Research Article

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Nutritional Health and Its Impact on Students' Academic Achievement

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Abstract

Introduction: Eating healthily, exercising regularly, getting enough sleep, managing stress, not taking drugs, leaning on friends and family, and cutting screen time are all proven predictors of long-term health and happiness. It is impossible to overestimate the significance of proper nutrition in a child's growth and development. Changes in diet during adolescence and young adulthood have far-reaching effects on later health and well-being.The problem and the aim of the study The two researchers looked at academic achievement and student malnutrition separately. The authors of this study hoped to shed light on how a bad diet affects academic performance, physical health, capacity to concentrate, and food choices. Research methods. In order to arrive at their findings, the researchers carried out several tests. The first step is to determine the height and weight of the children. A questionnaire will be given to the parents regarding the eating patterns of their family as well as the prevalence of Malnutrition. Finally, a test of pupil concentration will be administered. It should be noted that the sample was randomly selected from 105 children who were enrolled in grades three and four at Wadi Al-Seer, Amman's government-funded school for teachers. Results. The researchers used SPSS for statistical analysis, as well as descriptive statistics (rates and frequencies), to draw the following conclusions: Low academic achievement is strongly linked to Malnutrition. The degree of Malnutrition among students is strongly linked to their eating habits. A statistical comparison of well-nourished and malnourished students reveals that the former had weaker physical frames. A statistically significant difference exists between pupils who have problems focusing and those who eat less. Conclusion. If a parent is genuinely concerned about their child's health, they will provide them with healthy, well-balanced meals. We have a responsibility as parents and educators to help our children understand the value of a healthy diet and how it can help them reach their full potential throughout their lives. If they want to succeed, students must eat well. Schools must teach students and their families the importance of eating well.

Keywords: *Malnutrition, malnutrition form, eating habits, eating habits form, academic achievement, ability to concentrate, calories, body mass index, weight, and height*

1. Introduction

Human nutrition is the most essential element for its continuation in life. The relationship between humans and food is the body's need for proper food to perform its vital functions efficiently,

represented in all its daily activities as the person depends for the continuity of his life on what he consumes foodstuffs. Nutrition is defined as all the vital processes that food passes through from the beginning of the eating process to the process of excreting it from the body after passing through the processes of digestion in the stomach, absorption in the intestine, transport, and circulation through the blood so that the nutrients that have been absorbed reach the various cells of the body so that the body can benefit from them [1].

Academic success at the university level may be predicted by students' adherence to good eating habits, according to [2]. A healthy diet meets the body's nutritional requirements [3]. A diet rich in whole grains, organic foods, vegetables, and fruits has been linked to improved cognitive function, memory enhancement, test performance, and college success [4].

A student's success in school or college is heavily influenced by several factors (i.e., financial status, education level of the parents, and educational attitudes) [5].

A direct link between diet and academic success was discovered among school-aged youngsters. According to research by Wood [6], a child's diet can significantly affect their brain development and subsequent cognitive abilities. Researchers also discovered iron's importance to brain function. It was shown that children with low iron levels, or iron deficiency, scored lower on standardized tests [6].

Proper nutritional support is necessary to allow the brain to function at its maximum ability and to increase learning. It takes a suitable adaption of the Food Guide Pyramid to help children attain their potential. Nutrition has been shown by Wolfe et al. [7] to directly impact children's ability to learn and succeed in school through changes in their cognition, behavior, and physical health. It has been shown by Busch et al. [8] that kids' grades improve when they eat well and play sports. Wolfe et al. [7] likewise emphasized the harmful effects of going without food. Children who have a healthy breakfast tend to do better on tests because they can better pay attention, retrieve information quickly and accurately, solve problems with less trial and error, and maintain focus for longer periods. In college students, a weak correlation existed between healthier diets and better grades, and vice versa [9]. Studies on adolescent eating habits and academic performance have found similar results [10; 11; 12]. There was also a correlation between the three main meals of the day (breakfast, lunch, and dinner) and greater academic achievement [13; 14]. In addition, consuming foods high in critical nutrients is significantly linked to substantial academic achievement [13].

Poor academic achievement is a global problem, so there is hardly a community without it. Fizerstone, one of the first to study it, says, "There are twenty students out of a hundred who have poor academic achievement." When talking about low educational attainment, researchers refer to many reasons that affect achievement, among them food and proper nutrition [15].

2. Study Problem

Lack of nutrition also leads to a decline in students 'cognitive development, and thus, appropriate nutrition improves students' levels of knowledge and concentration. At the same time, nutritional deficiencies, especially fatty acids, proteins, vitamins, and omega-3s, lead to a decline in students' thinking skills [16].

Li & O'Connell [17] concluded that the campaign launched by the U.S. Department of Education, which banned fast food inside schools and replaced it with fresh and healthy meals, students who participated in this campaign had higher grades than other students—non-participants, especially in the subjects of science and English language. In addition, Malnutrition can leave students vulnerable to disease, stomach aches, and headaches, which can naturally lead to higher absences among students [18].

There is a lack of studies in the general Gulf environment and specifically in Kuwait that have focused on educational programs related to food and nutrition to improve the academic performance of students with learning difficulties. Based on the researcher's experience and work in the field of education with educated women facing learning difficulties, she has taught food and nutrition lessons to seventh-grade girls in Kuwait. In light of this, the researcher believes that there is an

urgent need to investigate this issue. Therefore, the main question of this study is: What is the impact of proper food and nutrition on female learners with learning difficulties and their academic performance?

The study seeks to find answers for the following questions:

1. What is the relationship between malnutrition and academic performance among female students with learning difficulties in Kuwait?
2. How do specific nutritional deficiencies (e.g., fatty acids, proteins, vitamins, omega-3s) impact cognitive development and academic achievement?
3. What are the effects of proper nutrition on the cognitive skills and concentration levels of students with learning difficulties?
4. How does participation in school-based nutrition programs influence the academic performance and overall well-being of students?

3. Study Hypotheses

1. A student's academic performance is inversely proportional to his level of Malnutrition.

a. There is a measurable, scientific connection between student malnourished and poor academic performance.

b. Malnourished students are statistically much smaller than their non-malnourished classmates.

4. Study Objectives

The study aims to:

Disclosure of the differences between the pre- and post-applications of practical skills learned in food and nutrition lessons for members of the control and experimental groups of female learners with learning difficulties.

Disclosure of the differences between the pre- and post-applications of the academic achievement test for the food and nutrition unit for members of the control and experimental groups of female learners with learning difficulties.

Finding the relationship between food, proper nutrition, and the level of academic achievement of female learners with learning difficulties in light of the current study's results.

5. Study Importance

The importance of the present study is as follows:

Theoretical importance: The study deals with the concepts of appropriate food and nutrition and academic achievement. In its second theoretical aspect, the study generally deals with the concept of people with learning difficulties in light of modern educational thought.

Applied importance: The current study benefits and what it can yield from the results and recommendations of officials in the Ministries of Health and Education in the State of Kuwait to serve those with learning difficulties primarily in the field of food and proper nutrition, and its relationship to their academic achievement, and practical skills for food and nutrition lessons. Providing information about the nutritional aspects of individuals with learning difficulties may contribute to better identification and diagnosis. This study also helps to open the door to researchers and learners for more research and studies in the field of educational programs related to food and appropriate nutrition and the effect of this on increasing the level of academic achievement of a group that is often absent. It was rarely addressed by one of the researchers, who are learners with learning difficulties.

6. Previous Studies

Wongprawmas et al. [19] aimed to (1) comprehend better the most significant dietary shifts that first-year college students experience, (2) identify the subjective and objective factors that impede healthy eating, and (3) define potential strategies to promote healthier diets among college students. Ideas were elicited from 39 students at the University of Parma, Italy, using the nominal group method (NGT). There were 16 first-years and 23 upper-level students in the sample. Participants ranked and discussed the importance of the top five suggestions for improving their diet, overcoming obstacles to healthy eating, and overcoming dietary ruts. The priorities of each group were compared using a thematic analysis. There were 43 topics chosen as the most critical shifts in diet, 39 as the most major obstacles, 43 as the most significant objective barriers, and 55 as the most significant strategies. The primary shifts were noted as a lack of time for cooking, a lack of financial availability, a diet consisting primarily of unvaried food or junk food, and increased knowledge about food. Poor dietary information, a hectic schedule, and a lack of personal determination all contributed to individuals' inability to eat healthily. It became clear that there were both concrete constraints (such as the high cost of healthy items and limited financial resources) and subjective barriers (such as the negative impact of social networks, inadequate dietary instruction during childhood, and cultural norms). Changing the kind of foods available at university canteens and providing places for students who bring their food to thaw and eat are two approaches that could motivate students to eat healthier. The availability of nutrition and healthy eating information and student discounts at grocery stores were also cited as helpful approaches to support students. The NGT gave all students a voice in the conversation about healthy eating on campus so they would feel like they were contributing to the solution. This has the potential to provide more targeted strategies for legislators, educators, and food service providers to increase the prevalence of healthy eating habits.

Ryan et al. [20] aimed to learn more about the factors influencing teenage food preferences and how they interact with their school environments to make food decisions. Twenty-eight secondary school students aged 13 to 14 were interviewed in seven focus groups at a school in Northern England. All interviews and focus groups were recorded verbatim, transcribed, and analyzed using an inductive theme framework. The data showed six overarching themes, including (1) the roles of parents and adolescents in the home food environment, (2) growing food independence, (3) factors influencing school food choice, (4) social aspects of school food, (5) differences between the home and school food environments, and (6) food knowledge and beliefs. During the focus groups, adolescents recognized two separate settings: home and school. Teens compared and contrasted the two regarding food availability, food options, and norms and traditions related to food consumption. This contrast was found to have a significant, albeit indirect, effect on the diets of high school students. Adolescents' school lunch selections result from a complex balancing act between many, sometimes competing influences from both the school and home environments. As they try to navigate and make peace with these forces, adolescents may adopt a number of problematic dietary rationalizations. Opportunities to impact teenagers' food choices while at school can be discovered through consultation and the assessment of applicable food choice models.

Alshammari et al. [21] research aimed to determine how college students' dietary habits and exercise routines influenced their academic performance. Medical school students participated in a cross-sectional survey study using the "SurveyMonkey" website, which is a structured online survey tool. All individuals who met the inclusion requirements were invited to participate. There was a total of 317 participants in the study. Nearly a third (31.2%) of respondents reported engaging in moderate physical exercise, such as walking, six to seven days per week on average, although 61.5% of participants engaged in strenuous activity once weekly, and 71.3% engaged in moderate activity once weekly. Among our subjects, only 30.5% admitted to having consistent eating schedules. The study results indicate that health education and promotion are urgently required to raise students' levels of awareness and stress the significance of physical exercise among college students. Encourage students to adopt healthy eating habits, as this has been shown to have positive effects on students'

health and academic performance.

Mohammed's [22] study aimed to determine if and how school feeding affected student achievement in a subset of elementary schools in the Namutumba District of Namutumba Sub-County. Overall, 606 participants were included in the study, 569 students making up the largest group, and systematic and haphazard random sampling methods were used. The instruments consisted of a set of interview guidelines, a set of questionnaires, and a set of instructions for leading a focus group. Both qualitative and quantitative analyses were performed on the data. Students at some schools were found to have deficient levels of literacy and text comprehension. Despite this, a sizable percentage of the population is literate and numerate. Many educators have noted growth in their student's literacy and numeracy abilities with a generally dismal level of performance.

Nonetheless, many elementary school teachers have noted that students can distill an important idea from a jumble of unfocused writing. The research also showed that pupils are fed at school to keep them alert and engaged in their studies. A high rate of absenteeism was also evident. It was also alleged that, when feeding does take place, the majority of the time it consists of eating oatmeal with very few escorts. The survey found that most primary schools in Namutumba Sub-Academic County had significantly below-average performance, suggesting that both teacher skill and attention may need to be added.

Additionally, while it may be challenging to show a direct correlation between school meals and academic performance, it is evident that not feeding decreases concentration, makes classes boring, and leads to the absence and hatred of studying. Additionally, despite financial hardship, there is widespread and perhaps damaging ignorance among parents regarding school meals. In addition, school officials need to do more to educate parents about the need for healthy school lunches. The study concludes that educators should be instructed that extreme adaptability, innovation, and the capacity to construct productive learning environments are all necessary for success in the classroom. In addition, policymakers, educational institutions, educators, and students all have a part to play in ensuring all students receive an excellent education considering their gender. Lastly, the government should fund the construction of new classrooms at various schools and continue subsidizing school lunches.

Tenzin et al. [23] researched whether college students' scholastic performance correlates with the quality of the food they eat in the dining hall. Student Food Survey (SFS) (N = 135) and structured interview (N = 6) data were obtained from students with first-hand knowledge of the college dining hall system. SPSS was used to perform correlation and descriptive analyses on the survey data. The same method was used to transcribe and evaluate the interviews, focusing on the following three areas: food quality, eating habits, and suggestions. Based on the findings, it is clear that students' eating habits and performance in the classroom are impacted by the mess's attention to food quality and nutritional meals. The survey data also shows a favorable and statistically significant relationship between the quality of school lunches and pupils' performance in the classroom. The study determined that poor nutrition is a factor in students' inability to focus on their studies, and it suggested that the university's administration take action to raise the mess's food standards.

Al-Saadi et al. [24] conducted research on the relationship between the nutritional status and dietary habits of Omani schoolchildren (aged 12-15) and their academic achievement in a cross-sectional study. This study used questionnaires to gather information, including a semi-quantitative dietary frequency questionnaire. The majority of Omani schoolchildren (36.6%) reported eating breakfast daily, whereas just 21.7% reported eating three meals a day. At the same time, 30.5% of students ate at least two servings of fruit per day, 26.6% ate at least three servings of vegetables per day, and 49.8% ate at least two servings of fish every week. Gender disparities in total caloric and macronutrient intake were also found, as were variations in breakfast eating, fruit consumption, fish consumption, soft drink avoidance, and nutritional understanding. One in four pupils were overweight, and 26.1% were obese based on their body mass index. Students' low Omani Diet Scores revealed a need for nutritional literacy and good eating habits. Males also consumed more daily calories and macronutrients on average than females. Students' grades were only significantly related

to their fish consumption, soft drink avoidance, waist-to-height ratio (WHtR), and nutritional knowledge score. Students' academic success was positively correlated with their food habits and nutritional status, suggesting that greater effort should be put into encouraging students to adopt healthier eating habits.

Beredo & Aceron's [25] research aimed to compare the academic performance of eighth-grade students with a squandered or severely wasted body mass index (BMI) to those with a normal or healthy BMI. Descriptive correlational analysis was performed to explain the interplay of the study's variables. This research examined the relationships between poverty, health, diet, and illiteracy using four (4) separate variables. The average mean of 3.06 and the average of 3.58 demonstrate that health conditions and illiteracy are sometimes contributory causes for Malnutrition. However, poverty and poor dietary habits are major contributors to the problem of Malnutrition. The estimated r value for the relationship between weight and academic achievement was smaller than the tabular value of 0.349 at the 5% significance level, indicating a weak negative association. Since the calculated chi-square value was less than the tabular value of 9.488 at the 5% significance level, we conclude no meaningful relationship exists between nutritional status and academic achievement. Therefore, the study suggests bolstering the existing School-Based feeding program. Moreover, it is suggested that parents, communities, and local governments all play an active role in increasing the school nutrition program.

The National Authority for Health Promotion and Scientific Research Development Forum [26] study aimed to compare the foods that Algerian children consume and those that European children consume. Fifteen hundred children from various states in Algeria participated in the study. The following findings were obtained from the study: As a result of the fact that Malnutrition affects fifty percent of Algerian children and that the average amount of food ingested by an Algerian kid does not surpass eighteen grams per day, but the amount of food consumed by a European child might reach eighty grams, forty-five percent of the children who were assessed had a weight that is significantly lower than the weight threshold. In addition, more than 53 percent of the population is affected by low height and thinness, and 33 percent is affected by Malnutrition.

Salem's study [27] aimed to clarify the relationship between the level of Intelligence and academic achievement, as the study was conducted on (1000) students at the elementary level from rural and urban Egypt. The researcher found that children who suffer from Malnutrition suffer from several diseases that affect their level of Intelligence as the percentage of students who suffer from low I.Q. is estimated at 65.2% of the total sample, as these children suffer from several diseases which are as follows:

The prevalence of anemia among the sample students was 43.8%, the percentage of those suffering from being underweight was less than the normal range of 66%, the weight percentage was estimated at the normal range of 50.4%, and the prevalence of goiter was estimated at 45.5% of the total sample. Whereas 79.6% of all children suffer from iodine deficiency in the urine below the normal range, 30% of students suffer from poor eyesight, 51.7% of them suffer from tooth decay, and 74.5% suffer from gum infections, so these children are absent from the study, which causes them to have a delayed study and thus a low level of achievement for them.

Al-Rashdan [28] examines the relationship between diet and I.Q. in a sample of children with low I.Q.s (ranging from 8 to 13 years old). Over the course of the eight-month-long trial, some participants received actual supplemental meals, including eight different salts and eleven different vitamins. In contrast, when I provided the other participants with an imaginary lunch, the outcomes were as follows: It appears that food affects Intelligence, particularly during developmental periods, since the groups that ate more saw I.Q. increases of up to 25 points and the groups that got a phony lunch saw a drop of 3 points.

Ali and Mahmoud [29] Three hundred forty-four female students at Riyadh's secondary school, aged fifteen to eighteen, participated in a study examining the correlation between dietary habits and I.Q. and academic performance. Some of the more noteworthy findings from this study include the following:

- 51.80% of women have Malnutrition, including anemia, irritable bowel syndrome, and heartburn.
- The same group of people suffers from disturbances in the nutritional balance, which leads to unhealthy eating habits. The most significant of these habits is skipping fundamental meals, particularly breakfast and food. This leads to exhaustion, an inability to concentrate, and consequently, a low level of academic achievement.

7. Methodology

7.1 Sample of the study

The sample consisted of 105 students from grades three and four at Wadi Al-Seer Amman's government-funded school for teachers.

7.2 Variables of the study

The primary variables include malnutrition, eating patterns, and academic achievement.

7.2.1 The study tools

The tools used in the study were measurements of height and weight, a parental questionnaire on eating patterns, and a pupil concentration test.

7.2.2 Validity and reliability of the study tools

Table 1: Validity and Reliability of Height and Weight Measurements

Measurement	Validity (r)	Reliability (ICC)
Height	0.98	0.95
Weight	0.98	0.97

Table 1 displays the validity and reliability metrics for the height and weight measurements utilized in the investigation. The accuracy of both height and weight measurements was evaluated using a standard weight set, resulting in a strong correlation coefficient of 0.98, showing that the devices utilized for these measures were highly precise. The reliability of these measurements was established by conducting inter-rater reliability assessments, in which two researchers independently measured the height and weight of a sample of 20 pupils. The intraclass correlation coefficient (ICC) for height was 0.95, and for weight, it was 0.97, suggesting a strong level of agreement between the measurements conducted by different researchers. The high validity and reliability scores indicate that the procedures employed to measure height and weight in this study are precise and consistent, therefore guaranteeing the dependability of the acquired data.

Table 2: Validity and Reliability of Parental Questionnaire on Eating Patterns

Validity Type	Factor Loadings	Reliability (Cronbach's alpha)	Test-Retest Reliability (r)
Content Validity	0.70+	0.89	0.85
Construct Validity	High		

Table 2 presents the validity and reliability metrics for the Parental Questionnaire on Eating Patterns utilized in the study. The content validity of the questionnaire items was verified by a panel of nutrition experts. The experts assessed the items and found that the factor loadings were over 0.70,

indicating a high level of agreement among the experts regarding the relevance of the items. The construct validity of the questionnaire was confirmed by factor analysis, which revealed distinct factors representing both good and unhealthy eating patterns. This indicates that the questionnaire effectively measures the specific constructs it was intended to evaluate.

The questionnaire's reliability was assessed using Cronbach's alpha, which yielded a value of 0.89 for the entire scale, showing a strong internal consistency among the items. The test-retest reliability of the questionnaire was evaluated by administering it to a sample of 30 parents on two separate occasions, with a two-week gap between administrations. The Pearson correlation coefficient for test-retest reliability was 0.85, indicating that the questionnaire yields consistent results over time. The combination of these measures provides evidence that the Parental Questionnaire on Eating trends is a trustworthy and consistent tool for evaluating dietary trends in school children.

Table 3: Validity and Reliability of Pupil Concentration Test

Validity Type	Correlation with ANT	Reliability (Cronbach's alpha)	Inter-Rater Reliability (ICC)
Criterion Validity	0.82	0.91	0.88

Table 3 presents the validity and reliability metrics for the Pupil Concentration Test utilized in the study. The criterion validity of the Pupil Concentration Test was determined by comparing it with the Attention Network Task (ANT), resulting in a correlation coefficient of 0.82. This high correlation coefficient suggests a strong association between the two measures and verifies the test's ability to accurately assess concentration.

The reliability of the Pupil Concentration Test was evaluated using two methods. The internal consistency of the test items, as measured by Cronbach's alpha, was determined to be 0.91. This high value indicates that the items are very consistent and reliably measure the same construct of concentration. The inter-rater reliability was assessed by having two separate raters evaluate the concentration levels of the identical set of pupils, yielding an intraclass correlation coefficient (ICC) of 0.88. The high ICC number indicates a substantial level of agreement among the raters, thereby validating the dependability of the test results.

The high validity and reliability ratings of the Pupil Concentration Test demonstrate its accuracy and consistency in measuring pupil concentration. This provides strong support for the study's conclusions.

8. Results of the Study

First: Presenting and interpreting the results of the study on the main hypothesis, which says:

The text of the hypothesis

There is a statistically significant correlation between the Malnutrition of a school student and his academic achievement.

Table (4) shows the results of the main hypothesis

Table 4: Correlational relationship between Malnutrition and academic achievement

Correlational relationship	Sample	R Value	df	Sig	Indication of differences
Malnutrition and academic achievement	70	-0.64	69	0.01	

Table 5: Achievement level ratios for the infected and the non-malnourished

The level of achievement	Achievement/ good / very good/excellent		Achievement/ Average / above average		Achievement/ Low / Weak		Total	
Repetition/ratios	R	%	R	%	R	%	R	%
Malnourished people	0	0	22	31.42	48	68.57	70	66.66
Students who are not malnourished	23	65.71	12	34.28	0	0	35	33.33

9. Interpret and Discuss the Result

Based on the data in Table (4), it is clear that students' academic achievement is negatively correlated with their Malnutrition. This is supported by the statistically significant value of R = -0.64, meaning that students whose families do not have access to a balanced diet that includes all the nutrients needed for healthy growth and physical and mental health are considered malnourished while conducting their field study, the two researchers realized that even financially stable families fail to provide their children with the recommended nutrients for their age. This can be attributed to a need for more knowledge about proper nutrition or an inadequate education on the subject. As a result, these children tend to eat an imbalanced diet, which hinders their physical and mental development and overall health. As a result, the infected individual is more likely to experience a range of health issues, including but not limited to rapid fatigue, anemia, osteoporosis, high cholesterol, weak immunity, exposure to infectious diseases, parasites, and other diseases. As a result of these illnesses, the student is likely to miss school frequently, which in turn causes academic delays compared to their healthy peers who do not experience Malnutrition. Table No supports this. (2), which shows that students with Malnutrition have a rate of 68.57%, while students who are not malnourished not only have a low level of achievement, but their performance is good to excellent, with an estimated rate of 65.71%, research by Alan Lousky, Sarah Al-Sebaei, and Sanaa Abdulaziz confirms that children's Intelligence and sectarian mental abilities are impacted by Malnutrition, which in turn impacts their academic achievement. It is worth noting that individuals who are malnourished do not exhibit any good or excellent results. According to all the studies that dealt with the relationship between food intake and academic achievement, including Ali and Mahmoud's, a student's cognitive, scientific, and good academic performance is enhanced when they receive a balanced diet that includes both quantitative and qualitative components [29].

9.1 Presentation and discussion of the first sub-hypothesis

There is a statistically significant correlation between poor nutrition and the student's ability to concentrate.

Table (6) shows the relationship between the Malnutrition and the ability to focus.

Table 6: Relationship between Malnutrition and the ability to focus in the student

Correlational relationship	Sample	R Value	df	Sig	Indication of differences
Malnutrition and the ability to focus on the student	70	-0.71	69	0.01	Significant

In the following table, we present an illustration of the correlational relationship that exists between hunger and the ability of students to concentrate. For the purpose of this analysis, the sample size constitutes seventy students. Given that the correlation coefficient (R value) is -0.71, it may be

concluded that there is a significant inverse association between malnutrition and the ability of students to concentrate. It appears from this that the capacity of students to concentrate is greatly diminished as the level of hunger they are experiencing grows.

For this particular investigation, the number of degrees of freedom (df) is 69. Given that the significance level (Sig) is 0.01, which is lower than the traditionally accepted threshold of 0.05, it can be concluded that the correlation that was found should be considered statistically significant. As a result, the data offers compelling evidence to support the hypothesis that pupils' focus skills are negatively impacted when they are malnourished. This statistically significant inverse link underscores the significance of sufficient nutrition in the maintenance of cognitive abilities that are crucial for student performance in academic settings. The findings highlight the need of correcting dietary inadequacies in order to improve the overall outcome of students' educational experiences and their ability to concentrate.

9.2 Presentation and discussion of the second sub-hypothesis

Students who are malnourished tend to be smaller than their peers who are not malnourished, and this difference is statistically significant.

Table 7: The differences between students with Malnutrition and students who are not malnourished in terms of anatomy

The differential relationship between groups	Sample	Mean	Standard deviation	"T" value	df	Sig	Indication of differences
The physique of the malnourished	70	1.00	0.45	9.32	103	0.05	Significant
The physique of non-malnourished people	35	1.83	0.38				

This table provides a comparative analysis of the physical characteristics of two groups of students: those who suffer from malnutrition and those who do not. The sample included 70 undernourished students and 35 well-nourished students. The average physique value for malnourished kids is 1.00, with a standard deviation of 0.45. In contrast, the average physique value for non-malnourished pupils is much higher at 1.83, with a standard deviation of 0.38.

The calculated T-value from the comparison is 9.32, with 103 degrees of freedom (df). The significance level (Sig) is 0.05, which signifies a statistically significant distinction between the two groups. This notable disparity indicates that non-malnourished students exhibit superior physical development in comparison to their malnourished counterparts. The results corroborates the idea that malnutrition has an adverse effect on the physical growth of students, which may potentially influence their academic performance and general welfare.

10. Discussion of the Results

This research confirms and contrasts with key findings from the prior literature, shedding light on novel facets of students' food habits and their effects.

This research supports the conclusions of Wongprawmas et al. [20], who found that first-year college students' diets undergo dramatic changes, with a lack of variety and an increase in fast food consumption due to time and money restrictions. These changes align with what we've seen in the dining halls, where time and money constraints have led students to prioritize convenience over nutrition.

Similarly, Ryan et al. [21] showed how vital family and school food settings are in molding

teenagers' eating habits. Our findings show that the two contexts' divergent norms, availability, and options profoundly affected students' food preferences and consumption habits.

The findings are consistent with those of Al-Saadi et al. [25], who highlighted the correlation between students' eating habits and their performance in the classroom. Most of our students had unhealthy eating habits and little awareness about nutrition, two factors strongly linked to their academic performance.

The findings also diverge sharply from those of Beredo and Aceron [26], who discovered no correlation between dietary habits and academic performance. Our findings reveal a complex association between nutrition and academic achievement, with several factors at play, including socioeconomic position, access to food, and personal choice.

Similarly to Salem's [28] depiction of the devastating effects of hunger on I.Q. and academic performance, we observed that malnourished students had inferior academic results and an increased prevalence of several ailments.

Students whose diets were more nutrient-dense showed greater cognitive ability, supporting a finding by Al-Rashdan [29] highlighting food's importance in intellectual growth.

Furthermore, the findings echo those of The National Authority for Health Promotion and Scientific Research Development Forum [27], which found that Algerian children's dietary habits differed from those of their European counterparts.

The analysis, however, had its share of inconsistencies. In contrast to Beredo & Aceron's findings [26], the researchers found that nutritional deficiencies, which typically lead to weight difficulties, were connected with academic outcomes.

11. Conclusion

Through this theoretical and field study, it is evident that Malnutrition causes many diseases and disorders, especially if it touches children in the stages of growth, as Malnutrition is considered one of the most severe problems that afflict the child because it limits his healthy physical, mental and psychological development, in addition to that he suffers from diseases that threaten his life Impaired immunity, anemia, protein and energy deficiency diseases and osteoporosis are all diseases that distract the child from doing all activities like other normal children, as proven by previous studies and the results of our research, the malnourished suffers from health problems and disorders at the level of growth. Thus the low level of achievement of the malnourished, either because of health problems or poor physical and mental growth or the inability to focus and keep up with the lesson, and this is what makes the two researchers present a group of.

12. Implications for Educational Policies and Interventions

Implications for educational policies and interventions to improve students' nutritional health and academic performance are substantial, according to this study's findings. Educational institutions must establish systems to guarantee students get enough nutrition because there is a strong negative association between hunger and both academic performance and focus. Nutrition education, healthy food options, and school-based nutrition programs can all help kids grow physically and mentally, therefore schools should think about including these into their curricula.

Legislators should also work to raise parental and guardian understanding of the link between a healthy diet and their children's performance in school and general health. Reducing the negative impact of malnutrition on academic performance can be achieved by making sure that children have access to healthy meals at home and at school. To tackle the complex issues of malnutrition and provide a setting where students may thrive academically, it is crucial for schools, parents, and healthcare professionals to work together.

Educational policies have the power to greatly impact students' academic performance and well-being by tackling nutritional shortages and encouraging good eating habits.

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