

## Effect of Education on Self-Efficacy Development of Nutritional Behaviors of First Grade Female Students of Kermanshah High Schools (2014)

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**Abstract:** Encouraging adolescents to healthy nutritional behaviors is a public health priority. The current research was conducted so as to study the effect of education on self-efficacy development of nutritional behaviors of first grade female students of Kermanshah high schools in 2014. This is an intervention based study on 160 first grade female students attending high schools (80 for intervention and 80 for control group) in Kermanshah in 2014. Required data of before and 3 months after intervention were gathered using a questionnaire. Educational interventions were carried out in four training sessions. Data were analyzed using SPSS software, chi square, Fisher exact, independent T and paired T tests. Statistically, before intervention, there was no significant difference between the two groups with regard to self-efficacy and demographic variables. However, 3 months after intervention, a significant difference has been observed between the two groups in term of self-efficacy development ( $P < 0.001$ ). Considering the positive effect of nutritional behavior training on self-efficacy development, it seems necessary to think of some suggestions for further promotion of lifestyle and health behaviors.

**Key words:** Self-Efficacy • Education • Nutritional Behaviors • Students

### INTRODUCTION

Adolescents – young people between the ages of 10 and 19 years – are often thought of as a healthy group [1]. This age period is accompanied by some biological, rational and social relation changes while the individual reaches to physical, psychological and sexual development, little by little, he/she learns to take responsibility of his/her health [2]. In every community, adolescents are one of the most important groups so that their health makes the underlying foundation of public health. According to the latest census carried out in 2011, in Iran, adolescents account for 12,278,478 (%16.3) of the

total population [3]. Deforche *et al.* [4] believed that individuals' dietary habits are largely determined during childhood and adolescence. The body need for nutrients in adolescence increases significantly due to doubling of body mass [5]. Researches has proved a relationship between nutritional and educational indicators such as learning skill, score level, academic achievement, IQ, academic and intellectual skills and class concentration [6]. Also, nowadays, nutritional indicators are recognized as risk factors of non-communicable diseases and based on the recent study in Tehran, forecast cardiovascular diseases among adolescent group of the society [7]. During recent years, international health organizations

have proposed some dietary recommendations in order to reduce the prevalence of cardiovascular diseases which promotes using more vegetables and less livestock [8]. The present evidence suggests that high-fat low-fiber diet and lack of daily fruit and vegetable intake (Which are rich in vitamins and phytochemicals) are associated with increased risk of different types of cancer [9]. A research on Isfahan indicated poor dietary effect for 90% of students [10]. Almost 70% of malnourished children of the world live in Asia where has a high rate of underweight prevalence, especially in South Asia [11]. Swindle *et al.* [12] evaluated longer-term curriculum on nutritional behavior and showed that after educational treatment, the average of healthy nutritional behavior raised up from 1.8 to 3. Finding of different researches warn about rapid weight gain and inactivity [13] as well as increasing tendency to high-calorie and low-value diet [14]. Change in health behaviors is the best way to reduce disease and death rate and improve the quality of life. Understanding predicting factors of behavior facilitates changing behavior interventions [15]. Self-efficacy refers to one's belief of his/her own capacities to deal with a certain situation. Nowadays, it is believed that, in order to agree upon changing trends toward health promotion, individuals are required to perceive their own efficacy in passing over the obstacles that may hinder the process of changing behavior [16]. Saksvig *et al.* [17] conducted a research to show that training programs lead to self-efficacy development in term of students' nutritional behaviors. The existing literature is indicative of the fact that individuals with high self-efficacy are more willing to involve in challenging situations, better change their health related behaviors and easily control their nutritional behavior, considering that self-efficacy plays an important role in balancing the correlation between knowledge and behavior [18]. Therefore, the present research was conducted aiming at studying the effect of education on self-efficacy development of nutritional behaviors.

## MATERIALS AND METHODS

This is an intervention based study on 160 first grade female students attending high schools in Kermanshah, Iran in 2014. The inclusion criteria were: being first grade high school student, not having any particular disease, not being under dietitian supervision and being involved with full consent. Assuming cluster and multi-stage sampling method, the region of study (Kermanshah) was divided to three areas from each two schools are randomly selected (Two schools for control treatment and two

schools for intervention treatment). Based on simple random sampling and considering the possibility of sample reduction, one class from each school and 20 students from each class were selected. A two part questionnaire was developed for collecting data. Part one contained 11 sections related to demographic profile of the subjects including age, school grade, parents' survival status, parents' education, parents' employment status, number of children, monthly family income, daily allowance and residential status. Part two was a 9-section self-report questionnaire devised based on 5-point Likert scale (Strongly agree, agree, neither agree nor disagree, strongly disagree, disagree) that measures nutritional behaviors and the subjects completed it twice, before intervention and three months after intervention. Scientific validity of the questionnaire was determined through content validity method. In order to determine the reliability of the questionnaire 30 students (Other than the subjects of this study) were asked to complete it based on which Cronbach's Alpha coefficient of self-efficacy was determined (0.8). Both control and intervention group completed the questionnaire before treatment. Then, training courses were held for intervention group in three 60-minute sessions. The content of training sessions include some generalizations about an introduction to food pyramid, importance of nutrition during puberty, the importance of snacks, types of snacks and common nutritional diets during adolescence. Training methods used in this program include speech, question and answer sessions and group discussion. Also, at the end of each session the students were given pamphlets on proper diet during adolescence and nutrition tips for teens. At the final stage, the pamphlets were also given to students of the control group. Data obtained from the questionnaires were analyzed using SPSS software 20 and Chi-square, Fisher exact, independent T, paired T and Mann-Whitney U tests.

## RESULTS

The majority of intervention group (63.8%) and control group (66.3%) were aged between 12 and 14 years old. In both intervention and control groups 52.5 and 48.8% were at grade 7 and 47.5 and 51.3% were at grade 9, respectively. Parents of 95% of the intervention group as well as 96.3% of the control group were alive.

In term of self-efficacy, we found no significant difference between the sub-items of the two groups. After training courses, there appeared a significant difference in all items of nutrition self-efficacy behavior of the students (Table 1).

Table 1: Comparison between nutrition self-efficacy behavior scores after training two groups (control and intervention) of first grade female students of Kermanshah (2014)

	Group	Very sure	Sure	Neither sure nor sure	unsure	Very unsure	P-value
I can have breakfast every morning	Intervention	63(78.8)	11(13.80)	4(5)	2(2.5)	0(0)	< 0.001
	Control	33(41.3)	18(22.5)	6(7.5)	15(18.8)	8(10)	
I can eat couple of fruits beside cheese and bread for the breakfast	Intervention	26(32.5)	25(31.3)	19(23.8)	8(10)	2(2.5)	< 0.001
	Control	17(21.3)	9(11.3)	16(20)	16(20)	22(27.5)	
I can use less soft drink	Intervention	45(56.3)	20(25)	11(13.8)	4(5)	3(3.8)	< 0.001
	Control	25(31.3)	19(23.8)	8(10)	19(23.8)	9(11.3)	
When hungry, I can eat healthy snacks (cheese, bread and vegetables) instead of junk foods (chips, chocolates and cheese puffs)							
	Intervention	51(62.8)	22(27.5)	4(5)	3(3.8)	0(0)	< 0.001
	Control	22(27.5)	13(16.3)	22(27.5)	14(17.5)	9(11.3)	
I can stop eating confectionery (chocolate, bread, cream) soon after meal.							
	Intervention	52(65)	21(26.3)	3(3.8)	2(2.5)	2(2.5)	0.003
	Control	32(40)	22(27.5)	12(15)	6(7.5)	8(10)	
I can have bread and cereals every day	Intervention	68(85)	10(12.5)	2(2.5)	0(0)	0(0)	< 0.001
	Control	35(43.8)	26(32.5)	12(15)	5(6.2)	2(2.5)	
I can drink three glasses of milk every day	Intervention	38(47.5)	20(37.5)	11(13.8)	1(1.2)	0(0)	< 0.001
	Control	22(27.5)	13(16.3)	9(11.2)	24(30)	12(15)	
I can have meat, egg and cereal in my daily food.	Intervention	52(65)	25(31.3)	2(2.5)	1(1.2)	0(0)	< 0.001
	Control	29(36.3)	17(21.2)	14(17.5)	13(16.2)	7(8.8)	
I can have fruits and vegetables every day	Intervention	59(73.8)	18(22.5)	6(7.5)	2(2.5)	1(1.2)	< 0.001
	Control	38(47.5)	19(23.8)	15(18.8)	7(8.8)	1(1.2)	

Table 2: The average and standard deviation scores of students' nutrition self-efficacy in both groups (Intervention and control)

Nutrition self-efficacy items	Intervention group			Control group			Difference		
	Before	After	p-value	Before	After	p-value	Intervention	Control	p-value
I can have breakfast every morning	2.89±1.20	3.69±0.69	< 0.001	2.65±1.45	2.66±1.43	0.934	0.80±1.12	0.01±1.35	< 0.001
I can eat couple of fruits beside cheese and bread for the breakfast	1.69±1.33	2.81±1.08	< 0.001	1.46±1.41	1.79±1.50	0.051	1.13±1.36	0.33±1.47	< 0.001
I can use less soft drink	2.43±1.48	3.32±0.90	< 0.001	2.44±1.54	2.40±1.43	0.830	0.90±1.50	-0.04±1.55	< 0.001
When hungry, I can eat healthy snacks (cheese, bread and vegetables) instead of junk foods (chips, chocolates and cheese puffs)							2.41±1.50	3.51±0.76	< 0.001
	2.31±1.35	0.268	1.10±1.52	0.20±1.60	< 0.001				2.11±1.53
I can stop eating confectionery (chocolate, bread, cream) soon after meal.	2.20±1.44	3.49±0.89	< 0.001	2.25±1.54	2.80±1.32	0.006	1.29±1.55	0.55±1.74	0.005
I can have bread and cereals every day	3.44±0.86	3.83±0.44	< 0.001	3.11±1.19	3.09±1.03	0.883	0.39±0.93	-0.03±1.52	0.04
I can drink three glasses of milk every day	2.03±1.36	3.31±0.76	< 0.001	1.86±1.58	2.11±1.48	0.229	1.29±1.29	0.25±1.85	< 0.001
I can have meat, egg and cereal in my daily food	2.73±1.15	3.60±0.61	< 0.001	2.75±1.26	2.60±1.36	0.413	0.88±1.06	-0.15±1.63	< 0.001
I can have fruits and vegetables every day	2.87±1.13	3.69±0.59	< 0.001	3.09±1.19	3.07±1.07	0.934	0.81±1.14	-0.01±1.34	< 0.001
Total nutrition self-efficacy	22.68±5.54	31.25±3.73	< 0.001	21.72±6.48	22.84±7.02	0.133	8.58±4.40	1.11±6.55	< 0.001

The results of comparison between the average scores of all items in nutrition self-efficacy behavior and total average of nutrition self-efficacy, before and after training the intervention group, showed a significant difference for all cases ( $P<0.001$ ) while the results self-efficacy development measurement of the control group, before and after training, showed no difference. In general, the results of independent T-test, used to compare the difference in mean scores of nutrition self-

efficacy of the two studied groups, before and after training, in order to measure its effect on dietary behaviors, was significant in all items (Table 2).

## DISCUSSION

The results showed that, in general, training has positively affected self-efficacy development of nutritional behaviors on students in intervention group.

Statistically, significant difference was observed among post training changes of nutrition self-efficacy of the two treatment groups ( $P < 0.001$ ) so that self-efficacy development score of the intervention group was higher than the control group. After training, a significant difference was observed between treatment and control group in terms of having breakfast which is consistent with the results obtained from the studies of Safavi *et al.* [18] and Khalaj *et al.* [19]. In terms of having snacks and soft drink (Items 3 to 5 of nutrition self-efficacy behavior), training led to a significant difference between intervention and control group which is also consistent with the results obtained from the studies of Safavi *et al.* [18] and Khalaj *et al.* [19]. In terms of having bread, cereals, meat and beans (items 6 to 8 of nutrition self-efficacy behavior), training led to a significant difference between intervention and control group which is also consistent with the results obtained from the study of Safavi *et al.* [18].

What is more, in terms of having milk and dairies (Item 7 of nutrition self-efficacy behavior), training led to a significant difference between intervention and control group ( $P < 0.001$ ) for which Safavi *et al.* [18] also observed that training lead to increased use of milk and dairies in intervention group; Also, Khalaj *et al.* [19] obtained the same results in their study. In term of having fruit and vegetable (Item 9 of nutrition self-efficacy behavior), training led to a significant difference between intervention and control group ( $P < 0.001$ ) which is consistent with Schmit *et al.* [20] and Tavasoli *et al.* [21] study where they found 14% increased use of fruit and vegetable in intervention group after training. In another study conducted by Abbasian *et al.* [22], after training, daily intake of fruit and vegetable in intervention group increased (0.6 and 0.63, respectively) more than control group; however, the amount of used fruit and vegetable before and after training were not significantly different. After intervention, Nicklas *et al.* [23] observed significant increase in using fruit and vegetable.

In general, results obtained from the current study demonstrated the increased effect of training on individuals' self-efficacy and trend toward healthy nutritional behavior and since healthy habits are shaped during childhood and adolescence, proper healthy behaviors learnt during these periods affect health and well-being of the individual later in life. Also, because of the significant role of education environment in conveying healthy and unhealthy habits, it seems necessary to put even more emphasize on providing training programs in order to change healthy habits and behaviors.

## CONCLUSIONS

Since it was proved in this study that training is effective in development of students' self-efficacy, it can also be argued that the proposed method may help the instructors to revise existing curriculums during their apprenticeship and internship and promote self-efficacy capacity of learners. With regard to the significance of health promoting lifestyles and the effect of self-efficacy and living conditions on such behaviors, the researcher recommended providing strategies to promote further more lifestyles health behaviors for every individual.

## REFERENCES

1. WHO (World health organization), 2012. 10 facts on adolescent health. Available from: <http://www.who.int/features/factfiles/adolescent-health/en/index.htm>.
2. Hosein-Nejad, M., M. Aziz-zadeh-Forozi, S. Mohammad-Alizadhe and A. Haghdooost, 2008. Role of Self Efficacy Predictors in Nutritional Behaviors of Kerman High School Female Students in 2006-2007 Academic Year. *JSSU*, 16(3): 320-320.
3. Statistical center of Iran. Information technology, 2011. [Cited 2011 15 September]. Available from: <http://www.amar.org.ir/Default.aspx?-tabid=1160>, 2011.
4. Deforche, B., D. Van Dyck, M. Verloigne and I. De Bourdeaudhuij, 2010. Perceived social and physical environmental correlates of physical activity in older adolescents and the moderating effect of self-efficacy. *Prev. Med.*, 50 Suppl. 1: 24-29.
5. Morgan, S.L. and R. Weinsier, 1997. *Fundamentals of Clinical Nutrition*. 1<sup>st</sup> ed. Mosby.
6. Lotfi, B., F. Rakhshani, I. Zareban, F. Montazerifar, H. Aloozaheh and Z. Parvizi, 2012. The effect of peer education based on health belief model on nutrition behaviors in Primary school boys, *Journal of Research and Health*, 2(2): 214-225.
7. Azad Bakht, L., P. Mirmiran, A.A. Momenan and F. Azizi, 2004. Knowledge, attitude and practice of guidance school and high school students in district-13 of Tehran about healthy diet. *Iranian Journal of Endocrinology and Metabolism*, 5: 409-416.
8. Nazari, M., S.H. Nik Nami, A.R. Heidar Nia, Gh R. Babaei and L. Ghahremani, 2006. The effect of the health education program on the nutritional behavior of primary school female students. *Daneshvar, Scientific-research Journal of Shahed University*, 13(61): 65-70.

9. Williams, S.R., 2001. Basic Nutrition and Diet Therapy. 11<sup>th</sup> ed, mosby Inc.
10. Hazavehei, S., Z. Asadi, A. Hasanzade and P. Shekarchizadeh, 2009. A Study on the Effect of Physical Education (Đ) Curriculum Based on BASNEF Model on Female Students' Regular Physical Activity in Isfahan University of Medical Sciences. ZUMS Journal, 17(69): 70-83.
11. Khor, G.L., 2003. Update on the prevalence of malnutrition among children in Asia. Nepal Med Coll J., 5(2): 113-122.
12. Swindle, S., S.S. Baker and G.W. Auld, 2007. Operation Frontline: Assessment of Longer-term Curriculum Effectiveness, Evaluation Strategies and Follow-up Methods. Journal of Nutrition Education and Behavior, 39(4): 185-246.
13. O'Loughlin, J.L. and J. Tarasuk, 2003. Smoking, physical activity and diet in North American youth: where are we at? Can J Public Health, 94(1): 27-30.
14. Thompson, O.M., C. Ballew, K. Resnicow, A. Must, L.G. Bandini, H. Cyr and W.H. Dietz, 2004. Food purchased away from home as a predictor of change in BMI z-score among girls. Int J. Obes Relat Metab Disord., 28(2): 282-289.
15. Walker, S.N., C.H. Pullen, M. Hertzog, L. Boeckner and P.A. Hageman, 2006. Determinants of older rural women's activity and eating. West J Nurs Res., 28(4): 449-474.
16. Mohammad-Alizadeh-Charandabi, S., M. Mirghafourvand, N. Tavananezhad and M. Karkhaneh, 2014. Health promoting lifestyles and self-efficacy in adolescent boys. J. Mazandaran Univ Med Sci., 23(109): 152-162.
17. Saksvig, B.I., J. Gittelsohn, S.B. Harris, A.J. Hanley, T.W. Valente and B. Zinman, 2005. A pilot school-based healthy eating and physical activity intervention improves diet, food knowledge and self-efficacy for native Canadian children. J. Nutr., 135(10): 2392-2398.
18. Safavi, M., S.H. Yahyavi, M. Mahmoudi and M. Pour Rahimi, 2011. Impact of educational on dietary behavior self-efficacy of middle school student in Kerman city in the year of 2010. Journal of qualitative Research in Health Sciences., 11(1 and 2): 41-50.
19. Khalaj, M. and I. Mohammadi zeidi, 2006. Health education effects on nutritional behavior modification in primary school students. J. Shahrekord Univ Med Sci., 8(1): 41-49.
20. Schmidt, R.L., 2010. Impact of Nutrition Education on Dietary Habits of Female High School Students. Masters Theses and Doctoral Dissertations.
21. Tavassoli, E., M. Reisi, H. Javadzade, M. Mazaheri, Z. Gharli pour, S. Ghasemi and S. Shakoori, 2013. The effect of the health belief model-based education and improvement of consumption of fruits and vegetables: An interventional study. Journal of Health in the Field, 1(2): 29-35.
22. Abbasian, F., N. Omidvar, D. Bondarianzadeh, B. Rashidkhani, E. Shakibazadeh and B. Hashemi, 2011. Effect of a School-based Intervention Based on Social Cognitive Theory on Fruit and Vegetable Consumption in Middle School Students in Tehran. hayat., 17(4): 73-84.
23. Nicklas, T.A., C.C. Johnson, R. Farris, R. Rice, L. Lyon and R. Shi, 1997. Development of a school-based nutrition intervention for high school students: Gimme 5. Am J Health Promot., 11(5): 315-322.