World Journal of Pharmaceutical research

Volume 3, Issue 1, 170-179. Research Article ISSN 2277 – 7105

IMPROVEMENT OF NUTRITIONAL BEHAVIORS AMONG PRIMARY SCHOOL STUDENTS IN AHVAZ: APPLICATION OF THEORY OF REASONED ACTION

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Article Received on
20 October2013
Revised on 24 November 2013,
Accepted on 30 December 2013

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ABSTRACT

We aimed educational program to improve the nutritional behavior among primary school students using reasoned action ofbehavior theory. **Methods:** Thisinterventional study was conducted on 140girl studentsintwoprimaryschools situated indistrict three in Ahvazcity,schools were divided into two groups of case and control, each school with 70 students. Participantscompletedthe questionnaireofthesurveybefore and two monthsafter educational intervention. **Results:** The results of this study showed that after educational intervention the average scores attitude toward the behavior of subjective norms, behavioral intention, and nutritional behavior of case group increased significantly compared to the control group. Moreover, this model could predict 46% of the nutritional The results of this **:**behavior of study population($P < 0.05$).**Conclusions** study showed that the implementationof the educational program based on the application of the theory of reasoned actionis effective in improving the nutritional behavior of students. (The results of this study can be used for designing future plans regarding the nutritionalperformance of students).

Keywords :Nutrition education; Students; Attitude; Nutritional.

INTRODUCTION

Nutrition is a science that discussesthe structure, combination and how the metabolism of food,converts theminto energy in the body as well as their relationship with growth (1).The proper nutrition is one of the most important components of healthand it is considered as the one of the most important principles of school health. Discussion of nutrition in children and the ages of growth in addition to its critical role in health can be effectivein preventingtheinfection and improving thegrowth(2).As a result of improper food pattern; children are at the risk of cardiovascular disease, cancer and diabetes. While children intake high fat,sugar and salt,they consume fruit, vegetable, cereals, vitaminsandmineralsin small quantities(3).The epidemiologic studies suggest that poor diet and lack of physical activity expose children to overweight and obesity, soitaffects their health in the future. More research also shows that children and adults who have a nutritious diet and physical activity participationhave better performance on academic success and educational activities(4).Malnutrition at school and in the developing countries may impede children's educational progress (5).During the screening assessments on the status of students of the country's schools in the academic year 2006-2007, the body mass index (BMI)disorder (excessive obesity is higher than 95% and too slendernessis less than 3%),and inKhuzestan Province,BMIand visiondisorder were amongthe most important problems of the students (6).The growth of children from sixto 12 years is relatively slow but stable, which food intake will increase accordingly. Children spend most of the day at school and theinfluence of friends and some adults such as teachers is also very important(7).Schools havethe naturalinterventional mechanism, i.e. classrooms; so, at the same time many health measures and interventions are included (8).Overall reviews conducted on the nutritional status of students in the country reflect the low level of nutritional awareness and performance of this age group, and most researchers haveemphasized on the necessity of nutrition education (9).According to the research carried out, one of the best models in relation to nutritional and attitude inalpatternisprobably a behavioralintention model. In this model the ultimate goal is to anticipate behavior, and the main factor for determining the behavior is the person's intention. It is important that the model-based education can improve the attitude of the students and have apositive impact on nutritional behaviors of the students of the studypopulation(10).The theory helps us to review assumptions and speculationaccurately with respect to the strategy of the goals intervention, so today the use of the theory for specialists of health promotion and education is almost mandatory. According to the theory, the determining factor for behavior is intention. The intention is necessary for behavioral

performance, but not enough to conduct behavioral intention(11).Behavioral intention also includes the attitude of individual behavior, the individual's perception of importantpeoplein his/her surroundings(12).Health and behavior have a direct relationship with each other because the root of many diseases is related to the wrong habits and behaviorof people(13).The theory of reasoned action (TRA) is a social cognitive model which provides a framework for understanding the voluntary behavior of people(14).According to this theory, the behavior dependson understanding attitudes and social norms(15).Studies show that the attitude toward the behavior and abstract norms has a direct positive correlation with desired behavior(16).While various authors suggest that patterns of behavior,which becomehabitual are not inneed ofattentionfor reinforcement, Garrett-John'sstudy shows that even those who have positive attitudes and strong intentionsfail for their behavior;and it also shows that the behavioral intention must be continued and strengthenedfor those were sparked by strong behaviors(17).In conjunction withapplying the theory of reasoned action to assess the impact of nutrition education on nutritional behavior among the available resources,a limited study has been done in this area. The present study was conducted to determine the effect of the nutrition education program based on the theory of reasoned action on nutritional behaviors of girls inAhvaz City primary schools. The criterion of nutritional behavior in this study was the quality and diversity of consumed snack .The results of this study canbe used in the future planning to improve nutritional behaviors pattern.

METHODS

It was a semi experimental study which has conducted on 140 students of girls aged 9-12 years those had studied in fourth standard from primary public schools were located in district 3 , Ahvaz city during academic years of 2012-2013 .

We had selected two schools by simple random sampling ، and chosen students of fourth standard from each school (one school was as intervention group and second school was as control group), parents of students were invited to participate their children in this study, and we were requested to signed informed consent and those parents who did not agree to participate their children in this study were excluded.The sample size was determined using Pukak formula,which is used in analytical studies for comparing the average estimation of twogroups. Based on thevaluesobtained insimilarstudies with a confidence level of 95% andpower of test was 90%, 70 people were calculatedforeach

group. Number of 140 students (70 people in the control group and 70 people in the case group) were selected randomly among students and enrolled in the study.

we are prepare package of education for this research. All student in this group has received package of education in four training session , and each session had done for one hour by training face to face , discussion , question and finale gave them a pamphlet and CD of quality of nutrition to each students.Tools for collecting information were the questionnairebased on the reasoned actiontheory. According to target groups, this questionnaire was used by a researcher in a smaller group and its validity and reliability were assessed and completed through the interview. Questionnaires were collected two times, before and two months after educational intervention. Datawere analyzedbySPSS (version 19) through independent and paired T-tests andChi-squaretest andone-way ANOVAandcovarianceanalysis. The questionnaire in this study consisted of two parts, the first part included the demographic information and the second part related to the theory of reasoned action variation included attitude toward behavior (7 questions), abstract norms (8questions) and behavioral intention (6 questions) and behavior (8 questions).After designing the questionnaire, the expert panel method was used for evaluating the validity of the questionnaire, andcronbach's alpha coefficient with the distance of 10 days was applied for internal consistency test. Educational planninginthisstudywas based on theactive participationof studentsin the learning process. Theeducational programwas set up based on the target theory and implemented in the four training sessions.

RESULTS

The case and control groupswere compared using an independent T-test and Chi-square test in terms of underlying factors such as age,parental education, Housing status, and the amount of pocket money and no significant difference was observed between the two groups in this regard. The age range of participants was 10-11years with an average of 10.19 years and a standard deviation of 74 years. Cronbach’s alpha coefficient of attitude questions was0.78,behavioral intention questions 0.80, and abstract norms questions0.72and in a study of the validity of the questionnaire the content validity rate (CVR)was 0.57 and the content validity index (CVI) 0.94 calculated. Cronbach'salpha coefficient of the questionnaire and the value of recurrent test were 0.72 and 0.81, respectively.Table1 presentsinformation related to the theory of reasoned action before and after the educational intervention between the two groups. The results showed that attitude,mind norms and intention and performance of the

case group in terms of nutritional behaviors after the intervention in comparison with previous intervention have significant differences,while in the control group, the difference was not significant (P< 0.0001) (Tables 2 and 3).

Table1:Parameters of statistical variablesTRAin two groups before and after education

	Case group				Control group				P-Value (Independent T test)	
Variable	Mean		SD		Mean		SD		Before	After
	Before	After	Before	After	Before	After	Before	After		
Attitude	17.157	20.65	3.48	1.23	17.94	17.88	2.94	2.8	0.15	0.00
Behavioral intention	7.94	11.75	3.72	0.57	8.61	8.5	2.70	2.7	0.225	0.000
Abstract norms	64.70	67.80	5.24	4.2	63.70	64.17	26.90	77	0.76	.0000

Table2:Statistical parameters of the variablesTRAbefore and after education in any of the groups studied

	Phase and group	Before education			After education		P-Value (PairedT test)
Variable							
		Group	Mean	SD	Mean	SD	
Attitude		Case group	17.157	3.48	20.65	1.23	0.001
		Control group	17.94	2.94	17.88	2.8	0.634
Abstract norms		Case group	64.70	5.24	67.80	4.2	0.001
		Control group	63.70	26.90	64.17	7	0.433
Behavioral Intention		Case group	7.94	5.24	11.75	0.57	0.001
		Control group	8.61	26.90	8.5	2.7	.0611

Table3:Mean test scores of behavior in the case and controlgroups before and after the intervention

Variable		Before the intervention		After the intervention		P-Value	
Performance (behavior)	Group	Mean	SD	Mean	SD	Before education	After education
	Case groups	14.6	3.64	22.61	2.03	0.707	0.001
	Control groups	14.8	3.05	11.13	2.9		

DISCUSSION

This study was conducted to improve the nutritional behavior of girl studentsof Ahvaz in 2012.The results of the mean attitude scores of this study indicate a significant increase of attitude scores of the students in thecase group versus nutritional behavior after the educationprogram. These changes can be a sign of the effectiveness of the program in promoting positive attitudes of students in nutritional behaviors, whichis consistent with similar studies that have been done by Tavassoli and Pirzadeh (18 and 19).According to the results of the present study, the students' attitudetoward the nutritional behavior in the control group was also positive, but this attitude is not sufficientfor increasing nutritional behaviors.In this regard, in their article Dehdari*et al.*point out that the attitude structure alone is not able to predict the nutritional behaviors of the students. In fact, in spite of the correlation between attitude and behavior,according to the theories, appearance of behavior is influenced by different factors such as intention and abstractnorms; accordingly, the necessity of applying the model and theories confirms the issues of behavioral change. Based on the behavioral intention model, the most important factor in a person's behavior is behavioral intention.Fishbein and Ajonsexpressed intention as a possible judgment of the desired type. People’s intention toward a behavior includes a combination of positive attitude to the behaviorand abstract norms.Abstract normsincludenormal beliefs and motivation for obedience (21).In this study we collected three abstract norms understood by parents, teachers and friends.After educational intervention the largest increase in the perceived abstract norms was obtained from parents and teachers. Given a positive impact of the two groupsin the nutritional behavior of students was a sign of the appropriate impact of education in the casegroup. In the present study, holding educational sessions for students in

the intervention group canhave beenimproved abstract norms with the positive nutritional behavior.The presentfindings do not coincidewith the similarstudy, which assessed theabstract norms on the nutrition,but according to Solhi and Ahmadi–Tabatabai'sstudy it has a significant impact on other behaviors such as physical activity and is consistent with the present findings(22, 23).The results of this study indicated that the mean score of behavioral intention of regarding nutritional behavior significantly increased after educational intervention. Since no similar study was found concerning the educational interventions conducted in the area of nutritional behavior using the theory of reasoned action, but it is consistent with the studies of other behaviors (12, 22- 24) . But the ratio of the effective factors in predicting the nutritional behavior conducted by Dehdaryshowed that the variable of behavioral intention predict 30 % of the behavioral variation byitself (20).By referring to thestudies conducted based onthe rational action model, it can be concluded that it is better to focus on the variable of behavioral intention and its determinants as well as the economic situation and indicators such as BMI in designing educational nutritional interventions (25).Regarding the performance of nutritional behaviors before and after the intervention between the case group and control group significant difference was observed,and nutritional behaviors in the case group were increased.The present study represents the promotion of nutritional behaviors among students in the intervention group after completion of the educational program. Studies by Mably (16), Lee (17) and Sharif (18) represent the positive role of education in nutritional behavior,which is consistent with the results of the present study that suggests increasing the nutritional behavior after completion of the educational program (26- 28).

CONCLUSIONS

Studies conducted in Iran and other countries have revealed that the appliance of education has a positive impact on raising awareness and attitudes of different age groupsparticularly in primary school. In the majority of studies, the level of awareness of the case group was significantly increased.The result would improve the person's nutritional behaviors and performance. Moreover, improving the level of performance that is in fact the ultimate goal of education needs to spend time and comprehensive and detailed procedures. Now, with regard to the role of the health of primary school childreneducation in promoting educational fields and wellbeing during next periods of life and the future of the country and also the important role of healthy nutritionalmodel in this respect; as well as the effect of unhealthy nutrition in incidence of diseases such as cardiovascular disease, cancersand diabetes and

other diseases, ; and given that the bad hygienic behaviorsoften goes back to the childhood experiences,to improvechildren's nutritional behaviors and providing educational programs we decided in this regard to examine the effect of nutritional education on nutritional behaviorsbased on the intention model inAhvaz girls primary schools.

ACKNOWLEDGMENTS

This article is part of the research master's degree thesis approved by the health education research, Ahvaz Jundishapur University of Medical Sciences (number) and sponsored by the University. Foremost, I would like to express my sincere gratitude toall faculty membersof health education and health promotion department of the school of public health, Office of education, administrators, officials and primary school students in Ahvaz which ultimately contribute to the implementation of this research.

REFERENCES

1-SH Sadeghi, P Torabi,MMinaei,FSadeghiGhotbabadi, , S sadeghian Sharif, Guide to nutrition education in Development and social welfare,first edition , publication of the United Nations Children's Fund (UNICEF), 2010, pages 7 to 53.

2-AMIN Shokravi F. Abolkheirians, ArdestaniM.School health and health promotion, First Edition,Sobhan Publication, pages 82, 83, and 84.

3 - Khalaj Mohammad, MohammadiZeidiEisa, The effect of health education onnutrition knowledge and behaviors change of primary school students in Qazvin, Shahrekord University of medical sciences, Volume 8, Number 1, spring2007, pp. 41-49.

4- SigfusdottiriID,kristjansson AL, john P. Health behavior and academic achievement in Icelandic school children. Advance Access publication 9 June 2006: 70-80.

5- Powell C, walkers, changes nutrition and education: a randomized trial of the effects of breakfast in rural primary school children. Am jclinNutr 1998; 88: 873-9,Printed in USA.

6- Amirkhani MA, The health status of the students based on the results of the examination integrated health system in the country schoolin the academic year 2006-2007, first edition, publication of Isfahan University of medical sciences, pages 47-90

7- Keshavarz Ali. The principles of Krausenutrition, first printing, *Jamenegar*Publication, 2006, pages 290-291.

8- MasoudniaE. Medical sociology, first edition, Tehran University publication, 2010, pages 300-301.

9) choohinch MA, He sari S.N, Hossain D, Haghighizadeh M.H. study of nutritional knowledge of Ahwaz high school girls and the education effect. Birjand journal of medical sciences, volume 16: Number 1, Spring 2008. [PERSIA

10- Boroumandfarkh, momenzaden F, Tavakkolkh, kelishadi R, sharifi Rad Gh. [*the* -1 effect of education on behavioral intention model of mother's attitude towards over eight reschool children's nutritional patterns]. Isfahan university of medical sciences, Isfahan, 2010; 15 suppl 1 (in persian)

11- Saffari m., shojaeiZadeh d., ghofrani pour F, HeYdarniaA,pakpurA, HEALTH EDUCATION AND PROMOTION THEORIES,MODELS AND METHODS, First edition, Sobhan Publication, 2009, pages 78 to 82.

12- Mahamed F, Karimzadehshirazi k, pourmahmoudiA, mossavi AM. The effect of education on preventive behaviors to ward osteoporosis based on behavior intention model (BMI) on female students. Armajhan Research jornal 2009; 14(2): 118-124. [PERSIAN]

13- Keshavarz z, simbar M, Ramezankani A. Effective foctors on nutritional Behavior of femal workers Based on "integrated model of planned behavior and self- efficacy": A Qualitative Approach. 1 may 2010. Accepted: 2 oct 2010. Hakim Research journal 2010; 13(3): 199-209. [PERSIAN]

14- M willa, J Betty, H Kevin. Testing the Theory of Reasoned Action in Explaining sexual Behavior Among African American young Teen Girls, journal of pediatric Nursing (2011)26, e45-e54.

15- Leiz, Jingxiaoj, Ruyang L. Research on the consumption mode of green electricity in china- Based on theory of reasoned action, Energy procedia 5(2011) 938-944

16- Ramayah T, Rouibah k, Gopi M, Rangel Gj. A decomposed theory of reasoned action to explain intention to use interned stock trading among Malaysianinventors, computers in human 25 (2009), 1222-1230.

17- Bruijun G. Exercise habit strength, planning and the theory of planned behaviour: An action control approach, psychology of sport and exercise 12 (2011) 106-114.

18- TavassoliElahe, Hassan ZadehAkbar, nilsazMahnaz., the effect of nutrition education on knowledge, attitude and performance of students in primaryschoolofgirlson consumption of snacks, The journal of Zahedan Medical Sciences, , Iran, 2012

19- Hazavehei MM, Pirzadeh A, Entezari MH, Hasanzadeh A. The effect of educational program based on Basnef model on the natritioanl behavior of student. [PERSIAN]

20 - DehdariTahereh,Chegini Maryam, DehdaryLaleh, Application of the theory of planned behavior in the low value snack consumption prediction in the high school girl students, the journal of midwifery and nursing care, vol. 2, issue 2, autumn and winter 2012, pages 18-24.

21- MiriMohammad Reza, MoasheriBibinarges, Moody Mitra, Sooresh Zahra, HoseiniHajar, application of behavioral intention model in women's reproductive behavior of employee,journalofBirjand University of medical sciences (volume 12: number 3 and 4, 2005 ,pages73-76.

22- M solhi, F zinatmotlagh, k karimzadeshirazi, M taghdisi, F jalilian. desinging and Implementing educational program to promote physical Activity Among students: An Application of the Theory of planned Behavior Quarterly of gonabad University of medical sciences and health care, Round 18: No. 1 Spring 2013, Pages45- [inpersian].

23- S.V AhmadiTabatabae, MltTaghdisi, N. Nakeei, F. Balali. Effect of Educational intervention Based on the theory of planned Behavior on the physical Activities of kerman health center's staff (2008),Quarterly Medical Sciences and Health Services GONABAD.

Journal of Babul medical sciences, Volume XII, no. 2, July 2013, pages 62-69[npersian]

24- Fathian Z, shariirad G, Hasonzadeh A, Fathian Z, studies of the effects of Behavioral intention model education on reducing the cesarean rate among pregnant women of khomeiny- shahr, Isfahan, in2006. [inpersian].

25- T. Dehdari, M kharghaniMoghadam, T mansouri, Asaki, survey of daily fruit consumption status among girl students who are living in dormitories and its predictors based on the theory of planned behavior construction. Razi Journal of Medical Sciences, Volume 20, Number 106, pages 10-15, April 2013. [inpersian].

26- Mobley C Gill is B, StadlerD,Hartsteinj, et al. The effects of the heal thy study intervention in middle school student dietary intakes international journal of behavioral nutrition and physical activity 2011, 8:7

27- shariif Z M, Bukharisss, Othman N, Hashim N, Ismail M , jamil z, et al. nutrition Education intention improves Nutrition knowledge, Attitude and practices of primary school children: A pilot study Submitted june17,2008: international Electronic journal of Health Education, 2008; 11: 119-132.

28- lee YM, Lee MJ- Kim S Y. Effects of Nutrition Education through Discretional Activities in Elementary school, journal of the Korean Dietetic Association 11(3):331-340,2005.