

Original Research Report



Intervention Measures for Proper Food Intake and Healthy Living amongst 5-12 Years Old Children in Warri, Delta State, Nigeria

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Abstract: This study examined, from the perspective of health professionals, the potential benefits of intervention measures promoting proper food intake and healthy living among children aged 5 to 12 years. Survey methodology was utilized for this study. The entire health staff of the Warri South Local Government Area in Delta State, Nigeria, comprising 291 individuals, comprised the study population. 165 respondents constituted the study's sample. A structured questionnaire using a four-point rating scale—Very High Extent (VHE), High Extent (HE), Low Extent (LE), and Very Low Extent (VLE)—with values of 4, 3, 2, and 1 was the instrument for data collection. For data analysis pertaining to the research questions, mean and standard deviation were utilized. A mean score of 2.5 represented the decision level. Results revealed that campaigns opposing excessive cassava flakes consumption could help to reduce the risk of eye problems and cancer in children, prevent inadequate nutrient intake, decrease the likelihood of obesity, and promote healthy growth, among others. Effective campaigns against improper food intake should be spearheaded by churches, community-based groups and organizations, and conducted in collaboration with families, particularly parents.

Keywords: Children, Families, Food Intake, Healthy Living, Toxicity

1. Introduction

Families in developing societies, such as Warri in Nigeria's Niger Delta region, have long faced food insecurity, particularly for their children. They typically consume food to sustain themselves rather than to enjoy. For them, survival entails consuming food that provides them with enough energy to carry out their daily tasks and occupations. Their cultural tendency toward food has always been to consume foods that provide the required energy. As a result, people seek nourishment especially if it is beneficial to their physical well-being. Many children, particularly those in primary school between the ages of 5 and 12, are at greater risk of malnutrition (Osadebe & Attah, 2022). Nutrition is critical for the growth, maturation, and overall well-being of children aged 5 to 12. Children require a nutrient-dense diet to support their physical and cognitive development (Paul et al., 2012). Children requires a wide variety of foods that are high in essential nutrients. This includes a wide variety of foods, such as fruits and vegetables, whole grains, lean protein sources (such as poultry, fish, and beans), and dairy products or calcium-rich alternatives. Maintaining a healthy snacking habit is critical, as are proper portion sizes (Axford, 2009). Fostering a welcoming dining environment free of food coercion or anxiety encourages the development of healthy eating habits (Anderson et al., 2003). Parents, caregivers, and educators all play critical roles in promoting healthy living and preventing malnutrition in children, which can impair their overall well-being.

Healthy living is defined as a way of life that focuses on adopting practices and behaviors with the goal of preserving or improving the overall well-being of young children. It is a multifaceted approach to physical, mental, and emotional well-being (Geissler et al., 1998). Nonetheless, poor dietary habits can make attaining a state of well-being difficult (Eze et al., 2017a). Inadequate nutrition is defined as the inability to obtain sufficient food and is linked to dietary patterns. Inadequate food consumption habits frequently result in a deficiency of essential nutrients and, as a result, malnutrition. Malnutrition is a health condition caused by eating a diet that is deficient or excessive in one or more nutrients (Kothari & Nouredine, 2010). A poor diet has a negative impact on health and is the primary cause of chronic noninfectious conditions such as diabetes, obesity, atherosclerosis, cancer, and allergies. Adherence to a healthy diet and lifestyle, as well as the consumption of high-quality foods, are essential for the prevention and treatment of these diseases (Anderson et al., 2003). Geissler et al. (1998) discovered that children who eat poorly are more likely to develop specific chronic health issues and complications, such as adult osteoporosis and cardiovascular disease. A childhood diet high in fatty, sugary, and salty foods can increase the risk of developing high cholesterol, high blood pressure, and atherosclerosis later in life. Obesity, sedentary lifestyle, and a family history of type 2 diabetes are all risk factors for type 2 diabetes in children. Many Niger Delta children are malnourished from the time they enter primary school. The children, for example, have been observed consuming a regional alcoholic beverage that is consumed by both men and women, resulting in serious health consequences. Furthermore, because of a lack of arable land, the local population is unable to cultivate vegetables, resulting in a deficiency of essential nutrients found in vegetables. Although a lack of essential nutrients in regular food is a nutritional concern for all populations, children under the age of five are especially vulnerable. According to the World Health Organization (WHO) (2016), Delta State had a serious child malnutrition problem, ranking among the worst in the country. Malnutrition is a major impediment to children's health and development, especially during their early years. A lack of adequate food and essential nutrients causes malnutrition (Kothari & Nouredine, 2010). Sufficient nutrient consumption is essential for good health and promoting longevity.

Appropriate food choice is critical for maintaining bodily functions and well-being, and it influences the rate of physiological and functional deterioration associated with the aging phenomenon (Anderson et al., 2003). Many young children in the Niger Delta are malnourished as a result of inadequate nutrient intake. Childhood malnutrition can result in long-term health problems as well as future educational and employment difficulties (Olack et al., 2011). Furthermore, it can slow wound and illness healing and worsen the severity of diseases like measles, pneumonia, malaria, and diarrhea. It can make the body more prone to illness (Geissler et al., 1998). Raising awareness, particularly among families and communities, is the first step in addressing childhood nutrition issues. This has been repeatedly emphasized by the World Health Organization over the years. Awareness interventions and programs aim to address various aspects of nutrition, ranging from advocating for ideal nutrition to support growth and development to combating malnutrition in all of its forms (WHO, 2016). To reduce childhood malnutrition, parents and families must understand the relationship between their dietary choices and their children's growth and well-being. In many developing countries, inadequate nutrition education is a major contributor to childhood malnutrition, especially among the poor. In light of this, this study examined the potential benefits of intervention measures for promoting proper food intake and healthy living amongst children aged 5-12 as perceived by health professionals.

1.1. Statement of Problem

The issue of inadequate nutrition in young children presents several significant concerns. Physical and cognitive development can be negatively impacted by inadequate nutrition, which may lead to stunted growth, failure to reach developmental milestones, and challenges in learning. Iodine, iron, and vitamin A deficiency, among others, can have detrimental effects on cognitive development, vision, immune function, and overall health. Insufficient consumption of calories and nutrients can lead to malnutrition, undernutrition, and deficiencies in micronutrients, all of which pose risks to the health and overall welfare of a child. Inadequate nutrition compromises the immune system, rendering children more susceptible to infections and ailments; consequently, this has an adverse effect on their overall well-being and recuperation (Olack et al., 2011). Particularly during critical developmental stages, cognitive abilities, learning capacity, and academic performance may be adversely affected by nutritional deficiencies. Childhood obesity is a prevalent issue among children of primary school age in Warri, Delta State, and the Niger Delta region at large. Cassava flakes, alternatively referred to as Garri, are a widely consumed food item among children aged 5 to 12 years old. Cultivated from cassava, a starchy root vegetable prevalent in numerous African regions, especially West Africa, these flakes represent a popular food option. An additional number of these children are exposed to the consumption of local gin, which are alcoholic beverages crafted using traditional or indigenous techniques in different parts of Warri. In addition, carrots, sweet potatoes, and corn, among other nutritious vegetables, are underutilized. This has become an impediment to providing this demographic with optimal nutrition, particularly for children from low-income households who are at a greater nutritional risk. The developmental progress of children has been impeded by inadequate dietary intake, specifically in regards to fruits and vegetables, and an overabundance of carbohydrates. In order to guarantee sufficient nutrition for every child, it is necessary to implement a comprehensive strategy that encompasses education, provision of nutritious food options, healthcare interventions, community involvement, and policy reforms.

1.2. Purpose of the Study

The main purpose of the study was to examine potential benefits of intervention measures for proper food intake and healthy living amongst 5-12 years old children in Warri, Delta State. Specifically, the study determined the following:

- (a) The extent nutrition campaigns against excessive cassava flakes will promote proper food intake and healthy living amongst young children of primary school ages in Warri, Delta State.
- (b) The extent nutrition campaigns against local gin consumption will promote proper food intake and healthy living amongst young children of primary school ages in Warri, Delta State.
- (c) The extent nutrition campaigns against poor vegetable consumption will promote proper food intake and healthy living amongst young children of primary school ages in Warri, Delta State.

1.3. Research Questions

The study was guided by the following research questions:

- (a) To what extent will nutrition campaigns against excessive cassava flakes intake promote proper food intake and healthy living amongst young children of primary school ages in Warri, Delta State?
- (b) To what extent will nutrition campaigns against local gin consumption promote proper food intake and healthy living amongst young children of primary school ages in Warri, Delta State?
- (c) To what extent will nutrition campaigns against poor vegetable consumption promote proper food intake and healthy living amongst young children of primary school ages in Warri, Delta State?

2. Materials and Methods

2.1. Design for the Study

This study adopted a survey design.

2.1.1. Ethics Statement

This research received approval from research and publications committee of the Department of Home Economics, Hospitality and Tourism, Ignatius Ajuru University of Education, Port Harcourt. Informed consent was received from all respondents included in this research.

2.2. Area of the Study

The study was carried out in Warri South, Delta State. The city of Warri is an oil hub in South-South Nigeria and houses an annex of the Delta State Government House. Warri is confronted with peculiar socio-economic problems, with a larger section of its population engaged in the public service. The area is also confronted with such problems as child health challenges and lack of access to quality nutrition for children; this makes the area ideal for this study.

2.3. Population and Sample

The population of the study was all the 291 health personnel of the Warri South Local Government Area of Delta State. The initial sample for the study was 165 respondents; this sample was determined using the Krejcie and Morgan Sampling Table (1970). The table provides the recommended sample size for the specified population size and desired precision level. The stratified

non-proportionate random sampling technique was used to select the respondents (85 females and 80 males).

2.4. Instrument for Data Collection and Study Procedure

The instrument for the data collection was a structured questionnaire titled: ‘Interventions for Proper Foods Consumption for Children Questionnaire’ (IPFCCQ; Cronbach’s α : 0.81) and its objective was to assess health professionals’ perceptions concerning the potential benefits of intervention measures promoting proper food intake and healthy living among children aged 5 to 12 years. The questionnaire was designed on a four-point rating scale of Very High Extent (VHE), High Extent (HE), Low Extent (LE) and Very Low Extent (VLE) with scores 4, 3, 2, and 1 respectively. The instrument was distributed by research assistants who physically met with each respondents.

2.5. Data Collection Technique

A total of three hundred and fifty (165) copies of the questionnaire was produced and distributed to the respondents through the direct contact approach, and with the help of three research assistants. In the end, a total of 156 copies (94.5%) were retrieved in good conditions and used for analysis.

2.6. Data Analysis Technique

Mean and standard deviation were used to analyze the data from the research questions. The decision level for the mean score was 2.5. The implication was that any item which was 2.5 and above was accepted, while any item less than 2.5 was rejected. The parametric statistics test (t-test) at .05 level of significance was used to test the hypotheses respectively.

3. Results and Discussion

3.1. Research Question 1: To what extent will nutrition campaigns against excessive cassava flakes intake promote proper food intake and healthy living amongst 5-12 years old children in Warri, Delta State?

Table 1: Mean and Standard Deviation on the extent nutrition campaigns against excessive cassava flakes intake will promote proper food intake and healthy living amongst 5-12 years old children Warri, Delta State

No.	Items	Males (n=75)			Females (n=81)		
		\bar{X}	SD	Remark	\bar{X}	SD	Remark
1	It will prevent toxicity to cancer among children.	3.19	0.84	HE	3.28	0.86	HE
2	It will reduce the risk of eye problem in children.	3.21	0.84	HE	3.41	0.88	HE
3	It minimizes low levels of iodine in children.	3.64	0.88	HE	3.32	0.86	HE
4	It will reduce the risk of goiter.	3.14	0.83	HE	3.87	0.92	HE
5	It prevents children from falling sick too often.	3.91	0.93	HE	3.79	0.90	HE
	Grand Mean	3.41	0.86	HE	3.53	0.88	HE

Keys: \bar{X} = mean; **SD**=Standard Deviation; **n**=no of sample; **HE**=High Extent; **LE**=Low Extent

Table 1 showed the mean ratings and standard deviation on the extent nutrition campaigns against excessive cassava flakes intake will promote proper food intake and healthy living amongst 5-12 years old children in Warri, Delta State. The data showed that the items 1-5 were had high extent (HE) scores because they had mean scores of 2.5 and above which was the cut-off mark for the mean. The standard deviation ranged between 0.83 and 0.93. The table also showed that the highest mean score was 3.91 (items 5) while the lowest mean score was 3.14 (item 4).

3.2. Research Question 2: To what extent will nutrition campaigns against local gin consumption promote proper food intake and healthy living amongst 5-12 years old children in Warri, Delta State?

Table 2: Mean and Standard Deviation on the extent nutrition campaigns against local gin consumption will promote proper food intake and healthy living amongst 5-12 years old children in Warri, Delta State.

No.	Items	Males (n=75)			Females (n=81)		
		\bar{X}	SD	Remark	\bar{X}	SD	Remark
1	It will reduce cases of distorted hearing.	3.12	0.79	HE	3.15	0.79	HE
2	It will prevent poor vision.	3.00	0.77	HE	3.19	0.80	HE
3	It will help manage poor coordination	3.24	0.80	HE	3.23	0.80	HE
4	It will prevent altered emotions.	3.35	0.85	HE	3.44	0.89	HE
5	It may help prevent depressive moods.	3.64	0.91	HE	3.27	0.82	HE
6	It will help prevent low blood glucose.	3.45	0.89	HE	3.63	0.91	HE
7	Prevent seizures.	3.02	0.78	HE	3.01	0.78	HE
8	Minimizes nutrition-related problems in children.	3.28	0.81	HE	3.23	0.80	HE
	Grand Mean	3.26	0.85	HE	3.26	0.85	HE

Keys: \bar{X} = mean; **SD**=Standard Deviation; **n**=no of sample; **HE**=High Extent; **LE**=Low Extent

Table 2 showed the mean ratings and standard deviation on the extent nutrition campaigns against local gin consumption will promote proper food intake and healthy living amongst 5-12 years old children in Warri, Delta State. The data revealed that the respondents' scores on items 1-8 were on high extent (HE) because they had mean scores less than 2.5 which was the cut-off mark. The standard deviation ranged between 0.77 and 0.91. The table also showed that the highest mean score was 3.64 (item 5) while the lowest mean score was 3.00 (item 2).

3.3. Research Question 3: To what extent will nutrition campaigns against poor vegetable consumption promote proper food intake and healthy living amongst 5-12 years old children in Warri, Delta State?

Table 3: Mean and Standard Deviation on the extent nutrition campaigns against poor vegetable consumption will promote proper food intake and healthy living amongst 5-12 years old children in Warri, Delta State.

No.	Items	Males (n=75)			Females (n=81)		
		\bar{X}	SD	Remark	\bar{X}	SD	Remark
1	Increases nutrient intakes.	3.12	0.78	HE	3.10	0.77	HE
2	Reduces the risk of obesity.	3.06	0.76	HE	3.78	0.92	HE
3	Reduces the risk of non-communicable diseases.	3.24	0.94	HE	3.88	0.93	HE
4	Reduces the risk of digestive problems.	3.15	0.79	HE	3.19	0.80	HE
5	Reduces weight gain risk.	3.93	0.94	HE	3.09	0.77	HE
6	Leads to good cardiovascular health.	3.97	0.74	HE	3.91	0.94	HE
7	Causes proper growth	3.66	0.91	HE	3.27	0.94	HE
8	Reduces exposure to harm on health.	3.09	0.77	HE	3.66	0.91	HE
	Grand Mean	3.27	0.82	HE	3.48	0.87	HE

Keys: \bar{X} = mean; SD=Standard Deviation; n=no of sample; HE=High Extent; LE=Low Extent

Table 3 showed the mean ratings and standard deviation on the extent nutrition campaigns against poor vegetable consumption promote proper food intake and healthy living amongst 5-12 years old children in Warri, Delta State. The data revealed that the respondents' scores on items 1-8 were on high extent (HE) because they had mean scores of 2.5 and above. The table also showed that the highest mean score was 3.97 (item 6) while the lowest mean score was 3.06 (item 2).

The findings on the extent nutrition campaigns against excessive cassava flakes intake will promote proper food intake and healthy living among 5-12 year old children in Warri, Delta State revealed that items 1-5 had high extent (HE) scores because they had mean scores of 2.5 or higher, which was the cut-off mark for the mean. Thus, campaigns against excessive cassava flakes consumption should have the potential to reduce cancer toxicity in children, reduce the risk of eye problems in children, improve iodine levels in children, reduce the risk of goiter, and possibly children who consume less cassava flakes may fall sick less frequently. These findings are supported by Mitchell et al. (2015) reports, which state that many environments force children to eat improperly. It is arguable that this may result in a lack of knowledge about the types of foods they consume because they are accustomed to them. However, research has revealed that the toxic effects of cyanide found in garri, for example, have traditionally been attributed to inhibition of cytochrome C oxidase, the terminal enzyme of the respiratory chain, which compromises oxidative phosphorylation leading to cytotoxic hypoxia (Okeke & Nnayelugo, 1989). As a result, it competes with Vitamin B12, negatively affecting rapidly growing tissues or tissues that are constantly renewed, such as the skin, peripheral nerves, and the nerve of the eye (optic nerve). The involvement of the

optic nerve can result in eye defects and blindness (Okeke & Nnayelugo, 1989). Excess carbohydrates can also lead to poor appetite control. As previously stated, eating carbohydrates raises blood sugar levels. These findings are also consistent with the findings of Birch and Fisher (1998), who stated that high blood glucose levels can cause permanent damage to the body. Eating too many carbohydrates, such as those found in cassava, can contribute to high glucose levels and thus to this damage. Damage to all major organs and vessels, including the heart, kidneys, eyes, nerves, and blood vessels, can occur (Caballero, Finglas, & Toldrá, 2015). Carbohydrates frequently get a bad rap for the reasons listed in this article. When populations or members of an ethnic group consume excessive carbohydrates and are unaware of the consequences, under-five-year-old children may face malnutrition problems.

The findings revealed that the respondents' scores on items 1-8 were on high extent (HE) because they had mean scores less than 2.5, which was the cut-off mark, in response to the research question on the extent nutrition campaigns against local gin consumption will promote proper food intake and healthy living amongst 5-12 year old children in Warri, Delta State. As a result, anti-local gin campaigns have the potential to contribute to efforts aimed at preventing distorted hearing, poor vision, poor coordination, altered emotions, depression, low blood glucose, seizures, and nutrition problems in school children. According to research, children who are exposed to alcohol can experience problems such as seizures and coma (Touré et al., 2013). This is true for alcoholic beverages (beer, wine, and liquor) as well as alcohol found in mouthwash and other personal care products. Low blood sugar levels are hazardous in children who consume alcohol (United Nations Children's Fund, 2009). Because the brain does not get enough glucose, low blood sugar can cause seizures and coma. A dangerously low blood sugar level can be fatal. The central nervous system is influenced by alcohol (Eze et al., 2017b). Children who consume alcohol can become inebriated in the same way that adults do. They may stutter when walking, speak incoherently, or appear sleepy. Because alcohol can irritate the stomach, they may vomit. Breathing and heart rate may slow to dangerously low levels (Omeje et al., 2018; Touré et al., 2013). These children can pass out and even die if their blood pressure drops (WHO, 2010).

Finally, the findings on the extent to which nutrition campaigns against poor vegetable consumption promote proper food intake and healthy living among children aged 5 to 12 in Warri, Delta State are presented. According to the data, the respondents' scores on items 1-8 were on the high extent (HE) because they had mean scores of 2.5 or higher. As a result, campaigns against poor vegetable consumption should be able to increase nutrient intake, lower the risk of obesity, lower the risk of non-communicable diseases, lower the risk of digestive problems, lower the risk of weight gain, promote good cardiovascular health, promote proper growth, and lower exposure to health risks. The findings are similar to those of Attah and Osadebe (2022), who implied that low awareness of the nutritious benefits of vegetables can lead to their low consumption and malnutrition in pregnant women and their children. Vitamin and mineral deficiencies may be one of the negative effects of avoiding vegetables. Calcium, magnesium, iron, and potassium are minerals found in fruits and vegetables that benefit skeletal, nerve, and cardiovascular health. Avoiding these foods may have an effect on any of these functions. It is recommended that people over the age of two eat more fruits and vegetables to supplement important nutrients that are deficient, reduce the risk of heart disease, stroke, and some cancers, and aid in weight management (Brown, Dewey, & Allen, 1998). Overall, children who do not consume enough vegetables may develop malnutrition problems. The study results highlight the significance of prioritizing nutritional and psychological interventions (Onyishi,

2023) for school children and their families which will aim at improving their eating habits and food choices. Since this is a perception study based on a survey approach, the real-world benefits of intervention measures promoting proper food intake and healthy living among children aged 5 to 12 years was not investigated. It is therefore suggested that future research should investigate the effectiveness of school- and family-focused intervention measures promoting proper food intake and healthy living among children aged 5 to 12 years.

4. Conclusion

Children residing in Warri are consistently subjected to the peril of consuming an excessive quantity of inappropriate food, which consequently exposes them to malnutrition. Most children struggle with nutrient deficiency due to inadequate food intake. This research investigated the focal point of interventions designed to encourage school children to consume a healthy diet. The research has demonstrated the necessity for interventions that center on campaigns targeting the issues of overconsumption of cassava flakes and local gin, and inadequate consumption of vegetables. The study's findings informed some recommendations. Churches, community-based organizations and groups, and community-based groups should lead effective campaigns against improper food consumption. It is imperative to conduct these campaigns in conjunction with families, with a particular emphasis on parents. Participation of schools and educators in the campaigns is essential. The campaigns ought to center on the adverse consequences associated with the overindulgence in cassava flakes, promote the avoidance of gin among children, and foster the consumption of vegetables among households.

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Conflict of Interest

No potential conflict of interest.

Author Contributions

ONE and AIA conceived, designed, and developed the research instrument, supervised data collection, and analyzed the data.

Data Availability Statement

The datasets generated and/or analyzed in this article can be obtained from the author on reasonable request. Further inquiries can be directed to the author.

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