins, 2015).
$N = z^2pq/d^2$
Z = 1.96, 95% confidence limit
d= 0.025 as the acceptable margin of error
p= the probability of the event occurring = 0.08
q= 1-p = which is the probability of the event not occurring in this 1-p =0.92
The sample size will then be determined as follows;
$n= 1.96^2 (pq)/d^2$
$n= 1.96^2(0.08) (0.92)/ 0.000625$
n= 0.28274/0.000625
n= 452

Sample and Sampling techniques

A multistage sampling technique was used in selecting respondents in this study. The selection was in 3 stages as follows:
Stage 1: purposive technique, this was used to select mothers whose children are 0-5 years.
Stage 2: systematic sampling technique was then used to select houses with odd numbers and every mothers and caregivers of children 0-5 years in the study area**.**
Stage 3: Eligible mothers and caregivers of under 5 children selected from each household were recruited for this study. Where a respondent from selected household declined consent or has any of the exclusion criteria, the next household on the sampling frame was randomly selected until the desired sample size was reached.

Research Instruments

The tool that was used for data collection is a self-structured questionnaire. Relevant data for the analysis was collected through the distribution of the questionnaire among the population under study. The self-structured questionnaire was distributed to the

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respondents to elicit information from respondents on background characteristics and other variables relevant to the study objectives and questions. The questionnaire was divided into two sections A & B.

Section A: elicit socio-demographic information of the respondents. While Section B: answer the research question.

RESULTS OR FINDING

Data Analysis and Interpretation

Table 1: Respondents' Socio Demographic Characteristics (n = 452)

Variables	Number	Frequency
Age		
15-19 years	20	4.4%
20-29 years	92	20.4%
30-39 years	128	28.3%
40-49 years	136	30.1%
50 years and above	76	16.8%
Marital Status		
Married	276	61.1%
Divorced	128	28.3%
Widowed	48	10.6%
Type of marriage		
Monogamy	268	59.3%
Polygamy	184	40.7%
Ethnicity		
Hausa	16	3.5%
Igbo	92	20.4%
Yoruba	336	74.3%
Fulani	8	1.8%
Ethnicity		0.0%
Islam	136	30.1%
Christinity	272	60.2%
Traditional	44	9.7%
Educational Status		
Primary	256	56.6%
Secondary	140	31.0%
Informal	8	1.8%
Tertiary	48	10.6%
None	0	0.0%
Employment Status		
Farming	60	13.3%
Trading	228	50.4%
Artisan	24	5.3%
Civil/Public Servant	128	28.3%
Others	0	0.0%
None	12	2.7%

Table 4.1 above shows the socio demographic information of the respondents: age distribution shows that most 136 (30.1%) were between 40-49 years, 128 (28.3%) were between 30-39 years, 92 (20.4%) were between 20-29 years, 76 (16.8%) were between 50 years and above and 20 (4.4%) were between 15-19 years. Marital distribution shows that majority 276 (61.1%) of the respondents were married, 128 (28.3%) of the respondents were divorced and 48 (10.6%) of the respondent were widowed. Data on type of marriage shows that majority 268 (59.3%) of the respondents married into monogamous family while 184 (40.7%) of the respondents married into polygamous family. Data on ethnicity distribution shows that majority 336 (74.3%) of the respondents were Yoruba, 92 (20.4%) of the respondents were Igbo and 4 (3.5%) of the respondents were Hausa. Educational qualification shows that most 256 (56.6%) were primary school certificate holder and 140 (31.0%) of the respondents attained secondary school level of education. Data on employment status shows that majority 228 (50.4%) of the respondents were traders while 128 (28.3%) of the respondents were civil/public Servant.

Answering Research Questions

Question 1: What are the strategies to reduce malnutrition among children from 0-5 years in Ikole LGA, Ekiti state?

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Table 2: strategies to reduce malnutrition among children from 0-5 years in

	Strategies to reduce malnutrition	SA	A	D	SD
1	Malaria Prevention is one of the best means of reducing malnutrition	180	136	92	44
		39.8%	30.1%	20.4%	9.7%
2	Malnutrition can be reduced and prevented through use of portable water	92	224	52	84
		20.4%	49.6%	11.5%	18.6%
3	Malnutrition can be reduced through proper food hygiene	224	184	24	20
		49.6%	40.7%	5.3%	4.4%
4	Earlier detection and treatment of diseases play major role in preventing malnutrition	56	184	128	96
		12.4%	40.7%	28.3%	18.6%
5	Experiencing Practice of exclusive breastfeeding for the first 6 months helps to prevent malnutrition	212	225	12	4
		46.9%	49.6%	2.7%	0.9%
6	The incidence of malnutrition can be reduced and prevented through good prenatal nutrition and prenatal care	224	128	52	48
		49.6%	28.3%	11.5%	10.6%
7	Malnutrition can be reduced through implementation of programs that addresses micronutrient supplementation and fortification	258	144	32	8
		59.3%	31.9%	7.1%	1.8%
8	Malnutrition can be prevented through proper health education on pregnant women of adequate and proper nutrition	312	136	4	0
		69.0%	30.1%	0.9%	0.0%
9	Improvement in hygiene practices and sanitation reduces the incidence of malnutrition	224	134	48	44
		49.6%	30.1%	10.6%	9.7%
10	Malnutrition can be reduced through public awareness and jingling	134	224	48	44
		30.1%	49.6%	10.6%	9.7%
11	Food security plays major role in preventing malnutrition	296	136	12	8
		65.5%	30.1%	2.7%	1.8%
12	Good availability, access and use of local food resources helps to prevent malnutrition	352	96	4	0
		77.9%	21.2%	0.9%	0.0%
13	Malnutrition can be prevented through improved health and other social services	228	132	48	44
		50.4%	29.2%	10.6%	9.7%
14	Malnutrition can be reduced through increased national commitments in nutrition funding and policy actions	268	96	34	52
		59.3%	21.2%	8.0%	11.5%
15	Malnutrition incidence can be reduced through appropriate Nutritional planning	212	84	52	4
		69.0%	18.6%	11.5%	0.9%

Table 4.2 above shows the strategies to reduce malnutrition among children from 0-5 years in Ikole LGA, Ekiti state. Majority 316 (69.9%)of the respondents agreed that malaria prevention is one of the best means of reducing malnutrition, majority 316 (70.0%) of the respondents agreed that malnutrition can be reduced and prevented through use of portable water, majority 408 (90.3%)of the respondents agreed malnutrition can be reduced through proper food hygiene, majority 240 (53.1%of the respondents agreed that earlier detection and treatment of diseases play major role in preventing malnutrition, majority 436 (96.5%) of the respondents agreed that practice of exclusive breastfeeding for the first 6 months helps to prevent malnutrition, 352 (77.9%) of the respondents agreed that the incidence of malnutrition can be reduced and prevented through good prenatal nutrition, proper feeding of the mother during pregnancy and prenatal care. Majority 412 (91.2%) of the respondents agreed that malnutrition can be reduced through implementation of programs that addresses micronutrient supplementation and fortification. Majority 448 (91.9%) of the respondents agreed that malnutrition can be prevented through proper health education of pregnant women of adequate and proper nutrition. Only few 92 (20.3%) of the respondents disagreed that improvement in hygiene practices and sanitation reduces the incidence of malnutrition while others 360 (79.6%) agreed. Very few 4 (0.9%) of the respondents disagreed that good availability, access and use of local food resources helps to prevent malnutrition while others 448 (99.1%) agreed. Only few 92 (20.3%) of the respondents disagreed that malnutrition can be prevented through improved health and other social services while others 360 (79.6%) agreed. Only few 88 (19.5%) of the respondents disagreed malnutrition can be reduced through increased national commitments in nutrition funding and policy actions while others 364 (80.5%) agreed. Also, majority 396 (87.6%) of the respondents agreed that malnutrition incidence can be reduced through appropriate nutritional planning while only few 56 (2.4%) disagreed.

DISCUSSION OF FINDINGS

The study findings indicated that majority of respondents agreed that malaria Prevention is one of the best means of reducing malnutrition, this is consistent with the finding of UNICEF (2016).

The prevention of malnutrition given by the mothers in this study can be categorized into the three strata of the UNICEF framework. The first stratum is made up of the immediate prevention at an individual level. Immediate causes identified included disease such as malaria and diarrhoea, inadequate food intake, child

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personality and behaviour. The second stratum are the prevention of underlying causes that manifest at the household level and impact on quality of care (e.g. inadequate child supervision because of the multi task of caregivers, and maternal attitude and behaviors), and access to resources (e.g. income, food supply). The third and last stratum, is tackling of basic causes which includes potential resources (financial). From the first stratum, the mothers identified that malnutrition can be reduced through proper food hygiene, improvement in hygiene practices and sanitation reduces the incidence of malnutrition, earlier detection and treatment of diseases play major role in preventing malnutrition and that malnutrition can be prevented through proper health education of pregnant women on adequate and proper nutrition. The presence of these strata suggest that the mothers recognize individual differences in needs among children, households and communities, while also acknowledging the influence of expectations at the societal level.

Research from Africa and other parts of the world provide evidence of the contributing effects of infectious diseases to malnutrition, (American Journal of Public Health, 2011). Interestingly, none of the participants raised the relationship of ill-health and malnutrition, except for the quantitative analysis. Some studies have reported a significant relationship between maternal education and child's nutritional status, (Onyekale & Onyekale, 2005). However, the findings in this study revealed, that some respondents think mother's educational background do not have any effect on malnutrition. Reason being that as far as that mother attend child welfare clinic, and implement what is taught by the health care workers, she can be able to care for the child.

Studies carried out in Pakistan, by Elsevier, (2015), stated that mothers described various magico religious therapies that is tried when their children are malnourished because the condition is associated with fright and spirit possession, and for some other's the first response in health seeking is prayer. In Rwanda, children are also taken to traditional healers for spiritual interventions rather than for medical care (GFH, 2014). In Somalia, in cases of kwashiorkor, the swollen limbs, stomach and face is burnt to remove the fluid (FSAU, 2017).

However, this study showed the contrary, majority of respondents agreed that malnutrition can be prevented through various means like: appropriate nutritional planning, personal hygiene, food hygiene, food security access and use of local foods.

Whereas in parts of Ghana and other African countries such Pakistan, Rwanda and Nepal, many perceived that malnutrition comes about as a result of mother's disregard of traditional norms and beliefs, some perceive the usual cause of malnutrition is the contact with a woman who had marasmic child or is otherwise in a state of ritual impurity. The mediating factor is said to be a saya (shadow, influence) emanating from such a person and ultimately linked with the spirit world, whilst some others associated the condition with fright and spirit possession.

Malnutrition is sometimes perceived as a natural phenomenon related to the "strength" of the body of the child at the time of delivery. It was explained as the result of God's curse, a spirit threatening the child, or "a wizard eating the child slowly (UNICEF, 2013). On the contrary key findings of the study revealed that majority of the respondents agreed that malnutrition can be prevented through various means rather that attributing it with spiritual scenarios.

Summary

The findings from the study shows that majority of participants were able to agree with various means of preventing malnutrition among children of 0-5 years. They understood that it is a complex disease that has many determinants as stated by the UNICEF framework. Although, primary caregivers did exhibit some knowledge on malnutrition, it would be beneficial to reinforce their education. Additionally, the issue of the three categories of malnutrition, needs to be addressed, especially stunting, explaining the consequences of long term malnutrition. This is especially important given the fact that many cases of stunting go unnoticed to the untrained eye. In spite of the fact that primary caregivers recognized the importance of a varied diet, due to their economic constraints, they believe the administration of a healthy diet to be more preventive than curative.

This study findings also revealed that majority of respondents disagreed that malnutrition is a result of spiritual illness/curse, and can be prevented.

CONCLUSION

Most of the respondents used for this study shown over average knowledge on the strategies to reduce malnutrition. Even despite of the good knowledge, there is need for government to step up their various interventions aimed at complementing this good knowledge to vastly reduce the incidence of malnutrition among children of 0-5 years. Also, health workers need to step up health education programs to scale up this level of knowledge to more excellent level and for more positive attitude among nursing mothers and guardians towards the reduction of malnutrition among children of 0-5 years.

Implications of Findings to Nursing

The findings of this study on the strategies to reduce malnutrition among children from 0-5 years in Ikole LGA, Ekiti state are in line with the assertions made by some researchers but it has also proved some other researchers wrong. Life-style is an important determinant of our nutritional and physical health and its

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modification is an effective public health tool for successful reduction and control of malnutrition in all forms and the current study was in conformity (UNICEF, 2013, Akparibo, 2013).

Recommendations

Based on the findings of this study, the following recommendations are made;

- Health facilities should encourage educational campaign that would focus on teaching mothers and community members how to use foods already available to them to prevent malnutrition in an economically feasible manner.
- Research should be encouraged to evaluate existing programs on prevention of malnutrition for its effectiveness and adjustment as the case may be.
- Mothers and caregivers should attend child welfare clinic for their children's growth to be monitored.

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