

Investigation of the effect of education on nutritional knowledge, attitude and performance of primary school students in Ilam – 2015

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ABSTRACT

Background and objective: Nutritional habits are formed in childhood and will remain until the end of life. Proper nutrition in childhood leads to the promotion of growth and development of child and reduces the risk of chronic diseases during adulthood. This study aimed to assess the effect of education about nutrition on nutritional knowledge, attitude and performance of students in primary schools.

Methods: This is a quasi-experimental study which is conducted in 2015. 180 students from primary school in Ilam city were selected randomly and assigned into case (90 people) and control (90 people) groups. Before initiation of educations, a pretest was held in both groups. Then for the case group, a nutritional education was performed during 5 sessions of 45 minutes. After 2 weeks of finishing the educational sessions, posttest was performed by giving a questionnaire of knowledge, attitude and performance to case and control groups. Eventually, two groups were compared with each other in terms of nutritional knowledge, attitude and performance. In order to analyze the collected data, SPSS 21 software was used. The significance level of tests was 5% and descriptive statistics including tables and numeric indices and also inferential tests including paired t-test, independent t-test and Chi-square were used.

Results: Findings of this study showed that in the case group, there was a statistically significant difference between the mean score of knowledge, attitude and performance of students before and after education ($P < 0.05$). In control group, however, no statistically significant difference was observed ($P > 0.05$). There was also a significant difference between case and control groups after education ($P < 0.05$).

Conclusion: Nutritional education may lead to the improvement of nutritional knowledge, attitude and performance of primary school students. Considering the importance and role of students and also low cost of preventive measures in comparison with therapeutic measures, it looks necessary to expand this type of educational programs.

Keywords: knowledge, attitude, performance, education, nutrition

1. INTRODUCTION

It is obvious that every boy's nutrition has a close relationship with his physical and mental health and consumption of enough nutrients maintains one's health and increases his efficiency. Unfortunately hunger and chronic malnutrition leads to the death of a number of people in the world each year. An overview of the children mortality shows that 23% of their mortality is due to diarrheal diseases, 25% due to acute respiratory infections and 40% is because of the direct impacts of malnutrition, such that one out of every three children in the world are involved with malnutrition. Investigations in Iran showed that 15.4% of children less than 5 years old have nutritional stunting and 10.9% have moderate to severe low weight according to the index of weight to age. Investigations also showed deficiency of micronutrients like iron, iodine, calcium and vitamins in 50% of the population in Iran and 18% to 20% of people had disorders related to the excessive increase in consumption of carbohydrates. In comparison with developed countries, the per capita consumption of dairy products in Iran is very low (170 grams per day compared with 450 grams per day).

During recent years, other than reduction in physical activity of children and adolescents, their nutritional taste also has changed from conventional foods with healthy snacks to high calorie foods that have not enough

nutritional value. Studies have shown that wrong nutritional behaviors are very common in Iran and it is observed that nutrition is mostly limited to a few specific foods and there is no variation in dietary pattern (7). The mid childhood (7 to 12 years old) is a period in which the nutrients needed for the rapid growth in adolescence should be provided. Unfortunately, nowadays consumption of junk foods as snack is growing among children especially among those in primary schools. Since these foods contain a lot of sugar, salt and fat, their consumption will be the underlying cause of chronic diseases in next years of life. In addition, due to the high health costs, these diseases impose a heavy burden on countries. According to the studies, only for type II diabetes which is associated with lack of physical activity and malnutrition, the total expenditure in the world is more than 132 billion US dollars each year and it is estimated that these expenditures increase to 192 billion dollars in 2030. Other than its relationship with growth and development, diet may reduce or intensify some of the complications related to the health like tooth decay, bone health, eating disorders, obesity, constipation, malnutrition and iron deficiency anemia in childhood and adolescence. During school times, nutritious snacks are very important, because at the times close to noon, even those children who have eaten breakfast will get hungry and this hunger makes sitting in the class impossible for them and they will not have enough concentration for learning. By eating a good snack, student's ability for learning will be increased. However, TV programs, attractive advertisements and many other things will lead to consumption of a lot of junk foods and low value foods.

Considering that children and adolescents spend about half of their time in school and there are about 17 million students in Iran, school is a suitable place for nutritional educations.

Nutritional education is any combination of educational strategies planned to facilitate decision making in choosing foods and healthy nutritional behaviors. Therefore nutritional education leads to health and welfare. School based nutritional educations are known as effective methods in establishing positive nutritional attitudes, correct nutritional habits and education about the relationship between nutrition and diseases. Therefore for authorities and health providers, it is necessary that by planning health promotion educational programs, provide the situation for increase in self-efficiency and consequently change in behavior not only in students but in their families as well. In order to reduce malnutrition, promotion of nutritional knowledge of the society by nutritional education is a national requirement in developing countries like Iran. Nutritional education is a part of health education and choosing a health education model is the first step for planning an educational program. Considering the importance of students' role as the next generation and low cost of preventive measures like nutritional education in comparison with therapeutic measures, it looks necessary to expand these educational programs. However, health promotion programs in the field of healthy nutrition will be successful when it is planned according to the common knowledge, attitude and performance of people. This study aimed to investigate the effect of nutritional education on improvement of nutritional knowledge, attitude and performance of primary school students in Ilam city.

2. MATERIALS AND METHODS

This is a quasi-experimental study with two groups (pretest, posttest type) conducted in 2015. The study population was all primary school students who were in school during the research period. The estimation of sample size was 180 students (90 cases and 90 controls) that were calculated by the following formula:

$$n = (Z_{1-\alpha/2} + Z_{1-\beta}) (\sigma_1^2 + \sigma_2^2) / (\mu_1 - \mu_2)^2$$

This research proposal is approved with the row number of 937035/207 and all questions are assessed and then approved by the Research Center for the prevention of psycho - social Damage, Ilam University of Medical Science. The sampling method was multistage random sampling which was conducted in those girls' primary schools in Ilam city that in terms of economic, social and cultural situation were similar. At the first stage, two schools were chosen randomly as cases and two schools as controls and then, according to the number of classes in each school, samples were selected randomly. Due to the probability of the lack of proper effectiveness of educations, during study, those students who were absent in one or more sessions of education and those who refused to participate in the study were excluded. The data collection tool included some questions about demographic information (education level of parents and their job), 16 questions about knowledge (for example: having which meal has more importance? Is it needed to have snacks in between meals?), 6 questions about attitude (for example: the probability of getting obese is high for me. Reducing the consumption of junk foods will prevent many diseases) and 9 questions about performance (for example: how is your breakfast consumption during a week? How is your snack consumption in a week?). The scoring protocol was as follows: in knowledge questions, true answers had 2, false answers had zero and answer of "I don't know" had one point (minimum zero and maximum 32 points). For attitude questions, the scoring was according to Lickert scale (completely disagree, disagree, no idea, agree, and completely agree). Therefore answer of "completely disagree" had 5 and "completely agree" had 1 score (minimum 6 and maximum 30 points). It must be mentioned that in this part, lower scores were more favorable. For behavior questions, the most favorable score was 3 and lack of healthy behavior had zero point (minimum zero and maximum 30 points). The Cronbach's alpha coefficient for this questionnaire was 0.80. In order to determine face and content validity of this

questionnaire, 10 copies of it was given to 10 experts in health education and nutrition. Their expertise was also applied in the questionnaire. Since nutritional education programs in primary schools are very limited in Iran, it was needed to have a briefing for teachers and authorities of the schools. Therefore a few days before initiation of the intervention, after getting the consent of school director, by using posters and also verbal education, teachers became acquainted with nutritional education. At the first day of study, researcher attended the schools and with school director's permission, explained the objectives of the study for students. Students were assured about confidentiality of their information and there was no need to write their names. It was mentioned that participating in the study was not compulsory but completely voluntary and the collected data would be reported collectively. Then, questionnaires were given to case and control groups (pretest). After collecting the filled questionnaire, according to the strengths and weaknesses of students and their needs, we started to provide the content of educations in accordance to students' understanding level.

For students in the case group, the educational program was conducted by an expert in nutrition during 5 sessions of 45 minutes' classes. The education content included principals of nutrition, food pyramid (various food groups and daily needs of each person, for example bread and grains group 6-11 units, vegetables 3-5 units and so on), importance of nutrition during school times, importance of snacks, various kinds of snacks, common nutritional problems and suitable diet during school time. The used educational methods included slide showing, showing educational photos for children provided by researcher to attract their attention and keep them concentrated on the topics that they had less information about. Some active methods like question and answer and group discussion were also used to make positive attitude in students to follow healthy diet. 2 weeks after finishing educational sessions, the posttest was performed for both groups using the same questionnaire. Eventually case and control groups were compared with each other in terms of knowledge, attitude and performance before and after intervention. The analysis was performed by SPSS 21 software with the significance level of 5%. Descriptive statistics including tables and numeric indices and inferential statistics including paired t-test and independent t-test and Chi-square were used.

3. RESULTS AND DISCUSSION

Age of samples was in the range of 7 to 12 years old with the mean of 19.47 years and standard deviation of 7.71. According to the findings, the education level of parents in case group was as follows: 50% diploma, 35.6% bachelor's degree and 8.9% master's degree and above and for mothers 55.6% diploma, 27.8% bachelor's degree and 11.1% master's degree and above. 68.9% of Fathers were self-employed and 81.1% of mothers were housewives. In control group, fathers' education level was 46.7% diploma, 44.4% bachelor's degree and 7.5% master's degree and above and for mothers it was 55.6% diploma, 41.1% bachelor's degree and 2.2% master's degree and above. 76.7% of fathers were self-employed and 61.1% of mothers were housewives that according to Chi-square statistical test, from this aspect, two groups were similar and no significant difference was observed between them ($P < 0.05$). In terms of parents' age, number of family members and economic status, there was no significant difference between two groups as well ($P < 0.05$). Results of the study showed that in case group, the mean score of students' knowledge had increased from 17.72 in pretest to 30 in the posttest. Paired t-test showed that this difference between pretest and posttest scores of knowledge in case group is significant ($P = 0.000$) but in control group, the mean scores of knowledge were 18.43 and 17.84 and their difference was not statistically significant ($P = 0.068$). The t-test also showed that difference between the mean scores of knowledge in case and control groups before education ($P = 0.313$, $t = 1.012$, $df = 178$) was not statistically significant but after education it was statistically significant ($P = 0.000$, $t = 22.685$, $df = 178$) (table 1). In case group, the mean score of attitude in pretest was 22.71 which reached 9.07 in posttest. Paired T-test showed that in case group, the difference between mean score of attitude before and after education was statistically significant ($P = 0.000$). In control group however, this score was 24.26 and 24.68 in pretest and posttest respectively and the difference between them was not statistically significant ($P = 0.382$). The independent t-test showed that the difference between mean scores of knowledge in case and control groups before education was ($P = 0.015$, $t = -$, $df = 178$) which was not statistically significant but after intervention ($P = 0.000$, $t = -36.777$, $df = 178$) which was statistically significant (table 1). The mean score of students' behavior in case group was 15.01 and 27.32 in pretest and posttest respectively. The paired t-test showed that in case group, the difference between mean scores of attitude before and after intervention has been statistically significant ($P = 0.000$) but in control group the score have been 13.79 and 14.93 in pretest and posttest and their difference was not statistically significant ($P = 0.11$). The independent t-test showed that the difference between the mean scores of knowledge in case and control groups before intervention has been ($P = 0.11$, $t = 1.578$, $df = 178$) which was not statistically significant but after intervention it was ($P = 0.000$, $t = 15.969$, $df = 178$) and the difference was statistically significant (table 1).

Table.1. The comparison between mean and standard deviation of knowledge, attitude and performance scores in case and control groups, before and after educational intervention

Group		Case	Control	Independent t-test
Studied field	Before	17.72 ± 4.65	18.43 ± 4.77	P= 0.000
	After	10.00 ± 1.01	17.84 ± 5.08	P= 0.068
Attitude	Before	22.71 ± 4.92	24.26 ± 3.414	P= 0.000
	After	9.07 ± 3.060	24.68 ± 2.617	P= 0.382
Performance	Before	15.01 ± 5.364	13.79 ± 5.020	P= 0.000
	After	27.32 ± 2.177	14.93 ± 7.031	P= 0.110

Discussion: With the increase in price of all required products especially increase in the price of food, the high risk population of the society will be increased as well. When most of the income of high risk people is spent for house and non-profit trainings, the ability to buy food will be decreased. Excessive consumption by some people and consumption without having any nutritional knowledge, has increased the complicity of this problem. Therefore, due to the lack of knowledge, even that small amount of money that goes for a healthy nutrition will have the least efficiency. Nutritional education for students especially in primary schools has a special importance because:

- 1) Children are ready to learn new things.
- 2) There are enough educational facilities available for them.
- 3) The compulsory presence of students in school makes it easier to perform the program.
- 4) Abundance of students leads to the expansion of education.
- 5) The relationship of students with their family members leads to the expansion of educations.

According to the results of this study, after intervention, the mean score of knowledge and appropriate behavior in case group was increased and the mean score of inappropriate attitude was decreased. In control group however, there was no statistically significant difference in the mean of these scores after education.

The mean score of knowledge, attitude and performance in two groups had not a significant difference before education but after education the difference was significant. Therefore according to the increase in knowledge and appropriate behaviors and reduction in wrong attitudes in case group, nutritional education has been effective on primary school students. Results of a study conducted by Motamed rezaee et al. also showed that using educational interventions about nutrition and food hygiene in teacher training centers, may be an effective factor in promotion of health in students. The other similar studies also have shown that knowledge and performance of students had increased after education. In Mansurian et al.'s study, the mean score of knowledge, attitude and performance in case and control groups had not any significant difference before education but after education, the mean score of knowledge, attitude and performance in intervention group and control group had a significant difference. In Dehdari et al.'s study with the title of "Health Education Interventions on Student Nutrition from 2000 to 2008" which was performed systematically, 23 studies which met the inclusion criteria were selected. Results showed that 18 out of 23 studies had reported the increase in knowledge, 8 studies reported the positive effect on attitude and 15 studies reported the improvement of nutritional behaviors in students. It must be mentioned that in other studies related to nutritional educations in which the study population have been students of guidance school, high school or teachers, the results have been similar to the results of this study. However, in Rahimi et al.'s study, after 2 months nutritional education, no significant change in knowledge, attitude and performance of women working in Tabriz University of medical sciences was observed.

It must be noted that children and adolescents need adequate food more than others so that they have the proper physical growth and mental development and be able to confront chronic diseases in old ages. Good nutrition is one of the main factors in maintaining children's health, especially for those at school ages.

In terms of the formation of nutritional habits, childhood and adolescence are two critical periods. Adolescence is one of the most important periods of growth and development in which healthy diet habits develop. On the other hand, many risk factors including obesity, cardiovascular diseases, lipoprotein disorders and hypertension that are associated with chronic diseases in adulthood are formed in this age.

According to the results of this study and other similar studies, nutritional education leads to the improvement of knowledge, attitude and nutritional performance in primary school students. Therefore, because of the importance and role of students and low cost of preventive measures such as nutritional education in comparison with therapeutic measures, it looks necessary to expand these educational programs. However, health promotion programs in healthy nutrition field will be successful if it is designed according to the knowledge, attitude and common performance of people.

It is recommended to conduct more studies on the effectiveness of having more education and the knowledge, attitude and performance of primary school students. It must be mentioned that the most beneficial educations are

those that follow an educational method or theory. Choosing an educational method leads to the initiation of program from the right place and keeps us on the right track. With a suitable theoretical background about health needs, the effectiveness of health education programs will be increased. Therefore it must be mentioned that the theory based educational interventions will have a higher effectiveness in comparison with common educational interventions and it is better to do interventions with the help of experts in health education and promotion field. It is recommended that in future studies, these effective methods in education, be used especially for children and adolescents. In addition, in future studies, adolescents should be studied directly alongside family based interventions and feasibility, effectiveness, content and form of the program in larger populations be noticed.

4. CONCLUSION

The strength points of this study were using educational photos suitable for children and slides to attract students' attention and using active educational methods like group discussion and question-answer. Limitations of this study that may affected the results are short period of intervention, low sample size, lack of following up the retention of intervention effects after a time period and also self-reporting of students.

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