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Exploring the Nexus between Nutrition and Academic Performance in Secondary Education: A Case Study in Nyarushanje Sub County, Rukungiri District

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ABSTRACT

The research investigated the impact of malnutrition on academic performance in secondary schools within Nyarushanja Sub County, Rukungiri District. Five schools Bwanga, Rubirizi, St. Peters, Bwanga High, and Nyarushanje High were involved. A total of 1,153 respondents, including head teachers, deputy head teachers, students, and parents, were considered. Sampling involved various methods: purposive, simple random, and stratified random sampling. Primary data came from questionnaires, interviews, and observations, while secondary data included existing literature from sources like magazines and textbooks. Demographic characteristics were assessed: 54% male, 46% female respondents; 36.7% single, 56.6% married, and 6.7% divorced respondents; and age distributions with a majority falling within the 21-30 age bracket. Regarding malnutrition's effects on academic performance, findings included causes such as poor balanced diet (30%), famine (18.3%), and digestive illnesses (16.7%)—and relationships, like cognitive functioning (33.3%) and the impact of iron and zinc on brain function. Proposed solutions to address poor nutrition encompassed providing balanced diet foods (33.3%), timely food availability (18.3%), government sensitization (21.7%), breakfast programs (15%), and support for needy families (3.4%). The study showed a significant correlation between malnutrition and academic performance, emphasizing the need for balanced diets, timely meals, educational initiatives, and government support to improve the nutritional status of students in Nyarushanja Sub County.

Keywords: Nutrition, Malnutrition, Academic Performance and Education

INTRODUCTION

Good academic performance is important for elementary age children as a tool for successful life as an adult. Proper nutrition for our children is a construct in which the individual as an indivisible being attains a positive state of integration of mind, body, and spirit with the environmental contexts. Academic achievement for children occurs within the construct of proper nutrition, living condition of parents and parents support to their children, as there is mutual influence between academic factors and nonacademic factors for a child, [1]. The

influence of the Department of Education emphasizes (DepEd) clearly the importance of providing good education to every child in the community, hence DepEd introduced the National Achievement Test (NAT) to spell out the community's values and perception of what Education in the community should be. Amongst the plethora of possible solutions, perhaps they should look first at the nutritional substance of what our school-aged children are eating each day as they struggle through a day of learning. There is a correlation between nutrition

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and cognition as well as psychosocial behavior; this relationship has been highly under-researched, but there exist many studies that look at the nutritional benefits of many proteins, vitamins, and food substances as they affect learning and brain function. Our schools have the potential to play a vital role in preparing and sustaining our students' potential learning abilities and benefitting their social behaviors by supplying nutritious breakfasts and lunches during school days. Recent studies have demonstrated that nutrition affects Students' thinking skills, behavior, and health, among all factors that impact academic performance. Research suggests that diets high in trans and saturated fats can negatively impact learning and memory, nutritional deficiencies early in life can affect the cognitive development of school-aged children, and access to nutrition improves Students' cognition, concentration, and energy levels. For example, one study found that Students with less nutritious diets performed worse on a standardized literary assessment [2]. Another study discovered that Students who ate more fast food fared worse on math and reading scores [3]. Similarly, a study that analyzed a healthy eating campaign that banned junk food from schools and introduced healthier, freshly prepared school meals found that participating Students scored higher on English and science tests than Students who did not take part in the campaign [4]. Nutrition also indirectly impacts school performance. Poor nutrition can leave Students' susceptible to illness or lead to headaches and stomachaches. resulting in school absences [5]. Access to nutrition that incorporates protein, carbohydrates, and glucose has been shown to improve Students' cognition, concentration, and energy levels [6]. In contrast, nutritional deficiencies (particularly zinc, B vitamins, Omega-3 fatty acids, and protein) early in life can affect the cognitive development of school-aged children [7]. Studies also suggest that diets high in trans and saturated fats can negatively impact the

brain, influencing learning and memory [8].

Finally, research has also established a link between nutrition and behavior. Studies have found that access to nutrition, particularly breakfast, can enhance a student's psychosocial well-being, reduce aggression and school suspensions, and decrease discipline problems [5].

Providing the nation's low-income youth with nutritious food has been a concern for over a hundred years. To see that food insufficient Students were adequately fed, school lunch programs began during the Great Depression of the 1930's. From the beginning the program had two goals: to use of surplus agricultural make commodities owned by the government as a result of price-support agreement with the farmers and to help prevent nutritional deficiencies among low-income school children by feeding them nutritious meals. Academic performance is important for elementary age children as a tool for successful life as an adult. Low academic performance demands that analysis of each of the perceived determinants be carried out with a view of grouping them into homogenous class of relatedness hence the reasons of this study [9]. In Nvarushanie Sub County. Rukungiri District, there are secondary schools both private and government and the academic performance each year decline in almost all classes. To examine the effects of malnutrition on Students' academic performance it demands that analysis of each of the perceived determinants be carried out with a view of grouping them into homogenous class of relatedness. With this, it becomes easy to investigate the significant effects of each class of determinants of nutrition on the academic performance of Students in Nyarushanja Sub County, Rukungiri District. From the above statement, this paper proposed measuring the effects wavs of of malnutrition for Students on their academic performance. It becomes possible to establish whether malnutrition has significant effect on the academic performance of Students in Nyarushanja Sub County, Rukungiri District. Among

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other factors, schools in Nyarushanje Sub County face the problem of poor performance of which malnutrition is investigated about the same problem in Nyarushanje Sub County hence the case study. thought to be the main factor and there is no any researcher who has ever

Aim of the Study

This study aimed to investigate how nutrition impacts the academic performance of students within specific secondary schools in Nyarushanja Sub County, Rukungiri District.

Objectives of the Study

- i. To establish the causes of malnutrition on the academic performance of Students in selected secondary schools in Nyarushanja Sub County, Rukungiri District.
- ii. To find out the relationships between malnutrition and students'

Research Questions

i. What are the causes of malnutrition in selected secondary schools in Nyarushanja Sub County, Rukungiri District? secondary schools in Nyarushanja Sub County, Rukungiri District. iii. To suggest measures that can be taken to solve the problem of poor

academic performance in selected

- taken to solve the problem of poor nutrition in secondary schools.
- ii. Is there any relationship between nutrition and students' academic performance?
- iii. What are the measures that can be taken to solve the problem of poor nutrition in secondary schools?

Geographical Scope

The study was carried out in 5 secondary schools found in Nyarushanja Sub County, Rukungiri District bordering Ntungamo in west, Rukiga in South, Mitooma in North and Kanungu in East. The schools include Bwanga, Rubirizi, St. Peters, Bwanga High and Nyarushanje High secondary schools. Data was collected in these schools.

Study Population

A total population of 1153 respondents were considered as the target population for this study. The population for this **Table 1** study includes head teachers, deputy head teachers, Students and some parents.

S/N	Category of respondents	Population size	Sample size	Sampling method	
1	Head teachers	4	4	Purposive sampling	
2	Teachers	40	4	Purposive sampling	
3	Students	1000	276	Simple random sampling	
4	Parents	101	32	Purposive sampling	
5	Deputy head teachers	4	4	Purposive sampling	
	Total	1153	320		

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Sample size and sampling procedure

The sample size comprised of 320 respondents based on [10]. The respondents were selected from 6 schools. The researcher selected objectively from the targeted population so as to tap correct data from the right individual. In sample size determination the formula by [11] was used:

If there is no measurable estimate, 50% (constant) or 0.5 is used, therefore, P = 0.5

Q= Standardize 1.0-P=0.5

D= Degree of accuracy desired using 10%, or 0.1

 $n = \frac{Z^2 P Q}{D^2}$

Where n= desired sample size.

Z=Standard normal deviation taken at 1.96 at confidence level of 95%.

P= Proportion of targeted population estimated to have similar characteristics.

In this case, 95% confidence level has 5% error.

The researcher set and took formalized questions to the respondents and get the needed data through questionnaires as well as face to face interaction with respondents.

Sampling techniques

Simple random sampling method so that each member of the population would get equal chances of being selected. Purposive sampling. To select the targeted respondents who were school administrators and Board of governors from the selected schools Stratified

The researcher used both primary and secondary data sources. In primary sources of data, the researcher got firsthand information by asking the respondents during data collection by use of a questionnaire and interview guide while secondary data sources included information already researched on like random sampling in which the population was divided into further number of strata and the sample was drawn from each stratum. The researcher adopted the above techniques because they are reliable, highly representative and present general view of the results [12].

Data sources

magazines, newspapers and text books concerning the needed data. The researcher also used observation method to discover the opinions, feelings, views of the respondents in the area of the study so as to acquire real data needed for the study.

Research instruments Questionnaire

A pre-tested questionnaire with both open and close ended questions were designed and administered to the selected respondents. Those who were able to read and write were allowed to fill their

The researcher also used an interview guide to some key respondents like school

The researcher asked permission to carry out the study and presented the introductory letter from the university. Respondents were briefed by researchers about the purpose and objectives of the study. Furthermore, respondents were informed that the study was for their own responses in the questionnaire themselves, while those who were not be able to read and write were helped by the researcher himself to explain and interpret the questionnaire.

Interviews

administrators, so as to collect valid data from the right source.

Data collection procedure

good and Nyarushanje Sub County At Large. The questionnaires to the school administrators and teachers were distributed to them by the researcher and they were asked to complete them during their free time. The researcher personally interviewed the school head teacher of

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each school. He also requested for the files containing relevant information for the study. The researcher collected the

The filled in questionnaires were checked for validity, clarity using pretest questionnaire before leaving data collection site. Data was edited, entered, coded, and analyzed correctly in the completed questionnaires personally on the agreed dates.

Data analysis

computer using SPSS and data analysis tools. The questionnaires were kept properly so that it will be used to describe basic statistics collected during the study after analysis by experts.

Ethical consideration

Clearance/introductory letter was obtained from institutional ethical review committee Board of KIU - Western Campus. Also, permission was sought from administrators of the selected schools. In the process of data collection, consent was obtained from the participants because it was their right before taking part in the study. Privacy was ensured using private codes known only by the researcher. All information from all respondents was kept confidentially. All sources of information were acknowledged.

RESULTS

Demographic characteristics of the respondents. Sex of respondents

The researcher tried to investigate the sex distribution of the respondents in the selected Primary schools in Nyarushanje Sub County, Rukungiri District and the following findings were obtained;

Sex	Frequency	Percentage
Male	172	54
Female	148	46
Total	320	100

Table 2: Sex of respondents

Source: Field data September 2017

Table 2 the researcher found out that 172 respondents accounting to 54% were male, while 148 accounting to 46% were female

and this meant that majority of the respondents who were involved in the study were male respondents.

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INOSR HUMANITIES AND SOCIAL SCIENCES 9(2): 12-23, 2023 Figure 1: Showing sex of the respondents



Marital status

The researcher investigated on the marital status of the respondents and the following findings were obtained;

Table 3: Marital	status of	the respondents
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Marital status	Frequency	Percentage
Single	116	36.7
Married	182	56.6
Divorced	22	6.7
Total	320	100

Source: Field data September 2017

Table 3, the researcher found out that 116respondents accounting to 36.7% weresingle, 182 accounting to 56.6% were

married, and 22 accounting to 6.7% were divorced. This meant that majority of the respondents were married.

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INOSR HUMANITIES AND SOCIAL SCIENCES 9(2): 12-23, 2023 Figure 2: Marital status of the respondents



Age distribution of the respondents

The researcher also investigated about the age distribution of the respondents and the following findings were obtained

Table	4: Ag	e distributions	of the	respondents
IUNIC		c alberts actoris	or the	respondences

Age	Frequency	Percentage	
10-20	112	35	
21-30	154	48.4	
31 - 40	27	8.3	
41+	27	8.3	
Total	320	100	

Source: Field data September 2017

In table 4 above, the researcher found out that 112 respondents accounting to 35% were in the age bracket between 10-20, 154 respondents accounting to 48.4% were in the age bracket between 21-30, 27 respondents accounting to 8.3% were in the age bracket between 31- 40 and 27

respondents were above the age of 41 accounting to 8.3%. This meant that most of the respondents were in the age bracket between 21-30 years which shows that most of the respondents were mature enough to give appropriate information.

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INOSR HUMANITIES AND SOCIAL SCIENCES 9(2): 12-23, 2023 Figure 3: Age distributions of the respondents

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Table 5: Causes of malnutrition on the academic performance of Students in selected secondary schools in Nyarushanja Sub County, Rukungiri District.

Causes of malnutrition on the academic performance	Frequency	Percentage
Poor balanced diet	96	30
Famine	59	18.3
Digestive illness ulcerative colitis	54	16.7
Poverty	49	15
Ignorance of pregnant mothers	11	3.4
Dysphagia	28	8.4
Lack of exercise and games	22	6.7
Total	320	100

Source: Field data September 2017

It was revealed that 96 accounting to 30% supported Normal physiological and neurological growth and development, 59 respondents accounting to18.3% supported that nutrition support brain function and neurotransmitter activity, 54 accounting to 16.7% supported that good nutrition eliminates or reduces stomach pain, headache, muscle tension, and fatigue, 49 accounting to15% supported normal physiological and neurological growth and development, 11 respondents accounting to3.4% supported nutritional accounting deficiencies. 28 to8.4%

supported affect the cognitive development of school-aged children while 22 accounting to 6.7% supported negatively impact the brain, influencing learning and memory. The factors presented here are not however exhaustive and therefore are not conclusive to be the only effects of nutrition on the academic performance of Students. There might be other factors that may interfere. All the selected respondents participated and this shows that the above effects are true according the support of to the respondents.

Table 6: The relationships between malnutrition and students' academic performance
in selected secondary schools in Nyarushanja Sub County, Rukungiri District.

Relationships between malnutrition and students' academic	Frequency	Percentage
performance		
Affecting cognitive functioning	106	33.3
Relationship on concentration	58	18.3
Iron plays an important role in brain function	70	21.7
Zinc is another nutrient that plays a role with cognition, specifically with memory	48	15
Food consumption is vital to the brain being able to make the right amount of amino acids and choline.	10	3.4
The substances, all found in food, are important to brain development and function.	26	8.4
Lack of protein, also known as Protein Energy Malnutrition, lead to poor school performance by children	21	6.7
Total	320	100

Source: Field data June 2017

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The study revealed that 106 accounting to 33.3% supported that nutrition affects cognitive functioning, 58 respondents accounting to18.3% supported there is a relationship on concentration brought by nutrition with Students, 70 respondents accounting to 21.7% supported that Iron plays an important role in brain function, 48 accounting to15% supported Zinc is another nutrient that plays a role with cognition, specifically with memory, 10 3.4 % accounting supported food consumption is vital to the brain being able to make the right amount of amino

choline, acids and 26 respondents 8.4% supported accounting to the substances, all found in food, are important to brain development and function 21 respondents accounting to6.7% supported lack of protein, also known as Protein Energy Malnutrition, lead to poor school performance by children. According to the above findings, it is therefore shown that there is a great relationship between nutrition and brain function of Students in selected primary schools in Nyarushanje Sub County, Rukungiri district.

Table 7: Measures that can be taken to solve the problem of poor nutrition in secondary schools.

Measures that can be taken to solve the problem of poor	Frequency	Percentage
nutrition		
Students should be provided with balanced diet foods.	106	33.3
Should always get their food in time to avoid stomach pains	58	18.3
and the related diseases		
Government sensitization	70	21.7
A program that provided breakfast to primary school	48	15
significantly increases arithmetic scores		
Government should provide help to the families which are	10	3.4
needy so as to cater for good food for their children for their		
good performance in studies		
Schools should engage students in games and sports	26	8.4
Access to hospitals for health education	21	6.7
Total	320	100

Source: Field data September 2017

The study revealed that 106 accounting to33.3% supported that Students should be provided with balanced diet foods, 58 respondents accounting to 18.3 % supported that Should always get their food in time to avoid stomach pains and the related diseases, 70 respondents accounting to 21.7% supported that government should put sensitization programs about nutrition, 48 accounting to15% supported that a program that provided breakfast to primary school children increases arithmetic scores, 10 accounting 3.4% supported Government should provide help to the families which

The research conducted in secondary schools within Nyarushanja Sub County, Rukungiri District unveiled critical insights into the relationship between are needy so as to cater for good food for their children for their good performance in studies, 26 respondents accounting to8.4% supported Students should always be reminded to eat their meal in time while at home and school, 21 respondents accounting to6.7% supported Students should be sent to schools with packed foods. According to the above findings, it is therefore shown that measures that can be taken to solve the problem of poor nutrition in primary schools are above though there are other, in selected primary schools in Nyarushanje Sub county, Rukungiri district.

CONCLUSION AND RECOMMENDATIONS

malnutrition and academic performance among students. By examining demographic characteristics, causes, and the impact of malnutrition, the study

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aimed to propose viable solutions to address this issue. The findings revealed a predominantly male respondent population, with the majority falling within the married status and aged 21 30 between to years. These demographics provided a comprehensive view of the sample involved in the study. Regarding the causes and effects of malnutrition, the study shed light on various factors contributing to poor nutrition among students. Factors like poor balanced diets, famine, and digestive illnesses were identified as prominent causes affecting academic performance. Additionally, the research established correlations between malnutrition and cognitive functioning, emphasizing the critical role of nutrients like iron and zinc in brain function. The proposed solutions highlighted the importance of

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interventions to combat malnutrition in schools. Recommendations included the provision of balanced diet foods, ensuring timely availability of meals, government sensitization programs. breakfast initiatives, and support for families in need. In conclusion. the studv underscored the undeniable link between proper nutrition and academic performance among students. Addressing malnutrition through proactive measures is crucial for enhancing the educational outcomes of students in Nyarushanja Sub County. Bv implementing the recommended solutions, such as education, nutritional timelv meal provisions, and government support, the educational sector can take substantial steps toward improving the overall wellbeing and academic success of students.

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