

Relation between Nutritional Assessment and Academic Performance of High School Students - A Review

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Abstract — Children are the most vulnerable group in our society and the foundation of every nation, thus their health and nutritional condition are an indicator of how that nation will develop in the future. Nutritional problems in children are a serious concern in both developing and developed countries. Childhood malnutrition can cause physical and mental retardation, stunted growth, and delays in social and emotional development. Many studies on the subject of academic performance have found a strong correlation between healthy eating practices, particularly the regular intake of breakfast, improved grades, increased school attendance, and better classroom behavior. Many of the meals that kids eat today are laden with salt, chemicals, and sugar, which harm them by making them tired, distracted, and sick, among other things, which affects their behavior and performance as well. The parent or guardian should focus more on the child's nutritional status by giving them enough food and nourishment. To acquire healthy eating habits that will assist children throughout their entire lives in reaching their full potential, it is the responsibility of parents and educators to teach them the significance and importance of proper nutrition. For kids to succeed academically, a proper diet is crucial. About the importance of healthy eating, schools must teach both parents and kids.

Keywords: Nutrition Assessment, Eating Habits, Academic Performance, Primary School, Dietary Pattern, Lifestyles, Nutrition

I. INTRODUCTION

A vital component of the growth and maintenance of good health is nutrition. Children are the most at-risk segment of our population and the cornerstone of any country, thus their health and nutritional status are a reflection of that country's future. Children's nutritional issues are a significant problem in both developing and industrialized nations [1]. Childhood malnutrition can result in stunted growth, diminished physical ability, and delays in mental and social development [2]. In light of this, the body mass index (BMI) is among the best indicators of nutritional condition. A useful indicator to determine health status is based on anthropometric measurements like height and weight, which the WHO has suggested [3]. The individual's behavior and cognitive function may be impacted by their diet, either due to dietary deficiencies or excesses. According to one study, most youngsters do not consume enough fruits and vegetables, and as a result, they perform poorly academically when compared to students who consume adequate amounts of these foods [4].

The years of school age are a dynamic time for both mental and physical development. Therefore, ensuring optimal nutrition during this time is crucial because it builds the foundation for long-term health, physical fitness, and intellectual capacity [5]. Malnutrition is one of the major

factors in low school enrollment, high absenteeism, bad academic performance, and early dropout; particularly during the primary school years [6]. This study reveals a high prevalence of undernutrition among rural primary school students as well as a strong correlation between the students' nutritional state and academic performance. These findings will contribute to the creation of efficient plans to lessen the burden of childhood malnutrition and serve as a guide for the advancement of the next generations [7-8].

The improvement of primary school kids' health and nutrition has been acknowledged by numerous organizations and governments as having a favorable impact on their academic success, development, and growth. Therefore, schools are useful places to implement interventions like teaching student's life skills and serving healthy meals. It has been said that school-aged children are not subject to nutrition monitoring [9].

There is a strong correlation between eating healthfully and academic achievement. Researchers discovered that students who consumed more fast food overall experienced slower academic growth, and those who reported consuming it once per day experienced slower academic advancement in math, reading, and science than those who consumed no fast food (Svokes, 2014)[10].

Additionally, studies have demonstrated that children learn more effectively when they are well-fed and that eating a nutritious diet is associated with improved grades, greater attentiveness and memory, and quicker information processing. The body feels fuller for longer after eating foods high in fiber, protein, and healthy fats like eggs, yogurt, apples, and meals. These foods also give the body the energy it needs to focus and be awake all day (options for youth, 2021) [11]. According to the CDC and prevention, active pupils learn better, while poor diet, inactivity, and an unhealthy lifestyle can all affect children's academic performance.

Revter, Forster, and Brister (2020) researched academic performance and discovered a significant association between healthy eating habits, notably every day almost daily breakfast consumption, better grades, more frequent attendance at school, and better classroom behavior [12]. According to Chen (2020), many of the foods that children are consuming nowadays are loaded with sugar, chemicals, and sodium, which is doing a lot of damage to the students by leaving them exhausted, unfocused, ill, etc., which has a detrimental impact on their behavior and performance as well [13].

II. LITERATURE REVIEW

In his study, Wanjohi (2010) discovered that the biggest causes of malnutrition among children in the zone were a lack of adequate food and a balanced diet. Malnutrition in children

was also discovered to have poverty as one of its main causes. The study's findings regarding the consequences showed that undernutrition has a detrimental influence on children's academic performance as well as their rate of growth and development.

A dangerous issue is a malnutrition, which occurs when your body does not acquire enough nutrients to operate properly. Poor nutrition may be caused by inadequate food intake, an unbalanced diet, or the absence of one or more nutrients. (Chinyoka and Naidu, 2013) [14].

According to Connell's research, just 14% of children with normal birth weight had the same outcomes, however, 34% of children with low birth weight had to repeat classes or be placed in special education classrooms [15].

According to Santanu Ghosh and Haradhan Saha, now that parents are more aware of the potential consequences that dietary shortages may have on academic performance, they should encourage their children to eat healthily for them to thrive in school.

This demonstrates how crucial nutrition is to students' intellectual success. The program's primary goal is to enhance the nutritional status of the recipients. Low-Income high school pupils frequently missed class due to hunger or inadequate nourishment. Due to their inability to focus and concentrate during class, this condition has an impact on their academic performance of those kids [16].

According to Alaimo (2005) and the Center on Hunger and Poverty (2002), eating insufficiently or going hungry can have negative physical, psychological, and social effects as well as lower academic performance [18].

Many people concur that break dancing programs have shown a rise in attendance and a decline in tardiness and behavioral issues, despite data from researchers' studies being inconsistent (Thatcher & Lester, 1985) [19]. Most research on behavioral issues and learning difficulties explicitly links poor diet or nutrition to these issues as the primary causes of these issues (Schoenthaler et al., 2000) [20]. They also suggest that better nutrition or dietary intake for school-age children is necessary to enhance academic performance. Numerous studies suggest that after-school programmers increase students' basic math scores, demonstrating their beneficial effects on academic performance (Schweitzer, 2005 et al.) [21].

III. METHOD

A. Study Design:

A cross-sectional, descriptive study approach was used in this research.

B. Target Area and Population:

Students at Narayan International High School (std.10-12) are our target, which has as its target area the Vadodara district.

C. Sample size: ($n = 250$) was determined using this formula ($n = z^2 pq/d^2$)

D. Data collection:

Information was gathered from each of our chosen students using a pre-tested standard questionnaire. To get some specialists' comments and suggestions, we created a questionnaire and distributed it to them. We redesigned our

questionnaire under the advice of experts. Their academic records have provided some of the information.

E. Socio-demographic characteristics:

This provides information about the students who were chosen for the study, such as their age, gender, name, and academic level.

F. Dietary practices assessment:

Food preferences Information were gathered on how many meals were eaten each day and where children receive their meals. World Health Organization recommendations (FAO/WHO, 2003) were used as the basis for the evaluation of daily meal consumption.

G. Anthropometric measurements:

Anthropometric measures were performed when the participants wore light clothing and wore no shoes.

H. Weight measurement:

The mechanical bathroom scale was zeroed before the participant stood on it to guarantee accurate body weight measurements. The participants were instructed to remove any 'heavy' objects from their pockets as well as any heavy clothes or outerwear. They were instructed to keep their eyes straight ahead and their hands steady on the scales. The needle/digital screen was allowed to settle before taking the measurement.

I. Height Measurement:

Height was measured with a "drop-down" tape measure placed at a distance of around 1.5 meters on a wall. Before the measurement, the participants were asked to remove their shoes. They were directed to face the wall and keep a forward stare. The wall should be in contact with the backs of their heads, calves, bottoms, and upper backs. They were situated just beneath the drop-down measuring device. After lowering the measuring instrument until it lightly touched the participant's head, the measurement was obtained.

J. Data analysis:

SPSS statistical software was used to analyze the data. The acquired data were evaluated using simple descriptive analysis.

K. Ethical consideration:

The Ethics and Research Committee of Parul University provided ethical approval for this work. Permission was acquired from the school administration, and participants were requested to sign the consent form before participating.

IV. DISCUSSION

Since nutrition is necessary to increase energy levels during physical activity. It proves that eating a well-balanced diet maintains the body healthy and in proportion to its size and weight. However, malnutrition may hinder a person's ability to perform. Past nutritional deficiencies may have had an impact on the metabolic changes in the brain. [22-24].

The health and utilization of healthcare among children are significantly influenced by parents. Children with inferior education have poorer health than those with greater education [25].

According to past studies, well-nourished children are often more capable of utilizing educational opportunities, more eager to attend school, and more prepared to study (Naik et al., 2015) [26]. The children's academic performance is therefore significantly influenced by their dietary state. Children's cognitive development is negatively impacted by their nutritional state (Opoola et al., 2016; Dey and Nath 2017) [27-28]. Undernourishment can prevent a youngster from having a bright future because of poor academic performance (Agarwal et al. 2018) [29]. Eliminating undernutrition can aid in enhancing children's cognitive development, which may ultimately enhance their grade advancement. A youngster who consumes a healthy diet will be more attentive and do better in school (Acharya et al. 2019; Okafor) [30-31].

V. CONCLUSION

The outcomes of this study strengthened the significant body of prior research on the connection between eating a healthy diet and academic achievement. These findings suggest that children of school age may perform below average due to poor nutrient intake. Contrarily, it is commonly known that children in school can perform better academically when they consume a balanced diet. A lot of parents are not aware of the benefits of giving their children a balanced meal each day. Thus, it is the responsibility of health educators and classroom teachers to inform these parents about the advantages of eating a well-balanced diet every day and the drawbacks of skipping meals for their children [32]. These findings, while neither causal nor conclusive, would seem to indicate that, if schools are worried about student academic performance and revenue streams, attention should be paid to students' nutritional quality, habits, and training. This study also showed a significant positive correlation between GPA and people's frequency of eating a healthy diet and if they pack a lunch. These findings agree with earlier research

Levinger (1996) said that hunger is a problem that is getting worse and that it may prevent school-age children from learning. Additionally, this study's findings demonstrated a significant relationship between GPA and the number of absences students take each month over a school year. The associations discovered in this study of absenteeism suggested that students' GPAs decline the more days they miss over a regular school month [33].

It is crucial to recognize that, as shown by the literature and this study, inadequate nutrition is a definite, demonstrable factor that negatively impacts academic performance. Fortunately, despite how harmful it may be, research shows that addressing inadequate nutrition is the simplest way to help students develop their cognitive abilities (Bryan et al., 2004) [34]. Future research is required to understand further how bad nutritional habits and academic performance interact and to keep track of how nutritional education programs are evolving in schools. It would be advantageous to replicate this study and include more information on the home environments of the students and the amount of parental involvement and support.

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