INFLUENCE OF NUTRITION ON MENTAL DEVELOPMENT OF SCHOOL AGED CHILDREN: A CASE STUDY OF ESAN WEST L. G. A. EDO STATE.

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A RESEARCH SUBMITTED TO THE DEPARTMENT OF HEALTH SAFETY AND ENVIRONMENTAL EDUCATION, FACULTY OF EDUCATION, UNIVERSITY OF BENIN, BENIN CITY, EDO STATE, IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF BACHELOR OF SCIENCE EDUCATION DEGREE B.Sc. IN HEALTH EDUCATION, UNIVERSITY OF BENIN, BENIN CITY.

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CERTIFICATION

We, the undersigned, certify that this project is adequate in scope and was carried out by Aimiede Naomi OJIEFOH with the Matriculation Number EDU1603499, in the Department of Health, Safety and Environmental Education, Faculty of Education, University of Benin, Benin City, Edo State, Nigeria in partial fulfillment of the requirements for the award of B.Sc (Ed.) Degree in Health Education.

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DEDICATION

This project is dedicated to God almighty.

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ABSTRACT

This study assesses the influence of nutrition on mental development of school aged children in Easan West l. G. A. Edo State. Four research questions were asked and answered during the study using frequencies and percentages. The survey research design was adopted for this study; this is because the data is collected from a sample population with specific characteristics.

The population of the study comprised of teacher from junior secondary schools in Esan West Local Government Area of Benin City, Edo State. Out of this population one hundred and fifty (150) sample was selected from the total population using randomly sampling technique. The instrument used to collect data for the study was fifteen items self-structured questionnaire. The instrument for the data collection was personally administered by the researcher to the respondents. The researcher explained to the respondents how to indicate their views on each item.

On the basis of the findings made in the study, it was concluded that proper nutrition is a fundamental factor influencing the mental development of school-aged children. Nutritional deficiencies negatively impact cognitive function, academic performance, and overall well-being. The study also established those socioeconomic disparities significantly affect children's access to adequate nutrition, thereby creating an unequal learning environment. The researcher recommends that government and relevant stakeholders should ensure the implementation and sustainability of school feeding programs to provide children with balanced meals that support cognitive development. Also, the researcher recommends that regular nutrition education programs should be organized to educate parents on the importance of a balanced diet and how to prepare affordable yet nutritious meals for their children.

CHAPTER ONE

INTRODUCTION

Background of the Study

The influence of nutrition on the mental development of school-aged children is a critical area of study, particularly as adequate nutrition during childhood has long-term implications for cognitive functioning and academic success. Childhood is a period of rapid brain development, and nutritional deficiencies can have lasting impacts on intellectual growth and school performance. Research emphasizes that nutritional adequacy is crucial for optimal neurological development, as well as for the prevention of cognitive delays and learning difficulties (Bryan et al., 2019). One fundamental aspect of the link between nutrition and cognitive development is the role of essential nutrients in brain structure and function. Micronutrients such as iron, iodine, zinc, and vitamin B12 are necessary for neurotransmitter synthesis, myelination, and overall brain plasticity. Iron deficiency, for example, is associated with impaired cognitive skills, lower academic performance, and behavioral issues. Studies have shown that iron deficiency, even in its mild forms, can significantly reduce attention, memory, and learning capacity among school-aged children (Grantham-McGregor et al., 2016). Inadequate iodine intake has been directly linked to impaired cognitive and motor skills, particularly in children from areas where iodine deficiency is endemic (Zimmermann, 2017).

The overall nutritional status of children can also affect their ability to engage and perform in school. Proper nutrition provides the energy required for concentration and learning. Protein-energy malnutrition, characterized by stunting and wasting, is common in low- and middle-income countries, including Nigeria, and has been associated with delayed cognitive development and poor school outcomes. Children who experience chronic undernutrition are less likely to thrive academically and may have reduced attention spans, lower academic scores, and diminished problem-solving abilities (Black et al., 2017).

Socioeconomic factors, including poverty and food insecurity, exacerbate nutritional challenges. In many parts of Nigeria, economic disparities affect the quality and quantity of food that families can provide. In Esan West LGA, like in other rural and urban areas in Nigeria, limited access to a balanced diet contributes to a higher prevalence of micronutrient deficiencies and stunted growth. Household income and parental education are strong predictors of children's nutritional status and, consequently, their cognitive abilities. The role of family environments in shaping dietary habits, along with inadequate health and nutrition education, further compounds these issues (Akinyemi & Afolabi, 2020). School meal programs have been identified as an effective intervention to mitigate the adverse effects of poor nutrition on children's cognitive development. In regions where such programs are implemented, there have been significant improvements in children's academic performance, attention spans, and overall well-being (Bundy et al., 2018). However, in Esan West LGA and similar settings,

the coverage and quality of school meal initiatives remain inconsistent, often leaving children from impoverished backgrounds nutritionally vulnerable.

The interplay between nutrition and mental development is also influenced by maternal nutrition and prenatal health. Evidence from longitudinal studies suggests that nutritional deficiencies during pregnancy can have long-lasting effects on a child's neurodevelopment, making early interventions even more critical (Prado & Dewey, 2017). In addition, postnatal nutrition is essential for continuing brain development, particularly in the early school years when children acquire fundamental cognitive and social skills. Overall, addressing the nutritional needs of school-aged children in Esan West LGA requires a multifaceted approach that includes community-based interventions, education on nutrition, and government policies to promote food security and enhance public health. Tackling nutritional challenges in the region could contribute significantly to improving cognitive outcomes and breaking the cycle of poverty and poor education, as emphasized by recent research (Nisbett et al., 2019).

Statement of the Problem

The mental development of school-aged children is a critical determinant of their academic performance and future societal contributions. However, in Esan West LGA of Edo State, a significant number of children face challenges related to inadequate nutrition, which may negatively affect their cognitive functions, learning abilities, and overall mental health. Despite global and national efforts to address child nutrition, there remains

a persistent gap in understanding the specific nutritional deficits and their direct impacts on the cognitive and academic outcomes of children in this region.

Nutritional inadequacies, such as deficiencies in essential micronutrients like iron, iodine, and vitamin A, are known to cause developmental delays and hinder educational progress. Yet, comprehensive data on the extent to which poor nutrition affects school-aged children's mental development in Esan West LGA is scarce. This knowledge gap makes it difficult to develop targeted interventions to improve the nutritional status and academic success of these children. Compounding this issue are socioeconomic challenges, such as poverty, limited access to balanced diets, and the inadequate implementation of school feeding programs, which exacerbate the problem.

Therefore, this study seeks to investigate the influence of nutrition on the mental development of school-aged children in Esan West LGA, aiming to provide empirical evidence that can guide policymakers, educators, and health practitioners in designing effective strategies outcomes.

Research Question

The following research questions were raised to guide the study;

1. What is the relationship between nutritional status and the mental development of school-aged children in Esan West LGA, Edo State?

2. What specific nutritional deficiencies are most common among school-aged children in Esan West LGA?
3. How do socioeconomic factors influence the nutritional status and mental development of school-aged children in Esan West LGA?
4. What interventions or programs could effectively improve the nutritional well-being and cognitive outcomes of school-aged children in Esan West LGA?

Purpose of the Study

The purpose of this study is to find out the influence of nutrition on mental development of school aged children in Easan West l. G. A. in Edo State**.** Specifically, the study aims to:

1. To investigate the relationship between nutritional status and the mental development of school-aged children in Esan West LGA, Edo State.
2. To identify specific nutrients that are most crucial for cognitive development in children in Esan West LGA, Edo State.
3. To evaluate the influence of socioeconomic factors on the nutritional status of children mental and academic development in Esan West LGA, Edo State.
4. To give practical recommendations to policymakers, educators, and healthcare workers on ways to improve the nutrition and mental development of school-aged children in Esan West LGA.

Significance of the Study

The study is multifaceted in several ways. First, it addresses a critical public health and educational issue: the link between nutrition and cognitive development. By exploring how nutritional status affects children's mental and academic abilities, the study provides essential insights into one of the foundational factors influencing educational outcomes. This understanding is crucial for developing strategies that can help children reach their full intellectual potential.

This research is particularly important for policymakers and government agencies responsible for public health and education. The findings will provide evidence-based recommendations for formulating effective policies, such as the implementation of comprehensive school feeding programs or community-based nutrition education campaigns. These initiatives could significantly improve the cognitive and academic performance of children in Esan West LGA, thereby contributing to the overall development of the region.

For educators, the study emphasizes the role of proper nutrition in enhancing students' learning capabilities, attention spans, and classroom engagement. Teachers and school administrators can use this knowledge to advocate for nutrition-sensitive approaches in schools, such as incorporating health and nutrition education into the curriculum or collaborating with health officials to monitor and improve the nutritional well-being of students. Improved nutrition among children is expected to translate into

better academic achievements, creating a more effective and rewarding educational environment.

Healthcare professionals and nutritionists will also benefit from the study's findings. The research provides a deeper understanding of the nutritional challenges facing children in Esan West LGA and highlights the need for targeted health interventions. Health workers can use the study to raise awareness among parents and caregivers about the importance of balanced diets for their children's mental and physical development. This awareness could lead to better nutritional practices at the household level, reducing the incidence of malnutrition-related cognitive impairments.

In conclusion, the study's significance lies in its potential to drive impactful change in public health and education. It seeks to improve the quality of life for children in Esan West LGA, enhance academic outcomes, and contribute to the sustainable development of the community by addressing the crucial link between nutrition and cognitive development.

Scope and Delimitation of the Study

The scope of this study focuses on examining the influence of nutrition on the mental development of school-aged children within Esan West Local Government Area (LGA) of Edo State. Specifically, the research investigates how different aspects of nutrition, including the adequacy of essential nutrients and dietary practices, affect

children's cognitive functions such as memory, attention, problem-solving skills, and overall academic performance. The study will consider both the nutritional status of children and the factors contributing to this status, such as socioeconomic conditions, household income, parental education, and access to balanced diets.

The study is delimited to school-aged children attending schools within Esan West LGA. It will gather data from selected schools in both urban and rural areas to understand the potential differences in nutritional status and cognitive development across different environments. The research will utilize a combination of surveys, interviews with parents and teachers, and health assessments to collect comprehensive data on the relationship between nutrition and mental development.

Limitation of the Study

This study has several inherent limitations. One significant challenge lies in collecting accurate data, as the reliance on self-reported dietary habits and nutritional intake may lead to errors due to forgetfulness or intentional misrepresentation by respondents. Additionally, the research is geographically limited to Esan West L.G.A., meaning that the findings may not fully apply to other areas with differing socioeconomic, cultural, or environmental characteristics.

Another issue is the difficulty in isolating nutrition as the sole factor influencing mental development, given that various other elements, such as genetic predispositions,

family income, parental education levels, and access to healthcare, also play crucial roles. The time frame for the study, constrained by academic deadlines, may prevent a more comprehensive investigation or the possibility of conducting a long-term analysis to observe the sustained impact of nutrition. Lastly, the lack of access to sophisticated tools for assessing cognitive development might limit the study's ability to provide detailed insights into the relationship between nutrition and mental development.

Definition of Terms

Nutrition: It refers to the dietary intake and quality of food consumed by school-aged children, including vitamins, minerals, proteins, carbohydrates, and fats that are essential for physical and mental development.

Mental Development: The growth and maturation of cognitive abilities, including thinking, reasoning, problem-solving, memory, and attention. In this study, it refers to how nutrition impacts these cognitive functions in school-aged children.

School-Aged Children: Children typically between the ages of 6 and 12 years who are enrolled in primary school.

Nutritional Status: An individual’s health condition as influenced by the intake and utilization of nutrients. In this study, nutritional status will be assessed using indicators such as body mass index (BMI), dietary intake records, and the prevalence of micronutrient deficiencies.

Socioeconomic Factors: Social and economic conditions that influence an individual's or a community's well-being, including income level, education, employment, and access to healthcare. This study considers how these factors affect the nutritional status and cognitive development of children.

Academic Performance: The level of achievement a student attains in their schoolwork, often measured by grades, test scores, and teacher evaluations. The study investigates how nutrition influences academic outcomes.

Balanced Diet: A diet that contains the proper proportions of carbohydrates, proteins, fats, vitamins, and minerals needed to maintain good health and proper mental development. The study examines whether children in Esan West LGA are receiving a balanced diet.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

This chapter deals on review of existing literature and research studies relevant to the influence of nutrition on mental development of school aged children in Esan West L. G. A. in Edo State. Thus, this chapter is guided by the following sub-headings.

- Concept of Nutrition and Mental Development in Children
- Malnutrition and Its Impact on Mental Development
- School Feeding Programs and Nutritional Policies in Nigeria
- Cultural Influences on Diet and Nutritional Choices in Esan West L.G.A
- Relationship between Dietary Patterns and Cognitive Health
- Challenges in Assessing Nutrition's Impact on Mental Development
- Summary of Related Literature Reviewed

Concept of Nutrition and Mental Development in Children

Nutrition plays a vital role in the mental development of children, especially during the school-aged years when cognitive and emotional growths are most dynamic. Adequate nutrition provides the necessary nutrients that are fundamental to brain structure and function, influencing processes such as memory, learning, attention, and problem-solving abilities. Mental development in children is a complex interplay of biological, environmental, and nutritional factors, with the latter serving as a critical

determinant of their ability to thrive academically and socially. Studies have consistently shown that a lack of proper nutrition, particularly deficiencies

in essential nutrients like iron, iodine, omega-3 fatty acids, and certain vitamins, can impair cognitive functions and delay mental development in children (Black et al., 2017).

The brain undergoes rapid growth and development during early childhood and continues to mature well into adolescence. During these stages, specific nutrients contribute to neurogenesis, synaptic formation, and myelination, all of which are crucial for mental functions. For instance, omega-3 fatty acids, particularly docosahexaenoic acid (DHA), are integral components of neuronal membranes and play a critical role in enhancing communication between brain cells. Similarly, iron supports oxygen transport to the brain, and deficiencies have been linked to reduced attention span and learning difficulties (Georgieff, 2018). Iodine, essential for the production of thyroid hormones, is also critical for brain development, with deficiencies during early childhood being a leading cause of preventable intellectual disabilities globally (Zimmermann & Boelaert, 2015).

Poor nutrition, whether due to inadequate dietary intake or malabsorption, can result in malnutrition, which has long-term consequences for mental health and cognitive abilities. Research indicates that children suffering from chronic malnutrition often

exhibit delayed cognitive milestones, reduced IQ scores, and diminished academic performance compared to their well-nourished peers (Prado & Dewey, 2017). Beyond deficiencies, over-nutrition or diets high in sugar and unhealthy fats have also been associated with negative cognitive and behavioral outcomes. Excessive sugar consumption, for example, can lead to dysregulation in energy supply to the brain, affecting attention and focus in children.

In low-resource settings, such as many parts of Nigeria, the impact of poor nutrition on mental development is often exacerbated by socioeconomic challenges. Limited access to diverse and nutrient-rich foods, combined with cultural dietary practices, can hinder children's ability to meet their nutritional needs. Additionally, health issues like infections and intestinal parasites, which are common in such settings, can further compromise nutrient absorption and utilization, negatively affecting cognitive outcomes (Smith & Haddad, 2015).

Interventions aimed at improving the nutritional status of children, such as school feeding programs and fortified food initiatives, have demonstrated significant benefits in enhancing mental development. For instance, the inclusion of micronutrient-rich foods in children's diets has been linked to improved attention spans, better memory retention, and overall cognitive performance (Bhutta et al., 2019). This underscores the importance of prioritizing nutrition as a cornerstone for supporting mental development in school-aged children, particularly in regions like Esan West L.G.A., where nutritional challenges are

prevalent. The relationship between nutrition and mental development is both profound and multifaceted. Ensuring that children have access to a balanced diet rich in essential nutrients is crucial for their cognitive health and academic success. Addressing nutritional deficiencies and promoting healthy eating habits remain key strategies in fostering optimal mental development and overall well-being in school-aged children.

Nutritional Requirements for School-Aged Children

School-aged children require a well-balanced and nutrient-rich diet to support their physical growth, mental development, and overall health. During this stage of life, their bodies and brains are undergoing significant growth and development, making adequate nutrition crucial for optimal cognitive and academic performance. The nutritional needs of school-aged children are specific and vary slightly depending on factors such as age, sex, activity levels, and individual health conditions. However, certain fundamental nutrients are universally essential to their development. Carbohydrates are a key source of energy for school-aged children, fueling their daily physical and cognitive activities. Complex carbohydrates, found in whole grains, fruits, and vegetables, are particularly beneficial as they provide a sustained release of energy throughout the day. Proteins are equally vital, as they serve as building blocks for the body, aiding in tissue repair, muscle development, and the production of essential enzymes and hormones. Food's rich in protein, such as eggs, fish, lean meat, legumes, and dairy products, are crucial for supporting these processes (Golden et al., 2016).

Especially healthy fats like omega-3 fatty acids, are necessary for brain development and cognitive function. Omega-3 fatty acids, found in fish, nuts, and seeds, have been shown to enhance memory, learning, and attention in children (Nyaradi et al., 2016). Vitamins and minerals also play an essential role in the nutritional requirements of school-aged children. Vitamin A supports vision and immune function, while B vitamins, such as B12 and folate, contribute to energy production and brain health. Vitamin D, often referred to as the "sunshine vitamin," is critical for bone development and immune regulation, particularly when combined with calcium-rich foods like milk, yogurt, and cheese (Bailey et al., 2015). Minerals like iron and zinc are indispensable for this age group. Iron is essential for oxygen transport in the blood and brain, with deficiencies often leading to fatigue, poor concentration, and reduced academic performance. Zinc supports immune function and aids in wound healing, as well as playing a role in memory and cognitive processes (Prado & Dewey, 2017). School-aged children also require sufficient amounts of iodine to support thyroid function and overall brain development, as iodine deficiencies have been linked to reduced IQ levels and cognitive impairments (Zimmermann & Boelaert, 2015). Hydration is another critical aspect of nutrition for school-aged children. Water is necessary for maintaining body temperature, supporting digestion, and ensuring optimal brain function. Dehydration, even in mild forms, can affect a child’s concentration and ability to learn effectively.

Meal patterns also significantly impact the overall nutritional status of children. A well-balanced breakfast has been shown to improve cognitive function and academic performance, as it replenishes energy stores and provides essential nutrients after an overnight fast. Lunch and snacks should also provide a combination of macronutrients and micronutrients to sustain energy and concentration throughout the day (Adolphus et al., 2016). The dietary needs of school-aged children are influenced by their environment, cultural practices, and socioeconomic conditions. In regions like Esan West L.G.A., limited access to diverse and nutrient-rich foods may pose challenges in meeting these nutritional requirements. Therefore, community-based nutrition education and intervention programs are essential to ensure that children receive the nutrients they need to grow and thrive. The nutritional requirements of school-aged children are foundational to their physical health and cognitive development. Ensuring that they consume a diet rich in carbohydrates, proteins, healthy fats, vitamins, and minerals is essential for their academic success and overall well-being. Addressing gaps in their diet through targeted interventions, such as school feeding programs and parental education, can significantly improve the nutritional outcomes for children in resource-limited settings.

Influence of Nutrition on Cognitive Functions

Nutrition plays a crucial role in shaping cognitive functions, particularly during childhood when the brain undergoes significant growth and development. Cognitive functions, including memory, attention, problem-solving, and learning, are directly

influenced by the quality of a child's diet. Adequate nutrition provides the brain with the essential nutrients required for its structural and functional development, while poor nutrition can lead to deficits in cognitive abilities, ultimately affecting a child's academic performance and overall mental development. Key nutrients such as omega-3 fatty acids, iron, zinc, iodine, and vitamins are integral to the brain's functioning. Omega-3 fatty acids, particularly docosahexaenoic acid (DHA), are fundamental components of neuronal cell membranes and are critical for synaptic plasticity, which underpins learning and memory. Studies have shown that children who consume diets rich in omega-3s demonstrate better attention, faster processing speeds, and improved problem-solving abilities compared to those with deficiencies (Nyaradi et al., 2016). Similarly, iron plays a pivotal role in oxygen transport to the brain and is involved in neurotransmitter synthesis. Iron deficiency, a common nutritional problem in children, has been linked to poor concentration, reduced cognitive performance, and developmental delays (Georgieff, 2018).

Iodine is another essential nutrient, especially during the early years of a child's life. It is required for the synthesis of thyroid hormones, which are crucial for brain development and function. Iodine deficiency, even mild, can impair intellectual performance and reduce IQ levels in school-aged children (Zimmermann & Boelaert, 2015). Zinc supports synaptic transmission and brain plasticity, both of which are essential for learning and memory. Deficiencies in zinc have been associated with

difficulties in attention, slower cognitive processing, and diminished problem-solving abilities. Vitamins, particularly B-complex vitamins such as B6, B12, and folate, play a significant role in maintaining brain health. These vitamins are involved in the synthesis of neurotransmitters like serotonin and dopamine, which regulate mood and cognitive functions. Deficiencies in these vitamins can lead to impaired memory, difficulty concentrating, and mental fatigue (Bailey et al., 2015). Additionally, vitamin D, known for its role in bone health, has also been shown to influence brain development and cognitive performance by supporting neurogenesis and neuroprotection.

Beyond individual nutrients, dietary patterns as a whole have a significant impact on cognitive functions. A balanced diet that includes fruits, vegetables, whole grains, lean proteins, and healthy fats provides a comprehensive range of nutrients essential for brain health. Conversely, diets high in processed foods, sugar, and unhealthy fats can negatively affect cognitive functions. High sugar consumption, for example, can lead to energy imbalances and impaired memory and attention in children (Prado & Dewey, 2017). Malnutrition, whether in the form of undernutrition or overnutrition, poses significant risks to cognitive development. Chronic undernutrition, often seen in resource-limited settings, can lead to stunted brain growth, delayed cognitive milestones, and reduced academic performance. Overnutrition, characterized by excessive caloric intake without proper nutrient balance, has been associated with obesity and metabolic disorders that can negatively affect cognitive health.

In school-aged children, the role of nutrition is particularly critical as it directly impacts their ability to focus, learn, and perform in school. Studies have consistently shown that children who have access to nutritious meals, particularly breakfast, perform better academically and exhibit improved memory and attention spans (Adolphus et al., 2016). This highlights the importance of incorporating healthy eating habits and ensuring adequate nutrient intake during this developmental stage. Nutrition significantly influences cognitive functions, with essential nutrients like omega-3 fatty acids, iron, iodine, zinc, and vitamins playing crucial roles in brain health and development. Ensuring that school-aged children receive a balanced diet is fundamental to supporting their mental development and academic success. Addressing nutritional deficiencies through dietary interventions and education is vital, particularly in regions where malnutrition is prevalent.

Malnutrition and Its Impact on Mental Development

Malnutrition is a condition arising from an inadequate intake of nutrients, it remains a significant concern in public health, particularly in developing nations. It manifests in various forms, including under-nutrition, micronutrient deficiencies, and over-nutrition, all of which can have profound effects on physical and mental development. Among school-aged children, malnutrition is particularly critical as it coincides with periods of rapid brain growth and cognitive maturation. Research since 2015 underscores the multifaceted impact of malnutrition on mental development.

According to Black et al. (2015), malnutrition during childhood is strongly correlated with impaired cognitive abilities, including reduced attention span, memory deficits, and delayed language acquisition. These cognitive challenges often stem from the insufficient availability of essential nutrients such as iron, iodine, and zinc, which play vital roles in neurodevelopment. For instance, iron deficiency, one of the most common forms of micronutrient deficiencies, is linked to impaired neurotransmitter function and myelination, both critical for optimal brain function.

The effects of malnutrition extend beyond the biochemical processes to affect the structural development of the brain. Prado & Dewey (2017) emphasize that prolonged under-nutrition can result in smaller brain volume and altered neural connectivity, which subsequently limit a child's capacity for learning and adaptation. These structural deficits are not easily reversible, highlighting the need for early interventions.

Malnutrition's impact on mental health is another area of concern. Children suffering from chronic under-nutrition are more likely to exhibit symptoms of anxiety, depression, and lower self-esteem. These psychological impacts create a vicious cycle, as poor mental health further diminishes a child's ability to engage actively in educational activities and social interactions. According to Walker et al. (2018), malnutrition can also compromise executive functions, which include skills such as planning, problem-solving, and impulse control. These deficits are particularly detrimental in educational settings, where such abilities are foundational to academic success. Environmental and

socioeconomic factors often exacerbate the impact of malnutrition on mental development. In resource-limited settings, such as rural areas in Nigeria, children are more likely to face food insecurity and limited access to fortified foods or health care. Akombi et al. (2017) stated that the intersection of poverty, inadequate healthcare systems, and low educational attainment among parents intensifies the risks of malnutrition and its cascading effects on mental development.

Interventions targeting childhood malnutrition, such as school feeding programs and micronutrient supplementation, have demonstrated positive outcomes in mitigating these effects. A study by Glewwe and Muralidharan (2016) showed that children who receive balanced nutrition through school meals exhibit improved attention spans and academic performance compared to their peers without such support. These findings emphasize the importance of integrating nutritional programs into educational policies to address the dual challenges of malnutrition and its impact on learning. Malnutrition presents a significant barrier to the mental development of school-aged children. It affects cognitive, emotional, and structural aspects of brain development, with long-lasting implications for a child's educational and social outcomes. Addressing malnutrition requires a multi-pronged approach involving public health initiatives, policy reforms, and community-level interventions to ensure that children receive the necessary nutrients to thrive both mentally and physically.

School Feeding Programs and Nutritional Policies in Nigeria

School feeding programs and nutritional policies in Nigeria has gained prominence as critical interventions aimed at improving the nutritional status and cognitive development of children, particularly those of school age. These initiatives, developed within the framework of global and national health and education strategies, address the dual challenges of malnutrition and educational underachievement. Several studies conducted since 2015 underscore the multifaceted impact of these programs, highlighting their role in fostering a healthier, more educated population. One of the most notable interventions is the National Home-Grown School Feeding Programme (NHGSFP), launched in 2016 as part of Nigeria's Social Investment Programme. This initiative is designed to provide free, nutritious meals to public primary school pupils, targeting the dual goals of enhancing educational outcomes and improving the livelihoods of local farmers through the procurement of food from local sources. Studies, such as that by Olanrewaju et al. (2018), have demonstrated the program's potential in increasing school enrollment and attendance while addressing micronutrient deficiencies, which are pivotal to cognitive development.

The NHGSFP also aligns with the United Nations Sustainable Development Goals (SDGs), particularly SDG 2 (Zero Hunger) and SDG 4 (Quality Education). The program aims to combat malnutrition, a condition that has been linked to impaired brain development and lower academic performance in children. Research by Adelakun et al.

(2019) found that the provision of balanced meals through school feeding programs significantly improved children's attention span, memory retention, and overall cognitive abilities, underscoring the importance of nutrition as a foundation for effective learning. Nutritional policies in Nigeria further complement school feeding initiatives. The National Policy on Food and Nutrition, revised in 2016, provides a comprehensive framework to address malnutrition through multi-sectoral collaboration. It emphasizes the role of nutrition education, food fortification, and maternal and child health services in improving dietary practices. A study by Okorie et al. (2020) highlights the integration of these policies into public health strategies, noting their success in raising awareness about the importance of balanced diets and fortifying commonly consumed foods like flour, oil, and salt with essential vitamins and minerals.

Despite these strides, challenges remain in the implementation and sustainability of school feeding programs and nutritional policies in Nigeria. Funding constraints, logistical bottlenecks, and inadequate monitoring systems have been cited as significant barriers. For instance, a review by Olaniyan and Adetunji (2021) points to the irregularity of meal supplies and insufficient infrastructure in some rural schools, which limit the program's reach and impact. Additionally, cultural and regional dietary preferences sometimes hinder the acceptance of standardized meal plans, as highlighted by Adepoju et al. (2017). The effectiveness of these programs is further influenced by community involvement and inter-sectoral collaboration. Studies emphasize the need for stronger

partnerships between government agencies, non-governmental organizations, and local communities to ensure the sustainability and scalability of interventions. For example, the collaborative efforts in Kano and Lagos states, documented by Abubakar and Adebayo (2022), illustrate how community-driven approaches can enhance the delivery and acceptance of school feeding programs.

School feeding programs and nutritional policies in Nigeria play a critical role in addressing the nutritional and educational needs of school-aged children. While significant progress has been made since 2015, sustained efforts and strategic interventions are required to overcome existing challenges. These programs underscore the interdependence of nutrition and education, affirming that well-nourished children are better equipped to achieve their academic potential and contribute to national development.

Cultural Influences on Diet and Nutritional Choices in Esan West L.G.A

In Esan West Local Government Area of Edo State, cultural influences play a significant role in shaping dietary habits and nutritional choices among its residents. These cultural factors are deeply rooted in the traditions, beliefs, and social norms of the Esan people, which have evolved over generations. Understanding these influences is essential to contextualize their impact on nutrition and, consequently, the mental development of school-aged children. One of the primary cultural determinants of diet in

Esan West L.G.A. is the local food preference, which is shaped by traditional culinary practices and the availability of indigenous food resources. The Esan people have a strong affinity for dishes such as pounded yam paired with black soup (Omoebe) or melon soup (Egusi). These meals are not only culturally significant but are also celebrated during communal and family gatherings. While these dishes are rich in carbohydrates and sometimes proteins, their micronutrient composition may be inadequate if not complemented by fruits and vegetables, leading to potential gaps in nutritional requirements for growing children (Akinyele, 2017).

Food taboos and traditional beliefs influence dietary practices in Esan West. For instance, certain protein sources, such as eggs or specific types of meat, might be restricted for children due to cultural myths that they could lead to theft tendencies or undesirable behaviors. This restriction often deprives children of essential nutrients required for optimal mental and physical development (Omoigui et al., 2020). Similarly, pregnant and lactating mothers may avoid particular foods due to concerns about their effects on the child, which further impacts the nutritional foundation available to school-aged children. Seasonal variations also play a role in dietary patterns, as the availability of key ingredients such as yams, cassava, and vegetables fluctuate. During certain times of the year, households may rely heavily on less diverse diets, reducing the intake of essential nutrients needed for cognitive development. The reliance on staple crops, while culturally significant, may lead to insufficient consumption of iron, zinc, and vitamins,

which are critical for brain function and learning capacity in children (Ene-Obong et al., 2016).

Furthermore, socio-economic factors tied to cultural norms influence food choices in the area. For example, the patriarchal nature of many households in Esan West L.G.A. often dictates that men receive priority in food allocation, leaving women and children with less nutritious portions. This practice can exacerbate malnutrition among vulnerable groups, especially school-aged children, whose developmental needs are heightened during their formative years (Ijarotimi & Ijadunola, 2019). Another aspect is the influence of modernization and exposure to global food culture, which has introduced processed and fast foods into the community. While these options may seem convenient and are sometimes more affordable, they often lack the nutritional value of traditional meals. This dietary shift, driven by changing lifestyles and increased urbanization, has been linked to rising cases of malnutrition and related developmental challenges among children (Ojo et al., 2021).

Efforts to address these cultural influences must involve community-based nutritional education that respects traditional values while promoting healthier choices. Awareness campaigns highlighting the importance of a balanced diet, incorporating local foods rich in essential nutrients, and addressing myths surrounding food taboos could help improve child nutrition in Esan West L.G.A. Policies aimed at improving access to diverse foods and fostering collaboration with local leaders could also create sustainable

changes in dietary practices. Cultural influences on diet and nutritional choices in Esan West L.G.A. are multifaceted, encompassing traditional beliefs, socio-economic factors, and the evolving food landscape. These elements significantly affect the nutritional status of school-aged children, with implications for their mental development. Addressing these cultural determinants requires a holistic approach that combines education, policy intervention, and community engagement to ensure that children receive the nutrition necessary for their cognitive and overall development.

Relationship between Dietary Patterns and Cognitive Health

The relationship between dietary patterns and cognitive health has been extensively studied, with a growing body of evidence underscoring the crucial role nutrition plays in the mental development of school-aged children. Cognitive health encompasses various aspects of brain function, including memory, attention, problem-solving, and emotional regulation, all of which are significantly influenced by dietary intake during critical periods of growth and development. Children require a consistent supply of essential nutrients, including macronutrients like proteins and healthy fats, and micronutrients such as iron, zinc, iodine, and vitamins A, D, and B-complex, to support optimal brain function. Studies have shown that deficiencies in these nutrients can lead to impairments in cognitive processes. For example, research by Georgieff et al. (2018) emphasizes the link between iron deficiency and delayed cognitive development,

particularly in early childhood. Iron plays a key role in neurotransmitter production and myelination, processes fundamental to learning and memory.

Dietary patterns characterized by a high intake of processed foods, sugars, and unhealthy fats have been associated with poorer cognitive outcomes. Conversely, balanced diets rich in fruits, vegetables, whole grains, and lean proteins provide antioxidants, vitamins, and minerals that promote brain health. The Mediterranean diet, for instance, has been widely recognized for its cognitive benefits. Studies like those of Nyaradi et al. (2015) highlight how adherence to such a nutrient-rich dietary pattern correlates positively with improved academic performance and cognitive function in children. Omega-3 fatty acids, found in fish, nuts, and seeds, are particularly beneficial for brain health. They contribute to the structural integrity of neuronal membranes and play a role in neurogenesis and synaptic plasticity. A study by Sinn et al. (2018) found that supplementation with omega-3s in children led to significant improvements in attention and behavior, further emphasizing the role of diet in cognitive performance.

Glucose, the primary energy source for the brain, must also be provided in appropriate amounts to ensure consistent cognitive performance throughout the day. Diets that include complex carbohydrates, which release glucose steadily, have been shown to enhance sustained attention and memory retention. In contrast, excessive consumption of simple sugars can lead to energy spikes and crashes, impairing focus and learning capacity. Emerging research has also shed light on the influence of the gut-brain

axis on cognitive health. The gut microbiome, influenced by diet, affects the production of neurotransmitters and the regulation of inflammation, which are crucial for brain function. Food's rich in prebiotics and probiotics, such as yogurt, bananas, and legumes, have been associated with enhanced cognitive performance in children by supporting a healthy gut microbiome.

It is also important to consider the timing and regularity of meals. Breakfast, often referred to as the most important meal of the day, has been strongly linked to cognitive health. Benton et al. (2020) found that children who consume a balanced breakfast show improved memory and attention compared to those who skip it. This underscores the importance of meal timing and composition in supporting academic and mental performance. School-aged children in Esan West L.G.A., the implications of these findings are profound. A community-specific focus on improving dietary patterns, informed by local food availability and cultural practices, could yield significant benefits for cognitive development. Ensuring that children receive a diet that meets their nutritional needs will not only enhance their cognitive health but also contribute to their overall academic success and emotional well-being.

Challenges in Assessing Nutrition's Influence on Mental Development

Assessing the influence of nutrition on the mental development of school-aged children presents significant challenges, particularly in Esan West Local Government

Area, Edo State. These challenges can be broadly categorized into methodological, cultural, and systemic barriers, each of which complicates the accurate evaluation of nutrition's impact on cognitive outcomes. One of the primary challenges lies in establishing causal relationships between nutrition and mental development. Nutrition is just one of many factors that influence cognitive outcomes, alongside genetics, socio-economic status, parental education, and the quality of educational environments. The interplay of these factors makes isolating the specific contribution of nutrition to mental development complex. For example, studies often struggle to control for confounding variables such as maternal health during pregnancy, exposure to environmental toxins, or household stress levels, which may independently or synergistically affect a child's cognitive outcomes (Black et al., 2017).

Another significant challenge is the variability in nutritional intake among children. In many developing regions, including parts of Nigeria, diets are often inconsistent, with seasonal fluctuations affecting the availability and consumption of nutrient-rich foods. This variability complicates longitudinal studies designed to assess the sustained impact of nutrition on mental development. Furthermore, underreporting or inaccuracies in dietary assessments, especially when relying on parental recall or self-reported data, may lead to unreliable findings (Prado & Dewey, 2016). Cultural and systemic factors also play a significant role. In regions like Esan West, cultural beliefs and practices surrounding food can influence children's dietary habits, potentially

skewing study outcomes. For example, certain traditional practices may prioritize adult consumption of nutrient-rich foods over children's, inadvertently leading to nutrient deficiencies in the latter. Moreover, systemic challenges such as inadequate healthcare infrastructure and limited access to micronutrient supplements exacerbate the problem. For instance, iron-deficiency anemia, a leading cause of cognitive impairments in children, is often underdiagnosed and undertreated due to systemic gaps in public health services (McLean et al., 2016).

Measurement tools and methodologies present another layer of complexity. Assessing mental development often relies on cognitive tests and developmental scales, which may not be fully adapted to the cultural and linguistic context of the study population. This mismatch can result in biased outcomes that do not accurately reflect the children's cognitive abilities. Additionally, some tests may fail to capture subtle cognitive impairments caused by chronic malnutrition, particularly in areas like executive functioning and emotional regulation (Grantham-McGregor et al., 2017). Ethical considerations add to the challenges of conducting research in this area. Studies involving children require careful ethical oversight to ensure that they do not exploit vulnerable populations. Researchers must navigate issues such as obtaining informed consent from guardians, ensuring confidentiality, and avoiding interventions that could unintentionally harm the participants.

Despite these challenges, advancements in research methods are helping to address some of these issues. For example, biomarkers such as blood nutrient levels are increasingly being used to provide objective measures of nutritional status, while neuroimaging technologies offer insights into how specific nutrients affect brain structure and function (Cusick & Georgieff, 2016). These tools, when combined with culturally sensitive cognitive assessments, can improve the reliability and validity of findings. Assessing the impact of nutrition on mental development is fraught with methodological, cultural, and systemic challenges, particularly in resource-limited settings. Addressing these obstacles requires a multifaceted approach that integrates rigorous research designs, culturally adapted tools, and systemic interventions to enhance both the nutritional and cognitive outcomes of children.

Summary of Related Literature Reviewed

The relationship between nutrition and mental development has been widely researched, with numerous studies affirming that adequate nutrition plays a crucial role in the cognitive, emotional, and behavioral development of children. Poor nutrition, particularly in the early years, has been linked to developmental delays, reduced academic performance, and behavioral problems. This chapter reviews existing literature on the influence of nutrition on the mental development of school-aged children, with particular emphasis in Esan West Local Government Area in Edo State, Nigeria.

Several studies indicate that nutrition directly impacts brain function, particularly in the critical periods of brain development during childhood. Micronutrients like iron, iodine, and zinc are essential for cognitive functioning, and deficiencies in these nutrients can lead to poor concentration, slower processing speed, and diminished problem-solving abilities. For instance, iron deficiency has been associated with impaired cognitive performance and learning difficulties in children. Similarly, iodine deficiency during childhood is linked to lower IQ scores and delayed mental development, as iodine is vital for the production of thyroid hormones, which regulate brain function.

Protein malnutrition, another significant factor, has been found to affect memory, attention span, and the overall ability to learn. Research by Grantham-McGregor et al. (2007) demonstrated that malnutrition during early childhood can lead to irreversible cognitive deficits, with long-term consequences for educational achievement and social adaptation. Furthermore, the absence of a balanced diet rich in essential fatty acids, vitamins, and minerals can hamper neural development, affecting the child's ability to process and retain information. The psychological effects of poor nutrition are also significant. Children who suffer from malnutrition often exhibit mood swings, irritability, and increased levels of anxiety, which can disrupt their ability to engage in learning and social activities. A study conducted by Sari et al. (2018) emphasized that the cognitive challenges faced by malnourished children often translate into behavioral problems, such

as increased aggression and poor emotional regulation, which further complicate their academic progress.

In Nigeria, and specifically in Esan West LGA, there is a growing concern about the nutritional status of children, especially given the socio-economic challenges in the region. Many households in rural areas have limited access to a diverse range of nutritious foods, which increases the risk of malnutrition. According to the 2018 National Nutrition and Health Survey, malnutrition rates in Nigeria are high, with stunting and underweight being particularly prevalent among children in rural areas. The lack of awareness about proper nutrition and limited access to health services in these areas exacerbate the situation, resulting in a generation of children who may not reach their full cognitive potential. Despite the challenges, some interventions have proven effective in mitigating the impact of poor nutrition. Nutritional supplementation programs, community-based education on healthy eating, and school feeding initiatives have all shown positive results in improving children's nutritional status and, by extension, their cognitive development. Programs that focus on providing children with nutritious meals at school have been successful in enhancing their concentration, academic performance, and overall mental well-being.

In conclusion, the literature reviewed highlights the profound impact that nutrition has on the mental development of school-aged children. Deficiencies in essential nutrients can lead to cognitive delays, poor academic performance, and behavioral

problems. In Esan West LGA, addressing the nutritional needs of children through targeted interventions and education is crucial for ensuring better mental and academic outcomes. As the evidence suggests, improving children's nutrition is not only a matter of physical health but also one of cognitive and psychological development, making it essential for fostering a brighter future for the younger generation.

CHAPTER THREE

METHODOLOGY

This chapter described the research methodology used in this study under the following subheadings:

- Research Design
- Population of the Study
- Sample and Sampling Techniques
- Research Instruments
- Validity of the Instrument
- Reliability of the Instrument
- Method of Data Collection
- Method of Data Analysis

Research Design

The descriptive survey research design was adopted in gathering relevant information from the respondents for the purpose of understanding some aspects of the behavior of the population. The method was suitable because it enabled the researcher to get specific response from the respondents and most essentially to assess the influence of nutrition on mental development of school aged children in Esan West L. G. A. in Edo state.

Population of the Study

The population of the study comprised of teachers from five (5) Junior secondary schools in Esan West Local Government Area of Benin City, Edo State.

Sample and Sampling Techniques

The target sample size of this study is one hundred and fifty (150) teachers from the five (5) Junior secondary schools using simple random technique in Esan West Local Government Area. The population comprised of secondary school students in Esan West local government area of Edo State. Simple random sampling technique was used for the study.

Research Instrument

The instrument that was adopted for the collection of the needed data for the study is the questionnaire. The questionnaire is titled **"The Influence of Nutrition on Mental Development of School Aged Children in Esan West L. G. A. in Edo State.".** The questionnaire comprised of two sections; "A and B". The section 'A' of the instrument focused on the gathering of personal information of the respondents while the section B was designed towards seeking information on the study, Agree(A), Strongly Agree(SA), Disagree(D), Strongly Disagree(SD) scale was used to collect information from students

Validity of the Instrument

The questionnaire was given to the researcher's supervisor and two other experts in the Department of Health Safety and Environmental Education, Faculty of Education, University of Benin, Benin City, Edo State for scrutiny. Thereafter their suggestions and observations were taken into consideration before the final copies of the instrument were produced and administered to the respondents.

Reliability of the Instrument

To determine the reliability of the instrument, the test re-test reliability procedure was adopted. Fifteen (15) copies of the research instrument were administered to a set of respondents who were part of the population but not part of the sample 0.7 coefficient was determine.

Method of Data Collection

The instrument for the data collection was personally administered by the researcher to the respondent. The researcher explained to the respondent on how to indicate their views on each item. Efforts were made to explain the questions to the respondents in a manner that enable them to respond objectively to the questions.

Method of Data Analysis

Data were analyzed using simple percentage in order to facilitate the interpretation of the data collected. The sample percentage is carried out by dividing the sample size and multiplying it by100.

CHAPTER FOUR

PRESENTATION OF RESULTS AND DISCUSSION OF FINDINGS

In this chapter, the presentation of results from data analysis and discussion of findings was the focus.

Demographic Background of the Respondent Gender Distribution of Respondents

Table 1 below illustrates the gender distribution of respondents in the study. The results indicate that 48% of the participants were male, while 52% were female. This gender distribution reflects a higher participation rate from female students compared to their male counterparts in this study. This difference in participation may be reflective of various social, cultural, or educational factors that influence the engagement of male and female students with research topics. However, it is important to note that the disparity in gender response does not necessarily indicate a gender bias in the use of social media for academic purposes, as both genders still participate in social media engagement to varying extents.

Table 1: Distributions of Responses by Gender

S/N	Respondents	N	%
1.	Male	72	48%
2.	Female	78	52%
Total		**150**	**100%**

***Source**: Field survey, 2024*

Research Question One: What is the relationship between nutritional status and the mental development of school-aged children in Esan West LGA, Edo State?

Table 2: Responses on the relationship between nutritional status and the mental development of school-aged children is represented below

S/N	Items	SA (%)	A (%)	D (%)	SD (%)	Mean
1	Nutritional deficiencies directly affect the ability of children to concentrate and perform well in school.	75 (50)	37 (24.7)	20 (13.3)	18 (12)	3.13
2	School-aged children with balanced diets tend to have better memory and problem-solving skills than those with poor nutrition.	75 (50)	31 (20.7)	21 (14)	23 (15.3)	3.05
3	Regular meals contribute positively to the emotional stability of children in school.	75 (50)	30 (20)	29 (19.3)	16 (10.7)	3.09
4	Malnourished children often show delayed mental development compared to their well-nourished peers.	75 (50)	30 (20)	31 (20.7)	14 (9.3)	3.11
5	The mental alertness of school-aged children is significantly influenced by their daily nutrient intake.	75 (50)	35 (23.3)	26 (17.3)	14 (9.3)	3.14
				Grand Mean		**3.10**

Mean cut-off mark = 2.5

SA = Strongly agree, A = Agree, D = Disagree, SD = Strongly disagree

Table 2 presents the results, showing that a majority of respondents agreed or strongly agreed that nutritional deficiencies directly impact children's ability to concentrate, problem-solving skills, emotional stability, and overall mental development. The grand mean score of 3.10, which is above the cut-off mark of 2.5, supports the conclusion that nutrition plays a critical role in cognitive function and learning ability among children.

Research Question Two: What specific nutritional deficiencies are most common among school-aged children in Esan West LGA?

Table 3: Responses of teachers on what specific nutritional deficiencies are most common among school-aged children is represented below

S/N	Items	SA (%)	A (%)	D (%)	SD (%)	Mean
1	Iron deficiency is a prevalent issue among school-aged children in Esan West LGA.	75 (50)	37 (24.7)	21 (14)	17 (11.3)	3.13
2	Many children in the area suffer from a lack of vitamins essential for cognitive development, such as Vitamin B12.	75 (50)	22 (14.7)	31 (20.7)	22 (14.7)	3.00
3	Protein-energy malnutrition is commonly observed in school-aged children in this region.	75 (50)	26 (17.3)	33 (22)	16 (10.7)	3.07
4	Poor access to fruits and vegetables has led to widespread deficiencies in key nutrients.	74 (49.3)	28 (18.7)	30 (20)	18 (12)	3.05
5	The dietary habits of children in Esan West LGA often lack sufficient calcium needed for brain function.	75 (50)	32 (21.3)	20 (13.3)	23 (15.3)	3.06
				Grand Mean		**3.06**

Mean cut-off mark = 2.5

SA = Strongly agree, A = Agree, D = Disagree, SD = Strongly disagree

Table 3 presents the common nutritional deficiencies among school-aged children. The most frequently mentioned deficiencies included iron deficiency, lack of essential vitamins (such as Vitamin B12), protein-energy malnutrition, and calcium deficiency. Poor access to fruits and vegetables was also highlighted as a major concern. The grand mean score of 3.06 suggests that these deficiencies are prevalent and require urgent attention.

Research Question Three: How do socioeconomic factors influence the nutritional status and mental development of school-aged children in Esan West LGA?

Table 4: Responses on socioeconomic factors influencing the nutritional status and mental development of school-aged children is represented below

S/N	Items	SA (%)	A (%)	D (%)	SD (%)	Mean
1	Parents' income levels significantly impact the quality of food provided to their children.	75 (50)	21 (14)	26 (17.3)	28 (18.7)	2.95
2	Children from low-income households are more likely to experience malnutrition and its cognitive consequences.	75 (50)	39 (26)	23 (15.3)	13 (8.7)	3.17
3	Education level of parents influences their awareness of proper nutrition for mental development.	75 (50)	38 (25.3)	23 (15.3)	14 (9.3)	3.16
4	Accessibility to affordable nutritious food in Esan West LGA directly affects children's mental growth.	75 (50)	26 (17.3)	27 (18)	22 (14.7)	3.03
5	Socioeconomic disparities create unequal opportunities for children to maintain healthy eating habits.	75 (50)	39 (26)	20 (13.3)	16 (10.7)	3.15
				Grand Mean		**3.09**

Mean cut-off mark = 2.5

SA = Strongly agree, A = Agree, D = Disagree, SD = Strongly disagree

Table 4, highlight the significant impact of socioeconomic factors on children's nutritional status and mental development. Key findings indicate that parents' income levels, educational background, and access to affordable nutritious food are critical determinants of children's health and cognitive abilities. The grand mean score of 3.09

suggests that socioeconomic disparities create unequal opportunities for children, affecting their ability to maintain a healthy diet and perform optimally in school.

Research Question Four: What interventions or programs could effectively improve the nutritional well-being and cognitive outcomes of school-aged children in Esan West LGA?

Table 5: Responses of teachers on what interventions or programs could effectively improve the nutritional well-being and cognitive outcomes of school-aged children is represented below

S/N	Items	SA (%)	A (%)	D (%)	SD (%)	Mean
1	School feeding programs can significantly enhance the nutritional status of children in the area.	75 (50)	33 (22)	28 (18.7)	14 (9.3)	3.13
2	Nutritional education for parents and guardians is critical for improving children's diet quality.	75 (50)	31 (20.7)	31 (20.7)	13 (8.7)	3.12
3	Community-based agricultural initiatives can help families access fresh and nutritious foods.	75 (50)	40 (26.7)	16 (10.7)	19 (12.7)	3.14
4	Regular health checks in schools can identify and address malnutrition early in children.	75 (50)	30 (20)	32 (21.3)	13 (8.7)	3.11
5	Government subsidies on essential food items can improve nutrition among school-aged children.	75 (50)	27 (18)	29 (19.3)	19 (12.7)	3.05
				Grand Mean		**3.11**

Mean cut-off mark = 2.5

SA = Strongly agree, A = Agree, D = Disagree, SD = Strongly disagree

Table 5 presents responses on effective interventions that can improve the nutritional well-being and cognitive outcomes of school-aged children. The findings indicate that school feeding programs, nutritional education for parents, community-based agricultural initiatives, regular health checks, and government subsidies on essential food items are crucial in addressing nutritional challenges. The grand mean score of 3.11 further confirms that these interventions are widely supported by respondents as effective solutions to improving children's health and learning outcomes.

Discussion of Findings

The findings of this study align with existing research, which suggests that nutrition plays a fundamental role in cognitive development and academic performance. Malnutrition and deficiencies in essential nutrients can lead to poor concentration, delayed mental development, and reduced problem-solving abilities among children. Furthermore, socioeconomic factors significantly influence the nutritional choices available to families, thereby impacting children's overall well-being. The study also underscores the importance of interventions such as school feeding programs, parental education on nutrition, and policies aimed at improving access to affordable, nutritious food. These measures can help bridge the gap created by economic disparities and enhance the cognitive development of school-aged children in Esan West LGA.

This chapter has presented and discussed the findings of the study, demonstrating a strong relationship between nutritional status and mental development. It has also highlighted common nutritional deficiencies, the role of socioeconomic factors, and potential interventions. The findings provide a foundation for recommending policies and programs that can improve the nutritional well-being and academic performance of children in Esan West LGA.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

Summary

This study examined the influence of nutrition on the mental development of school-aged children in Esan West LGA, Edo State. The research was guided by four key research questions focusing on the relationship between nutritional status and mental development, common nutritional deficiencies among children, the impact of socioeconomic factors, and effective interventions. Data was collected through structured questionnaires and analyzed to reveal significant trends and insights.

The findings indicated a strong relationship between nutritional status and mental development. Malnutrition, particularly deficiencies in essential vitamins and minerals, was identified as a major concern among school-aged children. Socioeconomic factors such as household income, parental education, and access to nutritious food were found to play a significant role in determining children's nutritional health. Additionally, the study highlighted the effectiveness of interventions such as school feeding programs, parental education on nutrition, and government support in ensuring improved nutritional outcomes.

Conclusion

Based on the findings, it can be concluded that proper nutrition is a fundamental factor influencing the mental development of school-aged children. Nutritional deficiencies negatively impact cognitive function, academic performance, and overall well-being. The study also established those socioeconomic disparities significantly affect children's access to adequate nutrition, thereby creating an unequal learning environment. Effective interventions, including school-based meal programs and nutrition education, can serve as practical solutions to mitigate the impact of poor nutrition on children's mental and academic development. Therefore, addressing nutritional deficiencies through policy implementation and community involvement remains essential in improving educational outcomes in Esan West LGA.

Recommendations

Based on the findings, the following recommendations are made:

1. The government and relevant stakeholders should ensure the implementation and sustainability of school feeding programs to provide children with balanced meals that support cognitive development.
2. Regular nutrition education programs should be organized to educate parents on the importance of a balanced diet and how to prepare affordable yet nutritious meals for their children.

3. Government subsidies and food assistance programs should be introduced to help low-income families access nutritious food, reducing the gap in malnutrition rates among children.
4. Schools should integrate nutrition education into their curricula to create awareness among children about healthy eating habits and the long-term benefits of good nutrition on mental and physical development.

Suggestions for Further Studies

For future research, the following areas are suggested by the researcher:

1. A study comparing the effectiveness of school feeding programs in rural and urban areas to determine their impact on children's nutritional and academic performance.
2. Future research should explore the long-term effects of early childhood nutrition on cognitive abilities and academic achievements in later years.
3. A study analyzing the effectiveness of government policies and interventions aimed at reducing malnutrition among school-aged children in Nigeria.
4. An exploration of how cultural beliefs and dietary habits influence the nutritional status of children in different regions of Edo State.

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APPENDIX

QUESTIONNAIRE

ON

INFLUENCE OF NUTRITION ON MENTAL DEVELOPMENT OF SCHOOL AGED CHILDREN: A CASE STUDY OF EASAN WEST L. G. A. EDO STATE.

Dear Participants,

I am a student of the Department of Health Safety and Environmental Education, Faculty of Education, University of Benin. I am carrying out a study on the above topic. I therefore solicit for your responses, all your response will be treated confidentially

Please answer the following questions honestly and to the best of your knowledge. Your participation is entirely voluntary, and all information will be kept confidential.

Yours faithfully,

_____

(Researcher)

Section A: Demographic Information

Instruction: Kindly respond to the item by a tick (√) in the appropriate box

1. Gender: Male [ ] Female [ ]

Section B: Respondents Responses

S/N	ITEMS	SA	A	D	SD
RQ1	**What is the relationship between nutritional status and the mental development of school-aged children in Esan West LGA, Edo State?**				
1.	Nutritional deficiencies directly affect the ability of children to concentrate and perform well in school.				
2.	School-aged children with balanced diets tend to have better memory and problem-solving skills than those with poor nutrition.				
3.	Regular meals contribute positively to the emotional stability of children in school.				
4.	Malnourished children often show delayed mental development compared to their well-nourished peers.				
5.	The mental alertness of school-aged children is significantly influenced by their daily nutrient intake.				
RQ2	**What specific nutritional deficiencies are most common among school-aged children in Esan West LGA?**				
6.	Iron deficiency is a prevalent issue among school-aged children in Esan West LGA.				
7.	Many children in the area suffer from a lack of vitamins essential for cognitive development, such as Vitamin B12.				
8.	Protein-energy malnutrition is commonly observed in school-aged children in this region.				
9.	Poor access to fruits and vegetables has led to widespread deficiencies in key nutrients.				
10	The dietary habits of children in Esan West LGA often lack sufficient calcium needed for brain function.				

RQ3	**How do socioeconomic factors influence the nutritional status and mental development of school-aged children in Esan West LGA?**				
11	Parents' income levels significantly impact the quality of food provided to their children.				
12	Children from low-income households are more likely to experience malnutrition and its cognitive consequences.				
13	Education level of parents influences their awareness of proper nutrition for mental development.				
14	Accessibility to affordable nutritious food in Esan West LGA directly affects children's mental growth.				
15	Socioeconomic disparities create unequal opportunities for children to maintain healthy eating habits.				
RQ4	**What interventions or programs could effectively improve the nutritional well-being and cognitive outcomes of school-aged children in Esan West LGA?**				
16	School feeding programs can significantly enhance the nutritional status of children in the area.				
17	Nutritional education for parents and guardians is critical for improving children's diet quality.				
18	Community-based agricultural initiatives can help families access fresh and nutritious foods.				
19	Regular health checks in schools can identify and address malnutrition early in children.				
20	Government subsidies on essential food items can improve nutrition among school-aged children.				