

# Influence of dietary intake and study habits on academic performance in selected residential tribal welfare school students in Salem district of Tamil Nadu

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## Abstract

**Aim:** The present study was conducted in 280 residential tribal welfare school students comprising 134 boys and 146 girls in the age group of 13–17 years to find out the influence of food intake and study habits on the academic performance.

**Materials and Methods:** The basic details and academic performance were noted, dietary intake pattern was collected by 24-h recall method, and study habits were assessed by using Dr. M. Mukhopadhyay and Dr. D. N. Sansanwal study habit inventory scale method.

**Results:** The finding discovered that there was a significant impact ( $P < 0.01$ ) of the dietary intake on academic performance among the selected boys and girls. Results on study habits showed that there was a significant impact with partial parameters of study habits with academic performance among the selected students.

**Conclusion:** The study concluded that the students need extra attention on the study habits to improve the academic performance among them.

**Keywords:** Academic performance, correlation, food intake, study habits

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## INTRODUCTION

Academic performance of students is one of the leading indicators used to evaluate the quality of education.<sup>[1,2]</sup> Understanding the vital relationship between dietary intake and academic achievement may aid in the improvement of effective interventions to develop students' eating habit.<sup>[3,4]</sup>

In children and adolescents, it has been revealed that academic achievement was influenced by dietary intake.<sup>[4,5]</sup> Mainly, current studies have concentrated on breakfast consumption, with evidence presenting that more regular consumption with good quality of nutritional breakfast is positively correlated with academic achievement.<sup>[6]</sup>

The various reviews revealed that regular intake of breakfast, higher intake of vegetables, fruit, and micronutrients including iron and folate, and lesser intake of junk foods were all associated with improved academic performance.<sup>[7]</sup> Academic performance is a complicated process affected by several parameters, one of which is study habits.<sup>[8]</sup>

Study habits comprise behaviors and skills that can increase motivation and convert the study into a helpful process with high returns, which eventually improves learning.<sup>[9]</sup> This skill is similarly defined as any action that assists the process of learning about a new

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topic, problem-solving, or memorizing part or all of the existing materials.<sup>[10]</sup> Study habits are, in fact, the opening to victory and differ from individual to individual.<sup>[11]</sup> Study habits are the utmost significant predictors of academic performance, and worldwide, investigation has exposed that study habits influence academic performance.<sup>[12]</sup>

Therefore, the above shreds of evidence rope the association between a healthier diet with academic achievement and good study habits with better academic achievement in children and adolescents, but no reviews have been explored on the association of dietary intake and study habits on academic performance in the residential tribal welfare school students. Hence, the aim and purpose of this study were to evaluate the relationship between dietary intake (nutrients intake) and study habits with the academic performance level among the selected students.

## MATERIALS AND METHODS

### Selection of sample

The study was conducted in Salem district of Tamil Nadu. In the Salem district, a total of 12 residential tribal welfare schools were chosen with proper permission and approval from the concerned authorities. A total of 280 high-school students between the age group of 13 and 17 years of both sexes were included in this study.

Basic information such as gender, age, annual income, and literacy level of the parents was collected from the selected students.

### Assessment of academic performance

To assess the academic performance of the children, marks obtained in the last qualifying examination were considered as the index of academic achievements. For this purpose, the investigator has obtained IX class (last qualifying examination in the academic year) marks of the subjects from the school register.

### Assessment of food intake

Detailed information on dietary intake was collected through the 24-h recall method for 3 consecutive days comprising 2 working days and 1 holiday. From the collected data, the following nutrients such as energy, protein, fat, zinc, calcium, phosphorus, iron, sodium, Vitamin A, thiamine, niacin, Vitamin C, riboflavin, and folic acid were calculated using the NSI calculator and used for further analysis.

### Study habits of the subjects

Dr. M. Mukhopadhyay and Dr. D. N. Sansanwal study habit inventory method was modified slightly and used. The inventory comprises 52 items about line subcomponents namely comprehension (12 items), concentration (10 items), task orientation (9 items), study size (7 items), interaction (3 items), drilling (4 items), supports (4 items), recording (2 items), and language (1 item), which characterize the basis of study habits. The items have been drafted in affirmative (34 items) and negative (18 items) forms. The positive questions were scored as 4, 3, 2, 1, and 0, and the negative questions were scores as 0, 1, 2, 3, and 4. This scale was administered by following the instructions laid down in manual. Before starting, the investigator made his best effort to see that each subject has clearly understood the purpose of the study. Using this scale, all the above study habits parameters were assessed and used for further analysis.

## Statistical analysis

Data were analyzed using SPSS software version 18.0 (SPSS Inc., Chicago, IL, USA). Pearson's correlation coefficient was used to study the relationship between academic performances with dietary intake and study habits and the *P* values was considered significant if it is less than 0.05.

## RESULTS AND DISCUSSION

### Basic details

The results on gender-wise distribution showed that about 47.9% were boys and 52.1% of them were girls. Regarding age, 26.12% of boys and 14.38% of girls were under the age group of 13–14 years. About 47.5% of the parents' monthly income was above Rs. 10,000 and 40.7% of the parents were earning between Rs. 5001 and 10,000. Analyzing the data that were collected regarding the educational level of the subjects, we confer that about 44.3% of them were illiterate, and 46.1% of the subject parents had done their secondary schooling. Nearly 0.4% and 1.1% of the parents completed their graduate and postgraduate studies, respectively.

### Academic performance of students

The academic performance of the respondents is given in Table 1. The majority percentage (55.7) of students got 40%–50% of marks and 22.5% of them secured 50%–60% of marks. Only 4.7% of students have got 80%–90% of marks in their previous examinations.

### Dietary intake and academic performance

Relationship between the dietary intake and academic performance of the school students is given in Table 2. A positive correlation was found in the nutrients such as energy (0.228), protein (0.295), fat (0.209), zinc (0.341), calcium (0.195), phosphorus (0.175), sodium (0.160), Vitamin A (0.227), thiamine (0.363), niacin (0.262), riboflavin (0.185), and folic acid (0.242) at 1% level of significance. Correlation for iron and Vitamin C was found to be not significant. The results showed that dietary intake has very strong correlation with the academic performance of the students, which is evident that about 9.7% of the students have scored between 70% and 90% of marks due to the proper dietary intake. Similar results were reported by Fayet-Moore *et al.*<sup>[13]</sup> and Barr *et al.*<sup>[14]</sup> they revealed that intake of breakfast regularly and consuming higher amounts of micronutrients such as folate and iron will improve the academic performance.

### Study habits and academic performance

Table 3 reveals the relationship between study habits and students' academic performance. Interpreting Table 3 found that there is a highly significant positive relationship between various parameters of study habits such as concentration, interaction and drilling with the academic performance, whereas other study habits had no or negative effect on academic performance. On the contrary, the results by Lawrence revealed a nonsignificant difference between study habits and academic performance of higher secondary school students.

## CONCLUSION

It can be concluded from the study that there is a significant

**Table 1: Academic performance of the respondents**

Academic marks	Number of students (%)
40-50	156 (55.7)
50-60	63 (22.5)
60-70	32 (11.4)
70-80	16 (5.7)
80-90	13 (4.7)

**Table 2: Correlation between dietary intakes with academic performance**

Academic performance versus dietary intake	Correlations
Energy	0.228**
Protein	0.295**
Fat	0.209**
Zinc	0.341**
Calcium	0.195**
Phosphorus	0.175**
Iron	0.055 (NS)
Sodium	0.160**
Vitamin A	0.227**
Thiamine	0.363**
Niacin	0.262**
Vitamin C	0.017 (NS)
Riboflavin	0.185**
Folic acid	0.242**

\*\*Correlation is significant at the 0.01 level (2-tailed). NS: Not significant

**Table 3: Correlation between study habits with academic performance**

Academic performance versus study habits	Correlation
Comprehension	0.064 (NS)
Concentration	0.203**
Task orientation	0.019 (NS)
Study sets	-0.139*
Interaction	0.131*
Drilling	0.199**
Supports	-0.068 (NS)
Recording	0.054 (NS)
Language	-0.298**
Overall	0.016 (NS)

\*Correlation is significant at the 0.05 level (2-tailed), \*\*Correlation is significant at the 0.01 level (2-tailed). NS: Not significant

relationship among various nutrient from food intake and academic performance and partial correlation between the study habits with the academic performance among the selected residential tribal welfare school students.

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Nil.

### Conflicts of interest

There are no conflicts of interest.

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