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The Effect of Diet on Learning of Junior High School Students in Mashhad, North-east of Iran

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Abstract

Introduction

Since nutrition, especially in childhood and adolescence is an important effect on intelligence and learning, so that malnutrition delayed to later periods of life, and these people during the course of training, will have many problems, this study was conducted to evaluate the effect of nutrition on student learning.

Materials and Methods

A cross-sectional study was conducted on 90 girls student. The sample size were all students that studying in a boarding school in 5 district of Mashhad-Iran. The valid and reliable questionnaire, consisted of 19 questions and specialized feeding habits of the students. Data were analyzed with SPSS-13 software.

Results

Out of the total, 90 students were included in the present study. Overall, 48.9 % and 51.1% of students were second and third of Junior High School respectively. Of these, 24.4%, their average were between 15-13; 65.6% were 15-18 and also 10% were between 18-20 respectively. 67.8% of students said that they love so much sweet meat and 61.1% of students used pickles and salt with food, in a large extent. Results showed that 38.8% of students had used too much salt in food, and on the other hand, 27.8% of students had used salt moderate. Results showed that students who had a lower average scores, the consumption of fish, red and white meat, green and orange vegetables and dairy products were lower than the other students ($P < 0.05$).

Conclusion

Students who have had better nutritional behavior (consumption of healthy breakfast, fruits and vegetables and dairy products were more than the other students) had higher average scores than other students.

***Key Words*:** Nutrition, Students, Learning, Mashhad.

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Introduction

Instructors and parents should carefully consider proper nutrition for children. Because the slightest negligence and frailty may cause physical and work slump in the later ages. Since school is a place for learning and training, characteristic of children can be based desirably. So it is necessary that public community esp-authorities and instructors of schools would have enough knowledge about nutrition and breakfast of students in order to provide their physiologic needs and health. Students' growth and health has a positive relationship with healthy nutrition. Nutrition not only affects on physical growth, but also it influences on human's mood and behavior. Some nutrients esp. vitamins and proteins are so necessary for body that lack of them can alter human behavior. Some of these nutrients involve in brain's nourishment and repair. So we can treat neural and psychotic disorders by proper nutrition. Complete and sufficient nutrition causes happiness and health, it prolongs people's lifetime and reduces disability and disease. Nutrition makes life pleasant, healthy and satisfactory and prevents from early aging (1-4). According to U.S Department of Agriculture, correct nutrition can decrease mortality of heart diseases 25%, infectious and respiratory diseases 20%, cancer 20% and diabetes up to 50% (5). According to the previous studies, many problems of prenatal and preterm neonates have a direct relationship with mother's nutrition before pregnancy and marriage (2-6).

Some studies have been conducted in relation to the effect of nutrition on learning in Iran and foreign countries. Ivanovic et al. described the impact of nutritional, intellectual, family, educational and socio-economic variables at the onset of elementary school in 1987 in Chile that may affect achievement on the Academic Aptitude Test (AAT) taken in 1998 at the end of high school, and to quantify the impact of these independent variables on the AAT. They showed educational and nutritional status has a positive effect on AAT (7).

To determine the effect of multivitamin/mineral supplementation on academic performance students in grades three through six (approximate age range=8 to 12 years old) were recruited from 37 parochial schools in northern New Jersey to participate in a double-blind, placebo-controlled clinical trial conducted during the 2004-2005 academic school year. This study showed that the in-school daily consumption of an MVM supplement by third- through sixth-grade inner-city children did not lead to improved school performance based upon standardized testing, grade point average, and absenteeism (8).

Belansky described the initial influence of ‘Local Wellness Policy’ (LWP) mandate on nutrition environments and policies. In 2005 and 2007, a survey about school features related to nutrition and physical activity was sent to a random sample of 45 low-income, rural elementary foodservice managers and principals. Three improvements were observed: increases in the percent of schools with policies stipulating predominantly healthy items offered in classroom parties, daily fresh fruit offerings in the lunchroom, and the percent of schools using skinless poultry (9).

Materials and Methods

This cross-sectional descriptive-analytic study was conducted on all female students of Haj Reza boarding junior high school. Study population was female students of junior high schools in Mashhad. Research tool was a standard questionnaire. It comprised two parts: demographic information including age, grade, and average of last semester, and 19 questions about nutrition and diet habits of students. This questionnaire was designed by Health School group of Al-Zahra faculty. It was applied to assess students’ nutrition.

Students were asked to complete the questionnaires in their rest time after coordinating with Education and Training authorities in the 5th region of Mashhad, manager school, in assistant with health instructor and training instructor. The students participated in the study with informed consent. After gathering the questionnaires, data were coded and analyzed by SPSS-11.5 and using descriptive (mean, frequency) and analytic (T-test) statistics.

Results

Results showed that 90 student participated in this study. 48.9% and %51.1% were from second and third grade of junior high school, respectively. 65.6 % had average between 15-18 (Figure.1). Findings revealed that 63.3% of students include very low amount of fish in their diet. With regard to dairy products, consumption up to high, intermediate, low, and very low have been recorded in 27.8%, 13.3%, 36.7%, 10%, and 12.2% respectively. Results showed that 70.1% of students use fruits including apricot, peaches, grapes, and plum within a week (Figure. 2). Findings showed that 34.4% of students don't eat breakfast or eat very low amount before going to school (Figure.3).

Findings indicated that 37.8% of students don't eat meat (red-white) ever or eat very little (Figure.4). Results showed that 26.7% of students consumed green and orange vegetables (carrot- spinach) at a very low amount or rarely. On the other hand, 31.1% consumed them moderately (Figur.5).

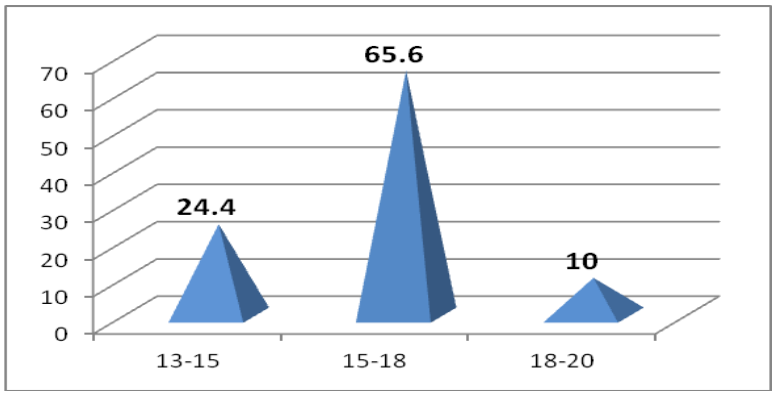

Fig. 1: Frequency of average among middle school students (%)

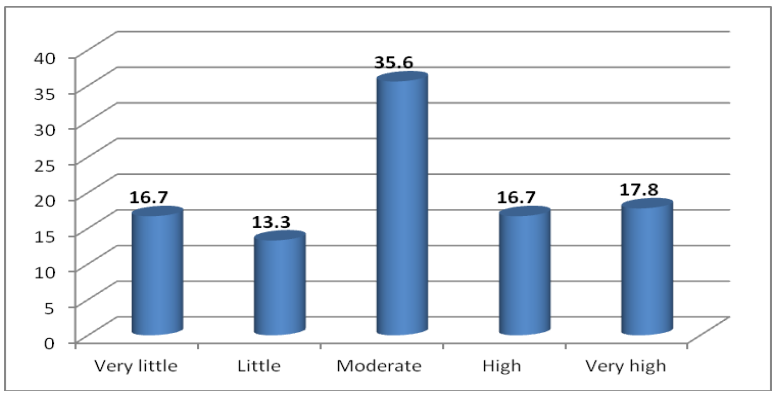

Fig. 2: Fruit consumption frequency among middle school students (%)

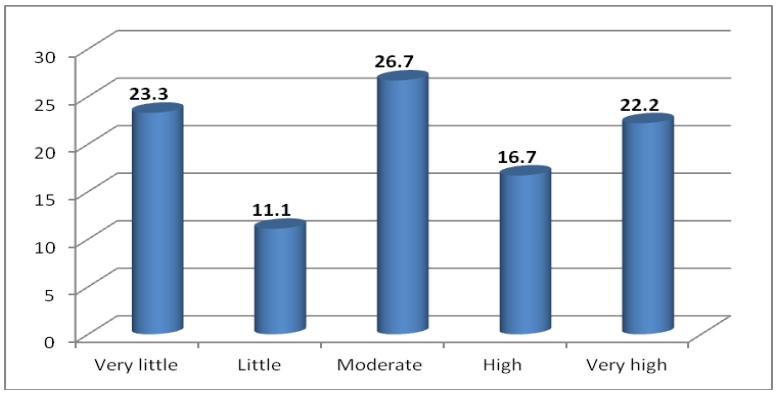

Fig.3: Breakfast consumption frequency among middle school students (%)

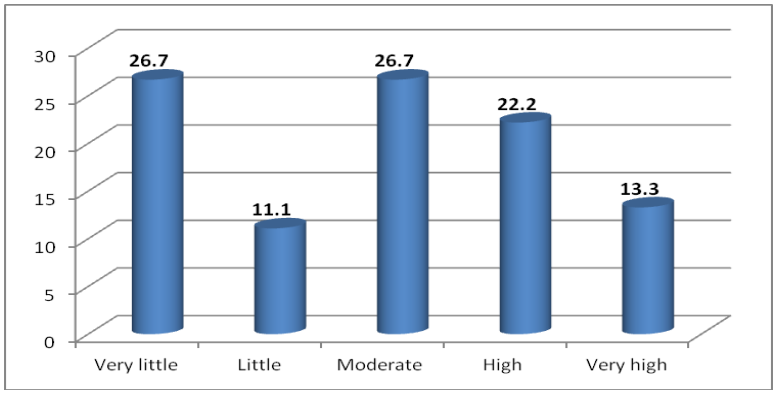

Fig.4: Red and white meat consumption frequency among middle school students (%)

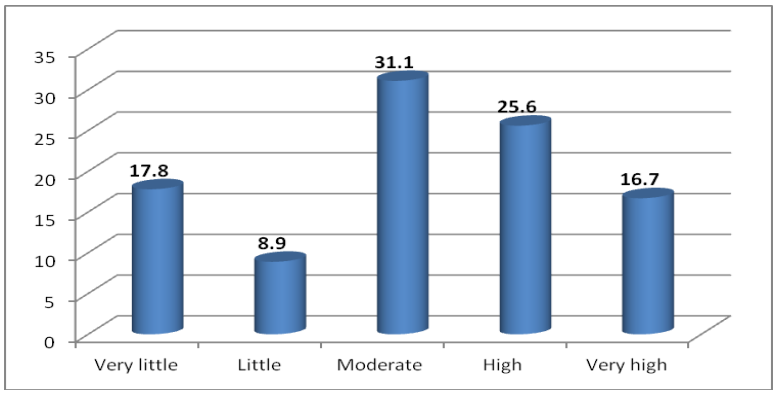

Fig.5: Vegetable consumption frequency among junior high school (%).

Results also showed that 64.4% of students enjoy eating chiken and fish at a high and very high degree, respectively (Figure.6). Findings revealed that 38.8% of students use salt in foods frequently and on the other hand, 27.8% students use it moderately (Figure.7). Findings revealed that 61.1% of students use pickles and salty things at a very high amount and 10% consume pickles at a moderate level (Figure.8). 67.8% and 18.9% of students were interested in sweats so much and very little, respectively (Figure.9).

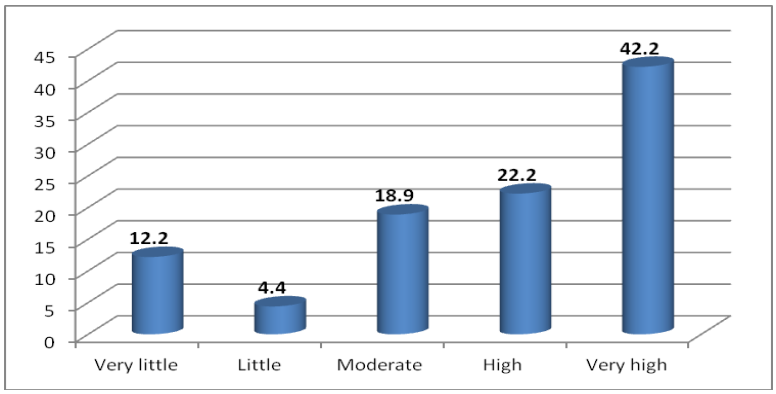

Fig.6: Frequency of enjoying chiken and fish among middle school students (%)

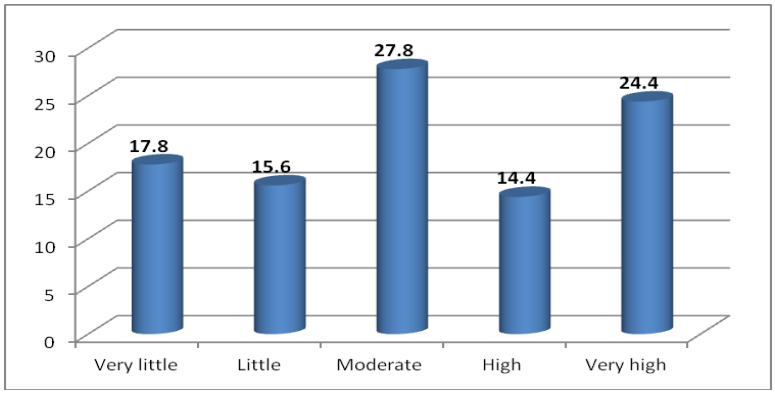

Fig. 7: Salt consumption frequency in junior high school students (%)

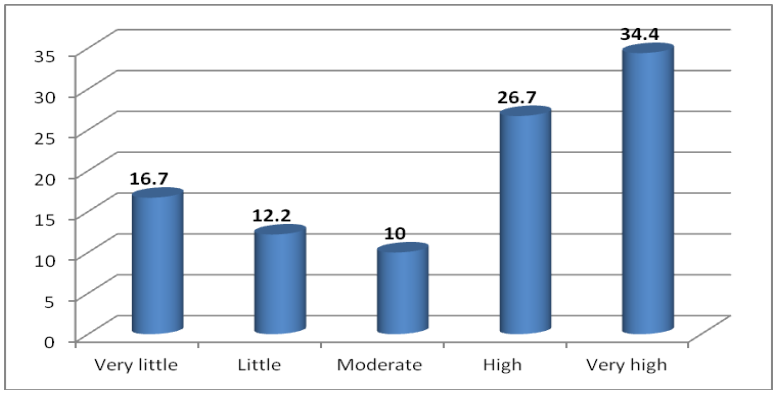

Fig. 8 : Pickles and salty consumption frequency in junior high school students (%)

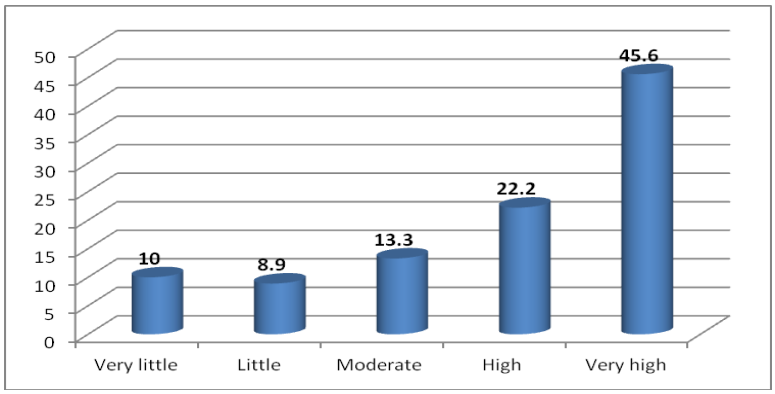

Fig.9: Sweats consumption frequency in junior high school students (%)

Findings showed that there was a significant association between amount of green and orange vegetables consumption and school grade as third grade middle school students consumed more vegetables than other students ($p<0.05$).

Results demonstrated that there is a statistically significant association between family income and dairy product consumption, as students who were from high income families had more dairy consumption ($p<0.05$).

Findings also showed that there is a significant relationship between dairy product consumption and fish and chiken meat consumption, as consumption of fish and hen meat is more among students who use more dairy products ($p<0.05$).

Results indicated that there is a significant association between family income and health satisfaction, as students who are from high income families, are more satisfied with their health($p<0.05$).

Findings showed that there is a significant association between sweats consumption and health satisfaction, as students who are more satisfied with their health use less amount of sweats ($p<0.05$).

Findings showed that there is a significant association between sweats consumption and eating breakfast, as consumption of breakfast is lower in students who use more amount of sweats ($p<0.05$).

Results revealed that there is a significant association between vegetables consumption and health satisfaction, as students who consume more vegetables are healthier ($p<0.05$).

Findings showed that there is a significant association between grade and vegetables consumption, as third grade junior high school students used more vegetables ($p<0.05$) (Table.1). Comparison of mean response rate of students base on their average are shown in (Table.2). Generally, student who had better nutritional behavior had a better average.

Table 1: Rate of vegetable consumption in students according to their grades

Grade	Vegetable consumption					Total
	Very high	High	Moderate	Little	Very little	
Second	27.3	25	27.3	11.4	9.1	100
Third	6.5	26.1	34.8	6.5	26.1	100

P<0.05

Table 2: Mean response rate of students to questionnaire based on their average

Questions	Average %		
	13-15	15-18	18-20
1. Do you eat fish 3 times in a week?	4.09	4.53	4.22
2. Do you eat fish once in a week?	3.91	4.37	4.22
3. Do you eat enough dairy products?	2.27	2.66	3.56
4. Do you feel good while eating?	2.14	2.51	3.33
5. How much do you consume fruits including apricot, grapes, peaches, and plum?	2.77	2.85	4
6. Do you eat breakfast before going to school?	2.59	2.98	3.78
7. How much do you consume meat (red-white)?	2.86	3.20	3.56
8. How much do you consume green and orange vegetables (carrot-spinach)?	2.45	3.02	2.78
9. How is your family income regarding preparation of food?	2.82	2.90	2.44
10. Do you like chiken and fish meat?	2.09	2.17	2.89
11. How much do you use salt in your foods?	2.77	2.92	2.89
12. Do you use pickles?	2.55	2.41	3
13. How much do you use cereals (rice, wheat, bread, grain)?	2.41	2.56	3.33
14. Do you eat breakfast during break times of school?	3.41	3.76	3.22
15. Do you eat enough egg?	2.86	2.86	3.33
16. How much do you eat vegetables?	2.41	2.81	3.44
17. How much sugar do you use while drinking tea?	2.23	2.85	3.56
18. Do you like sweats?	1.68	2.20	3
19. Do you satisfied with your health?	1.82	2.27	2.67

Discussion

In this survey, 81.1% of students were content with their heath condition and 18.9% were also unsatisfied. Karimi et al's study showed that 65.6% of students were content with their physical health and 34.4% were unsatisfied (10).

This study revealed that students who came from high income families had more satisfaction with regard to their health condition. It can be concluded that health condition in students from Mashhad is better than those of from Ramsar.

In the present study, a significant association was found between family income and dairy product consumption. Family income is one of the most important factors related to nutritional condition in children and malnutrition and insufficient health of children is related to poverty in the society (Pamela 2006). According to the Inderi et al, children nutrition depends on to the nutritional habits and economic status of family (11).

Ahmad et al. also reported that children who are from low income families receive low amount of egg, milk, meat, fruits, and protein in their diet (12). Their result also showed that 33.3% of students consume little egg and consumption of red and white meat is also moderate among students. On the other hand, 37.8% use these foods at a very low amount or don't use them at all. Based on Park's view, economic status is the determinants of purchasing power, life standard, life quality, family dimension, diseases pattern, and behavioral deviation in the society and important factor for seeking and reaching to health services (13).

In this survey, vegetables consumption increases with increase in mean age of students significantly. Consistently, Cook et al. (14) and Poorabdollahi et al. (15) reported that vegetable consumption increases with age. Researches have shown that diet rich in fruits and vegetables can decreases risk of many problems including obesity, diabetes, cancer, stroke, and cardiovascular diseases in students (14). Of note, fruits and vegetables should be washed well and disinfected.

Findings showed that 34.4% of students don't eat breakfast or eat very low amount before going to school and 33.3% of students also eat very low amount of snack during break times. Khanimoghaddam et al's study showed that 10.5% and 8.5% of students don't eat breakfast and snack, respectively (16).

Soheili azad et al's tudy in Langarood city, also showed that 8% of students don't eat breakfast (17). Importance of breakfast is because that it is considered as the most essential meal for children. Skipping breakfast leads to decreased concentration for learning.

Results of Sadrzadeh yeganes et al. (18) and Baghdadchi et al. (19, 20) show that breakfast consumption has an important effect on learning ability of children. In addition, if breakfast skipping continues and becomes a habit, it changes nutritional behavior and causes deficiency in receiving needed daily nutrients that are not replaced in other meals resulting in calorie, vitamins, and minerals deficiency. Accordingly, results of this study showed that students who consume more fish, red and white meat, dairy products and vegetables regularly, have more average in comparison to other students.

Findings of the present study revealed that 67.8% of students were interested in sweats so much and 38.8% used high amount of salt in their diets, and 61.1% of students were interested in pickles greatly and 43.3% consumed high amount of sugar with tea. Consumption of different kinds of sweats causes false satiety disturbing growth of children and habituates them to eating sweats and also leads to teeth decay in students. High pickles consumption makes students susceptible to cancer and gastrointestinal diseases and as a result, affects on their growth and prevents better learning and understanding of lessons.

Conclusion

Healthy nutritional behaviors such as consumption of hen, meat, fish, dairy products, cereals, eating breakfast before going to school, and use of snacks (fruits, bread, cheese, vegetables, nuts, raisin, …) during break times require training and encouragement from parents, instructors

and teachers and these behaviors generally affect learning abilities of students and enhance their learning and average. On the other hand, weak quantity and quality of diets and deficiency of micronutrients can adversely affect on memory and learning of children and adolescent and since nutritional behaviors are formed over the early years of life, training of students and their parents with regard to consumption of healthy foods and high energetic particularly in breakfast can have an important effect on school performance and learning of students.

Conflict of Interest: None.

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