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Investigation of the Relationship Between Health and Food Literacy and Healthy Eating Obsession in Call Center Employees

Çağrı Merkezi Çalışanlarında Sağlık ve Gıda Okuryazarlığı ile Sağlıklı Yeme Takıntısı Arasındaki İlişkinin İncelenmesi

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ABSTRACT

Aim: The aim of this study was to examine the relationship between food literacy, health literacy, and healthy eating obsession in call center employees.
Material and Methods: The cross-sectional descriptive study was conducted with 545 participants working in a call center, of whom 68.1% (n=371) were female and 31.9% (n=174) were male. A questionnaire consisting of sociodemographic data form, and perceived food literacy, health literacy, and ORTO-R scales were applied to the participants.
Results: While 51.7% (n=282) of the participants had a normal body mass index, 41.7% (n=227) were overweight. Perceived food literacy (p=0.008) and ORTO-R (p=0.004) scores of female participants were higher than male participants, and those who were married had higher perceived food literacy scores than singles (p=0.003). Underweight individuals scored higher perceived food literacy than normal-weight individuals, and normal-weight individuals scored higher than overweight individuals (p=0.004). ORTO-R scores of the overweight group were higher than the other two groups and the difference was statistically significant (p<0.001). According to the regression analysis, health literacy decreased by 5.026 units for those who do not think they are eating healthy, and by 9.943 units for those who do not know how a healthy diet should be. Overweight participants exhibit more orthorexic eating behavior (p<0.001).
Conclusion: Effective and continuous training programs will be beneficial for call center employees who have inactive and sedentary working conditions due to their work, in order to determine their deficiencies or inadequacies in terms of gaining food literacy, health literacy, and healthy eating behavior.
Keywords: Call center employees; health literacy; food literacy; eating disorder.

ÖZ

Amaç: Bu çalışmanın amacı, çağrı merkezi çalışanlarında gıda okuryazarlığı, sağlık okuryazarlığı ve sağlıklı beslenme takıntısı arasındaki ilişkinin incelenmesidir.
Gereç ve Yöntemler: Kesitsel tipte olan çalışma, bir çağrı merkezinde çalışan %68,1 (n=371) kadın ve %31,9 (n=174) erkek olmak üzere 545 katılımcı ile yapıldı. Katılımcılara sosyodemografik veri formu ile birlikte algılanan gıda okuryazarlığı, sağlık okuryazarlığı ve ORTO-R ölçeklerinden oluşan bir anket uygulandı.
Bulgular: Katılımcıların %51,7'si (n=282) normal vücut kitle indeksine sahipken %41,7'si (n=227) ise fazla kiloluydu. Kadın katılımcıların algılanan gıda okuryazarlığı (p=0,008) puanları ve ORTO-R (p=0,004) puanları erkek katılımcılara göre daha yüksek olup evli olanların ise bekarlara göre algılanan gıda okuryazarlığı puanları daha yüksekti (p=0,003). Düşük kilolu bireyler normal kilolu bireylere göre daha yüksek gıda okuryazarlığı algısı puanı alırken normal kilolu bireyler de fazla kilolu bireylere göre daha yüksek puan aldı (p=0,004). Fazla kilolu grubun ORTO-R puanları diğer iki gruba göre de daha yüksekti ve aradaki fark istatistiksel olarak anlamlıydı (p<0,001). Regresyon analizine göre sağlık okuryazarlığı sağlıklı beslenmediğini düşünenlerde 5,026 birim, sağlıklı beslenmenin nasıl olması gerektiğini bilmeyenlerde ise 9,943 birim azalmaktadır. Fazla kilolu katılımcılar daha fazla ortoreksik yeme davranışı sergilemektedir (p<0,001).
Sonuç: İşleri gereği hareketsiz ve hareketsiz çalışma koşullarına sahip olan çağrı merkezi çalışanlarının gıda okuryazarlığı, sağlık okuryazarlığı ve sağlıklı beslenme davranışı kazandırma açısından eksikliklerini veya yetersizliklerini belirlemeye yönelik etkili ve sürekli eğitim programları faydalı olacaktır.
Anahtar kelimeler: Çağrı merkezi çalışanları; sağlık okuryazarlığı; gıda okuryazarlığı; yeme bozukluğu.

INTRODUCTION

Nowadays, developing and changing living conditions cause big cities to live and stay awake 24 hours a day. Therefore, call centers which are the working areas of living cities, have to provide 24-hours service (1,2). Work-specific factors such as variable working hours, limited workspace, the system that sometimes does not allow short breaks, and inactivity can cause many health problems, especially nutritional disorders in employees (3). It is reported that unhealthy eating patterns cause an increase in the burden of obesity, nutrition-related non-communicable diseases, and related deaths, as well as environmental problems (4,5). Eating attitude is one of the biggest behavioral health problems today.

Social values, which are in constant change, also affect human feeding behavior. In recent years, there has been a clear awareness that healthy nutrition has positive effects on health in societies. However, obsessing over this type of behavior toward healthy foods causes a negative result in health and quality of life (6). Based on the definition by the Centers for Disease Control and Prevention (CDC), food literacy is the degree to which individuals have the capacity to obtain, process, and understand basic food and food preparation information for appropriate food selection (7), while nutritional literacy is the individual's capacity to access, understand, interpret and apply basic nutritional information and services in a way that improves their health (8). Health literacy (HL) is extremely important, as achieving higher levels of literacy in societies is associated with a range of health outcomes. Persons with poor health literacy are less sensitive to health education, less affected by the implementation of disease prevention programs, and less successful in the management of chronic diseases (9).

Food literacy, on the other hand, is based on the premise of applying basic literacy skills to concepts related to nutrition. This includes but is not limited to, the skills and behaviors required to choose healthy foods, and plan and prepare healthy meals that meet individual nutritional needs. A healthy eating plan plays an important role in preventing overweight/obesity and subsequent health conditions. However, understanding what a healthy diet includes is complex and may require high cognitive skills (10). Health and food literacy are crucial for both successful weight management and making healthy lifelong choices (11). Health and nutrition literacy plays an important role in the development of healthy eating behaviors (12).

The aim of this study was to examine the relationship between food literacy, health literacy, and healthy eating obsession in call center employees.

MATERIAL AND METHODS

In this cross-sectional descriptive study, the data collection process was carried out via Google Forms. Participants were first asked about their willingness to participate in the study. The research was conducted with a total of 545 participants, 371 female and 174 male, working in the call center. Ethics committee approval was obtained from the Ankara Medipol University (20.12.2022, 194).

Data Collection Tools

Sociodemographic Data Form: An introductory information form, which included questions about the participants' sociodemographic characteristics such as age, gender, and education level, was applied. Body weight and height were recorded according to the statements of the participants. Body mass index (BMI) values were calculated by the researchers by dividing the body weight by the square of the height. BMI values were evaluated according to the classification of the World Health Organization (WHO), <18.5 underweight, 18.5-24.9 normal body weight, 25.0-29.9 slightly overweight, and ≥30.0 obese (1).

Perceived Food Literacy Scale (PFLS): The scale was developed by Poelman et al. (13) in 2018, and a validity and reliability study for the Turkish version was conducted by Tarı Selçuk et al. (14) in 2020. It consists of 29 items in total, and 8 sub-dimensions as food preparation skills, resilience and resistance, healthy snack styles, social and conscious eating, examining food labels, daily food planning, healthy budgeting, and healthy food stockpiling. Individuals' agreement with each statement was determined by a five-point Likert scale, 5: always done to 1: never done. As the scores of individuals on the scale increase, their awareness of eating also increases. In the scale, items 2, 10, 12, 19, 26, 27, 28, and 29 are scored by reversing. The sum of the scores obtained from all items in the scale indicates the perceived food literacy level and high scores indicate the high level of food literacy. The score range for the whole scale is 48-141. In this study, the internal reliability coefficient (Cronbach alpha) of the scale was found to be 0.86.

Health Literacy Scale (HLS): The 47-item Health Literacy Survey in Europe (HLS-EU) form developed by Sorensen was later simplified as the HLS with the collaboration of Toçi, Bruzari, and Sorenson. Sezer and Kadıoğlu (12) conducted the validity and reliability study. The scale consists of 25 items and four subscales. Access to information includes five items (items 1-5), the score range of this subscale is 5-25. Understanding information includes seven items (items 6-12), the score range in this subscale is 7-35. The appraisal/evaluation subscale includes eight items (items 13-20), the score range on this scale is 8-40. The application/use subscale includes five items (items 21-25), the score range on this scale is 5-25. The score range for the whole scale is 25-125. The items of the scale are in a Likert structure as 5: I have no difficulty, 4: I have little difficulty, 3: I have some difficulty, 2: I have a lot of difficulty, 1: I am unable to do / I have no ability / impossible. All items of the scale have a positive structure, there is no reverse item. Low scores indicate insufficient, problematic, and poor health literacy, while high scores indicate adequate and very good. The higher the score, the higher the individual's health literacy level. The score range for the whole scale is 6-30 (15). In this study, the internal reliability coefficient (Cronbach alpha) of the scale was found to be 0.91.

ORTO-R: This scale was used to measure the intensity of participants' orthorexic behaviors. It consists of 6 items, developed by Rogoza et al. (16). Arusoglu et al. (5) conducted the validity and reliability study. The level of agreement of individuals with each statement is determined using a 5-point Likert scale. The person is asked to score 5 points if he/she always does the specified situations to 1 point if he/she never does. The scores of individuals from the scale were used for intergroup

comparisons (16). In this study, the internal validity coefficient (Cronbach alpha value) of the scale was found to be 0.83.

Statistical Analysis

The data obtained in the study were analyzed using the IBM SPSS v.22 program. Number, percentage, mean, and standard deviation were used for descriptive statistical methods in the evaluation of the data. The t-test was used to compare continuous data between two independent groups, and the One-way ANOVA test was used to compare more than two independent groups. Scheffe test was used as a complementary posthoc analysis to determine the differences after the ANOVA test. Pearson correlation and regression analysis were applied between the continuous variables. Linear regression (enter) was used to determine the effects of correlated independent variables on health literacy and perceived food literacy. The logistic regression model was also used to determine the relationship between perceived food literacy and health literacy. The findings were evaluated at the 95% confidence interval and at the 0.05 significance level.

RESULTS

A total of 545 individuals, 68.1% (n=371) female, and 31.9% (n=174) male, participated in the study. The majority of the participants (74.9%, n=408) graduated from university, and 48.4% (n=264) were married. Of the participants, 91.9% (n=501) knew how to have a healthy diet, 68.3% (n=372) were not doing physical exercise, and 84.0% (n=458) did not define obesity in their first-degree relatives. In addition, 51.7% (n=282) of the participants had a healthy normal BMI, while 41.7% (n=227) were overweight.

Cronbach alpha values of PFLS, HLS, and ORTO-R were found to be 0.84, 0.78, and 0.81, respectively, and the total scores were 100.18±14.77 for PFLS, 111.40±13.59 for HLS, and 17.55±4.38 for ORTO-R.

PFLS (p=0.008) and ORTO-R (p=0.004) scores of female participants were higher than male participants, and those who were married had higher PFLS total scores than singles (p=0.003). Individuals who think they eat healthy have higher HLS (114.53±12.04) and PFLS (105.24±14.71) scores, but lower ORTO-R scores (17.05±3.96) than those who don't think they eat healthy (p<0.001). It was observed that those who knew how to have a healthy diet and those who did physical exercise scored higher on HLS and PFLS (p<0.001). PFLS and ORTO-R differed significantly between the groups according to BMI. In the PFLS scores, underweight individuals scored higher than normal-weight individuals, and normal-weight individuals scored higher than overweight individuals (p=0.004). ORTO-R scores of the overweight group were higher than the other two groups and the difference was statistically significant (p<0.001).

There were weak and moderate positive correlations between both total and sub-dimension scores of PFLS and HLS (Table 2). While food preparation skills, one of the sub-dimensions of the PFLS showed a positive weak correlation with ORTO-R (r=0.157, p<0.001), ORTO-R is also correlated with healthy snack styles (r=0.109, p=0.011), examination of food labels (r=0.256, p<0.001), and daily food planning (r=0.261, p<0.001), and also the total score of the PFLS (r=0.128, p=0.003).

Multiple regression analysis was performed to reveal how health literacy is affected by thinking about living healthy and knowing how to eat healthy. A one-unit increase in those who think they live healthily affects health literacy by 5.026 units, while the same increase in knowing how to live healthily affects health literacy by 9.943 units. A total of 12.5% change in the level of health literacy is associated

Table 1. Comparison of the scales scores according to the demographic characteristics

Gender	Male (n=174)	Female (n=371)	p
HLS	110.51±15.62	111.82±12.52	0.295
PFLS	97.75±14.94	101.33±14.57	**0.008**
ORTO-R	16.78±4.13	17.91±4.54	**0.004**

Marital Status	Married (n=264)	Single (n=281)	p
HLS	111.67±13.96	111.15±13.25	0.654
PFLS	101.58±14.99	98.87±14.54	**0.003**
ORTO-R	17.31±4.21	17.77±4.52	0.216

Age Group	19-29 years (n=228)	30-39 years (n=253)	≥40 years (n=64)	p
HLS	110.27±13.90	111.78±13.53	113.58±12.40	0.143
PFLS	98.67±14.30	101.80±15.43	99.20±12.65	0.064
ORTO-R	17.78±4.39	17.53±4.46	16.79±3.96	0.277

BMI Group	Underweight (n=36)	Normal (n=282)	Overweight (n=227)	p
HLS	115.36±10.44	111.40±13.84	110.78±13.65	0.172
PFLS	105.19±15.86[a]	101.33±15.23[b]	97.97±13.81[c]	**0.004**
ORTO-R	17.41±4.80[ab]	16.92±4.25[a]	18.35±4.36[b]	**0.001**

PFLS: perceived food literacy scale, HLS: health literacy scale, BMI: body mass index

Table 2. Correlation between perceived food literacy and health literacy

	Accessing Information		Understanding Information		Appraising Information		Applying Information		HLS Total		ORTO-R	
	r	**p**	**r**	**p**	**r**	**p**	**r**	**p**	**r**	**p**	**r**	**p**
Food preparation skills	0.273	**<0.001**	0.352	**<0.001**	0.334	**<0.001**	0.273	**<0.001**	0.363	**<0.001**	0.157	**<0.001**
Resilience and resistance	0.231	**<0.001**	0.242	**<0.001**	0.327	**<0.001**	0.431	**<0.001**	0.361	**<0.001**	-0.057	0.185
Healthy snack styles	0.242	**<0.001**	0.264	**<0.001**	0.308	**<0.001**	0.346	**<0.001**	0.340	**<0.001**	0.109	**0.011**
Social and conscious eating	0.104	**0.015**	0.147	**0.001**	0.148	**0.001**	0.092	**0.032**	0.146	**0.001**	0.032	0.455
Examination of food labels	0.067	0.117	0.104	**0.015**	0.158	**<0.001**	0.213	**<0.001**	0.161	**<0.001**	0.256	**<0.001**
Daily food planning	0.070	0.102	0.089	**0.037**	0.117	**0.006**	0.168	**<0.001**	0.131	**0.002**	0.261	**<0.001**
Healthy budgeting	0.299	**<0.001**	0.311	**<0.001**	0.366	**<0.001**	0.421	**<0.001**	0.409	**<0.001**	0.128	**0.003**
Healthy food stockpiling	0.038	0.377	0.022	0.612	0.028	0.510	0.025	0.555	0.033	0.447	0.074	0.085
PFLS Total	0.291	**<0.001**	0.335	**<0.001**	0.386	**<0.001**	0.420	**<0.001**	0.421	**<0.001**	0.128	**0.003**

PFLS: perceived food literacy scale, HLS: health literacy scale

with thinking about eating healthy and knowing how to eat healthy (R^2=0.125). PFLS is negatively affected by 6.314 units from the male gender, 2.812 units from being single, 9.269 units from not considering a healthy diet, and 5.866 units from not doing physical exercise. Gender, marital status, thinking that eating healthy, and exercising affect the perceived food literacy at a rate of 31.8% (R^2=0.318). The effect of health literacy on perceived food literacy was tested with simple linear regression analysis and the results were found to be statistically significant (p<0.001). A significant relationship was found between perceived food literacy and health literacy. The adjusted R^2 value shows the generalizability of the model and the created model explains 17.7% of the total variance.

DISCUSSION

Despite the rapid developments in the food industry in recent years, exposure to important hazards arising from unhealthy foods and bad eating habits continues, as is the case with call center workers who live sedentarily and have to work constantly at a desk (17). From this point of view, this study aimed to investigate the relationships between food literacy and health promotion literacy of call center workers. In addition, no studies have been found in the literature on the food and health literacy of call center employees who have very sedentary living conditions. While 51.7% (n=282) of the participants in our study had a healthy BMI, 41.7% (n=227) were overweight. Factors affecting nutritional literacy include sociodemographic factors such as age, gender, education level, marital status, and income level. In order for individuals to lead a healthy life and gain healthy eating habits, it is necessary to increase food and nutrition literacy. The results of this study showed that both food and health literacy are closely related to sociodemographic and individual factors. In line with the findings of previous studies (18,19), statistically significant relationships were found between food and nutritional knowledge, food skills, endurance, and eating behaviors. The most striking finding was that females' PFLS scores were higher than males, while married females had a higher PFLS total score than singles. It has been found that gender and marital status play an important moderator role between food literacy and healthy eating habits in call center employees. Especially married and female participants had higher awareness of food literacy than males in terms of their resilience levels. It is assumed that since females are generally more sensitive about their appearance than males, they attach more importance to maintaining their healthy weight and therefore they constantly try to eat a balanced diet. It is thought that those who are married have higher health and food literacy because they are more organized and have more responsibilities. According to the results of the regression analysis, being male, being single, not thinking about a healthy diet, and not doing physical exercise are the factors that reduce PFLS. These factors explain 18% of the variance for PFLS. Participants who did not know how a healthy diet should be, smoking status, and BMI did not have a significant effect on PFLS.

It has been determined that individuals who think they eat healthy have higher HLS scores but lower ORTO-R scores than those who do not. In addition, it was determined that among the call center employees, those who do physical exercise and knew how to eat healthily had higher food and health literacy levels, and those who were overweight had a much higher orthorexic behavior. These results show that call center workers should be encouraged to develop not only declarative but also psychological and self-regulating aspects of food literacy in a balanced way through many different educational and cultural ways in order to lead a healthier life (13). In addition, health literacy was also significantly associated with food literacy levels, consistent with previous findings. This confirms that food and health are inextricably linked, meaning that all relevant variables need to be carefully considered in relation to each other. Knutsson et al. (20) reported that those who work constantly at a desk and/or in shifts exhibit more orthorexic eating behavior than those who work in daytime and active working conditions. In our study, it was determined that about half of the call center employees were overweight and these people developed more orthorexic behaviors. While the obsession with healthy eating may directly affect the lives of individuals and cause nutritional deficiencies and moreover eating behavior disorders, in some cases, the dietary rules applied by the individual in order to improve health may have harmful consequences on health (21). In the literature, it is stated that age, interest in healthy nutrition, and being compatible

with innovations in healthy nutrition are affected by health literacy, there is an increase in health literacy as age increases, and also knowing how to eat healthy is directly related to health literacy (22,23). In a study, it was determined that those with a BMI in the normal range and those who work in the health field, either themselves or one of their family members, had a higher level of nutritional literacy (24,25). While it has been reported that the level of nutritional literacy decreases with increasing age (26), there are studies reporting that there is no relationship between nutritional literacy and gender (27), or that female participants have higher nutritional literacy than male participants (28,29). This may be due to the fact that females are more interested in nutrition and health than males, have more knowledge and skills in food preparation, and are responsible for family nutrition.

Low health and food literacy is known to pose a barrier to healthy eating. Because healthy eating is an important part of a healthy life. In this direction, the primary purpose of the workplace physician is to maximize the health, physical, mental, and social well-being of the employee and maintain this level, and provide the necessary training. Therefore, it is among the primary duties of the workplace physician to raise awareness of healthy nutrition by increasing the health and food literacy levels of the call center employees who are constantly working at the desk. The more the occupational physician focuses on health and food literacy training, the better the physiological and psychological health of the employees will be.

In our study, it was determined that an increase in those who did not think they had a healthy diet decreased HLS by 5.026 units and those who did not know how to eat healthy decreased it by 9.943 units. It can be said that these factors explain 12.5% of the variance for HLS. In order to develop a healthy lifestyle, perceived food literacy and health literacy should be evaluated together.

According to our research results, perceived food literacy explains 17.7% of health literacy. While Apaydın Demirci and Çelik (30) reported that perceived food literacy explains 9.9% of healthy lifestyle behavior, İncedal Sonkaya et al. (31) stated that eating behavior explains 20.2% of the change in the dependent variable of health literacy, Çakıcı and Yıldız (32) reported that health awareness explains 34.4% of healthy eating behavior. Although more studies are needed, there are important research results that perceived food literacy may have a protective effect on health (33).

CONCLUSION

It is thought that effective and continuous training programs will be beneficial for call center employees who have inactive and sedentary working conditions due to their work, in order to determine their deficiencies or inadequacies in terms of gaining food literacy, health literacy, and healthy eating behavior. The working conditions of call center employees significantly affect the physical and psychological health of individuals. In order to eliminate the said negativities, employees should be informed about the health risks created by the work environment and their demands for training should be taken into consideration. In order to achieve this, it is important to plan regular trainings, to make occupational medicine active, preventive medicine, qualified, and accessible. It is necessary for the occupational physician to continue his/her profession without being under the pressure of any structure such as the employer, or state through the law, and the right to make free decisions based on scientific knowledge should be protected.

Ethics Committee Approval: The study was approved by the Non-interventional Clinical Research Ethics Committee of Ankara Medipol University (20.12.2022, 194).

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REFERENCES

1. www.who.int [Internet]. World Health Organization (WHO). Noncommunicable diseases. [Updated: 2022 Sep 16; Cited: 2023 Jan 12]. Available from: https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases
2. Sharma V, Varma K. Call centres employees: nutritional status and health. Res Reinf. 2015;3(1):44-9.
3. Yaşar A, Alpsoy F, Taçgın E. Evaluation of call centers in terms of work health and security. Ank Univ Sos Bilim Derg. 2017;7(1):1-29. Turkish.
4. Mehri A, Jafari N, Akbarzadeh I, Hadavand Siri F, Abbassgholizadeh N. Students' nutrition literacy and the existence of health care providers in Iranian schools. J Res Health Sci. 2020;20(2):e00476.
5. Arusoğlu G, Kabakçı E, Köksal G, Kutluay Merdol T. Orthorexia nervosa and adaptation of ORTO-11 into Turkish. Türk Psikiyatri Derg. 2008;19(3):283-91. Turkish.
6. Şengül R, Hocaoğlu Ç. What is Orthorexia Nervosa? Diagnostic and Therapeutic Approaches. KSU Med J. 2019;14(2):101-4. Turkish.
7. Food Forum; Food and Nutrition Board; Health and Medicine Division; National Academies of Sciences, Engineering, and Medicine. Food literacy: how do communications and marketing impact consumer knowledge, skills, and behavior? Workshop Summary. Washington DC: National Academies Press; 2016.
8. Carbone ET, Zoellner JM. Nutrition and health literacy: a systematic review to inform nutrition research and practice. J Acad Nutr Diet. 2012;112(2):254-65.
9. Nutbeam D, Lloyd JE. Understanding and responding to health literacy as a social determinant of health. Annu Rev Public Health. 2021;42:159-73.
10. Lee Y, Kim T, Jung H. The relationships between food literacy, health promotion literacy and healthy eating habits among young adults in South Korea. Foods. 2022;11(16):2467.

11. De Backer C, Teunissen L, Cuykx I, Decorte P, Pabian S, Gerritsen S, et al. An evaluation of the COVID-19 pandemic and perceived social distancing policies in relation to planning, selecting, and preparing healthy meals: An observational study in 38 countries worldwide. Front Nutr. 2021;7:621726.
12. Sezer A, Kadıoğlu H. Development of adult health literacy scale. J Nursology. 2014;7(3):165-70.
13. Poelman MP, Dijkstra SC, Sponselee H, Kamphuis CBM, Battjes-Fries MC, Gillebaart M, et al. Towards the measurement of food literacy with respect to healthy eating: the development and validation of the self-perceived food literacy scale among an adult sample in the Netherlands. Int J Behav Nutr Phys Act. 2018;15(1):54.
14. Tarı Selçuk K, Çevik C, Baydur H, Meseri R. Validity and reliability of the Turkish version of the self-perceived food literacy scale. Progr Nutr. 2020;22(2):671-7.
15. Aras Z, Bayık Temel A. Evaluation of validity and reliability of the Turkish version of health literacy scale. FN Hem Derg. 2017;25(2):85-94. Turkish.
16. Rogoza R, Donini LM. Introducing ORTO-R: a revision of ORTO-15. Eat Weight Disord. Bulimia and Obesity. 2021;26(3):887-95.
17. Amani R, Gill T. Shiftworking, nutrition and obesity: implications for workforce health- a systematic review. Asia Pac J Clin Nutr. 2013;22(4):505-15.
18. Sponslee HCS, Kroeze W, Poelman MP, Renders CM, Ball K, Steenhuis IHM. Food and health promotion literacy among employees with a low and medium level of education in the Netherlands. BMC Public Health. 2021;21(1):1273.
19. Ammar A, Brach M, Trabelsi K, Chtourou H, Boukhris O, Masmoudi L, et al. Effects of COVID-19 home confinement on eating behaviour and physical activity: Results of the ECLB-COVID19 international online survey. Nutrients. 2020;12(6):1583.
20. Knutsson A, Karlsson B, Ornkloo K, Landström U, Lennernäs M, Eriksson K. Postprandial responses of glucose, insulin and triglycerides: influence of the timing of meal intake during night work. Nutr Health. 2002;16(2):133-41.
21. Cena H, Barthels F, Cuzzolaro M, Bratman S, Brytek-Matera A, Dunn T. Definition and diagnostic criteria for orthorexia nervosa: a narrative review of the literature. Eat Weight Disord. 2019;24(2):209-46.
22. Luta X, Hayoz S, Gréa Krause C, Sommerhalder K, Roos E, Strazzullo P. The relationship of health/food literacy and salt awareness to daily sodium and potassium intake among a workplace population in Switzerland. Nutr Metab Cardiovasc Dis. 2018;28(3):270-7.
23. Mohd Isa D, Shahar S, He FJ, Majid HA. Associations of health literacy with blood pressure and dietary salt ıntake among adults: a systematic review. Nutrients. 2021;13(12):4534.
24. Monteiro M, Fontes T, Ferreira-Pêgo C. Nutrition literacy of Portuguese adults-a pilot study. Int J Environ Res Public Health. 2021;18(6):3177.
25. Patel P, Panaich S, Steinberg J, Zalawadiya S, Kumar A, Aranha A. Use of nutrition literacy scale in elderly minority population. J Nutr Health Aging. 2013;17(10):894-7.
26. Zoellner J, Connell C, Bounds W, Crook L, Yadrick K. Nutrition literacy status and preferred nutrition communication channels among adults in the lower Mississippi Delta. Prev Chronic Dis. 2009;6(4):A128.
27. Demir Özdenk G, Özcebe LH. Nutrition literacy, dietary behaviours and related factors among university personnel. Turk J Public Health. 2018;16(3):178-89. Turkish.
28. Michou M, Panagiotakos DB, Costarelli V. Low health literacy and excess body weight: a systematic review. Cent Eur J Public Health. 2018;26(3):234-41.
29. Kalkan I. The impact of nutrition literacy on the food habits among young adults in Turkey. Nutr Res Pract. 2019;13(4):352-7.
30. Apaydın Demirci Z, Çelik, B. The relationship between food literacy and healthy lifestyle behaviours. BSEU J Soc Sci. 2022;7(1):104-10. Turkish.
31. İncedal Sonkaya Z, Balcı E, Ayar A. University students food literacy and food safety knowledge, attitudes and behaviors: example of Amasya University Sabuncuoğlu Şerefeddin Health Services Vocational School. Turk Hij Den Biyol Derg. 2018;75(1):53-64. Turkish.
32. Çakıcı AC, Yıldız E. The impact of restaurant customers' health consciousness on healthy eating habits. Nevşehir Hacı Bektaş Veli Üniversitesi SBE Dergisi. 2018;8(1):1-22. Turkish.
33. Gibbs HD, Kennett AR, Kerling EH, Yu Q, Gajewski B, Ptomey LT. Assessing the nutrition literacy of parents and its relationship with child diet quality. J Nutr Educ Behav. 2016;48 (7):505-9.