Health behaviors in high school students in İzmir, Turkey

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Abstract

Aim: The aim of this cross-sectional study was to determine the prevalence of the self reported health behaviors and differences in these behaviors by gender and grades in high school adolescents in İzmir, Turkey.

Material and Methods: A stratified cluster sampling procedure was used for this cross-sectional study. The study sample included 2 296 students attending 22 high schools in İzmir. As a data collection instrument, some questions from the Health Behavior in School-aged Children Study 2009/2010 questionnaire and questions which were developed by the researchers to understand behaviors of internet use in adolescents were used. Chi-square tests and Cramer's V statistics were used for statistical analyses.

Results: Among the high school students, 33.8% experimented smoking, 26.3% smoked cigarette during the 30 days before the survey, 14.9% smoked cigarette regularly during the 30 days before the survey, 54.1% experimented drinking alcohol, 38.4% drunk alcohol during the 30 days before the survey, 31.6% got drunk, 10.9% were adequately physically active, 59.9% watched TV for a long period of time, 72.8% used internet for a long period of time, 48.1% ate breakfast regularly, 36.2% ate adequate amount of fruit, 14.1% ate adequate amount of vegetable, 31.3% ate candies and chocolate very often, 18% drunk soft drink very often, 30.3% were bullied, 29.9% bullied others and 41% involved in a physical fight.

Conclusions: These results showed that "Adolescent friendly health services" should be generalized all over Turkey, physicians should evaluate each adolescent for his/her health behaviors in each visit and implementation of prevention programs which adopt a health promotion perspective is necessary beginning from the elementary school. (Turk Pediatri Ars 2016; 51: 22-34)

Keywords: Alcohol, leisure time activities, adolescent, health behavior, violence, tobacco, eating behaviors

Introduction

Adolescent is a Latin term which means "maturation by development" and expresses the period of transition from childhood to adulthood. This period which is also called puberty is a stressful and fluctuant period for the individual and his/her connections during which many changes in terms of physical, cognitive, psychological and social aspects are experienced in association (1). Problems which may occur in one of the maturation processes may prevent healthy development in adolescents by affecting the other processes and cause to diseases which are also carried to adulthood (1, 2).

The most important characteristic which is observed typically in adolescence is tendency to take risk. This tendency may cause to adoption of negative behaviors and attitudes related with health including use of tobacco, alcohol and substance which constitutes the ba-

sis for non-infectious diseases, unsafe sexual relation, consumption of nutrients with low nutritional value and high fat and calorie content and sedantary life-style or may render these behaviors and attitudes a life-style (2-5). These attitudes and behaviors may both affect the current health status of adolescents and cause to morbidity and mortality in adulthood (2, 3). For example, it is predicted that one fifth of adolescents aged 13-15 years smoke at the present time and approximately half of the individuals who smoke in adolescence will continue this behavior for at least 15 years more (2). The most important characteristic of the behaviors observed in adolescents which affect health adversely is that they are preventable to a large extent (5). Therefore, adolescence is considered an opportunity for preventing carriage of the behaviors which affect health adversely to adulthood (3). In addition, detailed information about health-related behaviors and diseases of adolescents is necessary in terms of accurate development of inter-

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vention programs for both adolescence and childhood (3, 4).

Another important point related with health-related behaviors in adolescents is that adolescents tend to exhibit multiple risky behaviors in association (6). The characteristic of the behaviors which may affect health adversely of clustering poses a risk of occurrence of other behaviors in presence of one behavior, while it is an opportunity for interventions directed to one behavior to also prevent the others (6, 7).

In our country in which the 15-19 age group constitutes 8.1% of the population, studies should be conducted in order obtain information about the health states of the young ones, their health-related behaviors and social and personal factors which lead to occurrence of these behaviors, to evaluate the changes in these behaviors in time, to determine the priorities for programs which would be prepared to protect and develop the youngster's health and to observe the effects of the interventions performed (8). In this cross-sectional study, it was aimed to determine the frequency of self-reported health-related behaviors of the young individuals who attended high school in Izmir, the distribution of these behaviors by gender and grade and the primary areas in adolescent health programs.

Material and Methods

This study constituted a part of a cross-sectional survey based on evaluation of a questionnaire form read and responded by students. This questionnaire form was designed to determine self-reported health states, health-related behaviors and the factors related with these behaviors in adolescents attending high school in Izmir. Two thousand two hundred ninety six students who attended 22 high schools in Izmir were included in the study. Ethics committee approval was obtained from the Tepecik Education and Research Hospital Ethics Committee (meeting dated 09.30.2014, decision number: 10) and the necessary approval was obtained from the Izmir provincial directorate for national education (article dated 12.10.2014 with number 6297744).

Sample selection

Stratified cluster sampling method was used for selection of the sample. The sampling unit was accepted to be "school". The high schools were considered as two strata including general high schools and vocational high schools according to the type of education.

The 2013/2014 academic year of İzmir Provincial Directorate for National Education data were used to frame the study population. Private high schools and

private area high schools were excluded from the study. The students in the high schools which were excluded constituted 69% of the population.

Conclusively, the population was established as 193 370 students including 86 275 students studying at general high schools and 107 095 students studying at vocational high schools. The sample was calculated with 95% confidence interval, 80% power and 2% margin of error. Each stratum and each class was represented in the sample with its ratio inside the population and the sample size was determined to be 2 062 students with corrections including stratum, classroom and rounding. The design effect was calculated to be 1.28. It was thought that the high school students obtained from this sample would represent the young individuals attending high school in the province of Izmir.

The classes for which the questionnaire form would be applied were determined by drawing lots at the level of district, school and class. It was taken care of that at least one general high school and one vocational high school were included in each district. The questionnaire form was applied to students who were present on the day of application and who volunteered to participate in the study in the classes which were chosen by lot. The application was performed in a total of 101 classes in 22 schools.

Data collection tools used in the study

A questionnaire form composed of two parts was used as data collection tool in this study.

The first part consisted of 37 questions. These questions were obtained from the international questionnaire form belonging to an international survey named "Health Behaviour in School-aged Children Study-2009/2010 (HBSC 2009/2010)" (9). The questions related with gender, class, age, eating habits, dieting, physical activity, use of tobacco and alcohol, state of well-being, body weight, height, health complaints, body image, bullying, socioeconomic status, school life and family structure were selected from this questionnaire form. Since the conductors of the Turkey group of the "Health Behaviour in School-aged Children Study" were included in this study, a separate approval from the international coordinatorship of the HBSC study was not necessary for use of the questions.

The second part consisted of a questionnaire form which investigated the type of internet access of the students, the period of usage of internet, which activities in the internet they participated in and with what frequency they participated in these activities, which was established as a result of literature screening per-

formed by the investigators and face to face interviews with the young individuals and which took its final shape as a result of a pilot study. In this study, only the time of usage of internet was included in the evaluation among these questions.

Application

Pilot application: The pilot study for the questions which measured internet use was conducted with 30 adolescents aged between 15 and 18 years who presented to Cerrahpaşa School of Medicine, Department of Pediatrics, Adolescent Outpatient Clinic because of different causes. These adolescents were primarily asked to fill in the questionnaire form alone. Afterwards, the questions were discussed with each of them using a semi-structured interview technique. Changes in the expressions were made in order to clarify some questions after the pilot study.

General application: The questionnaire form was applied in a class period of 45-60 minutes in all classes. Two investigators and the class teacher were present during the application in the classroom. Before the application, the students were informed about the content of the study and that the participation was voluntary by reading a standard instruction. None of the students refused to participate in the study. The process of application of the questionnaire forms was completed in December 2014-January 2015.

Data input and confirmation

Data input was performed in January-February 2015 according to the data input guideline. Confirmation of the day input was completed by 2 members of the study team who worked in Cerrahpaşa Medical Faculty, Department of Public Health in accordance with the study protocol by reentering one of each 5 questionnaire forms. Data confirmation was completed in April 2015.

Definition of behaviors

In this study, the answers were primarily transformed into dichotomous variables for all behaviors investigated for statistical evaluation.

Consumption of tobacco behaviors: Experimenting smoking: having smoked more than one breath in a life time. Having smoked in the last 30 days: having smoked at least one time in the last 30 days. Regular smoking in the last 30 days: having smoked 20 or more cigarettes in the last 30 days. Experimenting nargileh: having smoked nargileh at least one time for a life time.

Consumption of alcoholic drink: Experimenting alcohol: having consumed alcohol more than a small amount for a life time. Having consumed alcohol in the

last 30 days: having consumed an alcoholic drink in the last 30 days albeit rarely. Having got drunk: having got drunk at least for one time for a life time. Having got drunk in the last 30 days: having got drunk in the last 30 days for at least one time.

Spare time activities: Sufficient physical activity: performing moderate or severe physical activity for at least 1 hour each day of the week. Watching TV for long periods of time: watching TV for at least 2 hours a day. Using the internet for long periods of time: using the internet for at least 2 hours a day.

Eating behaviors: Having regular breakfast: having breakfast for 7 days a week. Having regular breakfast on weekdays: having breakfast on each weekday. Consuming adequate amounts of fruit: eating fruit each day at least for once. Consuming adequate amounts of vegetable: eating vegetables each day at least for once. Consuming candy or chocolate frequently: consuming candy or chocolate at least for once every day. Consuming soft drinks frequently: consuming cola or other soft drinks for at least once every day. Dieting: Being on a diet at that moment in order to lose weight.

Behaviors related with violence: Having been bullied: having been bullied for at least once in the last 1-2 months at school. Having been bullied frequently: having been bullied for at least twice in the last 1-2 months at school. Having bullied others: having bullied other students for at least once in the last 1-2 months at school. Having bullied others frequently: having bullied other students for at least twice in the last 1-2 months at school. Involving in a physical fight: having involved in a physical fight for at least once in the last 12 months. Having been involved in a physical fight frequently: having involved in a physical fight for at least 3 times in the last 12 months.

Statistical analysis

The frequencies of the behaviors in the same grade by gender were compared using chi-square test. It was evaluated if the frequencies of behaviors of students with the same gender in different grades varied by testing correlation using Cramer's V coefficient method.

Results

Two thousand two hundred ninety six students attending 22 high schools in the province of Izmir were included in the study. While the number of registered students was 2 735 in the grades included in the study, 439 students were absent on the day of application (the rate of absenteeism was 16.5%). Therefore, a total of 2 296 students could be reached. The questionnaire

Table 1. Distribution of the study group by gender and grades

	Total		9 th grade				10 th grade				11 th grade				12 th grade			
			Female		Male		Female		Male		Female		Male		Female		Male	
	n		n	% ^a	n	% ^a	n	% ^a	n	% ^a	n	% ^a	n	% ^a	n	% ^a	n	% ^a
Number of students	1986		304	49.2	314	50.8	238	50.4	234	49.6	248	52.8	222	47.2	249	58.5	177	41.5

^aPercentages of distribution by gender in each grade**Table 2. Mean ages of the study group by gender and grades**

	Total		9 th grade				10 th grade				11 th grade				12 th grade			
			Female		Male		Female		Male		Female		Male		Female		Male	
	n		Mean	±SD	Mean	±SD	Mean	±SD	Mean	±SD	Mean	±SD	Mean	±SD	Mean	±SD	Mean	±SD
Mean age	1984 ^a		14.8	±0.55	14.9	±0.62	15.8	±0.59	15.9	±0.67	16.7	±0.53	16.9	±0.64	17.8	±0.55	17.8	±0.64

^aPercentages of distribution by gender in each grade**Table 3. Behaviors of consumption of tobacco and alcoholic beverages of the students by grades and gender**

Behaviors	n ^a	Total				p ^d	9 th grade				p ^d	10 th grade				p ^d	11 th grade				p ^d	12 th grade				p ^d
		Female		Male			Female		Male			Female		Male			Female		Male			Female		Male		
		n	% ^b	n	% ^b		n	% ^c	n	% ^c		n	% ^c	n	% ^c		n	% ^c	n	% ^c		n	% ^c	n	% ^c	
Experimenting smoking	1 959	325	31.6	338	36.3	0.031	71	23.7	72	23.3	0.897	73	30.7	79	34.8	0.343	81	33.2	93	42.3	0.044	100	40.7	94	53.4	0.010
Smoking in the last 30 days	1 967	237	23	280	29.9	<0.001	51	17.1	58	18.8	0.582	52	21.9	62	27.1	0.197	54	22	80	36	0.001	80	32.1	80	45.5	0.005
Smoking regularly in the last 30 days	1 967	111	10.8	183	19.6	<0.001	15	5	31	10	0.019	22	9.3	46	20.1	0.001	28	11.4	53	23.9	<0.001	46	18.5	53	30.1	0.005
Experimenting nargileh	1 956	317	30.7	388	41.8	<0.001	53	17.7	77	25.1	0.027	76	31.9	102	44.3	0.006	88	35.5	100	45.9	0.023	100	41.3	109	62.6	<0.001
Experimenting alcohol	1 966	502	48.8	562	60	<0.001	110	36.9	152	49	0.003	116	48.7	142	61.2	0.007	133	54.1	137	62.3	0.073	143	57.9	131	74.9	<0.001
Having consumed alcohol in the last 30 days	1 968	326	31.7	430	45.7	<0.001	69	23.2	104	33.5	0.005	68	28.7	114	49.4	<0.001	94	38.2	109	49.1	0.018	95	38.3	103	58.2	<0.001
Having got drunk	1 956	261	25.4	357	38.5	<0.001	41	13.7	73	23.9	0.001	61	25.6	92	39.8	0.001	73	29.8	90	41.1	0.011	86	35.1	102	59	<0.001
Having got drunk in the last one month	1 964	131	12.8	218	23.3	<0.001	22	7.4	43	13.9	0.009	26	11	57	24.7	<0.001	38	15.4	52	23.5	0.027	45	18.2	66	37.5	<0.001

^an=Number of students who answered the relevant question^bPercentage of having performed the behavior by gender^cPercentage of having performed the behavior by gender in each grade^dPearson's chi-square test

forms of 25 disabled students, 284 students who gave inconsistent answers to questions related with each other and 1 student who did not state gender were excluded from the evaluation. None of the students refused to participate in the study. Analysis of this study was performed with the data of 1 986 students. The rate of data loss was calculated to be 13.5%.

Nine hundred forty five of the student who participated in this study were male (47.7%) and 1 039 were female (52.3%). The distribution of the students by grades and gender is shown in Table 1. The mean age of the study group was 16.18±1.26. The mean ages by grades and gender are shown in Table 2.

Table 4. The state of having performed the behaviors of having experimented smoking, alcohol and nargileh or having got drunk for the first time at the age of 11 years or younger by age groups

	Age groups										
	Total		15 years and below		16 years		17 years		18 years and above		p ^c
	n	% ^a	n	% ^b	n	% ^b	n	% ^b	n	% ^b	
11 years or younger											
Experimenting smoking	44	6.6	21	8.8	8	4.7	12	6.3	3	3.3	0.217
Experimenting nargileh	30	4.3	14	5.9	9	4.8	7	3.3	0	0	0.087
Experimenting alcohol	133	12.5	60	14.5	31	11.7	28	9.7	14	12.2	0.294
Having got drunk	33	5.3	12	5.9	8	4.8	9	4.7	4	4.5	0.931

^aThe percentage among the students who reported that they performed the behavior^bThe percentage of having performed the behavior at the age of 11 years or younger in that age group among the students who performed the behavior^cPearson's chi-square test (comparison of the rates of having experimented the behavior before the age of 11 years according to age groups)**Table 5.** The states of having smoked, having consumed alcohol and having got drunk in the last 30 days by the age at which this behavior was performed for the first time in the students who have experimented smoking, alcohol and nargileh and who have got drunk

		Behaviors											
		Having smoked in the last 30 days				Having consumed alcohol in the last 30 days				Having got drunk in the last 30 days			
		n	% ^a	OR	%95 CI	n	% ^a	OR	%95 CI	n	% ^a	OR	%95 CI
Experimenting smoking	≤11 years	32	72.7	0.808	0.406-1.609	26	59.1	0.729	0.391-1.360	16	36.4	1.045	0.553-1.973
	>11 years	485	76.7			420	66.5			222	35.4		
Experimenting nargileh	≤11 years	18	60.0	1.209	0.574-2.549	23	79.3	1.967	0.790-4.898	15	50.0	1.804	0.867-3.753
	>11 years	382	55.4			456	66.1			245	35.7		
Experimenting alcohol	≤11 years	67	51.1	1.509	1.046-2.177	113	85.0	2.592	1.580-4.253	64	48.5	2.143	1.482-3.099
	>11 years	383	41.0			643	68.6			285	30.5		
Experimenting alcohol	≤11 years	19	57.6	1.212	0.596-2.461	32	97.0	8.267	1.119-61.090	26	78.8	3.220	1.376-7.532
	>11 years	317	52.8			480	79.5			323	53.6		

^aThe percentage of having smoked, having consumed alcohol and having got drunk in the last 30 days

Behaviors of consuming tobacco

The distribution of the students by grades and gender is shown in Table 3.

Experimenting smoking: six hundred sixty three (33.8%) of the students reported that they experimented smoking. This rate was 31.6% in the girls (n=325) and 36.3% in the boys (n=338). The difference was significant (p=0.031). This behavior was observed more frequently as the grade increased both in the girls and boys (Cramer's V=0.133, p<0.001; Cramer's V=0.228, p<0.001, respectively). Six point six percent of the students (n=44) who reported that they experimented smoking experimented smoking at the age of 11 years or before. When the students were examined after dividing them into age groups, the rate of experimenting smoking at the age of 11 years and before did not change (Table 4). Having experimented smoking at the age of 11 years and younger did not increase the risk of having smoked in the last 30 days, having

consumed alcohol in the last 30 days and having got drunk in the last 30 days (Table 5). *Having smoked in the last 30 days*: 517 of the students (26.3%) reported that they smoked at least once in the last 30 days. This rate was 23.0% in the girls (n=237) and 29.9% in the boys (n=280). The difference was statistically significant (p<0.001). This behavior was observed more frequently as the grade got older both in the girls and boys (Cramer's V=0.132, p<0.001; Cramer's V=0.215, p<0.001, respectively). *Having smoked regularly in the last 30 days*: 294 of the students (14.9%) reported that they smoked regularly in the last 30 days. This rate was 10.8% (n=111) in the girls and 19.6% (n=183) in the boys. The difference was statistically significant (p<0.001). This behavior was observed more frequently as the grade got older both in the girls and boys (Cramer's V=0.160, p<0.001; Cramer's V=0.188, p<0.001, respectively). *Experimenting nargileh*: 705 (36%) of the students reported that they experimented smoking nargileh. This rate was 30.9% in the girls (n=317) and 41.8% in the boys

Table 6. Spare time activities and eating behaviors of the students by grades and gender

Behaviors	Total						9 th grade					10 th grade					11 th grade					12 th grade				
	Female			Male			Female		Male			Female		Male			Female		Male			Female		Male		
	n ^a	n	% ^b	n	% ^b	p ^d	n	% ^c	n	% ^c	p ^d	n	% ^c	n	% ^c	p ^d	n	% ^c	n	% ^c	p ^d	n	% ^c	n	% ^c	p ^d
Sufficient physical activity	1 970	72	7	142	15.1	<0.001	25	8.4	56	18	0.001	19	8	32	13.8	0.043	9	3.6	34	15.5	<0.001	19	7.6	20	11.3	0.196
Watching television for long periods of time	1 960	576	56.1	599	64.2	<0.001	202	67.6	208	68	0.913	137	58.5	155	67.4	0.049	138	55.6	141	64.1	0.063	99	40.2	95	53.7	0.006
Using the internet for long periods of time	1 963	735	71.4	695	74.4	0.138	216	71.8	217	70.2	0.676	181	77.4	182	78.8	0.708	189	76.5	165	75.3	0.767	149	60.3	131	74.9	0.002
Having breakfast regularly	1 938	446	43.8	487	53	<0.001	131	44.3	184	60.5	<0.001	97	41.3	119	53.4	0.010	112	46.3	104	47.9	0.724	106	43.1	80	45.7	0.593
Having breakfast regularly on weekdays	1 964	495	48.1	543	58.1	<0.001	141	47	198	63.9	<0.001	103	43.3	132	58.1	0.001	119	48.8	117	53.2	0.343	132	53.2	96	54.2	0.837
Consuming sufficient amounts of fruit	1 973	406	39.3	308	32.7	<0.001	133	44.2	118	37.8	0.109	102	43	81	35.1	0.077	82	33.3	69	31.2	0.626	89	35.9	40	22.6	0.003
Consuming sufficient amounts of vegetable	1 954	164	16	111	11.9	0.01	52	17.4	38	12.4	0.083	35	15	28	12.3	0.412	36	14.6	25	11.4	0.305	41	16.6	20	11.3	0.125
Consuming candy or chocolate frequently	1 954	396	38.6	216	23.3	<0.001	121	40.5	68	22.2	<0.001	103	43.6	55	24.3	<0.001	83	33.9	56	25.6	0.051	89	36	37	21	0.001
Consuming carbonated beverages frequently	1 955	144	14	208	22.4	<0.001	49	16.5	60	19.5	0.331	35	14.8	64	28.2	<0.001	34	13.9	51	23.2	0.010	26	10.5	33	18.8	0.016
Dieting	1 980	109	10.5	48	5.1	<0.001	34	11.3	16	5.1	0.005	26	10.9	11	4.7	0.012	27	11	7	3.2	0.001	22	8.9	14	7.9	0.726

^an=Number of students who answered the relevant question^bPercentage of having performed the behavior by gender^cPercentage of having performed the behavior by gender in each grade^dPearson's chi-square test

(n=388) which was significantly higher compared to the girls (p<0.001). This behavior was observed more frequently as the grade got older both in the girls and boys (Cramer's V=0.195, p<0.001; Cramer's V=0.271, p<0.001, respectively). 4.3% of the students (n=30) who reported that they experimented smoking nargileh experimented nargileh for the first time at the age of 11 years or younger. When the students were examined by age groups, the rate of experimenting nargileh at the age of 11 years and younger did not change (Table 4). Having experimented smoking nargileh at the age of 11 years and younger did not increase the risk of having smoked in the last 30 days, having consumed alcohol in the last 30 days and having got drunk in the last 30 days (Table 5).

Behaviors of consuming alcoholic drinks

The distribution of the behaviors of drinking alcoholic drinks by grades and gender is shown in Table 3.

Experimenting alcohol: 1 064 of the students (54.1%) reported that they experimented alcohol. This rate was 48.8% in the girls (n=502) and 60.0% in the boys (n=562). The difference was statistically significant (p<0.001). This behavior was observed more frequently as the grade got older both in the girls and boys (Cramer's V=0.164, p<0.001; Cramer's V=0.185, p<0.001, respectively). 12.5% of the students who stated that they experimented alcohol (n=133) drunk their first alcoholic drink at the age of 11 years or younger. When the students were examined by age groups, the rate of

having experimented alcohol at the age of 11 years and younger did not change (Table 4). Having experimented alcohol at the age of 11 years and younger increased the rate of having smoked in the last 30 days by 1.51-fold, the rate of having consumed alcohol in the last 30 days by 2.59-fold and the rate of having got drunk in the last 30 days by 2.14-fold (Table 5). *Having consumed alcohol in the last 30 days:* 756 of the students (38.4%) reported that they consumed alcohol in the last 30 days, albeit rarely. This rate was 31.7% in the girls (n=326) and 45.7% in the boys (n=430). The difference was statistically significant ($p<0.001$). This behavior was observed more frequently as the grade got older both in the girls and boys (Cramer's $V=0.142$, $p<0.001$; Cramer's $V=0.184$, $p<0.001$, respectively). *Having got drunk:* 618 of the students (31.6%) reported that they had gotten drunk at least for once. This rate was 25.4% in the girls (n=261) and 38.5% in the boys (n=357). The difference was statistically significant ($p<0.001$). This behavior was observed more frequently as the grade got older both in the girls and boys (Cramer's $V=0.188$, $p<0.001$; Cramer's $V=0.252$, $p<0.001$, respectively). 5.3% of the students (n=33) who reported that they got drunk had gotten drunk at the age of 11 years or younger. When the students were examined by age groups, the rate of having got drunk for the first time at the age of 11 years and younger did not change (Table 4). Having got drunk for the first time at the age of 11 years and younger did not increase the risk of smoking in the last 30 days, whereas it increased the rate of having consumed alcohol in the last 30 days by 8.27-fold and the rate of having got drunk in the last 30 days by 3.22-fold (Table 5). *Having got drunk in the last 30 days:* 349 of the students (17.8%) reported that they got drunk in the last 30 days at least for once. This rate was found to be 12.8% in the girls (n=131) and 23.3% in the boys (n=218). The difference was statistically significant ($p<0.001$). This behavior was observed more frequently as the grade got older both in the girls and boys (Cramer's $V=0.127$, $p=0.001$; Cramer's $V=0.194$, $p<0.001$, respectively).

Spare time activities

The distribution of spare time activities of the students by grades and gender is shown in Table 6.

Sufficient physical activity: 214 of the students (10.9%) reported that they performed sufficient physical activity. This rate was 7% (n=71) in the girls and 15.1% (n=142) in the boys and the difference was statistically significant ($p<0.001$). This behavior did not change as the grade got older both in the girls and in the boys (Cramer's $V=0.075$, $p=0.125$; Cramer's $V=0.068$, $p=0.224$, respectively). *Watching TV for a long periods of time:* 1 175 (59.9%) of the students reported that they watched TV for long periods of time. This rate was 56.1% in the

girls (n=576) and 64.2% in the boys (n=599). The difference was statistically significant ($p<0.001$). This behavior was observed less frequently as the grade got older both in the girls and in the boys (Cramer's $V=0.201$, $p<0.001$; Cramer's $V=0.111$, $p=0.01$, respectively). *Using the internet for long periods of time:* 1 430 of the students (72.8%) reported that they used the internet for at least 2 hours a day. This rate was 71.4% in the girls (n=735) and 74.4% in the boys (n=695). No significant difference was observed between the boys and girls ($p=0.138$). This behavior was observed less frequently as the grade got older in the girls (Cramer's $V=0.147$, $p<0.001$) and did not change in the boys (Cramer's $V=0.075$, $p=0.152$).

Eating behaviors

The distribution of eating behaviors of the students by grades and gender are shown in Table 6.

Having regular breakfast: 933 of the students (48.1%) reported that they were having regular breakfast. This rate was 43.8% in the girls (n=446) and 53% in the boys (n=487). The difference was statistically significant ($p<0.001$). This behavior was observed less frequently as the grade got older in the boys (Cramer's $V=0.118$, $p=0.005$) and did not change in the girls (Cramer's $V=0.036$, $p=0.732$). *Having a regular breakfast on weekdays:* 1038 of the students (52.9%) reported that they were having a regular breakfast on weekdays. This rate was 48.1% in the girls (n=495) and 58.1% in the boys (n=543). The difference was statistically significant ($p<0.001$). This behavior did not show any change as the grade got older both in the girls and in the boys (Cramer's $V=0.070$, $p=0.171$; Cramer's $V=0.09$, $p=0.057$, respectively). *Consuming adequate amounts of fruit:* 714 of the students (36.2%) reported that they were consuming adequate amounts of fruit. This rate was 39.3% in the girls (n=406) and 32.7% in the boys (n=308). The difference was statistically significant ($p<0.001$). This behavior was observed less frequently as the grade got older both in the girls and in the boys (Cramer's $V=0.095$, $p=0.026$; Cramer's $V=0.116$, $p=0.005$, respectively). *Consuming adequate amounts of vegetables:* 275 of the students (14.1%) reported that they were consuming adequate amounts of vegetables. This rate was 16% in the girls (n=164) and 11.9% in the boys (n=111). The difference was statistically significant ($p=0.01$). This behavior did not show any change as the grade got older neither in the girls not in the boys (Cramer's $V=0.032$, $p=0.786$; Cramer's $V=0.016$, $p=0.973$, respectively). *Consuming candy or chocolate frequently:* 612 of the students (31.3%) reported that they were consuming candy or chocolate frequently. This rate was 38,6% in the girls (n=396) and 23.3% in the boys (n=216). The difference was statistically significant ($p<0.001$). This behavior did

Table 7. Violence-related behaviors of the students by grades and gender

Behaviors	n ^a	Total				p ^d	9 th grade				p ^d	10 th grade				p ^d	11 th grade				p ^d	12 th grade				p ^d
		Female		Male			Female		Male			Female		Male			Female		Male			Female		Male		
		n	% ^b	n	% ^b		n	% ^c	n	% ^c		n	% ^c	n	% ^c		n	% ^c	n	% ^c		n	% ^c	n	% ^c	
Being bullied	1 962	293	28.4	302	32.4	0.053	104	34.4	121	39.2	0.226	69	29.4	74	32.7	0.433	61	24.7	56	25.5	0.850	59	23.9	51	29	0.239
Being bullied frequently	1 962	99	9.6	136	14.6	0.001	39	12.9	55	17.8	0.094	20	8.5	33	14.6	0.040	22	8.9	26	11.8	0.301	18	7.3	22	12.5	0.071
Bullying others	1 962	254	24.7	333	35.7	0.001	83	27.6	111	35.8	0.029	64	27.2	74	32.7	0.197	65	26.3	79	35.7	0.027	42	17.1	69	39.2	<0.001
Bullying others frequently	1 962	100	9.7	160	17.1	<0.001	31	10.3	51	16.5	0.026	30	12.8	41	18.1	0.110	24	9.7	35	15.8	0.046	15	6.1	33	18.8	<0.001
Involving in a physical fight	1 977	271	26.2	539	57.3	<0.001	108	35.6	195	65.2	<0.001	68	28.8	140	60.6	<0.001	55	22.2	119	53.8	<0.001	40	16.1	85	48	<0.001
Involving in a physical fight frequently	1 977	156	15.1	395	42	<0.001	64	21.1	138	44.2	<0.001	42	17.7	112	48.5	<0.001	33	13.3	86	38.9	<0.001	17	6.9	59	33.3	<0.001

^an=Number of students who answered the relevant question^bPercentage of having performed the behavior by gender^cPercentage of having performed the behavior by gender in each grade^dPearson's chi-square test

not show any change as the grade got older neither in the girls not in the boys (Cramer's $V=0.076$, $p=0.113$; Cramer's $V=0.040$, $p=0.688$, respectively). *Consuming soft drinks frequently*: 352 of the students (18%) reported that they were consuming cola or other soft drinks frequently. This rate was 14% in the girls ($n=144$) and 22.4% in the boys ($n=208$). The difference was statistically significant ($p<0.001$). This behavior did not show any change as the grade got older neither in the girls not in the boys (Cramer's $V=0.063$, $p=0.249$; Cramer's $V=0.088$, $p=0.064$, respectively). *Being on a diet*: 157 of the students (7.9%) reported that they were on a diet. This rate was 10.5% in the girls ($n=109$) and 5.1% in the boys ($n=48$). The difference was statistically significant ($p<0.001$). This behavior did not show any change as the grade got older neither in the girls not in the boys (Cramer's $V=0.031$, $p=0.805$; Cramer's $V=0.070$, $p=0.196$, respectively).

Violence-related behaviors

The distribution of violence-related behaviors of the students by grades and gender is shown in Table 7.

Being bullied: 595 of the students (30.3%) reported that they had been bullied at least for once. This rate was 28.4% in the girls ($n=293$) and 32.4% in the boys ($n=302$). There was no significant difference between genders in terms of the rate of being bullied ($p=0.053$). Being exposed to this behavior was observed less frequently as the grade got older both in the girls and in the boys (Cramer's $V=0.097$, $p=0.022$; Cramer's $V=0.115$, $p=0.007$, respectively). *Being bullied frequently*: 235 of the students (12%) reported that they had been bullied at

least for 2 times. This rate was 9.6% in the girls ($n=99$) and 14.6% in the boys ($n=136$). The difference was statistically significant ($p=0.001$). Being exposed to this behavior did not show any change as the grade got older neither in the girls nor in the boys (Cramer's $V=0.075$, $p=0.122$; Cramer's $V=0.070$, $p=0.210$, respectively). *Bullying*: 587 of the students (29.9%) reported that they bullied other students at least for once. This rate was 24.7% in the girls ($n=254$) and 35.7% in the boys ($n=333$). The difference was statistically significant ($p=0.001$). This behavior was observed less frequently as the grade got older in the girls (Cramer's $V=0.100$, $p=0.017$) and did not change in the boys (Cramer's $V=0.044$, $p=0.614$). *Bullying others frequently*: 260 of the students (13.3%) reported that they bullied other students at least for 2 times. This rate was 9.7% in the girls ($n=100$) and 17.1% in the boys ($n=160$). The difference was statistically significant ($p<0.001$). Being exposed to this behavior did not change as the grade got older neither in the girls nor in the boys (Cramer's $V=0.078$, $p=0.099$; Cramer's $V=0.030$, $p=0.838$, respectively). *Being involved in a physical fight*: 810 of the students (41%) reported that they were involved in a physical fight at least for once. This rate was 26.2% in the girls ($n=271$) and 57.3% in the boys ($n=539$). The difference was statistically significant ($p<0.001$). This behavior was observed less frequently as the grade got older both in the girls and in the boys (Cramer's $V=0.170$, $p<0.001$; Cramer's $V=0.112$, $p<0.008$, respectively). *Being involved in a physical fight frequently*: 551 of the students (27.9%) reported that were involved in a physical fight for at least 3 times in the last 12 months. This rate was 15.1% in the girls ($n=156$) and 42% in the boys ($n=395$). The difference was statistically

significant ($p < 0.001$). This behavior was observed less frequently as the grade got older both in the girls and in the boys (Cramer's $V = 0.151$, $p < 0.001$; Cramer's $V = 0.108$, $p = 0.012$, respectively).

Discussion

Tobacco consumption behaviors

In our study, it was found that 33.8% of high-school students in İzmir experimented smoking, 26.3% smoked cigarette in the last 30 days, 14.9% smoked cigarettes regularly in the last 30 days, this behavior was observed with a significantly higher rate in the boys compared to the girls and the frequency of smoking increased significantly as the grade got older in both genders. In studies conducted in different provinces with adolescents at different ages in Turkey, the rate of having experimented smoking has been reported to range between 24.4% and 50% (10-14), the rate of smoking at the present time has been reported to range between 6.9% and 24.27% (10-21) and this behaviors have been reported with higher rates in boys (10-17, 20). Although the frequency of having experimented smoking was markedly lower in this study compared to the study conducted in 2013 in the United States of America (USA) with high-school students (41.1%), it was notable that the frequencies of having smoked in the last 30 days and having smoked regularly in the last 30 days were higher (15.7% and 5.6%, respectively) compared to the frequencies found in USA (22). The finding that the frequencies of these behaviors increased significantly as the grade got older was similar to the results of the study conducted in USA (22). In the HBSC 2009/2010 study in which many countries from Europe and North America participated, the rate of smoking for at least once in a week in students aged 15 years was found to be 1% in girls in Armenia and 61% in girls in Greenland (the mean frequency among countries 18%) and in contrast to our study, this behavior was observed to have a similar frequency in both genders in 23 of 38 countries and to be higher in girls in four countries (9).

It is known that starting smoking at an earlier age increases the possibility of smoking for long periods of time, being a heavier smoker and nicotine addiction (23). In our study, the rate of starting smoking at the age of 11 years and younger was found to be 6.6%. In the Global Youth Tobacco survey (2003), the rate of starting smoking before the age of 10 years in adolescents aged between 13 and 15 years was found to be 30.7% throughout Turkey (10). The fact that the result of our study was much lower than this rate may be considered favourable, but one should keep in mind the age difference between the study groups. In a longitudinal study

conducted with adolescents who were smokers, it was shown that the age of starting smoking was remembered incorrectly as the age got older and a tendency to state an older age occurred (24).

The frequency of experimenting nargileh which has been defined as a new public health problem by the World Health organization (WHO) was found to be 35% in high school students in İzmir in this study (25). This rate is higher compared to the rate reported by the students who participated in our study and markedly lower compared to the frequency of having experimented nargileh (45,8%) found in the study conducted with students of the 10th grade in 2012 in İstanbul (12).

Behaviors of consuming alcoholic beverages

In our study, the rates of having experimented an alcoholic beverage and having drunk an alcoholic beverage in the last 30 days were found to be 54.1% and 38.4%, respectively, in high school students in İzmir. It was observed that the rate of having experimented an alcoholic beverage was lower compared to the rate found in high school students in İstanbul (61%) and higher compared to the rate found in high school students in Samsun in 2008 (26.07%) (11, 14). In a research study reviewing the studies which investigated the frequencies of consumption of alcohol in adolescents below the age of 18 years in Turkey, it was reported that the frequency of lifelong consumption of alcohol ranged between 4.4% and 65%, whereas the frequencies of consuming alcohol currently were reported to range between 6.5% and 42% in different studies conducted in different provinces in Turkey with adolescents at different ages (11, 14, 19, 21, 26, 27). In this study, the rate of having experimented an alcoholic beverage was found to be lower compared to the rate found in high school students in USA in 2013 (66.2), but the fact that the rate of having drunk an alcoholic beverage at least for once in the last one month was higher compared to the rate found in USA (34.9%) draws attention to this problem (22). It is known that early onset of regular alcohol consumption increases the risk of being alcoholic in the future (28). The results of this study showed that 12.5% of the students had drunk their first alcoholic beverage at the age of 11 years and younger. The fact that the rates of smoking, consuming alcohol and getting drunk at the time of data collection were higher in these students compared to the ones who experimented an alcoholic beverage after the age of 11 years is an important finding. These results suggest that regulations related with alcohol alone are insufficient and education programs for children and families should be conducted in order to delay the age of alcohol initiation in children and adolescents. In this study, it was observed that the rate of being drunk (31.6%) was higher compared to

the rate found in high school students in Istanbul in 2000 (19) and the rate found in high school students in Samsun in 2008 (10.41%) (11, 14). In both studies, the rate of the students who got drunk increased as the grade got older similar to the results of our study (11, 14). In the "Health Behaviour in School-aged Children Study" 2009/2010, the rate of having been drunk for at least two times in the 15-year age group was found to range between 8% (Macedonia, girls) and 57% (Lithuania, boys) (mean: 32%) (9). The fact that the frequency of being drunk was higher compared to the previous studies conducted in our country and close to the mean value of the countries included in the HBSC study and the rate of having drunk an alcoholic beverage for at least once in the last one month was higher compared to the rate found in USA suggests that the prejudice that our country is not risky in terms of consumption of alcoholic beverages because of its cultural and religious properties is incorrect (at least regionally). Nationwide studies should be conducted to regionally and nationally evaluate this risky situation related with behaviors of consuming alcoholic beverages which was noted in Izmir. In this study, it was additionally found that the frequencies of consuming alcohol and being drunk in the last 30 days in the students who stated that they got drunk for the first time before the age of 11 years (5.3%) were 8-fold and 3-fold higher compared to the students who got drunk for the first time after the age of 11 years. These findings show that intervention programs should be initiated in the primary school years.

On the other hand, our results showed that the behaviors of drinking alcoholic beverages and getting drunk were more common in boys compared to girls similar to the results of the Istanbul 2000 and HBSC 2009/2010 surveys (9, 14). In contrast to these surveys, the behavior of having experimented an alcoholic beverage was found with a higher rate in girls compared to boys in USA 2013 high school students and the rates of having experimented an alcoholic beverage and consuming alcohol currently increased as the grade got older similar to the results of our study (22).

Spare time activities

According to the results of this study, the rate of performing sufficient physical activity was found to be 10.9%, the rate of watching television for long periods of time was found to be 59.9% and the rate of using the internet for long periods of time was found to be 72.8%. While the boys performed physical exercise and watched TV with a higher rate, the rate of using the internet for long periods of time was found to be similar in both genders. The frequency of performing sufficient physical exercise did not change as the grade got older in both genders, whereas the frequency of

watching television for long periods of time increased. The frequency of using the internet for long periods of time decreased in the girls and did not change in the boys as the grade got older. The frequency of performing sufficient physical activity was found to be lower in both genders compared to the frequency in the 15-year age group in the HBSC 2006 Turkey survey (girls 12.1%, boys 15.7%), the frequency found in the 15-year age group in the HBSC 2009/2010 survey Turkey data (girls 9%, boys 18%) and the frequency found in the 15-18-year age group in the 2010 Turkey Nutrition and Health Survey (girls 9.9%, boys 14.6%) (9, 29, 30). According to the results of the "Health Behaviour in School-aged Children Study" 2009/2010, the rate of the 15-year group students who performed sufficient physical activity was 15% (USA, boys 33% and Italy, girls 5%). This rate was 27.1% in high school student in USA (9, 22). In our study, it was noted that the frequency of using the internet for long periods of time was markedly higher compared to the frequency found in adolescents in 2012 in Eskişehir (35.1%) and the frequency of watching television for long periods of time was higher compared to the frequency found in 2008 in Ankara (35.8%) (27,31). In the "Health Behaviour in School-aged Children Study" 2009/2010, the mean rate of using computer for more than 2 hours a day on the weekdays in order to do homework or use the internet was found to be 55% in the 15-year age group (26% in Greenland and 73% in Iceland). This rate was reported to be 37% in Turkey (9). The causes which lead to reduced physical activity in adolescents have been reported to be tests, preparation courses, watching television and excess time spent for computer games (32). These results show that high school students in Izmir have a more sedantary life and spend more time watching television compared to their peers.

Eating behaviors

In this study, the frequencies of having breakfast regularly and having breakfast regularly on weekdays were found to be 48.1% and 52.9%, respectively. The frequency of the behavior of having breakfast regularly was found to be higher compared to the frequency found in high school students in 2013 in USA (38.1%), whereas the frequency of having breakfast regularly on weekdays was found to be lower compared to the mean frequency found in the countries which participated in the HBSC 2009/2010 survey (55%) (Armenia, girls 34% and Netherlands, boys 79%) (9,22). The frequency of having breakfast regularly in both genders was found to be similar to the frequency found in the 15-year age group in the HBSC 2006 Turkey study (girls 49.4%, boys 60.7%) and the frequency found in the 15-year age group in the HBSC 2009/2010 study (girls 48%, boys 59%) (9, 33). In these surveys, the frequency of the

behavior of having breakfast regularly was found to be higher in the boys similar to our study (9, 22, 29, 33). Since a correlation between absence of having breakfast regularly and obesity has been shown, we think that interventions directed to develop the behavior of having breakfast regularly should be included in the programs which fight against obesity (34).

When eating behaviors in high school students in İzmir were evaluated, the rate of consuming sufficient amounts of fruit was found to be 36.2%, the rate of consuming sufficient amounts of vegetables was found to be 14.1%, the rate of consuming candy or chocolate frequently was found to be 31.3% and the rate of consuming soft drinks was found to be 18%. It was observed that the rate of the behavior of consuming sufficient amounts of fruit decreased as the grade got older both in the girls and in the boys. Similar to the results of the "Health Behaviour in School-aged Children Study" 2006 Turkey (15-year age group), HBSC 2005/2006 (15 year age group), HBSC 2009/2010 (15 year age group), USA 2013 (high school students) surveys, the behavior of consuming sufficient amounts of fruit was observed more frequently in the girls (girls 42.1%, boys 25.5%; girls 34%, boys 25%; girls 35%, boys 27%; girls 60%, boys 65.3%, respectively) and the behavior of consuming soft drinks frequently was observed more frequently in the boys (girls 21.1%, boys 26.4%; girls 25%, boys 32%; girls 22%, boys 28%; girls 24.1%, boys 29.9%, respectively) (9, 22, 29, 33). In this study, the behaviors of consuming sufficient amounts of vegetable and consuming candy/chocolate frequently were observed more frequently in the girls compared to the boys (girls 24.6%, boys 19.3%; girls 36.7%, boys 22.3%, respectively) similar to the results of the HBSC 2006 Turkey survey (15-year age group) (33).

It has been reported that the behavior of dieting is observed more frequently in girls and the behavior of performing physical exercise is observed more frequently in boys due to esthetic concerns (32). In this study, the rate of dieting was also found to be higher in the girls compared to the boys. In the HBSC 2009/2010 survey, the rate of dieting in girls in the 15-year age group was found to be 8% which was lower compared to all the other countries (9). The fact that this rate was found to be 10.5% in our study suggests that the dimension of the problem is not very huge, because it is known that a very high rate (62.6%) has been reported in USA (22).

Violence-related behaviors

In this study, the frequency of having been bullied was found to be 30.3%, the frequency of having been bullied frequently was found to be 12%, the frequency of having bullied others was found to be 29.9% and

the frequency of having bullied other frequently was found to be 13.3%. It is known that the psychological health is affected negatively and the frequency of the behaviors which affect health negatively including consumption of tobacco, alcohol and substance increase in students who are bullied (35). In this study, the frequency of having been bullied was found to be lower compared to the frequency found in the 15-year age group in the HBSC 2006 Turkey survey (65.2%) and markedly higher compared to the data of the USA 2013 high school students (19.6%) (22, 33). It was notable that the frequencies of having bullied others in both genders (17.1% in the boys and 9.7% in the girls) were higher compared to the same study (13.2% in the boys, 7.3% in the girls) (33).

According to our results, violence-related behaviors were found with a higher rate in the boys compared to the girls excluding the behavior of being bullied similar to different studies conducted in previous years in our country and the international results of the HBSC 2009/2010 survey (9, 25, 33, 36-38). No difference was observed between genders in terms of the frequency of the behavior of being bullied. In the Istanbul 2000 survey, violence-related behaviors did not change as the grade got older. In contrast, it was found that the frequency of the behavior of being bullied decreased in both genders as the grade got older and the behavior of bullying others decreased in the girls and did not change in the boys as the grade got older in our study (14).

In our country, the frequency of having involved in a physical fight has been found to range between 30.2% and 41% in high school students in different studies conducted in different years (14, 21, 39). The frequency of having involved in a physical fight in the last 12 months which was found to be 41% in this study was notably higher compared to the mean frequency of the countries included in the HBSC 2009/2010 survey (the lowest 18% in Germany, the highest 50% in Greece) and compared to the frequency found in 2013 in USA (24.7%) (9, 22). In addition, the rate of getting frequently involved in a physical fight (27.9%) was found to be markedly higher compared to the mean frequency found in the HBSC 2009/2010 survey (10%) (2% Greenland, girls and 54% Armenia, boys) (9). All these results show that violence-related behaviors in high school students maintain their importance.

The fact that this study was a cross-sectional study based on the reports of adolescents and did not included direct measurements of the behaviors was a limitation of this study. It may be questioned if the adolescents reported correctly. Since the survey was anonymous, we think that the rate of correct reporting was high.

In conclusion, the results of this study show that the behaviors which may affect health negatively are common in adolescents attending high school in Izmir similar to the other studies conducted in our country and in other countries. The most notable finding was that the students were not sufficiently active physically and the behaviors of watching television and using the internet for long periods of time which are considered a part of sedentary life style were very common. The second notable finding was that the rates of consuming sufficient amounts of vegetable were very low. When this behavior was associated with not having breakfast regularly and not consuming sufficient amounts of fruit, it was observed that unhealthy eating behaviors were very common. In addition, the frequency and severity of the behaviors related with consuming tobacco and alcohol were notable. Violence-related behaviors were substantially common especially in the boys and their frequency was higher compared to many countries. All these results suggest that "Adolescent-friendly Health-care Services" should be generalized in our country and physicians should evaluate adolescents in terms of health-related behaviors at each visit. In addition, we think that intervention programs in which a health developing approach is adopted are needed starting from the primary school years. This and similar studies should be repeated regularly to monitor the efficiency of the programs applied and the changes which occur in behavior tendencies in time.

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