



Evaluate the Eating Habits of Teachers Working in Various Primary Schools in Ankara

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Authors' contributions

This work was carried out in collaboration between all authors. Authors HY and AÖÖ designed the study, performed the statistical analysis, and wrote the protocol. Author MK managed the analyses of the study, the literature searches and wrote the first draft of the manuscript. All authors read and approved the final manuscript

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ABSTRACT

Aims: The aim of this study is to evaluate the eating habits of teachers working in various primary schools in Ankara.

Study Design: This was a cross sectional study.

Place and Duration of Study: The study was conducted in Ankara, Turkey between February and May, 2012 in primary schools.

Methodology: The study was conducted with 200 teachers. Participants' frequencies of food consumption, eating habits, anthropometric measurements were collected face to face by questionnaire method.

Results: 76.0% of the participants were female and 24.0% were male. While more than half (56.0%) of the teachers consume three meals, the most skipped meals are morning (42.8%) and lunch (55.2%) meals. The most consumed food (38.4%) is fruit in both genders. Nutrient intake of teachers decreases when 46.5% of them are sad and when 37.5% of them are nervous, but for 65.5% of them this intake do not change in excitement ($p < 0.05$). 23.5% of the teachers consume

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milk daily, 52.5% eat eggs 1-2 times a week, 39.0% eat green leafy vegetables, 52.5% eat fruits and 77.0% eat white bread on a daily basis. Apart from that the most consumed (91.0%) every day drink is tea.

Conclusion: In recent years, wrong nutrition habits and the incidence of chronic diseases related with these habits have increased in the society. Considering the teachers' correct nutritional habits on students, it is thought that it is important to have nutrition lessons in undergraduate curriculum and nutrition seminars in in-service training programs in teacher-educated schools.

Keywords: School teachers; nutrition; eating behavior; body mass index.

1. INTRODUCTION

The main aim of the individual, the family and the society is to be healthy and productive. The symbol of being healthy and productive is a well-developed and sustainable body structure from bodily, intellectual, spiritual and social aspects. Human health is influenced by nutrition, heredity, climate and environmental conditions [1].

Adequate and balanced nutrition is the intake of the energy and nutrients required by the body in the amounts recommended daily [1]. The health of the individual is impaired when none of these nutrients are taken or when they are consumed less and more than necessary. The food is divided into four groups for adequate and balanced nutrition. These four food groups are: Meat and meat products, milk and dairy products, vegetables and fruits, and lastly bread and grains [2]. The choice of food and the formation of eating habits are under the influence of various factors. Nutritional habits can be affected by genetic, gender, social, cultural, religious, ethnic, economic, emotional and psychological conditions [3].

Nutrition is also important in the protection and development of health as much as it is in the treatment of diseases. The World Health Organization states in 2003 that chronic diseases such as cardiovascular diseases, certain types of cancer, obesity and Type 2 diabetes or non-contagious chronic diseases due to nutrition cause more deaths than the other causes of death. The report prepared for the prevention of chronic diseases especially emphasized the importance of adequate and balanced nutrition in prevention of diseases, ensuring healthy life continuity and treatment of diseases [4]. When the effect of adequate and balanced nutrition on health is examined, the importance of nutritional diversity shows up. One of the most important features of the Mediterranean Diet, which reflects common eating habits of the Mediterranean countries, is the variety of food. Consumption of

high amounts of olive oil, olives, fruits and vegetables, cereals (mostly whole grain foods), legumes and oil seeds, medium-high level fish, medium-level eggs, poultry and dairy products and low-level red meat products are the main characteristics of this diet. Medically beneficial effects of Mediterranean Diet are associated with many diseases, such as obesity, cardiovascular diseases, Type 2 diabetes, some neurodegenerative diseases and decreased risk of cancer [5,6].

In our country, especially, iron deficiency anemia, osteoporosis and chronic diseases such as obesity, cardiovascular diseases, and diabetes are some of the health problems that may result from an inadequate and unbalanced diet [7]. In addition to chronic diseases, work accidents, increased absenteeism and decreased work efficiency can be observed in employees that cannot take adequate and balanced nourishment. The main of the causes of nutritional problems identified in the employees are the inadequacy of working conditions, economic inadequacies, necessary importance that is not given to nutrition education and wrong nutrition habits [8].

Identification of nutritional trends of working adults and regulation of nutritional habits is important in terms of preventing possible disorders that may be caused by inadequate and unbalanced nutrition. This study was carried out to determine the eating habits of the teachers living in Ankara and their frequency of food consumption.

2. MATERIALS AND METHODS

The study was done in cross-sectional and descriptive type. The data were collected by using face to face interviews with teachers working in state primary schools in Ankara city center. A voluntary consent form has been signed with the participants and they are informed about the purpose and content of the

investigation. The Helsinki Declaration principles were followed in the study. Questionnaires were applied face to face to the participants. The questionnaire included demographic information, eating habits and frequency of food consumption. From anthropometric measurements, body weight (kg) was measured with a calibrable sensitive scale which is sensitive to 0.5 kg and care was taken to ensure that the individual was dressed thinly and shoe-free. The length was measured with a tape measure and when measuring care was taken to ensure that the feet were side by side and the head was in the Frankfort plane. "Body Mass Index" (BMI) was calculated using height and body weight measurements. Obtained BMI values correspond to; $BMI < 18.5 \text{ kg/m}^2$ as underweight, $18.5 < BMI < 25.0 \text{ kg/m}^2$ as normal, $25.0 < BMI < 30.0 \text{ kg/m}^2$ as overweight and $30 < BMI \text{ kg/m}^2$ as obese according to World Health Organization (WHO) [9]. A questionnaire of food consumption frequency which contains 35 different foods was

used to determine the food consumption habits of the teachers.

In the evaluation of the data, SPSS 21.0 statistical package program was used. Gender was used as the variable in the study. In the tables, quantitative data are given in terms of arithmetic mean and standard deviation, and qualitative data in number and percentage. Chi-square significance test (X^2) was applied in the evaluation of the data. The results were assessed in the 95% confidence interval at a significance level of $p < .05$.

3. RESULTS AND DISCUSSION

76.0% of the teachers are female and 24.0% of them are male. The mean age of the teachers are 36.9 ± 7.0 years (female: 36.1 ± 6.5 years; male: 39.5 ± 7.8 years). The general information of the teachers is given in Table 1.

Table 1. General information of teachers

Features	Woman (n=152)		Man (n=48)		Total (n=200)		p
	Count	%	Count	%	Count	%	
BMI (kg/m²)							
Underweight	10	6.6	-	-	10	5.0	
Normal	100	65.8	18	37.5	118	59.0	< .05
Overweight	37	24.3	27	56.3	64	32.0	
Obese	5	3.3	3	6.3	8	4.0	
Cigarette							
Non-user	101	66.4	26	54.2	127	63.5	> .05
User	51	33.6	22	45.8	73	36.5	
Alcohol							
Non-user	136	89.5	36	75.0	172	86.0	< .05
User	16	10.5	12	25.0	28	14.0	
Health Problem							
Not exists	112	73.7	41	85.4	153	76.5	> .05
Exists	40	26.3	7	14.6	47	23.5	
Weight increase in last year							
Not exists	91	59.9	38	79.2	129	64.5	< .05
Exists	61	40.1	10	20.8	71	35.5	
Reducing diet							
Never done	42	27.6	5	10.4	48	24.0	< .05
Done before	106	69.7	42	87.5	148	74.0	
Still doing	4	2.6	1	2.1	5	2.5	
Overweight person in family							
Not exists	81	53.3	21	43.8	102	51.0	> .05
Exists	71	46.7	27	56.3	98	49.0	
Regular exercise							
Not doing	94	61.8	17	35.4	111	55.5	< .05
Doing	58	38.2	31	64.6	89	44.5	
Nutrition education							
Un-educated	124	81.6	43	89.6	167	83.5	> .05
Educated	28	18.4	5	10.4	33	16.5	

90.0% of the teachers were married, 37.0% were living with 3 people in the family and 40.5% were living with 4 people. The percentage of smokers is 36.5% and the percentage of alcohol users is 14.0%. According to their declarations, 23.5% (n=47) of the teachers had health problems. The most common health problems are respiratory system diseases (35.0%) and cardiovascular diseases (25.0%).

The average BMI of female teachers is $23.2 \pm 3.4 \text{ kg/m}^2$ (min: 17.3, max: 38.9 kg/m^2) and for the male teachers it is $25.8 \pm 2.6 \text{ kg/m}^2$ (min: 19.5, max: 30.7 kg/m^2). According to BMI, more than half of female teachers (65.8%) were in normal weight on the other hand 56.3% of male teachers were overweight ($P < .05$). In addition, 40.1% of female teachers and 20.8% of male teachers stated that they had increased weight in the last year and 2.5% of them stated that they are still on a weight loss diet ($P < .05$). 49.0% of the teachers stated that they are fat individuals in their families. It was determined that the rate of female teachers who are regularly performing sports was 38.2% while for the male teachers this rate was 64.6% and it was determined that the most common sport among the teachers is walking (77.5%) ($P < .05$). 83.5% of the teachers did not have any nutrition education during their educational life (Table 1).

While more than half (56.0%) of the teachers in the study consume 3 meals, 49.5% of them stated that they generally skip the main meals. The most skipped meals are morning (42.8%) and lunch (55.2%) meals. The main causes of meal skipping are; having no time for meal (48.6%), habit (19.1%) and having no appetite for meal (16.1%).

87.5% of female teachers and 72.9% of male teachers said that they consume food between meals and it was determined that the most consumed snack was fruits (38.4%) in both genders. Between the meals, beverage consumption is 90.1% and 79.2% in male and female teachers respectively and the most consumed beverage is tea (42.6%) ($P < .05$). It was determined that 82.9% of female teachers and 64.6% of male teachers were eating while watching TV ($P < .05$) (Table 2).

When food consumption is examined based on the psychological state of the teachers; the food consumption decrease in female teachers when they are sad or angry by 52.6% and 41.4% respectively on the other hand for male teachers

food consumption do not change when they are sad or angry by 58.3% and 50.0% respectively again and there is no change in food consumption in case of excitement, for 60.6% of females and for 81.3% of males ($P < .05$). In addition, the food consumption is not affected in case of joy, for 62.5% of female teachers and 70.8% of male teachers ($P < .05$) (Table 3).

The frequency of food consumption of the teachers within the scope of the research was evaluated according to the food groups (Table 4).

From the milk and dairy products; 23.5% of the teachers consume milk, 37.5% of them consume yogurt and 75.5% of them consume white cheese on an everyday basis while from the meat and meat products; 52.5% of the teachers eat eggs, 60.5% of them eat red meat, 66.5% of them eat chicken meat and 38.5% of them eat fish meat 1-2 times a week. Beside these, from the vegetable-fruit group; the consumption of green leafy vegetables (39.0%), citrus fruits (56.0%) and other fruits (52.5%) is every day. While the majority (77.0%) of the teachers consumes white bread daily, the proportion of those who consumes whole wheat bread or whole-grain breads (18.0%) is found to be quite low. The daily consumption of liquid oil, olive oil and olive is 58.0% and 56.5% and 67.5% respectively. Sugar consumption is 55.0% on an everyday basis. And lastly, the most consumed everyday-drink is tea with 91.0%.

3.1 Discussion

Acquiring healthy eating habits and eating healthy foods are important for protecting health and preventing nutrition-related illnesses. With the development of technology, eating habits of people are changing and this can often affect their health in a negative way. This study was conducted to evaluate the eating habits of teachers and the frequency of food consumption.

Obesity is an important public health problem [10] and the prevalence of obesity in Turkey is increasing as it is in the whole world. According to the results of Turkey Diabetes, Obesity and Hypertension Epidemiology Research-II (TURDEP-II) study, the prevalence of obesity in Turkey has increased by 34.0% in women and 107.0% in men in the last 12 years [11]. According to the Turkish Nutrition and Health Survey (TBSA-2010), the incidence of overweight and obese ($BMI > 25 \text{ kg/m}^2$) in 19 years or/and over people was found to be 64.9% while this percentages are 59.6% in males and

70.7% in females [12]. In a study related to teachers that is done by Aykut et al. [13], it is found that 46.1% of the teachers are overweight and 10.8% of them are obese. In this study, it was determined that 27.6% of female teachers, 62.6% of male teachers and 36.0% of the general sample were overweight or obese ($P < .05$). Comparing to other studies conducted in Turkey, it is seen that the overweight or obese incidence is at a lower rate in this study. This may be due to the high awareness of teachers in food choices.

Smoking affects eating habits and causes insufficient and unbalanced nutrition [14]. It was determined that more than one third of teachers (36.5%) are smokers. The rate of smoking among teachers in Turkey varies between 31.5% and 42.0% according to various studies [15-17]. In general, the result is that the smoking status is not related to an increase in the level of education. 14.0% of the teachers who participated in the survey stated that they consume alcohol time to time. Çelebi et al. found

that 24.0% of teachers [15]; Ak et al. found that 27.7% of them consume alcohol [17].

In the "Eat Healthy, Protect Our Hearts" (SBKK) study that was conducted by the Ministry of Health with 15,468 individuals, the physical activity habits of the individuals were questioned and only 3.5% of the individuals were found to have regular physical activity (at least 3 days a week, 30 minutes, medium intensity) [18]. In a survey that was conducted by Yurtseven et al. [8] on 168 employees, it was found that 13.8% of the individuals are regularly exercising and another study that is done by Çelebi et al. [15] on 252 teachers, it was found that 11.3% of female teachers and 6.7% of male teachers perform exercises on a regular basis. In this particular study, 38.2% of female teachers and 64.6% of male teachers stated that they regularly exercise ($P < .05$). Comparing to other studies, the reason for the high percentage of regular exercising teachers could be because this study is conducted in Ankara.

Table 2. Nutrition habits of teachers

Nutritional habits	Woman (n=152)		Man (n=48)		Total (n=200)		p
	Count	%	Count	%	Count	%	
Number of meals							
1	4	2.6	-	-	4	2.0	
2	53	34.9	13	27.1	66	33.0	> .05
3	81	53.3	31	64.6	112	56.0	
≥4	14	9.2	4	8.4	18	9.0	
Main-meal skipping							
Non-skipping	73	48.0	28	58.3	101	50.5	> .05
Skipping	79	52.0	20	41.7	99	49.5	
Consuming snacks between main-meals							
Consuming	133	87.5	35	72.9	168	84.0	
Non-consuming	19	12.5	13	27.1	32	16.0	< .05
Consuming beverages between main-meals							
Consuming	137	90.1	38	79.2	185	87.5	< .05
Non-consuming	15	9.9	10	20.8	25	12.5	
Consuming food after waking up at night							
Non-consuming	122	80.3	41	85.4	163	81.5	> .05
Consuming	10	6.6	1	2.1	11	5.5	
Consuming sometimes	20	13.2	6	12.5	26	13.0	
Eating speed							
Fast	40	26.3	22	45.8	62	31.0	
Slow	25	16.4	3	6.3	28	14.0	< .05
Normal	87	57.2	23	47.9	110	55.0	
Eats while watching TV							
Doesn't eat	26	17.1	17	35.4	43	21.5	< .05
Eat	126	82.9	31	64.6	157	78.5	

Table 3. Changes in food consumption due to psychological condition of teachers

	Woman (n=152)		Man (n=48)		Total (n=200)		p
	Count	%	Count	%	Count	%	
Sadness							
Increase	37	24.3	7	14.6	44	22.0	< .05
Decrease	80	52.6	13	27.1	93	46.5	
Constant	35	23.0	28	58.3	63	31.5	
Nervous							
Increase	44	28.9	12	25.0	56	28.0	< .05
Decrease	63	41.4	12	25.0	75	37.5	
Constant	45	29.6	24	50.0	69	34.5	
Joy							
Increase	35	23.0	12	25.0	47	23.5	> .05
Decrease	22	14.5	2	4.2	24	12.0	
Constant	95	62.5	34	70.8	129	64.5	
Excitement							
Increase	10	6.6	4	8.3	14	7.0	< .05
Decrease	50	32.9	5	10.4	55	27.5	
Constant	92	60.6	39	81.3	131	65.5	

In maintaining the physiological balance of the body and protecting the organs, frequency of the consumption of food, the amount of energy per meal and the amount of nutrients are important [19]. Nutritional habits are related to the number of daily meals, the types and quantities of foods consumed at main meals and snacks. In order for individuals to be fed well and balanced, it is important that their daily food intake is divided into three main meals. In order to maintain an adequate and balanced nutrition, individuals should take their daily food intake by dividing them into three main meals. Conditions such as irregular meals, starvation or excessive nutrition can affect health negatively.

50.5% of the teachers in this study stated that they did not skip their main meals. In a study that is conducted by Sabbağ [20], 54.33% of the teachers and in another study that is done by Birsen [21], 82.0% of the government officers stated that they eat three meals every day.

It was determined that the most skipped main meal is lunch (55.2%) in people who indicated that they generally skip meals (n=99). The main reasons of meal skipping are; having no time for meal (48.6%), habit (19.1%) and having no appetite for meal (16.1%). According to the study done by the Ministry of Health on 39.705 people, the most frequent reasons for skipping meals are having no time for meal (36.3%) and no habit (30.7%) [22]. In a study that is conducted by Ulaş et al. [10] the most frequent causes of meal skipping are having no appetite (30.1%) and having no time (19.0%); in another study that is

done by Yurtseven et al. [8] these reasons are having no time (33.1%) and having no appetite for it (28.5%). Other studies on working individuals have similar reasons for skipping meals with this study. The expressions that is given for the reasons for meal skipping may be due to the fact that the working conditions are not appropriate for regular feeding and that the mealtime is not sufficiently cared and consequently the mealtime is not planned in advance.

Between the meals, eating snacks in small quantities are important for increasing the work efficiency [23]. 82.5% of the female teachers and 72.9% of the male teachers stated that they consume snacks between meals and it is determined that the most consumed foods are fruits (38.4%) in this respect (P < .05). It was determined that 90.1% of the female teachers and 79.2% of the male teachers consume beverages between meals and the most common consumed drink is tea (42.6%) (P < .05). Özçelik and Yönel found that tea or coffee is the first place (86.25% and 85.3%, respectively) in beverages consumed between meals, followed by fruits (49.0% and 43.7% respectively) in the foods [24,25].

Eating fast is one of the nutritional habits associated with obesity. In this study, 26.3% of female teachers and 45.8% of male teachers declared that they are eating fastly (P < .05). Yardımcı and Özçelik determined the rate of fastly-eaters to be 34.5% in a study that was done with 650 women [26].

Table 4. The frequency of food consumption of teachers

Food	Daily		3-4 Times a week		1-2 Times a week		Rarely-never	
	Count	%	Count	%	Count	%	Count	%
Milk	47	23.5	29	14.5	59	29.5	65	32.5
Yoghurt	75	37.5	54	27.0	52	26.0	19	9.5
White cheese	151	75.5	21	10.5	21	10.5	7	3.5
Other cheeses	61	30.5	40	20.0	47	23.5	52	26.0
Egg	18	9.0	32	16.0	105	52.5	45	22.5
Red meat	10	5.0	43	21.5	121	60.5	26	13.0
Chicken meat	3	1.5	20	10.0	133	66.5	44	22.0
Fish	1	0.5	6	3.0	77	38.5	116	58.0
Sausage, salami, etc.	1	0.5	7	3.5	49	24.5	143	71.5
Offal	-	-	-	-	6	3.0	194	97.0
Legumes	-	-	10	5.0	97	48.5	93	46.5
Oily seed	25	12.5	32	16.0	73	36.5	70	35.0
Green-leafy vegetables	78	39.0	66	33.0	46	23.0	10	5.0
Other vegetables	31	15.5	48	24.0	104	52.0	17	8.5
Potato	6	3.0	23	11.5	120	60.0	51	25.5
Citrus	112	56.0	50	25.0	23	11.5	15	6.5
Other fruits	105	52.5	58	29.0	28	14.0	6	4.5
White bread	154	77.0	9	4.5	10	5.0	27	13.5
Whole wheat + whole grain	36	18.0	13	6.5	33	16.5	118	59.0
Rice	1	0.5	35	17.5	130	65.0	34	17.0
Bulgur	-	-	17	8.5	87	43.5	96	48.0
Pasta	-	-	11	5.5	117	58.5	72	36.0
Cake-biscuit	11	5.5	16	8.0	70	35.0	103	51.5
Candy	110	55.0	17	8.5	14	7.0	59	29.5
Honey, jam	70	35.0	34	17.0	42	21.0	54	9.0
Pekmez	30	15.0	20	10.0	38	19.0	112	56.0
Pastry	3	1.5	6	3.0	46	23.0	145	72.5
Pudding	3	1.5	5	2.5	57	28.5	135	67.5
Liquid oil	116	58.0	22	11.0	23	11.5	39	19.5
Olive oil	113	56.5	20	10.0	29	14.5	38	19.0
Butter	40	20.0	17	8.5	51	25.5	92	46.0
Olive	135	67.5	15	7.5	32	16.0	18	9.0
Tea	182	91.0	4	2.0	6	3.0	8	4.0
Carbonated drinks	4	2.0	9	4.5	32	16.0	155	77.5
Juice	15	7.5	30	15.0	49	24.5	106	53.0

More than one third of the teachers stated that their nutritional intake decreased in cases of sadness (46.5%) and nervousness (37.5%) ($P < .05$). In the study that Vançelik et al. [27] conducted, they found that nutrient intake generally decrease (42.6%) when individuals are sad or tired, while nutritional intake does not change when they are joyful or excited (41.4%).

Bread and other grain products are the main food source in the diet of the people in our country [28, 29] and in a study examining the food consumption tendencies of individuals over the years, it is observed that the consumption of bread and other grains, red meat, fish, fruits and butter decrease and the consumption of milk yogurt, poultry meat and eggs is increase [12].

Milk and dairy products, which are rich in nutrients such as calcium, phosphorus, vitamin D, potassium, zinc, riboflavin, reduce cardiovascular disease and Type 2 diabetes risk, as well as improving bone health [30, 31]. Especially for bone health, it is recommended to consume 3 servings of milk and dairy products daily [20]. According to the TBSA-2010 report, the percentage of people in Turkey that are consuming milk, yogurt-buttermilk and cheese daily is 11.8%, 55.1% and 76.0% respectively [12]. In this particular study, 23.5% of teachers consume milk, 37.5% of them consume yogurt and 75.5% of them consume cheese on a daily basis. Especially the percentage of those are consuming milk and yogurt every day is rather

low however this situation is similar to other studies done in Turkey [8,12]. Due to the fact that the rate of digestive disorder related to milk consumption (maldigestion) in Turkey is around 25.0%, having gas, ventricosity and nausea can be seen in individuals and these problems can also reduce the milk consumption [32]. However, the consumption of yogurt and cheese, which are in the same nutrient group, also seems to be inadequate. This may be due to the fact that the effects of milk and dairy products on health may not be known.

Meat, which is a high quality protein source, is rich in micronutrients such as iron, zinc and B vitamins. In a study that is conducted by Heart Disease and Risk Factors in Turkish Adults (TEKHARF), 34.7% of the subjects stated that they rarely consume red meat, 43.4% of them consume chicken meat rarely and 54.8% of the subjects consume fish meat rarely in the winter months [33] and in a study on adults in Konya, the proportion of people who never consumes red meat is 2.7% while the proportion of people who consumes red meat on a daily basis is 8.8% [34]. In this study, 13.0% of the teachers consume red meat, 22.0% consume chicken meat and 58.0% consume fish rarely. Fish consumption was found to be similar to other studies in Turkey, including TEKHFARF study [8,12,33]. The cause of the higher red meat consumption in study compared to other studies could be because of the socio economic reasons.

Percentage of people who consume eggs every day according to studies that are conducted in Turkey; 29.7% in TBSA's study, 22.1% in TEKHFARF's study, 17.7% in Yurtseven et al.'s study and 9% in this particular study. As can be seen, egg consumption is found to be lower in this study compared to others. Excessive number of individuals skipping morning meal in this study (42.8%) may have affected egg consumption. According to the TBSA report, the proportion of people who have consumed dry legumes for 1-2 times a week has been determined as 46.6%, which is similar to the result of this study and this proportion is determined as 48.5% [8,12,33].

Every year in the world, at least 2.7 million people die from problems that are related to consuming inadequate amounts of vegetables and fruits. Vegetables and fruits are rich in terms of folic acid, beta-carotene, which is a vitamin A precursor, vitamin E, C, B₂ vitamins, calcium, potassium, iron, magnesium, pulp and other antioxidant compounds. And they also help to

release harmful substances from the body because of their antioxidant properties. In addition, the vast majority of the intake of pulp in the diet is derived from this group of foods. It is recommended to consume at least 5 servings or 400 gr vegetables and fruits per person daily [35]. In one study, it was found that individuals over 18 years of age in our country consume 1.64 servings of fruits and 1.57 servings of vegetables per day [36]. It was found that daily amounts of green-leafy vegetables and fruits that are consumed by the teachers participated in this study are 39.0% and 52.5% respectively, and similar results were found in other studies [8,12]. In a study conducted by Öner et al. [36] in canteen employees, it was found that 88.3% of participants consume green vegetables and 84.8% of them consume fruits often or always; in another study with women working in the public sector in Bolu, the rate of women that are consuming fruits daily was determined as 76.7% [25]. Also, in a study that is conducted in the United States, the proportion of people who are consuming enough vegetables and fruits everyday was found to be 26.0% [37].

According to the reports of the State Planning Organization and the World Health Organization, bread and other grain products are the main nutrients in Turkey [38]. On average, 44.0% of the daily energy is provided only from bread and 58.0% of it provided from other grain products [39]. In the study that is conducted by TEKHFARF, it was determined that 18.2% of the individuals consume whole-wheat bread daily and in this particular study, it was found that 18.0% of the participants consume whole-wheat bread or whole-grain bread each day [33]. Consumption of whole grain products should become widespread due to higher fiber and vitamin content than white bread.

When the food consumption frequency is examined, 55.0% of the participants consume sugar every day and 35.0% of them consume honey or jam. In particular, consumption of simple carbohydrates, such as sugar, should be reduced in daily diet (should be <10% of the daily energy received) and the consumption of complex carbohydrates which are present in foods such as cereals and dry legumes should be increased. When the frequency of food consumption of the participants participating in the study and their compliance to the Mediterranean Diet was evaluated, the consumption frequency of green-leafy vegetables, other vegetables and whole grain

bread was found low (39.0%, 15.5% and 18.0% respectively). More than half of the participants were found to be eating fruit and citrus every day (56.0% and 52.5%) and 67.5% were consuming olives every day. The Mediterranean diet includes medium-level of chicken meat, egg and fish consumption with low level of red meat consumption. It is seen that 22.0% of the teachers consume chicken meat, 58.0% of them consume fish, 22.5% of them consume eggs and 13.0% of them consume red meat rarely or not consume at all. In brief, although Turkey is a Mediterranean country, it is concluded that the harmonization level of this study is not at the desired with the Mediterranean diet.

The main limitation of this study was the number of participants is insufficient.

4. CONCLUSION

In recent years, the wrong eating habits and therefore the incidence of chronic diseases in the society is increasing. Given the effects of the teachers' correct nutritional habits on students; it could be stated that it is important to have nutrition lessons in undergraduate curriculum in teacher-educating schools and nutrition seminars in in-service training programs.

CONSENT

All authors declare that 'written informed consent' was obtained from the participants for publication of this study.

ETHICAL APPROVAL

All authors hereby declare that all experiments have been examined and approved by the appropriate ethics committee and have therefore been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Baysal A. Nutrition, 15th ed. Ankara: Hatipoglu Publishing House; 2014.
2. Turkey's Food and Nutrition Guide. Hacettepe University Department of

- Nutrition and Dietetics, Health Sciences. Merdiven Advertisement presentation, 1. Baskı. 2015;96s.
3. Kiefer I, Rathmanner T, Kunze M. Eating and dieting differences in men and women. The Journal of Men's Health and Gender. 2005;2(2):194-201.
4. WHO/FAO. Diet, nutrition and the prevention of chronic diseases, WHO Technical Report Series, 916. 2003; Geneva.
5. Barbaros B, Kabaran B. Mediterranean diet and health protective properties. Journal of Nutrition and Dietetics. 2014;42(2):140-147.
6. Gonder M, Akbulut G. Current mediterranean diet and potential health effects: Review. Türkiye Klinikleri J Health Sci. 2017;2(2):110-120.
7. Ayhan DE, Günaydın E, Gönülüaçık E, Arslani, Çetinkaya F, Asımı H, et al. The nutrition habits of Uludag University medical faculty students and the factors affecting them. Uludağ University Medical Faculty Magazine. 2012;38(2):97-104.
8. Yurtseven E, Eren F, Vehid S, Koksall S, Erginoz E, Erdoğan MS. Evaluation of eating habits of white-collar workers. Kocatepe Medical Journal. 2014;15(1):20-26.
9. World Health Organization. Global Database on Body Mass Index. Accessed: 20 March 2016. Available:http://www.who.int/bmi/index.jsp?intropage=intro_3.html
10. Ulaş B, Young MF. The attitudes and behaviors of the staff working in the Malatya military hospital in 2007 on the topic of healthy nutrition. Inonu University Medical Faculty Magazine. 2010;17(3):187-193.
11. Satman I, Omer B, Tutuncu Y, Kalaca S, Gedik S, Dinccag N, et al. Twelve-year trends in the prevalence and risk factors of diabetes and prediabetes in Turkish adults. European Journal of Epidemiology. 2013;28(2):169-180.
12. Hacettepe University Institute of Health Sciences Department of Nutrition and Dietetics. Turkey Nutrition and Health Survey 2010. Report on the Assessment of Nutrition Status and Habits; Hacettepe University and T.C. Ministry of Health; 2014.

13. Aykut M, Horoz D. Prevalence of obesity in teachers working in Kayseri province center. *Erciyes Medical Journal*. 2011;33(3):213-218.
14. The Effects of Nutrition and Nutrient Consumption of. Kayseri: Erciyes University; 2006.
15. Çelebi E, Oğuzöncül AF. Determination of some health behaviors of special education teachers. *F.Ü Sağ Bil Tıp Derg*. 2013;27(2):87-92.
16. Çoban SA, Sungur G. Teachers' behaviors and opinions about smoking. *Turkish Thoracic Journal*. 2013;14(2):98-102.
17. Ak Ş, Çelen Ü, Özen Y, Tabak RS, Piyal B. The health behaviors of the employees of primary schools in central districts of Ankara. *TAF Preventive Medicine Bulletin*. 2006;5(2):83-93.
18. T. C. Ministry of Health General Directorate of Primary Health Services Department of Food Safety Department of Community Nutrition Branch. Protecting our Heart, Healthy Research, Research Report; 2004.
19. Anonymous. A nutritional guide specific to Turkey. Gökçe Offset, 2006, Ankara.
20. Sabbağ Ç. Nutrition habits and nutrition knowledge levels of teachers in elementary schools. Ankara: Ankara University; 2003.
21. Just one EB. Levels of knowledge about adults' fat and cholesterol. Ankara: Ankara University; 2004.
22. T. C. Ministry of health general directorate of primary health care services. Determination of obesity (obesity) and weakness in health workers research report 2011.
23. Samsatlıoğlu Ö. Workers' Nutrition at the Workplace and Related Factors. Ankara: Gazi University; 2004.
24. Özçelik AÖ. A research on the nutritional habits of health personnel. *Food*. 2000;25(2):93-99.
25. Oriol LA. A Research on Nutrition Habits and Nutritional Status of Women Working in the Public Sector in the Central District of Bolu. Ankara: Ankara University; 2005.
26. Assistant H, Özçelik AÖ. Nutritional habits of adult women living in the province of Ankara. *Social Policy Studies*. 2012;28(7): 87-101.
27. Vançelik S, Gürsel Önal S, Güraksın A, Beyhun E. Factors related to nutrition knowledge and habits of university students. *Kor Hek*. 2007;6(4):242-248.
28. Pekcan G. Nutrition problems and dimensions in Turkey: The importance of nutrition and nutrition policies. *New Turkey Health Special Issue*. 2001;39:572-585.
29. National Food and Nutrition Strategy Working Group Report, State Planning Organization, General Directorate of Economic Sectors and Coordination, Publication No KB: 2670, Ankara; 2003.
30. Quann EE, Fulgoni VL, Auestad N. Consuming the daily recommended amounts of dairy products would reduce the prevalence of inadequate micronutrient intakes in the United States: diet modeling study based on NHANES 2007–2010. *Nutrition Journal*. 2015;14:90.
31. Rizzoli R. Dairy products, yogurts, and bone health. *Am J Clin Nutr*. 2014;99:1256–1262.
32. Supreme J, Arslan P. A study of lactation habits (lactose intolerance and intolerance) of adult individuals. *Syndrome Monthly Medical Journal*. 1995;7:8-15.
33. Arslan P, Mercanlıgil S, Gökmen Özel H, Çıtak Akbulut G, Dönmez N, Çiftçi H, et al. TEKHARF 2003-2004 survey participants' general nutritional pattern and eating habits. *Turkish Cardiodi Derm Arş*. 2006;34(6):331-339.
34. A Research on the Nutritional Habits and Knowledge Level of Women Working in Public Institutions in Konya Province. Ankara: Ankara University; 1997.
35. Kılıç M. Prevention of behavioral risk factors in the prevention of chronic diseases. *TAF Prev Med Bull*. 2011;10(6):733-740.
36. Öner C, Çatak Binali, Yıldız M, Erdogan, Canpolat I, Lieutenant Ö. Nutritional characteristics of canteen employees. *Smyrna Medical Journal*. 2013;1:7-11.
37. United States Department of Agriculture (USDA). Diet quality of low income and higher income Americans in 2003-2004 as measured by the Healthy Eating Index-2005. Erişim adresi. Available: <http://www.cnpp.usda.gov/Publications/NutritionInsights/Insight37.pdf>. Erişim tarihi: 08.11.2016

38. T. C. Ministry of Health General Directorate of Primary Health Care Services. Turkey's healthy nutrition and mobility program (2010-2014). The 1.Print. Ankara, Kurban Matbaacılık Publishing; 2011. Metabolic Diseases. Bread Waste. Accessed: 08.11.2016. Available:<http://beslenme.gov.tr/index.php?lang=tr&page=123>
39. Turkey Public Health Institution Department of Obesity, Diabetes and

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