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THE EFFECT OF FOOD PRICE INFLATION ON NUTRITIONAL BEHAVIOUR AND SPORTS ACHIEVEMENT AMONG PHYSICAL AND HEALTH EDUCATION STUDENTS IN JUNIOR SECONDARY SCHOOLS IN ANAMBRA STATE NIGERIA

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Abstract

In a recent report by the United Nations, Nigeria has the second-highest rate of stunted growth in children globally. This development is linked to the rising cost of living, which hits many households in Nigerians from all angles. This study examined the effect of food inflation on students' sports performance in physical and health education. For this purpose, an experimental research design with a pre-test and post-test control group was used using an independent t-test to analyze the data collected from the field. A total of 50 students sampled in 20 junior secondary schools (15 public and 5 private) in the experimental and control groups participated in the research in Anaocha local government area of Anambra state Nigeria. The data of the study were collected with the 'Nutritional Behavior Scale', 'Attitude towards Nutrition Scale', 'Sport Performance Scale', 'Attitude towards Sports Scale' and 'General Academic Achievement Test'. The study found that students who received the nutrition education programme achieved positive nutrition attitudes and behaviours, higher sports performance and attitudes compared to the students in the control group who did not undergo any experimental procedure. The study concluded that no significant difference was found in the general academic achievement of the experimental and control groups. Based on the results of the research findings, the study recommends that Parents should ensure children receive adequate animal protein for growth and development. If this is not feasible, affordable alternatives like mushrooms can also support their nutritional needs. Proper nutrition helps build strong immunity and reduces the risk of future health complications.

Keywords: Nutrition education, health education, physical education, nutritional habits, nutritional behaviour, academic achievement, sports activities

Introduction

Good nutrition can enhance sporting performance during physical and health education activities. A well-planned, nutritious diet should meet most of an athlete's vitamin and mineral needs, and provide enough protein to promote muscle growth and repair. Foods rich in unrefined carbohydrates, like wholegrain breads and cereals, should form the basis of the diet. Participating in endurance sports among students requires optimal nutrition, with a specific focus on dietary modifications. Targeted fitness development at an early age, especially in adolescence is deemed the foundation for leading an active lifestyle, avoiding potential overweight, reducing motor deficiencies and thus improving the general quality of life.

Nutrition is important for an athlete because it provides the energy required to perform the activity. The food they take leaves an impact on strength, training, performance and recovery. Not only the type of food is important for sports nutrition but also the time is equally important for what they eat throughout the day. It also has an impact on their performance level and their body's ability to recover after a workout. An athlete needs to pay close attention to when what and how much he eats or drinks before a game or match.

In a recent report by the United Nations (UN, 2024), Nigeria has the second-highest rate

of stunted growth in children globally. This development is linked to the rising cost of living, which hits many households in Nigerians from all angles. The impact is felt not only in the pockets but also in the physical and health education. As a result, when buying staples, many prioritize price over nutrition to reduce expenses. Over time, when food becomes more expensive, malnutrition rates climb. In 2024, food inflation in Nigeria reached alarming heights, surpassing 40%—the highest since 1996. Because of this steep increase, families are finding it difficult to afford even basic food items. To put this into perspective, the average price of a 50kg bag of rice costs upwards of ₦85,000, and beef goes for ₦5,000 in just one year, according to the National Bureau of Statistics (NBS, 2024) food price report.

Studies have predicted that many Nigerians will certainly feel the additional financial pressure at the checkout line, and many will eat less nutritious and cheaper food options. Low-income and fixed-income households, in particular, bear the brunt of these changes. The immediate and long-term health impacts of these changes are contributing to a decline in student's performance in sports activities and general academic performance.

School children need adequate and balanced nutrition for the healthy development of their physical and mental structures. Since this age group, which is the core of society, is the group most affected by nutritional deficiencies, their nutrition should be given great importance (UNICEF, 2024). Inadequate and unbalanced nutrition is among the most important health problems in developing countries. Although the problem is encountered in all age groups, nutrition is of particular importance, especially in school-age children. Since children in this age group are in constant biological change, they need more energy and other nutrients. More and better quality protein, vitamins and minerals are required for the construction of new tissues (UNICEF, 2024). Childhood is a period in which long-lasting habits are established. Changes in lifestyle to ensure proper nutrition do not lead to negative changes in quality of life, and fasting habits are among these habits (Ankara et al., 2020; Hellenius et al., 2021). Thanks to adequate and balanced nutrition, the expected growth and development of children according to their age is ensured, and their resistance to diseases increases. In addition, the importance of eating habits gained in childhood is emphasized in bone development, increase in cognitive ability and school performance, and in the prevention of some diseases seen in later ages. The school environment is of great importance in reinforcing the healthy eating habits acquired in childhood. One of the important reasons underlying the healthy diet of students in school nutrition may be that students come to school ready to learn and gain healthy eating habits in their later lives. Health education given at school can play an active role in acquiring healthy eating habits throughout life (Follong et al., 2020; Hurley, Yousafzai & Lopez-Boo, 2021; Mahumud et al., 2021; Sahota et al., 2022). It is of great significance to provide energy intake balance and optimum nutrition in childhood. A healthy diet has been linked to academic achievement, physical performance, and improved cognitive and psychomotor levels for both children and adults (Akdeniz et al., 2021; David et al., 2019; Pollitt & Lewis, 2020; De Groot et al., 2022; Vassiloudis, Yiannakouris, Panagiotakos, Apostolopoulos and Costarelli, 2020). Since adolescent children are in the growth process, their nutritional requirements are different from adults. In this period, inadequate and unbalanced nutrition negatively affects both the physical development and learning ability of the child. For school-age children to be successful in the education process, healthy conditions must be provided (Contento, 2021). In this context, people who influence, direct and train human health should have sufficient nutritional knowledge. In particular, teachers' nutritional knowledge should be sufficient and they should transfer this knowledge to students for students to gain proper nutrition habits. Nutrition education is a very difficult process, contrary to what many people think. Because it is not easy to change people's eating habits. To persuade individuals to develop better eating habits, it is necessary to first understand why they are fed this way. Generally, financial situation, price of food, availability, beliefs and habits are factors that affect the eating habits of individuals. In particular, the low socioeconomic status of families negatively affects the food consumption habits and frequency of family members and causes the inability to meet their

healthy nutritional needs (Abdullah, 2021; Martin et al., 2021; Onuralp, 2021; Santoso et al., 2019; Vaughn, 2021; Zheng & Ju, 2021).

It is of great significance to provide energy intake balance and optimum nutrition in childhood. A healthy diet has been linked to academic achievement, physical performance, and improved cognitive and psychomotor levels for both children and adults (Akdeniz et al., 2021; David et al., 2019; Pollitt & Lewis, 2020; De Groot et al., 2022; Vassiloudis, Yiannakouris, Panagiotakos, Apostolopoulos and Costarelli, 2020). Since adolescence children are in the growth process, their nutritional requirements are different from adults. In this period, inadequate and unbalanced nutrition negatively affects both the physical development and learning ability of the child. In order for school-age children to be successful in the education process, healthy conditions must be provided (Contento, 2021). In this context, people who influence, direct and train human health should have sufficient nutritional knowledge. In particular, teachers' nutritional knowledge should be sufficient and they should transfer this knowledge to students in order for students to gain proper nutrition habits. Nutrition education is a very difficult process, contrary to what many people think. Because it is not easy to change people's eating habits. In order to persuade individuals to develop better eating habits, it is necessary to first understand why they are fed this way. Generally, financial situation, price of food, availability, beliefs and habits are factors that affect the eating habits of individuals. In particular, the low socioeconomic status of families negatively affects the food consumption habits and frequency of family members and causes the inability to meet their healthy nutritional needs (Abdullah, 2021; Martin et al., 2021; Onuralp, 2021; Santoso et al., 2019; Vaughn, 2021; Zheng & Ju, 2021).

The most important reason for inadequate and unbalanced nutrition after economic reasons is the lack of nutritional information. Nutritional knowledge level is one of the factors that affect the nutritional habits, food choices and nutritional status of individuals, families and societies. Education of the society and individuals about nutrition by nutritionists positively affects the quality of life and health status of the society. Nutrition education has a great place and importance to protect and improve health (Campbell, Abbott & Spence, 2023; Hindin, Contento & Gussow, 2024). These problems, which occur as a result of lack or excessive consumption of nutrients in the diet, increase the risk of chronic diseases that may develop later. For this reason, it is of great importance to make the necessary recommendations for the intake of nutrients in a balanced and sufficient way and to ensure healthy growth (Lua & Wan Putri, 2020).

The most important reason for inadequate and unbalanced nutrition after economic reasons (food inflation) is the lack of nutritional information. Nutritional knowledge level is one of the factors that affect the nutritional habits, food choices and nutritional status of individuals, families and societies. Education of the society and individuals about nutrition by nutritionists positively affects the quality of life and health status of the society. Nutrition education has a great place and importance to protect and improve health (Campbell, Abbott & Spence, 2020; Hindin, Contento & Gussow, 2021). These problems, which occur as a result of lack or excessive consumption of nutrients in the diet, increase the risk of chronic diseases that may develop later. For this reason, it is of great importance to make the necessary recommendations for the intake of nutrients in a balanced and sufficient way and to ensure healthy growth (Lua & Wan Putri, 2020). Studies on the effects and relationships of children's nutritional status and physical activity on their development have shown that there may be differences depending on factors such as family, culture and environment, and that changes in education levels may also affect their level of nutrition knowledge. Children, young people in the age of growth and development, and athletes are among the groups affected by unbalanced nutrition. In this respect, it can be mentioned that there is a close relationship between nutrition and sports performance and activities. Regular sports and physical activity provide a healthy bone structure, a strong muscle system, control and prevention of obesity, reduction of fat ratio, and effective development of the heart and lungs in children (Lua & Wan Putri, 2020). Most sports experts agree that a balanced diet is necessary to achieve good performance (Hill, Appleton, & Mallinson, (2024). Adequate and balanced intake of nutrients is necessary for optimal performance by making arrangements for

training and competition periods according to the athlete's gender, age, daily physical activity and type of sport. When planning athlete nutrition, the athlete's age, gender, height, weight, body composition, nutritional habits and possibilities, health status, social and economic conditions should also be taken into account (Hill, Appleton, & Mallinson, (2024). While adequate and balanced nutrition improves performance, inadequate and unbalanced nutrition affects performance negatively. Conscious nutrition is also important for sports activities because, an athlete who cannot have a balanced diet cannot find the strength to do sports activities, cannot stay in shape, cannot gather the necessary energy (Lua & Wan Putri, 2020). On the other hand, it is important to determine the health risks related to nutrition and sedentary behaviors of school-age children, to plan appropriate nutrition and sports activity trainings, and to develop children's positive health, nutrition and sportive behaviours. For this reason, in this study, nutrition education was attached importance so as to change the positive behaviour of children in terms of adequate balanced nutrition and sportive activity in physical and health education.

Nutrition education programs are an effective method in helping children and adolescents gain healthy eating habits. Nutrition education should be given together with other courses at school, for example, children's daily energy and nutritional values should be calculated in math class, or texts related to nutrition should be selected in reading classes. Nutrition specialists should be invited to the school and meetings should be held on healthy eating. Nutrition Education Programs given in schools must also include teachers. The training provided has positively affected the health status and morale of teachers, which has increased the quality of education (Centers for Disease Control and Prevention, 2023; (Campbell, Abbott & Spence, 2020; Hindin, Contento & Gussow, 2021). The purpose of this study is to analyze the effects of nutrition education programmes applied to school-age children on their performance in physical and health education as regards sports activities as well as academic achievement. On this premise, the study opted to provide answers to the following research questions:

Research Questions

i. To what extent does the nutrition education programme for physical and health education students in junior secondary schools in Anaocha local government area of Anambra state affect their sports performance and attitudes?
ii. To what extent does the nutrition education programme for physical and health education students in junior secondary schools in Anaocha local government area of Anambra state affect their nutritional behaviours and attitudes?
iii. What is the effects of nutrition education programmes on the general academic achievements of physical and health education students in junior secondary schools in Anaocha local government area of Anambra state?

Methodology

The Nutrition Education Programme was carried out in the form of case studies, presentations and information sessions for two hours once a week for eight weeks in 20 selected junior secondary schools (15 public and 5 private) in Anaocha local government area of Anambra State. The trainings were given in the meeting room determined by the school administrators in the schools where the family education program will be implemented. In the trainings, methods and techniques such as narration, question-answer, case study, group discussion were used by using a projection device. At this stage, no education was given to the children in the control group. After the training program was completed, the posttests of the study were applied.

For ethical consideration, the study seek permission to conduct this survey having written to the school administration, this was done through written of official letters to patents/guardians as well as the school authorities and the permission to undertake the study was granted from both parties. While no intervention was made on the control groups in the teaching of the related nutrition education programme behaviour gains in the secondary school within the scope of the study, the 'Planned Nutrition Education Programme' was applied in the experimental groups. Children attending middle and second grades of two

selected groups, one experimental and one control group, were included in the study. The study group consisted of 60 students in total, 30 of whom were in the experimental group (15 girls, 10 boys), and 25 were in the control group (15 girls, 10 boys) making a total of 50 participants. In determining the classes that make up the study group; the proximity of socioeconomic levels, the similarity of school achievements and opportunities, easy transportation and time factors were taken into account. In the selection of classes in the school, teachers' opinions, class structure and student characteristics were taken into consideration. In line with these data, the existing natural classes were selected using the cluster sampling method without disturbing the structure of the classes. However, it was decided which group would be the experimental or control group by way of neutral assignment.

The research adapted the scale developed by Hill, Appleton, and Mallinson (2024), inspired by Hewitt and Flett's (2021) model for the dimensions of perfectionism. The aim of the scale is to measure the perceptions of children and adults regarding sports performance. A 5-point Likert-type rating system was used in the grading of the 12-item scale: (1) strongly disagree (2) disagree, (3) partially disagree, (4) undecided, and (5) strongly agree. EFA (Exploratory Factor Analysis) was performed on the scale scores, and CFA (Confirmatory Factor Analysis) was performed to confirm the structure by determining which structure the scale was for our own culture. After the validity study, Cronbach's Alpha values and two-half test reliability (Split-Half) were calculated for the internal consistency reliability of the scale, and the Explained Mean-Variance and Construct Reliability (CR) values were calculated for the convergent validity. As a result of the analyses performed on the scale scores, the Cronbach Alpha coefficient was found to be 0.85. High scores on the scale indicate that the perception of sports performance is high.

In the study, the “Attitude Scale Towards Sports” was used to measure the attitudes of the participants towards sports. “Attitude Scale Towards Sports” developed by Sharma (2019) consists of 25 items. The scale measures affective characteristics such as interest in sports, living with sports and active sports. The Attitude towards Sports Scale is a 5-point Likert-type rating scale as “Totally Agree (5), Agree (4), Undecided (3), Disagree (2), Strongly Disagree (1)”. The minimum score that can be obtained from the scale is 25 and the maximum score is 125. The high score indicates the high attitude towards sports. Since the Cronbach-alpha internal consistency coefficient of the scale was calculated as 0.92 for this study, the reliability of the data is quite high.

Children's food consumption was evaluated with the "Nutritional Behavior Scale" developed within the scope of food consumption. The scale consisted of 14 items with low-fat/salty and high-fat/salty food options to determine the food consumption of children. Children were shown comparable foods and asked which of the two foods they ate the most (frequently). Scale items are negative for unhealthy food and positive for healthy food. In the scale converted into a Likert form, negative scores were subtracted from positive scores, and nutritional behavior scores were obtained. A high total score from the scale indicates healthy eating habits. Low scores on the scale indicate unhealthy food consumption, while high scores indicate healthy food consumption. The internal consistency reliability coefficient of the original scale was found to be 0.76 (Parcel et al., 1995). For this tool, validity and reliability analyzes were conducted within the scope of the scale and Likert form adaptation study to Kazakh culture. The Cronbach Alpha internal consistency coefficient of the scale, which reveals the one-dimensional structure, was calculated as 0.86.

General Academic Achievement Test, developed by the researcher, was prepared as a multiple-choice test, taking into account the achievements of the curriculum in which the participant students studied. In the study, questions were prepared considering the units within the scope of mathematics, language, social studies and science courses. To ensure content validity, the opinions of two subject area experts and an assessment-evaluation expert were also consulted, and expert opinion was taken to determine the appropriateness in terms of language. In the beginning, a multiple-choice test with 50 questions was created by the achievements and a pilot test was applied. In line with the item analysis after the pilot test application, it was decided to exclude the questions with a distinctiveness index below 0.30. Validity and reliability measurements

were made for the remaining 40 questions. In this study, the KR-20 formula, which is a special form of the Cronbach's Alpha coefficient, was used to calculate reliability (Savige et al, 2020). As a result of the validity and reliability calculations, the reliability coefficient (KR-20) of the test was found to be 0.86. The lowest score that can be obtained from the test is 0, and the highest score is 40. The nutritional attitude scale was developed by the researcher to measure the child's attitude towards activities that reduce fat intake, increase healthy food consumption, and nutrition style that improve health. The scale in the Likert form takes values in the range of 1-5 (1- strongly disagree, 4- strongly agree), with a total score between 5-50. The total scores obtained from the scale are divided by the number of items and the average of the nutritional attitude score is obtained. A high mean score on the scale indicates a positive eating attitude. As a result of explanatory factor analysis, it was seen that the attitude scale towards nutrition had a one-dimensional structure. The explained variance of this one-dimensional structure is 62.26%. The internal consistency value calculated with the Cronbach Alpha reliability coefficient was found to be .86. These findings show that the attitude scale towards nutrition is valid and reliable for the participants in the sample of the study. The independent t-test was employed to analyze the data collected from the proceeds of the survey.

Data Presentation and Discussion of Result

The study used the Statistical Packages for Social Sciences programme (SPSS 26). Normal distribution of the data and homogeneity of variance, which are the prerequisites for using parametric tests, were tested. The Levene test was used as a variance homogeneity test. Parametric statistical tests were applied according to the normal distribution of the data. Independent Samples t-test was used to determine the difference between the pretest and post-test scores between the groups. To determine whether the entry behaviours of the groups differ in terms of nutritional behaviours and attitudes, sports performance and attitudes, and general academic achievement, the relevant scales were applied as a pre-test. The independent t-test results regarding the comparison of the pretest scores of the groups are given in table 1.

Table 1: Comparison of Pre-Test Nutritional Behaviors and Attitudes of Experimental and Control Groups

Pre-test	Group	N	Mean	SD	t	P-Values
Attitude Towards Nutrition	Experimental	50	3.22	0.36	0.396	0.694
	Control	50	3.18	0.35		
Nutritional Behaviour	Experimental	50	3.09	0.46	-0.370	0.713
	Control	50	3.12	0.31		

Table 1 reports that, no statistically significant difference was found between the groups in terms of nutritional attitudes and behaviours as a result of the independent t-test for the pre-test nutritional attitude and behaviour scores of the control and experimental groups (p value>0.05). This finding shows that the control and experimental groups were close to each ot
her in terms of nutritional attitudes and behaviours before the application.

Table 2: Comparison of Pre-Test Sports Performance and Attitudes of Experimental and Control Groups

Pre-Test	Group	N	Mean	Std. Deviation	t	p
Attitude Towards Sports	Experimental	50	3.28	0.92	0.447	0.657
	Control	50	3.18	0.79		
Sports Performance	Experimental	50	2.21	0.46	0.749	0.457
	Control	50	2.13	0.44		

Table 2 shows that no statistically significant difference was found between the groups in terms of sports attitude and performance as a result of the independent t-test for the pre-test sports attitude and performance scores of the control and experimental groups [p>0.05]. This finding shows that the control and experimental groups were close to each other in terms of sports attitudes and performances before the application.

Table 3. Comparison of Pre-Test Academic Achievement of Experimental and Control Groups

Pre-test		N	Mean	Std. Deviation	t	p
Achievement	Experimental	30	27.25	8.10	0.083	0.935
	Control	30	27.03	12.35		

Table 3 depicts that no statistically significant difference was found between the groups in terms of academic achievement as a result of the independent t-test for the pre-test scores of the control and experimental groups [t(60)=0.083; p>0.05]. This finding shows that the control and experimental groups were close to each other in terms of general academic achievement before the application.

Table 4. Comparison of Post-Test Nutritional Behaviors and Attitudes of Experimental and Control Groups

Post-test		N	Mean	Std. Deviation	t	p
Attitude Towards Nutrition	Experimental	50	4.41	0.40	2.532	0.014
	Control	50	4.06	0.64		
Nutrition Behaviour	Experimental	50	4.06	0.52	5.334	0.000
	Control	50	3.35	0.51		

Table 4 statistically significant difference was found between the groups in terms of nutritional attitudes and behaviours as a result of the independent t-test for the post-test nutritional attitude and behaviour scores of the control and experimental groups (p-value <0.05). This finding led to a significant difference in the nutritional attitudes and behaviours of the experimental groups compared to the control group after the implementation of the nutrition education program. In this respect, the nutrition education program applied to school-aged children had a significant effect on their positive eating behaviours and attitudes.

Table 5. Comparison of Post-Test Sports Performance and Attitudes of Experimental and Control Groups

Post-Test	Group	N	Mean	Std. Deviation	t	p
Attitude Towards Sports	Experimental	50	4.08	0.44	2.046	0.045
	Control	50	3.80	0.59		
Sports Performance	Experimental	50	3.11	0.91	4.180	0.000
	Control	50	2.32	0.50		

Table 5 shows that a statistically significant difference was found between the groups in terms of sports performance and attitudes as a result of the independent t-test for the post-test sports performance and attitude scores of the control and experimental groups (p-value<0.05). This finding led to a significant difference in the sports performance and attitudes of the experimental group compared to the control group after the application of the nutrition education program. In this respect, the nutrition education program applied in the experimental group of school-age children had a significant effect on the sports performance and attitudes of the children.

Table 6: Comparison of Post-test Academic Achievement of Experimental and Control Groups

Post-Test	Group	N	Mean	Std. Deviation	t	p
Academic Achievement	Experimental	50	29.50	7.32	0.650	0.000
	Control	50	10.91	4.05		

Author's Computation (2024)

Table 6 depicts a statistically significant difference between the groups in terms of academic achievement as a result of the independent t-test for the post-test scores of the control and experimental groups [p>0.05]. This finding shows that there is no difference between the control and experimental groups in terms of general academic achievement after the application.

Discussion

In this experimental study, the effect of the nutrition education program applied junior secondary school students in Anaocha LGA of Anambra State, Nigeria on their nutritional behaviours and attitudes, sports performance and attitudes and academic achievement was investigated. As to the research findings, the students in the experimental group, who were given a nutrition education programme, developed positive eating behaviours and attitudes compared to their peers in the control group, who did not receive any treatment. Table 1 reports that, no statistically significant difference was found between the groups in terms of nutritional attitudes and behaviours as a result of the independent t-test for the pre-test nutritional attitude and behaviour scores of the control and experimental groups (p value>0.05). This finding shows that the control and experimental groups were close to each other in terms of nutritional attitudes and behaviours before the application. Table 2 shows that no statistically significant difference was found between the groups in terms of sports attitude and performance as a result of the independent t-test for the pre-test sports attitude and performance scores of the control and experimental groups [p>0.05]. This finding shows that the control and experimental groups were close to each other in terms of sports attitudes and performances before the application. Table 3 depicts that no statistically significant difference was found between the groups in terms of academic achievement as a result of the independent t-test for the pre-test scores of the control and experimental groups [t(60)=0.083; p>0.05]. This finding shows that the control and experimental groups were close to each other in terms of general academic achievement before the application. In table 4, a statistically significant difference was found between the groups in terms of nutritional attitudes and behaviours as a result of the independent t-test for the post-test nutritional attitude and behaviour scores of the control and experimental groups (p-value <0.05). This finding led to a significant difference in the nutritional attitudes and behaviours of the experimental groups compared to the control group after the implementation of the nutrition education program. In this respect, the nutrition education program applied to school-aged children had a significant effect on their positive eating behaviours and attitudes. Table 5 shows that a statistically significant difference was found between the groups in terms of sports performance and attitudes as a result of the independent t-test for the post-test sports performance and attitude scores of the control and experimental groups (p-value<0.05). This finding led to a significant difference in the sports performance and attitudes of the experimental group compared to the control group after the application of the nutrition education program. In this respect, the nutrition education program applied in the experimental group of school-age children had a significant effect on the sports performance and attitudes of the children. Table 6 depicts a statistically significant difference between the groups in terms of academic achievement as a result of the independent t-test for the post-test scores of the control and experimental groups [p>0.05]. This finding shows that there is no difference between the control and experimental groups in terms of general academic achievement after the application. This result is in line with the studies conducted by Hill, Appleton, and Mallinson (2024), Campbell, Abbott and Spence, (2020) Hindin, Contento & Gussow, (2021), Lua & Wan Putri, (2020), Hill, Appleton, and

Mallinson, (2024), Lua and Wan Putri, (2020). Campbell, Abbott and Spence, (2020), Hindin, Contento & Gussow, (2021) whose studies found significant and positive relationships among students' attitudes towards sports activities, physical and health education and academic performance in Mali, Cambodia, Togo, Senegal and Italy.

Conclusion

This study examined the relationship between nutrition education programs applied to students and students' Nutritional Behavior-attitude, sports performance-attitude and academic achievement. The study found that students who received the nutrition education programme achieved positive nutrition attitudes and behaviours, higher sports performance and attitudes compared to the students in the control group who did not undergo any experimental procedure

Recommendations

i. Parents should ensure children receive adequate animal protein for growth and development. If this is not feasible, affordable alternatives like mushrooms can also support their nutritional needs. Proper nutrition helps build strong immunity and reduces the risk of future health complications. This will increase students' performance in physical and health education especially in sports activities.

ii. Raising awareness about the importance of balanced diets for children is essential. Educating families about the need for adequate nutrition will help ensure children receive the necessary nutrients to thrive and avoid long-term health issues. This will enhance students' performance in physical and health education especially in sports activities.

iii. School feeding programmes in developing countries, which often include both in-school meals and take-home rations, have been proven effective in improving nutrition for students and their younger siblings. In Nigeria, past implementations of these programmes have shown positive outcomes. To build on this success, the programme should be scaled up to increase the amount of food provided per child and extended to all junior secondary schools. This will lead to increased students' performance in physical and health education especially in sports activities.

iv. Achieving food security requires substantial investment to boost agricultural productivity and strengthen market systems. The government should increase its agricultural budget to meet the 10% target of the Malabo Declaration and work with private sector partners and development institutions to mobilize additional funding. Innovative models, like Public-Private Partnerships (PPP), can reduce investment risks and attract more stakeholders. This will increase students' performance in physical and health education especially in sports activities.

v. Households can save money by buying staple foods during peak production seasons when prices are lower. Purchasing and storing larger quantities during these periods would help households manage their food budgets more effectively. This will increase students' performance in physical and health education especially in sports activities.

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