

The effect of nutrition and food hygiene education on the knowledge of female elementary school teachers in city of Ferdows

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ABSTRACT

Introduction: Teachers are one of the most influential groups in elevating social health, and their teaching nutritional points to the students can both affect students' awareness and the transferring of such nutritional education to the families. This study was undertaken to survey the influence of nutrition and nutritional health education on the awareness of female elementary school teachers. **Materials and Methods:** Fifty-seven female elementary school teachers were chosen from the Ferdows City for this quasi-experimental study. Prior to the outset of the educational workshop, they were asked to fill out a questionnaire about nutrition and nutritional health, which was followed by the two-day workshop. After two months, they were given a second questionnaire. The results were analyzed by paired *t*-test, ANOVA, and McNemar. In all the tests, a significance level $\alpha = 0.05$ was considered. **Results:** Findings of the study showed that the mean score of awareness before interference was 10.98%, which reached up to 18.2% after the interference ($P < 0.001$). With regard to the importance of breakfast intake, the teachers' awareness increased from 57.9 to 98.2% from before to after intervention, respectively. **Conclusion:** Applying interventional methods of education in teacher training centers in conjunction with medical and educational centers, with regard to nutrition and nutritional health, can elevate the health of students.

Key words: Awareness, education, nutrition, teachers

INTRODUCTION

Nutritional literacy and culture are important issues in the proper physical growth and prevention of the generation of many diseases related to them. In recent years, the status of good nutrition has been considered as an acceptable

development indicator for social, economic, and health planners in developing countries.^[1,2]

Children and teenagers are the future of society, and to underpin an active and healthy society, it is necessary for them to know how healthy and good food leads to the maintenance of their health. Research has shown that children's nutritional patterns are mostly affected by social and physical environments. Social environment impacts children's nutritional patterns through a set of socioeconomic and socio-cultural factors, such as, parents' level of education, time limitation, and race.^[3] The nutritional pattern directly affects children's mental and physical growth.^[4] Evaluation of the nutritional status of elementary school children in some parts of the world and Iran indicates the presence of malnutrition, such as, short stature, underweight, weight loss, weight gain, or obesity, in these regions.^[5-7]

Malnutrition is a problem that needs a comprehensive study due to its multi-dimensional nature. Most cultural components of a

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society are printed on the minds of children by educating parents and children. In this regard, teachers are one of the principle components. Teachers are communication rings between schools and health centers and transfer health knowledge to their students, and consequently, to their families; thus, they improve the health of students and families. Teachers are one of the most influential groups that improve the health level of society. Undoubtedly, presenting nutritional education to students by teachers leads to the transfer of this education to their families, in addition to the influence of the knowledge on students.^[8,9] To this end, improving the knowledge of teachers and health teachers is of significance and studies have demonstrated that this education can be one of the methods for increasing knowledge, especially in teachers and health teachers, who spend most of their time with students, in order to transfer educational materials to them.^[8,10] As food is one of the most fundamental requirements for human beings, nutrition and food hygiene should be considered as one of the health educational aspects.^[11]

In a study in Qazvin, about the effect of health education on the change in nutritional behaviors and knowledge of elementary school students, it was seen that the students' knowledge of 22.79 ± 5.4 before the education increased to 51.06 ± 4.75 after training.^[12] Moreover, in the investigation of the effect of nutritional education on the nutritional attitude and knowledge of 60 health teachers in the Ahwaz elementary schools, the difference between the attitude and knowledge scores of the intervention group significantly increased after education;^[13] this indicated that one stage of targeted nutritional education in a short run, could help in making considerable changes in the level of nutritional attitudes and knowledge among health teachers in elementary schools.

Studies have shown that proper nutritional education of teachers and their information and knowledge improvement can lead to the presentation of positive, constructive transformations in correcting food intake patterns and decreasing the risk of malnutrition in children.^[14,15] As no nutrition and food hygiene educational program has been held for the teachers of the city of Ferdows thus far, this study was performed to determine the effect of nutrition and food hygiene education on the knowledge level of elementary school teachers in this city.

MATERIALS AND METHODS

This semi-experimental study was designed and implemented in order to determine the effect of nutrition and food hygiene education on the improvement of nutritional knowledge among female elementary school teachers in the city of Ferdows. The studied society included 57 female elementary school teachers, who were working in the urban regions of Ferdows and were studied using the census method. To determine the face and content validity of the prepared questionnaire, it was sent to seven experts in the health and nutrition education and their ideas were affected. Before starting the education, the questionnaire was completed as a pre-test; this questionnaire included demographic information, 20 nutrition knowledge questions, and five food hygiene knowledge questions. Scores

of 1 and 0 were considered for correct and incorrect responses, respectively. Then, nutritional and environmental health experts held 16-hour, two-day educational workshops for teachers, using educational aids; this workshop was in the form of lecturing, group discussion, and two sessions of team work. The materials presented in the educational workshops included the importance of nutrition, food groups, vitamins and minerals, food hygiene, role of breakfast in the morning, iron deficiency, and iron-deficiency anemia, in school ages. After holding the workshop for two months, different question-and-answer and discussion sessions were held in schools. Then, the initial questionnaire was used for evaluation. The collected data were analyzed by descriptive and analytical tests, considering the normal distribution of data using the Kolmogorov-Smirnov test, paired *t*-test, analysis of variance (ANOVA) and McNemar, at the significance level of $P < 0.05$.

FINDINGS

This study was done on 57 female elementary school teachers in the city of Ferdows with a mean age of 39.5 ± 4.6 years. The mean of the knowledge score before the intervention was 10.98, which increased to 18.2 after the intervention ($P < 0.001$) [Table 1]. Also, the percentage of correct responses of the teachers on the importance of breakfast intake increased from 57.9% before the intervention to 98.2% after the intervention ($P < 0.001$). The accuracy of responses to questions on the role of food in the body, main sources of energy supply in the body, and the most important role of proteins increased from 56.1 to 59.6%, 19.3 to 22.8%, and 31.6 to 43.9%, respectively, although this difference was not statistically significant for the three final items. For the main groups of the food pyramid, the percentage of correct responses significantly decreased from 29.8 to 7%. For the other questions, the percentage of correct responses to knowledge questions showed a significant increase, except for the main factors of food spoilage, which are mentioned in Table 2. The mean of the changes in the knowledge score before and after the intervention, in terms of the level of education, indicated a significant difference ($P > 0.05$) [Table 3].

DISCUSSION

For any attempt to generate a healthy behavior, having knowledge and information is the first key element,^[16] therefore, it is essential to give knowledge to teachers and students, as two of the important groups, for preventing nutritional diseases.

Table 1: Comparing mean knowledge scores before and after the intervention in the studied teachers

Statistical indexes	Frequency	Mean	SD	Paired <i>t</i> -test
Before intervention	57	10.98	4.2	T=11.62 df=56
After intervention	57	18.2	2.2	$P < 0.001^*$

*is significant at $\alpha < 0.05$

Table 2: Comparing relative frequency of correct responses to knowledge questions before and after the intervention in the studied teachers

Question	Before intervention <i>N</i> =57 <i>n</i> (%)	After intervention <i>N</i> =57 <i>n</i> (%)	McNemar test
Importance of breakfast intake	33 (57.9)	56 (98.2)	<i>P</i> <0.001*
Role of food in body	32 (56.1)	34 (59.6)	<i>P</i> =0.7
Main resources of energy supply in body	11 (19.3)	13 (22.8)	<i>P</i> =0.65
Intake rate of milk and dairy for calcium supply	21 (36.8)	45 (78.9)	<i>P</i> <0.001*
Milk type in children	17 (29.8)	33 (57.9)	<i>P</i> =0.003*
The high-quality type of protein	7 (12.3)	22 (38.6)	<i>P</i> =0.001*
Which nutrients are lost by draining the rice?	21 (36.8)	55 (96.5)	<i>P</i> <0.001*
The food group with the highest vitamins	22 (38.6)	51 (89.5)	<i>P</i> <0.001*
Reasons for not using cheese snacks by children	20 (35.1)	38 (66.7)	<i>P</i> =0.001*
Iron in food products	20 (35.1)	53 (93)	<i>P</i> <0.001*
Foods that decrease iron absorption	13 (22.8)	25 (43.9)	<i>P</i> =0.02*
The best time for using iodized salt while cooking	38 (66.7)	56 (98.2)	<i>P</i> <0.001*
Foods that increase iron absorption	22 (38.6)	48 (84.2)	<i>P</i> <0.001*
The first symptom of vitamin A deficiency	14 (24.6)	25 (43.9)	<i>P</i> =0.03*
Foods containing vitamin A	29 (50.9)	48 (84.2)	<i>P</i> <0.001*
Apparent signs of food spoilage	45 (78.9)	55 (96.5)	<i>P</i> =0.004*
Food spoilage factors	48 (84.2)	56 (98.2)	<i>P</i> =0.008*
Sensory organs that have no use in detecting food spoilage	15 (26.3)	29 (50.9)	<i>P</i> =0.007*
Characteristics of food labels	35 (61.4)	57 (100)	<i>P</i> <0.001*
Main factors involved in food spoilage	44 (77.2)	51 (89.5)	<i>P</i> =0.08
Infectious agents in foods	24 (42.1)	50 (87.7)	<i>P</i> <0.001*
Definition of food hygiene	31 (54.4)	54 (94.7)	<i>P</i> <0.001*

*is significant at $\alpha < 0/05$ **Table 3: Comparing mean changes of knowledge scores before and after the intervention in terms of level of education among teachers**

Level of education	Statistical indexes			
	Frequency	Mean	SD	ANOVA test
Diploma	6	5.8	7.3	<i>F</i> =0.53
Upper diploma	29	7.8	3.4	<i>df</i> =2.54
Bachelor	22	6.9	5.4	<i>P</i> =0.059

In the present study, before the intervention, 10.98% of the teachers had a desirable knowledge on nutrition and food health, which reached 18.27% after the intervention. In a study on the effect of education on the nutritional knowledge level of teachers, and the transfer of this knowledge to students in the elementary schools of Sarvestan, the mean score of the teachers improved from 2.12 before the intervention to 4.18 after that, which was consistent with the present study.^[10]

Different studies indicated that school teachers were helpful guides and could play an important role with regard to nutritional knowledge. In a research performed by two educational methods (lecturing and self-education) on the nutritional knowledge level of high school female students, it was shown that nutritional knowledge with regard to the values of vitamins and minerals, increased.^[17] In this study, the level of nutritional knowledge with regard to the nutritional value of vitamins and minerals increased considerably. A study conducted in Iran's Endocrinology and Metabolism Research Center, which evaluated the knowledge,

attitude, and behavior on healthy nutrition among high school and middle school students in Region 13 of Tehran, revealed that a small percentage of teenagers had nutritional knowledge, which was in contrast to the results of the present study.^[18] A Healthy Heart Project was conducted in the city of Bushehr, to plan educational programs for the improvement of the cardiovascular health of children. This study showed that teachers could increase the general knowledge level of students, as 25% increase in knowledge was observed post the tests, in the experimental group;^[19] this result also was similar to the present results.

In another research in the city of Amlash on 1665 female students, the knowledge level on nutrition and food hygiene increased from 61.5 to 77.15%. In the present study, the knowledge level of the teachers who studied food hygiene (food spoilage factors, factors of food spoilage) was low before the intervention; however, it increased considerably after the intervention.^[20]

These results were consistent with the findings of the educational intervention in 2003-2004, which was done on teachers and students in the schools of Tabriz. That study was performed in a lecturing and educational workshop format and resulted in an increased percentage in the knowledge of teachers and students.^[21]

In an investigation on the effect of an educational booklet on the knowledge of elementary school students in Bushehr,

in terms of food pollution, the extent and percentage of the students' knowledge considerably increased after the intervention. In this study, the teachers were responsible for the booklet education.^[22] Thus, the present study used educational pamphlets for educating teachers as well.

CONCLUSION

Due to their specific socio-cultural responsibilities, school teachers have better opportunities to interact with children and other family members with regard to proper educational performance in schools. Considering the findings of the present study, based on the weakness of knowledge among school teachers in terms of nutrition and food hygiene, the Education Ministry, as a most influential institution, can provide the required fields for the increase of knowledge among teachers, students, and consequently, the society.

Accordingly, it is recommended to plan a constant education on nutrition and food hygiene, using educational aids and other educational facilities in the Teacher Training Centers, with the cooperation of Health Centers and Education Organizations, as appropriate facilities should be presented to schools.

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