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Original Article

Health-Promoting Behaviors of High School Students in Northern East Turkey-A Cross-Sectional Study

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Abstract

Considering the fact that current health-promoting behaviors of adolescents will shape the health of the next generation, most countries collect data on the subject in order to plan necessary health programs timely. This study aimed to determine the level of health-promoting behaviors of the ninth and eleventh-grade high school students in the city of Rize and the associated factors. Using a cluster sampling method, a cross-sectional study was conducted in 2015, involving 641 students. Data were collected in the classrooms by administring a self-responded questionnaire. The questionnaire included the Turkish version of Adolescent Health Promotion Scale (AHPS). AHPS has six domains and forty items. Scores were calculated on a 0-100 scale. Getting a score over 60 was defined as good health-promoting behavior. Mann Whitney U, and Backward Logistic Regression tests were used for data analysis.

Of the students, 56.0% were girls, and 59.6 % were in the ninth grade. The total AHPS mean score was 60.8± 0.6. Of the participants, 54.9% scored over 60. The mean scores of domains, life appreciation, social support, stress management, health responsibility, nutrition and exercise were 69.2±0.8, 64.7±0.8, 59.7±0.7, 59.2±0.7, 56.6± 0.7, and 48.3±1.0, respectively. Parental education, and employment, perceived family income, current health

status, gender, alcohol/cigarette use were the associated factors with health- promoting behaviors in the univariate analysis. Having an employed father (OR:4.6) and being a non-smoker (OR:2.2) were the independent predictors for good health-promoting behavior. High school students in Rize showed a moderate level of health-promoting behaviors. The poorest behaviors were in exercise and nutrition. Comprehensive school health program and supportive environment was recommended to improve health promotive behaviors of the students.

Introduction

Adolescents need special attention since they experience a rapid biologic and psychosocial development. Almost one sixth of the global population are adolescents and their current health behaviors will affect the health and well-being of the next generation. Thus, adolescence is also a period of knowledge gain and skill development for leading a healthy life (1,2).

Health promotion model was developed by Pender in 1982. This model focused on transforming unhealthy eating and exercise behaviors or inadequate coping skills into healthy ones. It is for both patients and healthy individuals. According to the model, individuals make effort to be healthy understanding the benefit of health and realizing that a healthy lifestyle is possible through experience, and gaining self-confidence that they can live healthy. The model has been used in health care and in research over time. Various scientist has developed scales to measure health promoting efforts in diet, exercise, sleep, health responsibility, stress management, social support and life appreciation domains (3,4).

After the Ottawa Charter for Health Promotion in 1986, WHO's Global School Health Initiative, launched in 1995 to mobilise and strengthen health promotion and education activities at schools. The World Health Organisation (WHO) defines health promotion as a process of enabling people to increase control over and to improve their health. It moves beyond focusing on individual behavior towards a wide range of social and environmental interventions. As a behavioral social science discipline, health promotion aims to positively influence the health behavior of individuals and communities as well as the living and working conditions that influence their health. Health promoting schools focus on caring for self and others, making healthy decisions and taking control over life's circumstances, preventing leading causes of disease, disability and death like helminths, alcohol and tobacco use, violence and injuries, sexually transmitted diseases, sedentary lifestyle and unhealthy nutrition. A health

promoting school helps students to gain knowledge, beliefs, skills, attitudes, and values. It supports these through health education and by creating a healthy school environment (5,6,7). According to the data of Turkish Statistical Institute, young people comprise 23.5% of the population, and adolescents 15.5%. Of the girls between the ages of 15-19 years, 4.8% were married and 3% had a live birth (8,9). Overweight prevalences differ between %7-26, 10% of the boys and 5% of the girls were smokers and 30% began cigarette smoking under age of ten. Lectures entitled "health" were included in the curriculum in 1995 in parallel with the WHO programs. However, social determinants of health such as creating enviroment which support physical activity or school nutrition programs need to be improved in Turkey. Individual efforts are still important since research shows that the prevalence of physical activity among adolescents was low, aproxiamately 70% of boys and 86% of girls were found to be sedentary (8,9). To our knowledge there is no previous study on health promotion behaviors among students in Rize. The purpose of this study was to determine the level of health promoting behaviors of the ninth and eleventh grade high school students in the city of Rize with the associated factors.

Methods

Study design and subjects

This cross-sectional study was carried out in the city of Rize which is a province in North East Anatolia (Black Sea reagon). The study population was 5409 students attending public high schools in Rize city center in the 2014-2015 education period. The sample consisted of 641 students in 30 classrooms, chosen by the probability-proportional-to-size cluster sampling procedure. The list of all public schools eleventh and ninth grade classes with their populations were obtained from Rize Provincial Directorate of National Education. The cumulative total of the classrooms were estimated and from that list 30 classroom were selected by systematic sampling method with a random start. In the cluster sampling method, a sample size of 600 considered enough for large populations. Thus 600 is planned as an optimal sample size in thirty cluster sampling method with 20 students per cluster. All students present in the classroom at the time of data collection volunteered to answer the questionnaire. Eventually, 652 students took part in the study, more than the planned sample size. Eleven questionnaires with missing responses in AHPS were excluded from analysis. Finally 641 records were analysed.

Data collection

The questionnaire and name of schools were sent to the Rize Provincial Directorate of National Education, and their written permission to conduct the study was obtained. The questionnaire was pretested in a different school before data collection. Data collection was done during February-June 2015. Data were collected via a self-administered questionnaire in classrooms under the supervision of the researchers. Information about the survey was also presented on the questionnaire and students were assured about the confidentiality and anonymity of their responses.

Ethics committee approval for the study was obtained from the Karadeniz Technical University Faculty of Medicine Local Ethical Committee (2015/31) and administrative permission was obtained from Rize Governership. The study was financially supported by Recep tayyip Erdoğan University Scientific Research Project Unit (Project number: 2015.53001.106.03.02).

Questionnaire and Measurements

The questionnaire included questions about personal characteristics of students (age, gender, grade, parental education and employment status, perceived family income, family structure, hometown history, perceived health status, awarenes of parental health insurance, and unhealthy habits such as alcohol use and smoking). The dependent outcome variable of the study was the mean health promoting behavioral score of students. It was measured using Adolescent Health Promotion Scale (AHPS) which was developed by Chen et al. The Turkish version of the scale was previously used in Turkey by Ortabağ et al. and defined as valid and reliable for Turkish adolescents with a Cronbach's α coefficient of 0.92 (8,9). The scale has forty items with five response options (never, rarely, sometimes, usually, always). The highest possible score was 200 and the lowest possible score was 40 indicating the most and least promoting behaviors. There are six domainsin in the AHPS: nutrition (six items), social support (seven items), life-appreciation (eigth items), health responsibility (nine items), stress management (six items) and exercise (four items). The raw score was derived by summing the item scores. Then, the raw scores were converted to a value from 0 to 100 for the total and domain scores ([Original score-Lowest possible original score)/Possible original score range]×100).

Data analysis

Data entry and statistical analysis were performed using SPSS 22.0. Total AHPS and descriptive statistics of the domains were presented with mean±standard error of the mean

(SEM). After checking the normality assumption of the total AHPS and domain scores by using Kolmogorov-Smirnov test, Mann Whitney U was performed to detect associations with independent variables in one-way analysis. A p-value less than 0.05 was considered statistically significant. Cronbach's alpha coefficient calculated at 0.905. Backward logistic regression analysis was applied to evaluate the independent association existing between the personal characteristics. Getting a score of ≥60 on total APHS and its domains was defined as good health promotion behavior. This cut-off level was chosen because it was around the mean AHPS score of 60.8. Independent variables that were significant at the $p \leq 0.05$ level in univariate analysis were included in logistic regression analysis as dummy variables to control for confounding factors. The results were presented in odds ratios (OR) and 95% confidence intervals. Dummy variable centered on the regression analysis were as follows: perceived family income (1=Rich,0=Others), father's employment status (1=Employed, 0=Not-employed), chronic condition (1= absent, 0=present), knowledge about parents' health insurance (1=Knows, 0=Does not know), smoking status (1=Never-smoked, 0=Others), alcohol use (1=Never-consumed, 0=Others). Coding for gender and grade varied parallel to the result of univariate analysis of each domain in order to get a positive Odds Ratio.

Results

Descriptive characteristics of participants

Of the students who participated in the study, 56.0 % were girls and 44.0% were boys, 59.6 % were ninth and 40.4% were eleventh graders. Their average age was 16.0±0.04 years (min=13.8, max=19.2). Most of the students were living in nuclear families (89.2%), most had mothers who were housewives (82.2%), most were resident in Rize (86.0%), most perceived that their families have medium income (87.3%). With respect to parent education, 53.1% had mothers and 74.5% had fathers with an education level over secondary school. Three percent of the students had unemployed fathers. Health related characteristics of the participated students are shown in Table 1.

Table 1: Distribution of students' health related characteristics*		
Health related characteristics	N	%
Parental health insurance		
Have	378	61.3
Does not have	4	0.6
Don't know	235	38.1
Total	617	100.0
Have a chronic condition		
Yes	161	25.1
No	480	74.9
Total	641	100.0
Smoking status		
Non-smoker	483	75.5
Occasionally	43	6.7
Sometimes	29	4.5
Weekly	25	3.9
Daily	60	9.4
Total	640	100.0
Alcohol use		
Never	526	82.7
Occasional	36	5.7
Sometimes	39	6.1
Weekly (4-5 times in a week)	35	5.5
Total	636	100.0

*Total number for each variable was presented since some variables have missing data.

Most of the parents had health insurance (61.3%) while 38.1% of the students had no knowledge of parental health insurance. Regarding health, 25.1% of the students had at least one chronic problem. The frequencies of smoking daily and weekly alcohol consumption were 9.4% and 5.5%, respectively (Table 1).

Health promoting behaviors

The mean total score for the AHP scale was 60.8±0.6 (min=5, max=100, median=61.3). The mean scores for life appreciation, social support, stress management, health responsibility, nutrition and exercise were 69.2±0.8 , 64.7±0.8, 59.7±0.7, 59.2±0.7, 56.6± 0.7, and 48.3±1.0, respectively (Table 2).

Table 2: Descriptive statistics of the total AHPS and its domains

Domains	Number of Items	Min	Max	Mean	SEM	SD	Median	N
Life appreciation	8	0.0	100.0	69.2	0.8	19.8	71.9	641
Social support	7	0.0	100.0	64.7	0.8	19.9	67.9	641
Stress management	6	0.0	100.0	59.7	0.7	18.4	58.3	641
Health responsibility	9	0.0	100.0	59.2	0.7	18.5	58.3	641
Nutrition	6	0.0	100.0	56.6	0.7	18.0	58.3	641
Exercise	4	0.0	100.0	48.3	1.0	14.5	43.8	641
TOTAL AHPS	40	5.0	100.0	60.8	0.6	14.5	61.3	641

AHPS: Adolescent Health Promotion Scale

Table 3 shows the mean AHP scores based on socio-demographic characteristics. The mean total AHP score was significantly higher among those students whose mothers were university graduatea(65.2±1.7), whose fathers were employed (61.1±0.6) and whose family income perception was very rich (66.2±5.1) ($p<0.05$). The mean total AHP score was not associated with gender and grade. As seen in the Table 3, life appreciation was not associated with gender, grade or parent' s socio-economic characteristics ($p>0.05$).

Gender was the only associated variable with social support score. With respect to gender, girls scored significantly higher on social support (66.8±1.0) and health responsibility (60.9±1.0) than boys (61.9±1.2 and 57.2±1.1 respectively). On the other hand, nutrition (61.3±1.1) and exercise (57.2±1.5) scores were significantly higher among boys compared to girls (52.8±0.9 and 41.3±1.3 respectively). Differences across grade levels were also determined ($p<0.05$). Students in the ninth grade scored higher on exercise (50.5±1.3) than students in the eleventh grade (45.0±1.6) while students the in eleventh grade scored higher on stres management (61.5±1.1) than students in the ninth grade (58.5±1.0). Exercise scores were not associated with the other socio-demographic variables such as mother education, father employment status and perceived family income ($p>0.05$) while nutrition score was significantly higher among students whose mothers were university graduates(62.2±2.4) ($p<0.05$) (Table 3).

Besides gender, health responsibility score was significantly associated with paternal employment status and perceived family income ($p<0.05$). Students of working fathers scored higher on health responsibility (59.6±0.8) and stress management (60.2±0.7). Regarding stress management, mean scores differed significantly according to perceived family income besides grade and paternal employment status ($p<0.05$). Students who perceived family income as very rich had got the highest score (67. 4±6.0) (Table 3).

Table 3: Distubition of mean AHP scores by socio-demographic characteristics[1]

Socio-demographic characteristics	Mean±SEM							
	Life appreciation	Health responsibility	Social support	Stress management	Nutrition	Exercise	AHPS	N
Gender								
Girls	69.6±1.0	60.9±1.0	66.8±1.0	60.9±0.9	52.8±0.9	41.3±1.3	60.5±0.8	359
Boys	68.7±1.2	57.2±1.1	61.9±1.2	58.3±1.1	61.3±1.1	57.2±1.5	61.1±0.9	282
p	0.488	0.012#	0.002*	0.111	0.001*	0.001*	0.599	
Grade								
9th grade	68.2±1.1	59.2±1.0	63.9±1.1	58.5±1.0	56.7±0.9	50.5±1.3	60.5±0.8	382
11th grade	70.7±1.1	59.3±1.1	65.8±1.1	61.5±1.1	56.4±1.1	45.0±1.6	61.2±0.9	259
p	0.207	0.904	0.393	0.036*	0.995	0.004*	0.541	
Mother's education level								
Uneducated	68.0±2.7	55.6±2.5	60.2±2.9	54.3±2.3	51.6±2.6	44.6±3.8	57.0±1.9	44
Primary school	71.2±1.2	60.2±1.2	66.4±1.3	61.6±1.2	58.9±1.2	48.5±1.7	62.3±0.9	247
Secondery school	68.7±1.4	58.4±1.3	62.8±1.4	59.4±1.3	55.6±1.3	47.3±1.8	59.9±1.0	186
High school	66.1±2.2	58.3±1.9	64.9±2.0	58.8±1.9	53.8±1.8	48.7±2.5	59.4±1.5	113
University	71.7±2.5	65.3±2.4	68.0±3.1	61.4±2.3	62.2±2.4	57.8±3.9	65.2±1.7	37
Total	69.3±0.8	59.3±0.7	64.7±0.8	59.9±0.7	56.7±0.7	48.5±1.0	60.9±0.6	627
p	0.357	0.132	0.115	0.085	0.005**	0.190	0.025##	
Paternal employment status								
Unemployed	62.3±5.2	49.6±5.0	58.3±6.0	48.7±3.2	52.0±3.7	43.4±4.7	53.2±3.4	19
Employed	69.5±0.8	59.6±0.8	65.0±0.8	60.2±0.7	56.9±0.7	48.5±1.1	61.1±0.6	605
Total	69.3±0.8	59.3±0.7	64.8±0.8	59.9±0.7	56.7±0.7	48.3±1.0	60.9±0.6	624
p	0.150	0.021#	0.268	0.002*	0.275	0.489	0.021#	
Perceived family income								
Very rich	78.1±6.1	57.2±8.0	74.7±5.3	67.4±6.0	61.8±5.5	52.6±8.0	66.2±5.1	12
Rich	67.6±3.3	59.1±3.6	60.1±3.9	57.3±2.8	54.4±3.4	44.2±4.6	58.5±2.9	45
Moderate	69.3±0.8	59.6±0.7	64.9±0.8	60.1±0.8	56.9±0.7	48.6±1.1	61.1±0.6	559
Poor	64.3±6.6	58.0±5.6	67.6±5.9	60.4±5.4	59.1±4.7	53.1±7.3	61.0±5.0	16
Very poor	70.3±5.2	38.2±8.0	57.1±7.2	37.0±7.0	35.9±5.9	32.0±5.5	46.8±4.3	8
Total	69.3±0.8	59.2±0.7	64.7±0.8	59.8±0.7	56.6±0.7	48.3±1.0	60.8±0.6	640
p	0.508	0.029##	0.280	0.021	0.035	0.197	0.033	

The overall APH and domain scores were significantly differed with regard to students' health related characteristics (Table 4). The students who were aware of their parents' health insurance coverage scored higher on health responsibility (73.2±0.8), stres management (61.8±0.9), nutrition (57.6±0.9) and on the overall AHP ($p<0.05$). Students with a chronic condition scored lower on exercise (44.1±2.2) and nutrition (52.4±1.5) behaviors ($p<0.05$). The average scores of total APH, life appreciation, health responsibility, social support and stress management domains were significantly lower among students who smoked cigarette and used alcohol compared to non-smokers and teetotallers ($p<0.05$) (Table 4).

Table 4: Distubition of the mean AHPS scores by health related characteristics

Health related characteristics	Mean±SEM							
	Life appreciation	Health responsibility	Social support	Stress management	Nutrition	Exercise	AHPS	N
Awareness of parental health insurance								
Knows	70.1±1.0	60.8±1.0	65.9±1.0	61.8±0.9	57.6±0.9	48.5±1.3	62.0±0.7	378
Don't knows	68.1±1.3	57.3±1.2	63.0±1.4	56.7±1.1	54.7±1.1	47.8±1.7	59.2±1.0	235
Total	69.3±0.8	59.4±0.7	64.8±0.8	59.8±0.7	56.5±0.7	48.2±1.0	60.8±0.6	613
p	0.291	0.023	0.117	0.001**	0.044	0.725	0.019##	
Chronic condition								
Yes	67.1±1.8	58.4±1.6	64.5±1.7	57.7±1.7	52.4±1.5	44.1±2.2	58.8±1.3	162
No	69.9±0.9	59.5±0.8	64.7±0.9	60.5±0.8	58.0±0.8	49.6±1.1	61.4±0.6	479
Total	69.2±0.8	59.2±0.7	64.7±0.8	59.8±0.7	56.6±0.7	48.2±1.0	60.8±0.6	641
p	0.410	0.457	0.869	0.201	0.001*	0.009*	0.134	
Smoking status								
Smoker	61.3±1.8	53.7±1.6	59.7±1.7	57.0±1.6	54.4±1.5	50.3±2.2	56.5±1.3	157
Non-smoker	71.8±0.8	61.0±0.8	66.3±0.9	60.6±0.8	57.3±0.8	47.6±1.1	62.1±0.6	483
Total	69.2±0.8	59.2±0.7	64.7±0.8	59.7±0.7	56.5±0.7	48.3±1.0	60.8±0.6	640
p	0.001	0.001	0.001	0.020	0.075	0.402	0.001	
Alcohol use								
User	62.6±2.2	54.6±2.1	59.2±2.2	56.4±2.0	56.1±1.9	56.1±1.9	56.9±1.7	110
Never	70.6±0.8	60.2±0.8	65.9±0.8	60.5±0.8	56.6±0.8	56.6±0.8	61.6±0.6	526
Total	69.3±0.8	59.2±0.7	64.7±0.8	59.8±0.7	56.5±0.7	56.5±0.7	60.8±0.6	636
p	0.001	0.010	0.001	0.024	0.844	0.980	0.004	

[1] Total number for each variable was presented since some independent variables were missing data.
*Mann Whitney U, **Kruskal Wallis, # Student t testi, ##ANOVA
AHPS: Adolescent Health Promotion Scale

Table 5: Factors for predicting a good health promoting behavior (backward stepwise logistic regression results)

AHPS Domains	Predictive factors	B	SEM	P-value	OR	95% CI
Total AHPS						
	Employed father	1.517	0.580	0.009	4.559	1.462-14.210
	Non-smoker	0.792	0.194	0.001	2.207	1.510-3.227
Health Responsibility						
	Girls	0.502	0.171	0.003	1.652	1.180-2.311
	University graduate mother	0.713	0.358	0.046	2.041	1.012-4.114
	Awareness of parental health insurance	0.364	0.174	0.036	1.439	1.024-2.022
	Non-smoker	0.697	0.201	0.001	2.008	1.353-2.980
Life appreciation						
	11th grade students	0.450	0.193	0.020	1.568	1.075-2.288
	Non-smoker	0.936	0.200	0.001	2.550	1.724-3.771
Social Support						
	Non-smoker	0.848	0.196	0.001	2.336	1.590-3.433
Stress Management						
	Had employed father	2.107	0.758	0.005	8.226	1.861-36.365
	Knows parental health insurance	0.424	0.172	0.014	1.528	1.091-2.140
	Non-smoker	0.519	0.194	0.008	1.680	1.148-2.456
Nutrition						
	Boys	0.914	0.181	0.001	2.495	1.751-3.556
	Without a chronic condition	0.445	0.207	0.032	1.561	1.040-2.342
	Had university graduate mother	0.851	0.366	0.020	2.343	1.144-4.797
	Non-smoker	0.670	0.212	0.002	1.953	1.290-2.959
Exercise						
	Boys	1.004	0.181	0.001	2.729	1.912-3.893

AHPS: Adolescent Health Promotion Scale

Discussion

As a result of the research, we determined that the average health promotion score of high school students in the city of Rize was 60.8. Regarding the domains, life appreciation has the highest mean score (69.2) followed by social support (64.7). Among the domains, exercise has the lowest mean score (48.3) followed by nutrition (56.6). Stress management and health responsibility were in the midle of the six domains with scores 59.8 and 59.4 in order. Our findings are compatible with the literature (12,13,14,15,16).

In Table 6, the mean total AHP scores reported in the literature by different scoring procedures was presented.

Table 6: The mean AHP scores from the literature by different scoring procedures

Scoring types	Overall Mean Score	Cronbach alpha coefficient	Study population	Country
Reference ranges 0-100				
Rize	60.8	0.91	Grade 9-11	Turkey
Wang D. et al.(13)	62.8	0.92	University	China
Aghamolaei T. et al. (14)	64.8	Not given	Grade 12	Iran
Reference ranges 40-200				
Chen MY et al.(8)	129.0	0.93	Grade 6	Taiwan
Temel AB (12)	140.7	0.86	Grade 8	Turkey
Rize	137.0*	0.91	Grade 9-11	Turkey
Ortabağ et al.(9)	137.2	0.92	Secondary and high school	Turkey

* Overall original mean score re-calculated in order to compare within the same range.

The re-calculated original mean score in our study was 137.0 and it was between the lowest and highest original score reported in the literature. Regarding the studies evaluating the mean of the scale between 0-100, Wang et al found 62.8 in university students in China and Aghamolaei et al. found 64.8 among the 12th graders in Iran (10,11,12,13,14). Our average score, 60.8, was interpreted to be compatible with the literature. Thus, we can recommend the AHPS as a valid, reliable and easy to use instrument in assessing health-promoting behaviors of high school students in Rize like in all other countries.

In this study, using alcohol and smoking were negatively associated with health-promoting behaviors or not to use alcohol or tobacco were positively associated with health promotive behavior, which were highly expected findings. Furthermore, never-smokers had up to 4.6 times higher possibility of performing good health-promoting behavior in overall AHPS, 2.0 times in health responsibility, 2.6 times in life appreciation, 2.3 times in social support, 1.7 times in stress management and 2.0 times in nutrition domains compared to those who were smokers. These results are consistent with those of Ortabağ T. et al (11). In their study, the total mean score and mean domain scores were significantly higher among non-smokers than smokers. Similarly, Chen et al. found that adolescents with lower AHP-SF scores were more likely to

spend more time watching TV, which indicates the negative correlation between risky behavior and health-promoting behavior (17).

In our study, though the difference was not significant, students with very rich family income perception got the highest life appreciation (score 78.1). Higher scores of life appriciation and social support showthat mental or spirutual issues have more impact on health promoting behaviors of the students, which is culturally common in the Turkish society due to religious background and family/neighboorhood solidaristic tradition. Being thankful to the Creator for the positive aspects of life and accepting that all human beings are equal and the worth of humanbeings is determined by the good he does in the eyes of Creator are the basic tenets of the religion. On the one hand, these findings were consistent with the social learning theory. Similar to our study, among university students in China which is an eastern country, the highest mean scores were observed for life appriciation (69.97) and social support (68.29) domains (11). While life appriciation scores were higher regardless of sociodemographic variables, they were significantly lower among smokers and alcohol users than their counterparts. Logistic regression analysis showed that good life- appriciation behavior was 1.6 times more common among eleventh grade students compared to the ninth graders. This finding might be due to older age of eleventh graders who developed intellectual, conceptual and rational thinking, and understood and agreed on social, cultural and religious values.

We determined a stress management score, which is over the scale's mean score. A connection between spirituality and stress management have been mentioned in the literature. However, difficult life conditions make it difficult to manage (18,19). Our study confirmed both aspects of the above ideas. Students from low-income families and with an unemployed father had lower stress management scores than their counterparts. Those students might have poor nutrition and exercise behavior, which are highly correlated with stress management or life

appreciation behavior. The study also revealed that poor stress management behavior and risky behaviors were hand in hand. To sum up, the findings complemented each other.

Low scores of exercise and diet were remarkable findings since they were defined as modifable behaviors in the protection of noncommunicable diseases and positive behaviors are not common in the society. Exercise mean score was belove 50 and those students who perceived their family income very poor had the lowest mean exercise score (32.0) followed by the lowest mean nutrition score (35.9). These were relatively more objective results compared to life appreciation and social support. The lower scores in these domains were almost the embodiment of the poor environmental facilities and economic conditions which gave concrete form to students' perceptions. These findings showed the necessity to improve facilities at schools such as making healthy choices easy and accessible choices to all of the the students. Male gender was found to be an independent predictor for good health promoting behavior in nutirition (OR: 2.5) and exercise (OR:2.7). Dawson et al. and Hosseini Z. found similar results to ours (20,21). For good nutrition behavior, having a university graduated mother (OR: 2.3) and not having a chronic condition (OR:1.6) were the other independent predictive factors. Girls and students with a chronic condition were disadvantageous groups since their nutrition and exercise behavior scores were lower than the boys and those students without a chronic condition. Chronic condition, poor nutrition and poor exercise behavior constituted triple burden for poor health at this age which necessiate early diagnosis, more attention, more care and special assistance towards the *disadvantaged* groups. Schools should provide support for students whose fathers are unemployed and whose mothers have low education level. Besides, further research is necessary to undestand the reasons of gender difference in exercise and nutrition behavior. Social inequities or inappropriate environmental conditions might be the reasons for poor health promoting behavior in those domains among girls. Similar to ours, generally, health

responsibility behavior was better among girls than boys in various studies using different scales to measure the health promoting behavior (16, 22).

The students were questioned about their health insurance knowledge and found that an important portion (more than one third) were unaware. Knowledge about the health insurance helps students to get correct health service in the correct time and promotes health (23). This variable was used as an indicator of awareness of using health services, health literacy and/or health responsibility and observed that those who had knowledge had significantly higher health responsibility scores. Overall, nutrition and stress management domain scores were also significantly higher among students who knew their health insurance status. Furthermore, good health responsibility behavior was 1.4 and good stress management behavior was 1.5 times higher among students who knew their parents' health insurence compared to those who did not know. In contrast to our study, the lowest score was in health responsibility dimension in Rasht, Iran (24). Aghamolaei T et al. reported significantly higher health responsibility scores among girls (16). At schools, information about increasing health expenditures both at familial level or national level and its relation with unhealthy behaviors should be given to eliminate the ignorance on the subject and health illeteracy. Besides, students should be taught that prevention is better than treatment and every citizen must save money for future health problems either privately or by joining in the current national financial health protection systems (25).

This study may not be representative of all of Turkey because it was conducted in high schools in Rize Province, a small province located in the northern part of Turkey. Further research in differerent provinces of Turkey is required. The study is also limited by the fact that the data were collected by means of a self-reported questionnaire based on students'perceptions and subjective opinions.

Conclusions

In conclusion, the high school students in the city of Rize demonstrated a moderate level of health promoting behaviors with the lowest mean score on the exercise domain. Life appreciation and social support domains had a greater effect in getting a high total health promoting behavior score. Our findings highlighted important social determinants with regard to health promoting behavior. Health promoting behaviors of students were independently associated with personal and socio-economic factors. Schools should provide interactive health education which discusses the cause-effect relationship of behaviors on health in order to make young people imbibe healthy behaviors in a rational manner. To improve all students' nutrition and exercise behaviors launching special health promotion programs for schools both in local and national level are recommended.

1. Declerations

1.1. Conflicts of interest

The authors have no conflicts of interest to declare.

1.2. Funding

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