

Health-related behaviors and nutritional status of adolescents who study as boarders and day-students

Emine Ela KÜÇÜK¹, Osman GÜNAY^{2,*}

¹Faculty of Health Sciences, Giresun University, Giresun, Turkey

²Department of Public Health, Faculty of Medicine, Erciyes University, Kayseri, Turkey

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Background/aim: Boarders and day-students study together in regional boarding schools. This study was carried out to compare the health and nutritional status of boarders and day-students who study at regional boarding schools in Turkey.

Materials and methods: A total 634 boarders and 492 day-students in the 4th–8th years of nine boarding schools in Giresun Province of Turkey were included. A questionnaire including 49 questions about sociodemographic characteristics and health and nutritional status was completed by the students. Height and weight measurements of the students were also taken. The chi-square test was used for statistical analyses.

Results: The boarders evaluated their health status as worse than the day-students. The proportion of the students having three meals a day was higher among the boarders than the day-students. According to BMI values, 11% of the boarders were evaluated as underweight, 77% as normal, 9.5% as overweight, and 2.5% as obese. These proportions were respectively 15.5%, 67.3%, 12.8% and 4.5% for the day-students.

Conclusion: The boarders have more regular diets and the proportion of normal-weighted boarders was higher than that of the day-students. However, they perceived their health as worse than the day-students.

Key words: Adolescent, boarder, boarding school, day-student, nutritional status

1. Introduction

The adolescent period is one of the most dynamic and complex transition periods in the whole lifetime of individuals (1,2). Though the period poses some risks, it also provides an important opportunity to assure sustainable health and wellness through health education and preventive health behaviors (3). Risky health behaviors acquired during this period lead to increases in morbidity and mortality of the individuals (4). On the other hand, preventive and clinical interventions provide health gains for later periods (5).

Healthy lifestyle behaviors are defined as the control of all behaviors that affect the health of individuals in order to protect, improve, and raise the health status of individuals and the application of those behaviors that are convenient for their own health status (6). The development of healthy lifestyle behaviors and the reduction of risky health behaviors among adolescents help them to prevent diseases and employ long-term positive health habits (7).

One of the most important healthy lifestyle behaviors is healthy nutrition. The fast growth and development rate in

adolescents increases their need for energy and nutrients. Unhealthy diets in adolescents lead to nutritional problems. Unhealthy diets also cause long-term health problems like coronary diseases, diabetes, and cancer (8,9).

Regional boarding schools have been established in Turkey, especially in less populated rural areas. Boarders and day-students study together in these schools. It may be useful to focus on the school life of adolescents in order to improve their health-related behaviors.

In this study, we aimed to compare the health and nutritional status of adolescents between 10 and 14 years of age who study as boarders and day-students at regional boarding schools.

2. Materials and methods

The study was conducted with students who study as boarders or day-students in the 4th–8th grades of regional boarding schools (RBSs) in Giresun, a province located in the northern part of Turkey. There were 14 RBSs in Giresun. It was determined that a total of 3698 students (2244 boarders and 1454 day-students) were registered at

* Correspondence: gunayos@erciyes.edu.tr

these schools during the 2008–2009 educational year. In order to conduct the study, ethical consent was obtained from the Ethics Committee of the Erciyes University Medical Faculty and administrative permission was obtained from the Provincial Directorate of Education.

In order to determine the sample size, it was accepted that the standard deviation of the students' quality of life scores may be approximately 15 points and that there may be a difference of 3 points between the mean points of two groups. Sample size was calculated as 393 for both groups by taking $\alpha = 0.05$ and $\beta = 0.20$.

There were two RBSs in some districts. It was planned to take one RBS in each district in order to represent the province. For this reason, nine RBSs were selected for the study. It was determined that in the 4th to 8th grades of the selected schools, a total of 2075 students were enrolled (1267 boarders and 808 day-students) and that they studied in a total of 95 classes. The mean number of students in each class was calculated as 23 (14 boarders and 9 day-students). It was predicted that about 1035 students (630 boarders and 405 day-students) could be reached in the case that one class from each grade of each school was included (a total of 45 classes). All of the students in the selected classes were planned to be included in the study.

The data were collected with a questionnaire form prepared by the researchers and the Pediatric Quality of Life Scale (PedsQoL). The questionnaire form contained 49 questions regarding the sociodemographic characteristics of the students and their families and also their health status, social relations, nutritional status and habits, lifestyle, and body image. A pilot study was conducted with a group of 30 students and the questionnaire form was finalized using the results of this pilot study. The results of this study related to the PedsQoL were previously published in another article (11).

The students in the study sample were visited in their classrooms by the researchers and were informed about the aim of the study, and their verbal consent was obtained. The questionnaire forms were distributed to the students who agreed to participate in the study. The questionnaires were filled out by the students under the supervision of the researchers. Next, height and weight measurements were taken. A total of 1264 students were interviewed, but 138 forms were excluded because of incomplete information. Hence, a total of 1126 students, 634 boarders and 492 day-students, were included in the study. This sample size was also found sufficient to compare the height and weight status of the boarders and day-students (power was calculated as 0.857 for height categories and 0.887 for body mass index (BMI) categories).

The heights of the students were measured with a standard measuring tape and their weights were measured with a digital scale of 50 g sensitivity after the students had

taken their shoes off, with their uniforms on, and 0.5 kg was subtracted from the obtained weights.

Using the height and weight values, BMI values were calculated. The weight and BMI values were evaluated based on height for age and BMI for age classifications of the World Health Organization (WHO). Height for age values under the 15th percentile were considered as short, between the 15th and 85th percentiles as normal, and equal to or over the 85th percentile as tall. BMI for age values under the 15th percentile were considered as thin, between the 15th and 85th percentiles as normal, between the 85th and 97th percentiles as overweight, and equal to or over the 97th percentile as obese (12).

The data were evaluated using SPSS 15.0. The Pearson chi-square test was used for statistical analyses. $P < 0.05$ was considered statistically significant.

3. Results

A total of 1126 students participated in the study. Of the study group, 56.3% were boarders and 43.7% were day-students, and 50.2% were girls. With respect to the sex distribution, no significant difference was found between the boarders and day-students ($P > 0.05$).

The mean age was 12.5 ± 1.5 years for the boarders and 12.2 ± 1.5 years for the day-students. The mean number of siblings was 4.2 ± 1.8 for the boarders and 3.5 ± 1.5 for the day-students. Mean family size was 6.4 ± 2.2 for the boarders and 5.7 ± 1.7 for the day-students. The differences in the mean numbers of siblings and family size were found statistically significant ($P < 0.001$).

The educational levels of the parents of the boarders and the economic levels of their families were lower than those of the day-students ($P < 0.001$).

As seen in Table 1, it was determined that 50.1% of the study group brushed their teeth regularly, 86% cut their nails once a week, 33.6% washed their hands at least 10 times a day, and 75.4% did sports. No significant difference was found between the boarders and day-students with respect to these behaviors.

Of the students, 49.5% stated that they take a bath once a week and 46.3% more than once a week, and 18.8% stated that their daily sleep durations were shorter than normal. There were significant differences between the boarders and day-students with respect to their frequency of taking baths ($P = 0.006$) and self-reported sleep durations ($P < 0.001$). The percentage of the students taking baths more frequently than once a week was higher among the boarders than the day-students. On the other hand, 29% of the boarders and 20.3% of the day-students stated that they had sleeping problems and the difference between the groups was statistically significant ($P < 0.001$).

As seen in Table 2, 5.5% of the students indicated that they had less than three meals, 55.5% three meals, and

Table 1. A comparison of the health-related behaviors of the boarders and day-students.

Behaviours		Groups				Total		χ^2	P
		Boarders		Day-students					
		Number	%	Number	%	Number	%		
Number of hand washings daily	1-4	171	27.0	145	29.5	316	28.1	3.268	0.195
	5-9	236	37.2	196	39.8	432	38.4		
	10 and over	227	35.8	151	30.7	378	33.6		
Having a toothbrush	Yes	599	94.5	463	94.1	1062	94.3	0.072	0.788
	No	35	5.5	29	5.9	64	5.7		
Tooth brushing	Regularly	325	51.3	239	48.6	564	50.1	0.813	0.666
	Sometimes	283	44.6	231	47.0	514	45.6		
	Never	26	4.1	22	4.5	48	4.3		
Frequency of cutting nails	Once a week	543	85.6	425	86.4	968	86.0	1.914	0.590
	Once in 2 weeks	44	6.9	29	5.9	73	6.5		
	Once a month	41	6.6	36	7.3	77	6.8		
	Other	6	0.9	2	0.4	8	0.7		
Frequency of taking baths	Everyday	44	6.9	26	5.3	70	6.2	12.562	0.006
	Once in 2-3 days	268	42.3	184	37.4	452	40.1		
	Once a week	288	45.4	269	54.7	557	49.5		
	Once in 2 weeks	34	5.4	13	2.6	47	4.2		
Smoking	Nonsmoker	622	98.1	481	97.8	1103	98.0	0.163	0.686
	Smoker	12	1.9	11	2.2	23	2.0		
Doing sports	Yes	465	73.3	384	78.0	849	75.4	3.306	0.069
	No	169	26.7	108	22.8	277	24.6		
Duration of sleep	Short	149	23.5	63	12.8	212	18.8	21.729	<0.001
	Normal	413	65.1	375	76.2	788	70.0		
	Long	72	11.4	54	11.0	126	11.2		
Total		634	100.0	492	100.0	1126	100.0		

16.5% more than three a day, while 22.5% of the students did not respond to this question. It was determined that 60.2% of the boarders and 49.6% of the day-students had three meals daily. The percentage of students having three meals a day was higher among the boarders than the day-students. The difference in the daily meal frequencies of the groups was found significant ($P < 0.001$).

It was determined that more than 70% of the students always or sometimes skipped meals and that lunch was the most commonly skipped meal, and 13.5% of the students were dieting to get thinner. Specifically, 13.6% of the boarders and 13.4% of the day-students were on a diet to get thinner. No significant difference was found between the groups with respect to their meal skipping and dieting behaviors and their favorite dishes. Similarly, no significant difference existed between the boys and

girls with respect to meal skipping and dieting. However, it was determined that boys preferred meat dishes and girls preferred vegetable dishes more, and the difference between the groups was found significant.

As shown in Table 3, according to the height for age values, 25.8% of the students were classified as short, 63.4% as normal, and 10.8% as tall. The percentage of the boarders with short stature was higher than that of the day-students and the difference between the boarders and day-students was found significant. In terms of the BMI for age, 13.0% of the students were classified as thin, 72.7% as normal, and 14.3% as overweight or obese. The percentage of the students with normal weight was higher among the boarders. The difference between the boarders and day-students was found significant. On the other hand, no significant difference was found between boys and girls in

Table 2. Comparing the nutritional characteristics of the boarders and day-students.

Characteristics	Groups	Groups				Total		χ^2	P
		Boarders		Day-students					
		Number	%	Number	%	Number	%		
Daily meal frequency	One or two	38	6.0	24	4.9	62	5.5	27.33	<0.001
	Three	382	60.2	244	49.6	626	55.5		
	Four or more	84	13.3	101	20.5	185	16.5		
	Unanswered	130	20.5	123	25.0	253	22.5		
Meal skipping behavior	Always	38	6.0	26	5.3	64	5.7	2.684	0.261
	Sometimes	423	66.7	310	63.0	733	65.1		
	Never	173	27.3	156	31.7	329	29.2		
Skipped meal	Breakfast	106	19.8	103	25.8	209	22.3	4.760	0.190
	Lunch	334	62.3	232	58.0	566	60.5		
	Dinner	96	17.9	65	16.2	161	17.2		
Dieting behavior	Dieting	86	13.6	66	13.4	152	13.5	0.005	0.942
	Not dieting	548	86.4	426	86.6	974	86.5		
Favorite dishes	Meat dishes	147	23.2	139	28.2	286	25.4	4.572	0.102
	Pastry dishes	143	22.5	114	23.2	257	22.8		
	Vegetable dishes	344	54.3	239	48.6	583	51.8		
Total		634	100.0	492	100.0	1126	100.0		

terms of height for age and BMI for age ($\chi^2 = 2.139$, $P = 0.343$ and $\chi^2 = 3.773$, $P = 0.287$).

As seen in Table 4, 27.8% of the students perceived their general health status as very good and 45.1% as good. It was determined that the boarders perceived their health status worse compared to the day-students and the difference between the groups was found significant ($P < 0.001$).

4. Discussion

It was determined that 50.1% of the study group brushed their teeth regularly, 86% cut their nails once a week, 33.6% washed their hands at least 10 times a day, and 75.4% did sports (Table 1). No significant difference was found between the boarders and day-students with respect to these behaviors. These results imply that such behaviors are related to the general status of the families in the region and the RBSs do not affect these behaviors much. In a study conducted by Pelen and Günay (13) on primary school students in the provincial center of Kayseri, it was reported that 90% of the students cut their nails once a week and 85% brushed their teeth at least once a day. While the frequencies of cutting nails are similar in the two studies, the percentage of those who brush their teeth regularly was found to be lower in the current study when compared with the values found in Kayseri. This difference

can be attributed to the regional differences and to the fact that the current study included students from a rural area.

The percentage of the students taking baths more frequently than once a week was higher among the boarders than the day-students. The results led us to think that bathing facilities at the boarding schools might be better than that of some families in the region. On the other hand, the percentage of students who considered their sleep durations insufficient was higher among the boarders than the day-students. This situation may be due to the fact that the boarders experience sleeping problems more often because of crowded dormitories and environmental changes. However, since the bathroom and dormitory conditions of the students were not examined directly, whether or not the statements of the boarders and day-students reflect the conditions at the schools cannot be assessed.

The percentage of the students having three meals a day was higher among the boarders than the day-students. The higher percentage of having three meals a day among the boarders can be attributed to the boarders' constantly staying at schools, their having regular meal times, and their having limited opportunities for meals outside the school.

Skipping meals is one of the most common problems during the adolescent period. It was determined that more

Table 3. The comparison of the boarders and day-students in terms of height for age and BMI for age.

Assessment	Groups	Groups						χ^2	P
		Boarders		Day-students		Total			
		Number	%	Number	%	Number	%		
Height for age	Short	180	28.4	110	22.4	290	25.8	11.131	0.004
	Normal	400	63.1	314	63.8	714	63.4		
	Tall	54	8.5	68	13.8	122	10.8		
BMI for age	Thin	70	11.0	76	15.4	146	13.0	13.673	0.003
	Normal	488	77.0	331	67.3	819	72.7		
	Overweight	60	9.5	63	12.8	123	10.9		
	Obese	16	2.5	22	4.5	38	3.4		
Total		634	100.0	492	100.0	1126	100.0		

Table 4. The boarders' and day-students' assessment of their own health.

Groups	Assessment of own health status									
	Very good		Good		Medium		Poor		Total	
	Number	%	Number	%	Number	%	Number	%	Number	%
Boarders	148	23.3	283	44.6	173	27.2	30	4.7	634	100.0
Day-students	165	33.5	225	45.7	88	17.8	14	2.8	492	100.0
Total	313	27.8	508	45.1	261	23.2	44	3.9	1126	100.0

$\chi^2 = 23.697$, $P < 0.001$.

than 70% of the students always or sometimes skipped meals, that lunch was the most commonly skipped meal, and that 13.5% of the students were dieting to get thinner. No significant difference was found between the boarders and day-students with respect to their skipping meals and dieting behavior. Again, with respect to the percentages for skipping meals and dieting, no significant difference existed between the boys and the girls. In the study conducted by Pelen and Günay (13) in Kayseri, the percentage of the students who skipped meals was found close to 70%. In a study by Calderon et al. (14) performed on high school students in Los Angeles, 54.7% of the students were reported to be dieting in order to control their weights. The percentage of dieting students in our study is far less than the percentage in Calderon et al.'s study. This situation may be due to the fact that the students in our study were generally from families of low socioeconomic levels and that obesity rates were low. On the other hand, the observation that about 70% of the boarders and day-students were satisfied with their

body weights is compatible with the low percentage of the students who were dieting to control their weights.

According to the height for age values, 25.8% of the students were classified as short, 63.4% as normal, and 10.8% as tall. The difference between the boarders and day-students was significant and the percentage of the boarders with short stature was higher than that of the day-students. In terms of BMI for age, 13.0% of the students were classified as thin, 72.7% as normal, and 14.3% as overweight or obese. The difference between the boarders and day-students was significant and the percentage of students with normal weight was higher among the boarders. The percentage of overweight/obesity was found higher among the day-students than the boarders.

According to the NHANES study, 16.3% of children and adolescents have been reported to be obese (15). The WHO Regional Office for Europe reports that almost 20% of children and adolescents in the region are overweight and about one-third of them are obese. In European countries, the percentage of overweight and obesity

ranges between 18% and 35% among school children (16). According to the results of the 2010 Turkish Nutrition and Health Survey, it was determined that 23.6% of children aged 12–14 are short, 13.2% are tall, 21.2% are thin, 14.8% are overweight, and 9.8% are obese (17). In a study carried out in Ankara, 13% of the children from the age interval of 11–14 were reported to be overweight or obese (18). In another study conducted among high school students in Manisa, it was found that 4.4% of the students were short, 5% were thin, and 16.8% were overweight or obese (19).

The percentages of overweight and obesity determined in our study are lower than the values reported for the USA, European countries, and Turkey in general, but they are close to the percentages reported in the studies conducted in Ankara and Manisa. The percentages of short stature and thin students are higher than the corresponding values obtained in Manisa.

It was determined that the percentages of short stature were considerably high among both the boarders and day-students. These results indicate that the students studying at the RBSs in the region are generally from families of low socioeconomic level and that chronic malnutrition is widespread. However, the percentage of students with normal weights was higher and overweight/obesity was lower among the boarders than the day-students. These results lead us to think that the current nutrition of the boarders is more regular and the nutritional compositions of the meals are better planned at the RBSs.

In the study group, 27.8% of the students rated their health status as very good, 45.1% as good, and 3.9% as poor. It was determined that the boarders perceived their general health status worse than the day-students. In a study conducted at two elementary schools in İstanbul by Önal et al. (20), it was reported that 31.3% of the students rated their health as excellent, 47.2% as good, 17.5% as medium, and 4% as poor. In terms of the students' perceptions, the results of this latter study and our current study are similar. Though the results of our current study that the boarders perceive their health status worse compared to

the day-students can be attributed to their health statuses actually being worse than that of the day-students, it can also be attributed to psychological reasons that lead them to perceive their health status as worse than it actually is. In this study, the general health status of the students was not objectively assessed.

This study is the first research that compares the health and nutritional status of boarders and day-students in Turkey. However, the study has some limitations. First of all, as the study was conducted in a single province, it does not represent all of the RBSs in Turkey. Secondly, objective indicators of the health status of the students were not examined, except height and weight measurements. Most of the presented results are based on self-report, which may not reflect the real situation.

In conclusion, according to the results of this study, boarders studying at RBSs are generally from families of lower socioeconomic status and have a higher percentage of short stature, which reflects chronic malnutrition. The boarders currently have more regular diets compared to the day-students and the percentage of boarders with normal weights is higher. However, the boarders perceived their health status more negatively compared to the day-students. On the other hand, health-related behaviors of the boarders and day-students were generally similar, but sleeping problems were more prevalent among the boarders.

In order to further evaluate the health status of boarders and day-students, national-scale surveys should be carried out.

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