The effects of the training program to improve healthy nutrition and physical activity behaviors of school children on weight management

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ABSTRACT

Purpose: To investigate the effects of the training program to improve healthy nutrition and physical activity behaviors of primary school children on weight management.

Materials and methods: This study was a quasi-experimental follow up study with pretest and posttest design and included the 5th, 6th and 7th primary school graders (n=122) in İzmir metropolitan city. Experimental group covered 66 and the control group covered 56 students. We identified students' dietary habits and physical activity behaviors and the influencing factors and prepared and implemented a training program related to their learning needs. Students' behaviors were monitored for six months and impact of the program was evaluated.

Results: Risky eating behaviours in the experimental group decreased but contrary it increased in the control group statistically ($p < .05$). In the intervention group, mean scores of Physical Activity Questionnaire increased significantly ($p < .05$). There was no change in the self-efficacy level of the control group students while an increase in the intervention group was detected. Although no statistically significant differences were detected between the two groups in the pretest in terms of weight management, but in the post test it increased in the experimental group ($p<.05$) The obtained value of OR was 2.99.

Conclusions: The training program was effective and made changes in healthy nutrition and physical activity behaviors and so in weight management in the experimental group compared to control group.

Keywords: Adolescent, nutrition, physical activity, weight management, school health

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INTRODUCTION

Based on World Health Organization (WHO) data, there are more than 600 million obese and more than 1.9 billion, were overweight adults in the world as a result of unhealthy eating habits and unbalanced nutrition [1].

On the other hand, one in every 7 children in underdeveloped countries was estimated to be underweight in 2014. According to WHO, underweight rates are declining but trends vary from region to region [2]. Obesity, which was once thought as the problem of underdeveloped countries, has started to affect low-middle income countries along with the health problems it entails [3].

Bad-eating habits such as favoring some foods over others, preference for food/junk food/snacks, uncontrolled nutrition, excess beverage consumption and consumption of energy-dense foods in addition to sedentary life habits caused by attending courses and private lessons after schools, test anxiety and anxiety for safety, long hours of computer use and video games, TV and reduction in physical activities are behavioral factors that negatively affect the nutrition of school age children in Turkey [4].

Food preferences and eating behaviors of adolescents are affected by environmental and individual factors [5].

Lack of sports habits in the family, using service buses to go to school instead of walking, spending more time in front of the TV and computer and preparing for exams negatively affect physical activity behaviors by creating a sedentary lifestyle. Along with the changes in nutrition habits, all these factors influence the basic equation of "energy intake=energy expenditure" in favor of energy intake [6]. WHO recommends at least 60 minutes moderate-intensity daily physical activity for children and adolescents aged 5-17 [7,8]. It is confirmed that weight management (WM) is ensured, bone development increases, blood pressure is lowered and psychological wellbeing is improved in physically active children [9].

Globally, physical activity is 81% insufficient in adolescents aged 11-17 and girls engage in less physical activity compared to boys [7].

According to Turkey Nutrition and Health Survey (TNHS) (2010), regular exercise behavior (at least 30 minutes daily) is 58.4% in children aged 6-11, lack of exercise is observed in 65.8% of the children aged 6-8 and in 52.7% of the children aged 9-11.

Based on Turkey Report of The Health Behavior in School-aged Children (HBSC) research (2009-2010) conducted with 11, 13 and 15 age-groups in 26 countries of the European Union; 19% of the girls and 27% of the boys that are 11 years old, and 12% of the girls and 18% the boys that are 13 years old have at least one hour moderate- to vigorous-intensity physical activity daily [3].

WM is balancing the body weight and fat ratio at most favourable levels [10]. This definition is also known as a nursing initiative [11]. WM is crucial in school-age children to prevent future chronic diseases, ensure healthy development of children and community health [12]. American Dietetic Association also supports life style changes and WM initiatives [13]. Giving school age children healthy nutrition and regular age-appropriate physical activity (PA) habits is necessary for WM and healthy life in adulthood.

Although there are no national studies that investigate prevalence of obesity in children and adolescents in Turkey, the results of some local and regional studies revealed that the frequency of obesity was found to be 1.1-16.0%, overweight 7.5-17.8%, weakness 4.1-17.1% [14]. As a result of the WHO European Chilhood Obesity Surveillance Initiative (COSI) research; 24.8% of school-age children in the 6-9 age group in Turkey was determined to be above the normal weight [15].

Evidence-based and school-based research that includes initiatives supported by age-appropriate training programs that aim to promote healthy eating habits and ensure the acquisition of skills of PA is becoming more and more important. Evidence of school based interventional studies shows that healthy living habits could be improved among the students [16], In the context of these targets, the following can be cited; decreasing the time that the students spend sedentarily, increasing PA [17], increasing the intake of fruits and vegetables in order to ensure healthy nutrition [18], reducing sugar-sweetened beverage intake (Tipton, 2015) and ensuring that children are in normal BMI limits as early as possible [17].

Studies conducted abroad [16,17,19,20] and in the country [18] present evidence that successful results have been obtained with the cooperation of nurses, parents and teachers in the process of ensuring WM, sufficient and balanced nutrition and PA in adolescents, providing information and consultancy and developing healthy life style behaviors.

It is believed that the evidence presented in this study which displayed the influence of nursing initiatives based on theoretical framework to ensure WM in adolescents will guide health policies as a good model to improve adolescent health in the context of school health services and emphasize the role and significance of school health nursing which is a special work domain of community health nurses. The study aimed to investigate The Effects of the Training Program to Improve Healthy Nutrition and Physical

Activity behaviors of School Children on Weight Management.

MATERIALS AND METHODS

This study was a quasi-experimental follow up study with pretest and posttest design. Students' behaviors were monitored for six months and impact of the program was evaluated.

Participants

This study was a quasi-experimental follow up study with pretest and posttest. The study included al the 6th, 7th and 8th graders (n=122) who attended a primary school in a district of İzmir metropolitan city. Experimental group covered 66 students and the control group covered 56 students. In order to get the sample size right, A priori power analysis was conducted and minimal sample size required 52 students with 91% power and 5% type 1 error [21].

Hypothesis

We hypothesized that at the end of the training program, the experimental group would keep weight management at a higher level than in the control group.

Intervention and Data Collection Tools

The study was conducted in three phases. 1. Identifying students' dietary habits and PA behaviors and influencing factors. 2. Implementation the training program. 3. Monitoring the students behaviors and evaluate the impact of the training program (Figure 1).

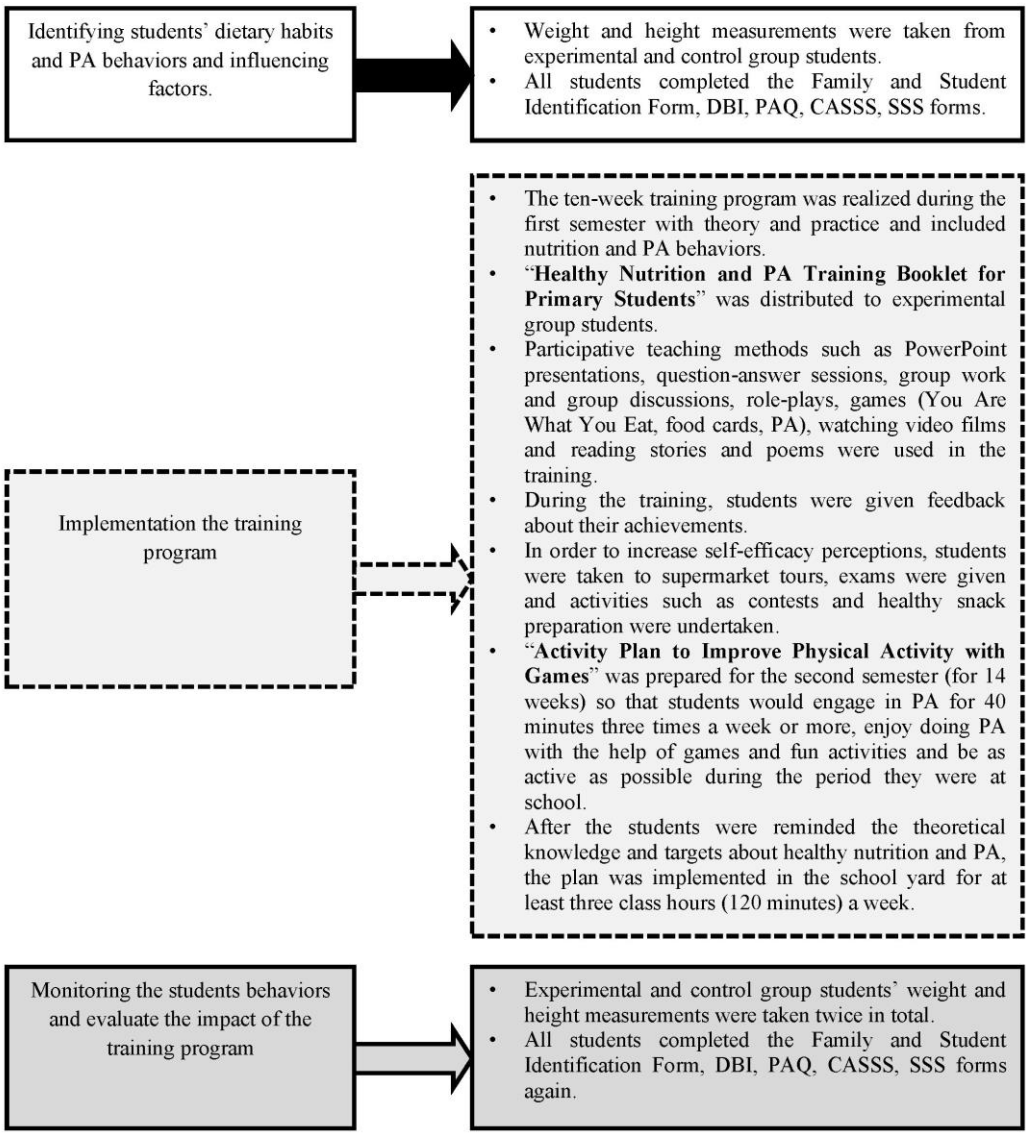

Figure 1. Stage of "healthy nutrition and physical activity behaviors training program"

Data were collected from students with the data collection tools prepared using the Precede-Proceed (P-P) model and Social Cognitive Theory (SBT) – Table 1.

Table 1. P-P Model Definition Phase: Diagnostic Features and Diagnostic Methods

P-P Model Diagnostic Phase	Diagnosis	Diagnosis Methods
Social Diagnosis	* Funny PA, supporting/blocker, family/friends etc. factors	* Questionnaire form ***** CASSS
Epidemiological Diagnosis	* Private health goals and related problems with the connection	* Height-weight measurements of the students, Calculating BMI.
Behavioral Diagnosis	* PA features * Eating habits; properties, risk level	* PAQ * Monitoring Form for School-Environmental Conditions and Students' Dietary and Physical Activity Behaviors * DBI
Environmental Diagnosis	* Family and Student Identification Form	* Family and Student Identification Form
	* Environmental factors; (school cafeteria, canteen features)	* Monitoring Form for School-Environmental Conditions and Students' Dietary and Physical Activity Behaviors
	Observe students at course recess and lunch hours (nutrition and physical activity)	- Interviews with teachers - School talks with Deputy Staff - Interviews with Physical Education Teachers - Meeting with the Head of School
Educational and Organizational Diagnosis	* Preparers to define the effect of strengthening and facilitating factors of health behavior * School curriculum	* SSS * Interviews with a Physical Education Teacher * Course content analysis
Administrative and Policy Diagnosis	* The food and drinks are sold in the canteen * The food and drinks are served in the dining hall.	* Questionnaire form
PROCEED Phase	* Practice, Evaluation-Process, Impact, Outcomes	* Report

Family and Student Identification Form

This form consisted of children's' age, gender, family type of, and parents' age, education, economic status.

Dietary Behaviors Index (DBI)

DBI with six items was developed to identify dietary behaviors risks in children and adolescents.

Students are asked to indicate frequency of their dietary behaviors by scoring from never (0 points) to always (4 points). Based on risk intervals calculated as; no risk (0), low risk, (1-6), medium risk (7-12), high risk (13-18), extreme risk (19-24) points dietary behaviors risk levels are evaluated [22].

Physical Activity Question Form for Primary School Students (PAQ)

PAQ consists of a total of nine items. Validity and reliability study of PAQ for Turkish society was conducted by Sert and Temel (2014). The minimum score that can be obtained for each item is 1 and the maximum score is 5; therefore the minimum total score is 9 and the maximum total score is 45 [23].

Secondary School Self-Efficacy Scale (SSS)

The Likert scale with four sub dimensions has 37 items. Students are asked to respond by scoring between 1 and 5 for each item following the lead: How realistic it is for you to do each of the items below? Scoring is as follows: 1 (Not suitable), 3 (Somewhat suitable), 5 (Very suitable). Reliability coefficient (Cronbach Alfa) of the scale was reported to be between 0.73 and 0.89. High total scores point to high level of self-efficacy. The lowest score that can be obtained from the scale is 37 and the highest score is 185 [24].

Child-Adolescent Social Support Scale (CASSS)

The scale is composed of five sub dimensions and a total of 60 items. It is scored in two phases as prevalence and significance. Prevalence scoring uses 6 point Likert type scoring: 1 (Never), 2 (Rarely), 3 (Sometimes), 4 (Mostly), 5 (Almost Always), 6 (Always). Significance scoring uses the following: 1 (Not significant), 2 (Significant), 3 (Very Significant). Cronbach Alpha coefficient for the subscales were found to be between 0.87 and 0.95 and Cronbach Alpha coefficient for the whole scale was found to be 0.96 for assessing the prevalence and 0.95 for assessing significance. Test-retest coefficient for the scale was found to be 0.80 for prevalence section and 0.72 for significance section [25].

Data collection

After observing the behaviors of students and examining the content of the textbooks, the families and students who agreed to participate in the research were informed separately about the purpose and importance of the study. The first data were collected a year ago to prepare the training program. At the end of the training program, the latest data were collected.

Statistical analysis

Statistical analysis of the data was completed by using SSSS 16.0 package program and margin of error was accepted as 0.05. Pearson Chi-square test and Fisher Chi-square test were used to compare the demographic variables and the other qualitative data to test the homogeneity between the groups and Mann Whitney U test and t-test were used to compare between-groups quantitative data. Kolmogorov Smirnov test was utilized to see whether data were fit for normal distribution. Mann Whitney U test was used in between-groups follow up comparisons for quantitative data which did not display normal distribution and independent t-test was used for quantitative data which displayed normal distribution; and Wilcoxon Signed Rank Test was used for in-group follow up comparisons of quantitative data which did not display normal distribution. Sample size was calculated by using power analysis. In calculating the expected impact sizes (d) and expected means according to the Precede-Proceed (P-P) model, $d = |\bar{A}_1 - \bar{A}_2|/\sigma$ equation was used for two means and one single standard deviation in parametric data [21]. In parametric data, pre test and post test means and standard deviations for both tests calculated by using the following equation: $d = \frac{|\bar{A}_1 - \bar{A}_2|}{\sqrt{(\sigma 1)^2 + (\sigma 2)^2/2}}$ [21]. In non-parametric data, targeted impact size for a single group was calculated with $|\frac{z}{\sqrt{n}}|$ formula [26]. Impact size for Chi-square test was calculated with OR [27].

RESULTS

Demographic and clinical characteristics

Students' Socio-demographic and Family Characteristics

Mean student age was 12.18±0.87, 51.6% of the students were boys and 48.4% were girls. Of the students 45.1% were the first born in the family, 82.4% had a nuclear family. The majority of mothers (83.2%) and fathers (79%) were primary school graduates and 29.3% of the students had a working mother and 89.8% of them had a working father. The two group students were similar in terms of socio-demographic characteristics and family structures (p>.05).

The Changes in Students' Dietary Behaviors

Examination of experimental and control group students' in-group and between-groups DBI mean scores shows that experimental group students' DBI mean scores was 9.21±3.45 in the pretest and 7.47±3.02 in the post test. While no statistically significant differences were identified between experimental and control group students during pretest in between-groups comparison (U= 1672, p= .363), a statistically significant difference was found in the post test. (U= 1109.5, p= .000). It was targeted to increase DBI mean score of the experimental group to 7.48±3.45 with 0.3 impact size. In the posttest, DBI mean score of the experimental group was identified as 7.47±3.02. The obtained (7.47±3.02) DBI mean score and impact size (0.45) was found to be above the moderate level (Table 2). This value shows that the training provided in the study made it possible to achieve the objectives at higher levels.

The Changes in Students' PA Behaviors

While experimental group students' pretest mean score was 26.44±5.50, their post test men scores were found to be 28.91±4.87. Pretest mean

scores in the control group were 27.70±6.10 and their post test means score was found to be 25.55±6.29. A significant difference was found for both experimental (t= -3.193 p=.002) and control group (t= 2.115 p=0.039) for in-group comparison. For between groups comparison, experimental and control group students' PAQ mean scores did not present any differences in the pretest (t= -1.197 p=.234) but a significant difference was detected in the post test (t=3.320 p=.001). Between the pre and post test, experimental group's PAQ score impact size difference was .48 and the impact value was found to be .34 for the control group (Table 2).

Table 2. Evaluating WM of Experimental and Control Group Students' WM and the Factors that Affected WM

DBI	**in-group comparison**				***between-groups comparison***
	Experimental Group (n= 66)		**Control Group (n= 56)**		
	Mean	**Sd**	**Mean**	**Sd**	***U, p***
DBI pre-test	9.21	3.45	9.59	3.06	U= 1672, p= .363
DBI post-test	7.47	3.02	10.00	3.77	U= 1109.5, p= .000
In-Group Significant Test Z,p,r	z= -3.63, p= .000, r= 0.45		z= -.58, p= .563, r= 0.07		*Wilcoxon Signed Ranks Test Mann-Whitney U r= impact size*
PAQ	**in-group comparison**				***between-groups comparison***
	Experimental Group (n= 66)		**Control Group (n= 56)**		
	Mean	**Sd**	**Mean**	**Sd**	***t, p***
PAQ pre-test	26.44	5.50	27.70	6.10	t= -1.197, p= .234
PAQ post-test	28.91	4.87	25.55	6.29	t= 3.320, p= .001
In-Group Significant Test t, p, d	t= -3.193, p= .002, d= .48		t= 2.115, p= .039, d= .34		*Dependent and independent samples t-test d= impact size.*
CASSS	**in-group comparison**				***between-groups comparison***
	Experimental Group (n= 66)		**Control Group (n= 56)**		
	Mean	**Sd**	**Mean**	**Sd**	***U, p***
CASSSA pre-test	274.68	47.85	258.07	45.14	U= 1427, p= .031
CASSSA post-test	278.59	45.92	264.83	45.64	U= 1523, p= .095
In-Group Significant Test z, p, r	z= - .52, p= .603, r= - .06		z= - .84, p= .398, r= - .11		*Wilcoxon Signed Ranks Test Mann-Whitney U r= impact size.*
CASSSB pre-test	157.01	19.86	148.56	21.52	U= 1384, p= .017
CASSSB post-test	152.96	20.19	151.20	17.09	U= 1686, p= .406
In-Group Significant Test z, p, r	z= - 1.63, p= .103, r=-.20		z= - .65, p= .516, r=-.08		*Wilcoxon Signed Ranks Test Mann-Whitney U r= impact size.*
SSS	**in-group comparison**				***between-groups comparison***
	Experimental Group (n= 66)		**Control Group (n= 56)**		
	Mean	**Sd**	**Mean**	**Sd**	***U, p***
SSS pre-test	157.15	15.48	157.01	20.55	U= 1734, p= .558
SSS post-test	163.31	18.86	158.80	22.02	U= 1635, p= .274
In-Group Significant Test z, p, r	z= - 2.83, p= .005, r= - .35		z= - 1.53, p= .126, r= - .20		*Wilcoxon Signed Ranks Test Mann-Whitney U r= impact size.*

The Changes in Students' Self-efficacy Levels

Experimental group students' pretest SSS mean score was 157.15±15.48, their post test SSS mean score was 163.31±18.86; control group students' pretest SSS mean score was 157.01±20.55 and their post test mean score was 158.80±22.02.

A significant difference was identified in the experi mental group between pre and posttests (p<.05). However, no difference was found in the control group (p>.05).

No significant differences were identified between the groups based on pre and post tests (p>.05).

It was found that impact size of SSS mean score in the experimental group was - .35, while that impact size of SSS mean score in the control group was - .20 (Table 2).

Students' Social Support Levels

No statistically significant differences were found during the comparison of experimental and control groups' post test mean scores (p>.05). It was found that impact size of CASSSA mean scor experimental group was - .06, while that impact size of CASSSB mean score was - .20. It was found that impact size of CASSSA mean scores in the control group was - .11, while impact size of CASSSB mean score in the control group was - .08 (Table 2).

The Changes in Students' WM

It was observed that the rate of 63.6% of the students in pretest with WM (normal) increased to 78.8% in the posttest and this rate decreased to 55.4% from 62.5% in the control group. Although no statistically significant differences were detected between experimental and control group st6udents in pretest in terms of WM, a statistically significant difference was found between the two groups since WM behaviors increased in the experimental group (p<.05) (Table 2). Experimental group students' weight management behaviors were higher than the targeted levels determined according to PP model. The obtained value of OR=2.99 is between moderate and high impact size and is also higher than the expected impact size (2.47).

DISCUSSION

Evaluating Experimental and Control Group Students' Pre and Post Training Dietary Behaviors

When students' DBI scores were assessed to identify the risky dietary behaviors pre and post training, it was found that experimental group's pretest DBI mean score dropped to 7.47±3.02 from 9.21±3.45 and control group's pretest DBI mean score increased to 10.00±3.77 from 9.59±3.06 and this difference was found to be statistically significant (p<.05) (Table 2). While there were no statistically significant differences for between-groups comparisons in pretest, the decrease in the experimental group in post test was significant compared to the control group. In the light of the data, it is realized that DBI mean scores of students in both groups are at moderate risk level in both pre and post test. It was aimed to increase the DBI mean score to 7.48±3.45 in the experimental group with 0.3 impact size. However, DBI mean score of the experimental group was identified to be 7.47±3.02 in post test. The obtained (7.47±3.02) DBI mean score and impact size (0.45) were found to be higher than the moderate level (Table 2). This value shows that the training made it possible to reach a target higher than what was targeted in the study.

Increases in students' fruit and vegetable consumption were identified at the end of the 6-month training program given in Texas [8], decreases in students' consumption of fatty foods were observed as a result of the 9-month training program in Mississippi [28] and decreases in sweet food intake and in the behavior of adding extra sugar to food were reported in another study [29]. The results of the other studies conducted in Turkey revealed positive developments in adolescents' healthy nutrition behaviors [18,30].

Evaluating Experimental and Control Group Students' Pre and Post Training PA Behaviors

When students' PAQ scores were assessed to identify student behaviors pre and post training related to physical activity, it was found that experimental group's pretest PAQ mean score increased to 28.91±4.87 from 26.44±5.50 and control group's pretest PAQ mean score dropped to 25.55±6.29 from 27.70±6.10 and this difference was found to be statistically significant (p<.05; p<.05). While there were no statistically significant differences for between-groups comparisons in pretest, the decrease in the experimental group in post test was significant compared to the control group. It was aimed to increase the PAQ mean score to 29.19±5.50 in the experimental group with 0.5 impact size. However, PAQ mean score of the experimental group was identified to be 28.91±4.87 in post test. Impact size (0.45) of this obtained (0.48) value was found to be highly close to 0.5 moderate level (Table 2).This value shows that the training made it possible to reach a target higher than what was targeted in the study. However, researchers implement training programs in the world and in our country to develop PA in students despite al negative conditions. At the end of Month 4, Wright et. al. (2013) observed increases in "at least 60 minutes daily activity, participation and continued attendance in PA classes" by experimental group male students compared to control group male students and at the end of Month 12, by experimental group female students compared to control group female students. All the findings of the studies conducted in the world and in our country show that training programs aimed to increase physical activity levels present successful outcomes in improving students' PA behaviors.

Evaluating Experimental and Control Group Students' SSS Mean Scores

It was found that experimental group students' self efficacy perception mean scores in the pretest (157.15±15.48) increased to 163.31±18.86

in the post test and this difference was found statistically significant (p<.05).

However, similar scores identified in the pretest for the control group did not result in increases in the post test. Also, the difference between the groups in the post test was not found significant (p>.05).

It was aimed to increase the SSS mean score to 161.79±15.48 in the experimental group with 0.3 impact size. The obtained (163.31±18.86) SSS mean score and impact size in the post test (-.35) were found to be higher than the moderate level (Table 2).

This value shows that student behaviors in the context of preventive health, interpersonal relationships, substance abuse and academic achievement and their views on self efficacy were "suitable" in pre and post tests and that the training provided to improve their self efficacy perceptions allowed them to reach a higher self efficacy level than the level originally targeted. Despite the positive results in the experimental group, no statistically significant differences were identified between the experimental and control group students' SSS mean scores.

Students' Social Support Levels

Despite the positive results in the experimental group, no statistically significant differences were identified between the experimental and control group students' CASSS mean scores.

Evaluating Experimental and Control Group Students' WM at the end of the Training Program

It was observed that student ratio of 63.6% in the experimental group in the pretest (normal) increased to 78.8% in the post test and this ratio decreased to 55.4% from 62.55 in the control group. While there were no statistically significant differences between the experiential and control group students in the pretest in terms of WM, statistically significant differences were found between the two groups as a result of increased WM behaviors in the experimental group (p<.05) (Table 3). Experimental group students' WM behaviors targeted at the beginning of the study according to PP model were at higher levels compared to those of control group students. The obtained OR=2.99 value is between moderate impact size and high impact size and bigger than the expected impact size (2.47). Based on these results, Hypothesis was accepted.

Table 3. Experimental and control group students' WM

GROUP	WM (pre test)						*Significant Test* $X^{2,p}$	WM (post test)						*Significant Test* $X^{2,p}$
	Available		No		Total			Available		No		Total		
	N	%	N	%	N	%		N	%	N	%	N	%	
Experimental Group (n=66)	42	63.6	24	36.4	**66**	**100.0**	X^2 = .017 p= .523	52	78.8	14	21.2	**66**	**100.0**	X^2 = 7.648 p= .005
Control Group (n=56)	35	62.5	21	37.5	**56**	**100.0**		31	55.4	25	44.6	**56**	**100.0**	
WM	**Available**		***No***				***OR***	**Available**		***No***				***OR***
Experimental	42		24				1.05	52		14				2.99
Control group	35		21					31		25				

These results may be regarded as the indicator that planned training programs for adolescents especially at schools can be successful in developing healthy nutrition behaviors and increasing PA behaviors. Positive outcomes were obtained both in healthy nutrition behaviors and PA behaviors as a result of many studies conducted via specific training programs at schools and these results were reflected in students' BMI measurements [31]. However, study results emphasize the fact that training programs which aim to increase healthy dietary behaviors and PA levels should be provided for students at early ages and continuity should en ensured.

In a study conducted by Taiwan, satisfaction in body image increased in the experimental group composed of students who were approximately ten year old [32].

Studies on WM have been conducted also in our country with students. Sevinç et. al. (2011) conducted a randomized controlled study on 6771 students and implemented a PA and healthy nutrition program to the first experimental group and only the healthy nutrition program to the second experimental group. In the framework of the

PA program, 2-hours a week physical education classes were increased to 3-hours a week for the first experimental group and students were provided with an age appropriate PA training program.

At the end of the study, it was found that BMI increase of .51 in the control group was decreased to .35 and .37 respectively for both experimental groups. It is believed that positive behavioral changes in WM obtained in the current study may be related to researcher's efforts to ensure participation by families, school environment and school staff in addition to students and to the effective training methods used by the researcher.

CONCLUSIONS

It has been shown that the training program prepared for the change of PA behaviors and healthy nutrition, which is accompanied by the P-P model integrated with SBT, is effective in the intervention group students in WM. According to the control group students, intervention group students were able to maintain WM by staying at the appropriate height and weight for their age. This result confirmed the hypothesis for the effectiveness of the training program.

The study proved that healthy nutrition training programs geared for students in today's advanced educational systems are not limited to the training topics included in the textbooks but should be supported with providing students with fun, collective tasks, group work, active teaching methods and should be enhanced with supporting booklets, leaflets, posters-banners, colorful and interesting presentations and in-class and out-of -class fun educational practices.

Longer monito-ring/follow-up periods, continuous support for the students with reinforcement activities could increase achievent of the training program.

School health nurses, who have an important place in the provision of preventive health services, will be effective in protecting and sustaining the health of school children by preparing and implementing such health education programs. It could be proposed for the school nurses and public health nurses to implement this training model in the schools with different social and cultural backgrounds.

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Conflicts of interest

The authors declare that they have no conflict of interest.

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