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Original article

# Determination of Nutrition Knowledge Levels of Teachers Working in Edirne Center

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**Abstract.** *Objective:* This study was carried out to determine the nutritional knowledge levels of teachers working in Edirne Center. *Methods:* A total of 389 teachers, 272 female (69.9%) and 117 male (30.1%) volunteers working at schools affiliated to the Republic of Turkish Ministry of National Education in Edirne Center and agreeing to participate in the study. The research data were collected by face-to-face interview method using a questionnaire form. The data of the research were evaluated using the SPSS 19.0 package program. *Findings:* The average age of teachers participating in the study was 42.67 ± 8.76 years. Teachers' nutritional knowledge score average was 4.61 ± 1.36. There was no significant relationship between teachers' age, gender, marital status, education, branch of study and body mass index (BMI) and their nutritional knowledge scores (p> 0.05). There was no statistically significant relationship between teachers' access to nutritional information source, food label reading knowledge, emphasizing healthy nutrition in their lessons giving nutritional advice to their students and nutritional behavior affects students' behavior (p> 0.05). There was a negative relationship between age and nutritional knowledge score, and it was significant at 0.09 level (r = -0.093. p = 0.067). The relationship between the nutritional knowledge score and body mass index (BMI) was not found to be significant (p> 0.05). *Result:* In the study, the nutritional knowledge levels of teachers did not reach the expected goals for each teacher. The implementation of nutrition education programs and the frequent evaluation of the results of teachers, who shape the future and are role models for students, will lead future generations to gain healthy eating habits.

**Key words:** Nutrition program, Teacher nutrition, Healthy nutrition

## Introduction

Rapid technological developments in the last hundred years have positively affected areas such as medicine, communication, production and transportation, and have caused rapid changes in the lifestyles of societies. On the other hand, despite the increase in leisure time in daily life with the change of lifestyle, people's interests that require less energy expenditure have changed, and the time allocated for food shopping and home cooking / cooking has become shorter day by day. The fact that food resources are decreasing and the world population is increasing rapidly, the effort to use food resources effectively has increased the speed and power of technology use in the food industry. Fast-ready food production and consequently consumption has increased significantly due to commercial reactivity (1-4).

In addition to the low prices of these products, the fact that they do not require domestic preparation such as preparation and cooking other than heating makes them suitable and easily accessible for all groups of the society (3,5).

Apart from the problems of product quality and sanitation, the consumption of fast ready-to-eat foods, especially the consumption of saturated fat, sugar, sodium and cholesterol, while the consumption of unrefined grains and vegetables decreases, possible adverse effects on health are worrying (6,7). Since fast food consumption has strong positive associations with weight gain, it is considered to be one of the most important determinants of increasing obesity rates (3,8).

Obesity, a global public health problem, has been characterized as both a disease in itself and a risk factor for other noncommunicable diseases such as cardiovascular diseases, diabetes and certain types of cancer (7,9). Most of the factors that constitute the 'Obesity System', including the food environment, psychological effects, physical activity and the biology of the individual, and which are interconnected, can be controlled (5).

It is known that more than 50% of daily energy is taken from processed foods in most developed countries (5). Food preferences during childhood are also closely related to adult eating habits (10). Children get more than 50% of their daily energy from the food they consume outside the home, especially at school (11). Food and beverage marketing that focuses on children and adolescents promotes almost entirely unhealthy products, and they make a significant contribution to obesity rates and lifelong negative effects on children's health (12).

Children spend more of their time at the school where they study (11). Education systems are shaped in line with the cultures of societies and the behaviors desired to be acquired by individuals. Education is the main way to reach a high level of life individually and to develop and progress as a society by interacting with knowledge, learning and teaching. Basic education, which is one of the important steps of education, provides children with the basic knowledge and skills necessary for their adaptation to society and a better life (13).

School environmental factors include classroom nutrition education, types of food available at school, physical activity, and frequency of breaks. Creating and encouraging healthy eating behaviors in schools is the most effective way to prevent childhood obesity and its consequences (14). During school hours, teachers spend more time with their students than their students' parents and other relatives. They are able to monitor their students' behavior, appearance, and learning abilities more closely every day. For this reason, they can see the interests of the students and the strength of this interest and nutritional problems, and support their students to adopt the right habits (15). Teachers have the potential to influence their students' eating habits through nutritional education, avoiding unhealthy classroom meals, and positive role modeling (16).

Initiatives to prevent childhood obesity include "family-based" and "school-based" studies (17). On the other hand, it is known that schools have a great impact on helping children acquire healthy eating and physical activity habits (11). In addition to acting as educators for structured programs, teachers occupy a special position as role models for their students given their close communication and interactions throughout the school day (11, 18-20). For this reason, it is thought that teachers can influence students' eating behaviors and habits (11,17).

Therefore, teachers can support healthy student behaviors by modeling healthy eating behaviors, incorporating personal nutritional information into daily classroom activities, and avoiding unhealthy classroom eating practices (11).

The aim of this study is to determine the level of knowledge about nutrition of teachers who play an important role in childhood and adolescence, such as family.

## Materials and Methods

This research is a descriptive study conducted between February 2019 and March 2019. Ethics committee approval was obtained from Trakya University Faculty of Medicine Scientific Research Ethics Committee (TUTF 2018/463) for the application

of the study. The sample of the study consists of 389 volunteer teachers who work in schools affiliated to Republic of Turkish Ministry of National Education in Edirne Center and agree to participate in the study. The research data were collected with the help of the questionnaire form by using mutual interview technique. The questionnaire form consists of 43 questions and 3 parts: socio-demographic characteristics, nutritional habits, and nutritional knowledge questions of teachers. General nutrition knowledge questions consisting of 10 questions were prepared by examining other studies on this subject and considering the information that should be known in general (15,21). For those who answered the general nutrition questions correctly, 1 point was given per each correct answer and 0 points for false answers and comparisons between groups were made according to this scoring.

Teachers' anthropometric measurements as their body weight (kg) and height (cm) have been taken and body mass indexes (BMI) were calculated from here. In the assessment of body mass index (BMI). Classification of the World Health Organization (WHO) was used. According to this classification those with a body mass index (BMI) below 18.5 kg / $m^2$ are classified as underweight, those with 18.5-24.9 kg / $m^2$ as normal weight, those with 25.0-29.9 kg / $m^2$ as pre-obese and those above 30 kg / $m^2$ as obese (22).

The data of the research were evaluated using the SPSS 19.0 package program. Chi-square analysis was used to interpret the significance of the findings. Frequency and percentages, median (min-max) values and arithmetic mean ± standard deviation are given as descriptive statistics. For all statistics confidence interval was taken as 95.0% and $p < 0.05$ values are considered statistically significant.

## Results

The distribution of the relationship between teachers' sociodemographic and other descriptive characteristics and nutrition knowledge scores is given in Table 1. When the table is examined in terms of the groups that make up the majority in the first place; 66.6% of the teachers (n = 259) were 40 years and above, 88.2% (n = 343) were married, 69.9% (n = 272) were female, 78.7% (n = 306) of them were undergraduate and 24.7% (n = 96) were classroom teachers. In addition, 2.1% of the teachers (n = 8) were underweight, 47% (n = 183) were normal weight, 39.1% (n = 152) were pre-obese, 11.8% (n = 46) were obese.

There was no significant relationship between teachers' age, gender, marital status, education, branch of study and body mass index (BMI) and their nutritional knowledge scores ($p > 0.05$).

The distribution of the relationship between teachers' nutritional behavior and nutritional knowledge scores was given in Table 2. There was no statistically significant relationship between teachers' access to nutritional information source, food label reading knowledge, emphasizing healthy nutrition in their lessons, giving nutritional advice to their students and nutritional behavior affects students' behavior ($p > 0.05$).

The relationship of teachers' nutritional knowledge score with age and body mass index (BMI) is given in table 3. There was a negative relationship between age and nutritional knowledge score, and it was significant at 0.09 level ($r = -0.093$. $p = 0.067$). The relationship between the nutrition knowledge score and body mass index (BMI) was not found to be significant ($p > 0.05$).

## Discussion

Individuals of all ages, genders and professions should be trained about nutrition in order to gain a good nutritional habit (23). It is of great importance that teachers, who are an important occupational group in our society, have good nutritional knowledge and can reflect this to their students by applying them correctly (24). However, in order for the teacher to train his/her students in nutrition education, the teacher must first have sufficient-balanced nutrition knowledge and habits. Therefore, in this study it was aimed to determine the nutritional knowledge levels of teachers. The average age of the teachers participating in the study was found to be 42.67 ± 8.76 years. The average age of individuals involved in the study was compatible with the average age of the teacher population in our country and it can be said that it is parallel to the country in general.

**Table 1.** Distribution of the Relationship Between Teachers' Sociodemographic and Other Descriptive Characteristics and Nutrition Knowledge Scores

| | Nutrition Knowledge Score | | | | | | |
|---|---|---|---|---|---|---|---|
| Sociodemographic and Other Descriptive Characteristics of Teachers | | **n %** | **$\bar{X}$ ± SS** | **Min** | **Max** | **F** | **p** |
| Age | 20–29 | 34<br>8.7 | 4.91 ± 1.46 | 2.00 | 8.00 | | |
| | 30-39 | 96<br>24.7 | 4.73 ± 1.32 | 2.00 | 7.00 | 1.731 | 0.178 |
| | 40 and higher | 259<br>66.6 | 4.52± 1.35 | 1.00 | 8.00 | | |
| Gender | Female | 272<br>69.9 | 4.68 ± 1.35 | 1.00 | 8.00 | 1.453 | 0.147 |
| | Male | 117<br>30.1 | 4.46 ± 1.37 | 1.00 | 7.00 | | |
| Marital Status | Married | 343<br>88.2 | 4.65 ± 1.34 | 1.00 | 8.00 | 1.531 | 0.127 |
| | Single | 46<br>11.8 | 4.32 ± 1.44 | 1.00 | 7.00 | | |
| Education | Teacher High School | 3<br>0.8 | 3.00 ± 1.00 | 2.00 | 4.00 | 1.606 | 0.172 |
| | Associate Degree | 29<br>7.5 | 4.65 ± 1.14 | 1.00 | 6.00 | | |
| | Bachelor's Degree | 306<br>78.7 | 4.66 ± 1.35 | 1.00 | 8.00 | | |
| | Master's Degree | 46<br>11.8 | 4.39 ± 1.45 | 1.00 | 7.00 | | |
| | PhD | 5<br>1.3 | 4.20 ± 2.04 | 1.00 | 6.00 | | |
| Field / Branch | Classroom teacher | 96<br>24.7 | 4.56 ± 1.29 | 1.00 | 7.00 | 0.066 | 0.992 |
| | Sciences* | 65<br>16.7 | 4.61 ± 1.30 | 1.00 | 7.00 | | |
| | Social Studies* | 140<br>36 | 4.62 ± 1.33 | 1.00 | 8.00 | | |
| | Medical Knowledge | 2<br>0.5 | 4.50 ± 2.12 | 3.00 | 6.00 | | |
| | Sports | 86<br>22.1 | 4.66 ± 1.52 | 1.00 | 8.00 | | |
| Body Mass Index (BMI) Classification | Underweight | 8<br>2.1 | 4.12± 1.35 | 2.00 | 6.00 | 1.292 | 0.277 |
| | Normal weight | 183<br>47 | 4.72 ± 1.29 | 1.00 | 8.00 | | |
| | Pre-obese | 152<br>39.1 | 4.57± 1.40 | 1.00 | 8.00 | | |
| | Obese | 46<br>11.8 | 4.36± 1.48 | 1.00 | 7.00 | | |

* Sciences: Physics / Chemistry / Biology. Mathematics. geometry
* Social Sciences: History. Philosophy. Geography. Foreign language Turkish / Literature etc.

**Table 2.** Distribution of the Relationship Between Teachers' Nutrition Behavior and Nutrition Knowledge Scores

| | | Nutrition Knowledge Score | | | | | |
|---|---|---|---|---|---|---|---|
| Nutritional Behaviours | | **n %** | **$\bar{X}$ ± SS** | **Min** | **Max** | **F** | **p** |
| Nutrition Knowledge Source | TV / Radio | 82<br>21.1 | 4.70 ± 1.27 | 2.00 | 8.00 | 0.400 | 0.877 |
| | Newspaper / Magazines | 9<br>2.2 | 4.25 ± 1.66 | 1.00 | 6.00 | | |
| | Social Media | 70<br>18.4 | 4.51± 1.41 | 1.00 | 8.00 | | |
| | Friends | 10<br>2.6 | 5.00 ± 1.24 | 3.00 | 7.00 | | |
| | Family | 77<br>19.7 | 4.66 ± 1.26 | 1.00 | 7.00 | | |
| | Doctor | 40<br>10.2 | 4.42 ± 1.46 | 1.00 | 8.00 | | |
| | Dietitian | 67<br>17.2 | 4.67 ± 1.45 | 1.00 | 7.00 | | |
| | Pharmacist | 34<br>8.6 | 4.64± 1.36 | 2.00 | 7.00 | | |
| Reading Food Label Information | Always | 213<br>54.8 | 4.56 ± 1.34 | 1.00 | 8.00 | 0.300 | 0.741 |
| | Sometimes | 167<br>42.9 | 4.66 ± 1.36 | 1.00 | 8.00 | | |
| | Never | 9<br>2.3 | 4.77 ± 1.78 | 1.00 | 7.00 | | |
| Emphasis on Healthy Eating in Lessons | Always | 116<br>29.8 | 4.68 ± 1.38 | 1.00 | 7.00 | 0.445 | 0.721 |
| | Often | 107<br>27.5 | 4.61 ± 1.27 | 1.00 | 7.00 | | |
| | Sometimes/rarely | 154<br>39.6 | 4.53 ± 1.40 | 1.00 | 8.00 | | |
| | Never | 12<br>3.1 | 4.91 ± 1.44 | 1.00 | 6.00 | | |
| Giving nutritional advice to students | Yes | 321<br>82.5 | 4.65 ± 1.33 | 1.00 | 8.00 | 1.391 | 0.165 |
| | No | 68<br>17.5 | 4.40± 1.48 | 1.00 | 7.00 | | |
| Nutritional behavior influencing students | Yes | 251<br>64.5 | 4.64± 1.360 | 1.00 | 8.00 | 0.725 | 0.469 |
| | No | 138<br>35.5 | 4.54 ± 1.37 | 1.00 | 8.00 | | |

Teachers' nutritional knowledge score average was 4.61 ± 1.36. When the relationship between teachers 'sociodemographic and individual characteristics and their nutritional knowledge scores was examined no significant relationship was found between teachers' age, gender, marital status, education, branch of study and body mass index (BMI) and their nutritional knowledge scores ($p > 0.05$). In a study conducted on 200 teachers, have found that the average knowledge scores of the teachers increased as their age, professional experience and educational status increased (21). Another study conducted on 100 physical

**Table 3.** The Relationship of Teachers' Nutrition Knowledge Score with Age and Body Mass Index (BMI)

| | | Nutrition Knowledge Score |
|---|---|---|
| Age | **r** | -.093* |
| | **p** | .067 |
| Body Mass Index (BMI) Classification | **r** | -.057 |
| | **p** | .261 |

* Correlation coefficient is significant at 0.10 level.

teachers showed that teachers' nutritional knowledge levels were insufficient (25). In the study of Kayapınar, in which 134 primary school teachers' nutritional habits and knowledge levels were examined it was determined that teachers' nutritional knowledge levels were insufficient (26). In another study on 150 teachers, 22% of the teachers were found to have insufficient nutritional knowledge whereas 3.67% of the teachers in the another study conducted on 381 teachers have shown the same results (15,27) . In a different study conducted on 173 teachers, on 173 teachers only four teachers (3%) answered at least four of the five nutritional knowledge questions correctly (28).

When the relationship between teachers 'nutritional behavior and nutritional knowledge scores was examined, there was no statistically significant relationship between teachers' access to nutrition information source, food label reading information, emphasizing healthy nutrition in their lessons giving nutritional advice to their students and nutritional behavior affects students' behavior ($p > 0.05$). In a study conducted on 775 teachers parallel to the results of this study, nutritional literacy levels did not differ significantly in terms of educational status and marital status (29). Another study conducted on 200 teachers the difference between teachers' level of knowledge and taking lessons about nutrition was found to be statistically significant (21). In a meta-analysis conducted in 2020 it was shown that teaching nutrition education by qualified teachers in primary schools can make a significant contribution to the knowledge and nutritional habits of children (30). Therefore, if teachers realize how important knowledge and behaviors are in terms of healthy nutrition, they can contribute more to the knowledge and behavior development of children in terms of healthy eating (31). Nutritional knowledge relates to dietary intake in the general population (32). In a different study conducted on 571 students for 36 weeks, the healthy eating habits of students who received nutrition education from teachers trained by dietitians increased (33). Another study conducted on 70 students for 4 weeks showed an increase in the nutritional knowledge score averages of the students who were educated by the teachers trained by dietitians (34). In a different study conducted on 628 teachers, a significant relationship was found between the feeding hours and the nutritional self-efficacy of the teachers (16).

When looking at there was a negative relationship between age and nutritional knowledge score, and it was significant at 0.09 level ($r = -0.093$. $p = 0.067$). In a study conducted with 282 teachers in 2016, it was observed that the nutritional knowledge scores of teachers about vitamin mineral increased significantly as the age increased (35). Another study conducted on 1094 teachers no significant relationship was found between age and teachers' nutritional knowledge (36).

In the light of this information, the nutritional knowledge level of teachers an important occupational group in our society is very important for positive role modeling on their students and to avoid unhealthy eating habits. However, unfortunately there are not many studies in the literature on this subject and the nutritional knowledge levels of teachers are not at the desired levels in the studies. The implementation of nutrition education programs and the frequent evaluation of the results of teachers who shape the future and are role models for students will lead future generations to gain healthy eating habits. This study is limited with the affiliated schools of the Republic of Turkish Ministry of National Education in Edirne Center because of transportation difficulties. Although the number of teachers participating in the study did not reflect all teachers it provided data to shed light on further studies.

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**Consent to participate:** Written consent was obtained from the participants in accordance with the principles of the Helsinki Declaration

**Authors' contribution:** All authors contributed to the study understanding and design. The introduction, material method, findings and discussion part of the article were written by Merve PEHLİVAN, Leyla TEVFİKOĞLU PEHLİVAN, Nihan YALDIZ and Burcu YEŞİLKAYA. Data collection was carried out by Kıymet Pınar ÇALIM, Kübra YAZAR, Ruken KULİN and Sezen IBRAIMI. All authors have read and approved the final version of the article.

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