Determination of Food Neophobia in Municipal Employees: A cross-sectional study

Bir Grup Belediye Çalışanında Besin Neofobisinin Saptanması: Kesitsel bir çalışma

Presented as an oral presentation at the Süleyman Demirel University Faculty of Medicine 3rd International / 6th National Health Services Congress.

Merve ENGÜN[1] , **Bahar YALÇIN[1]** **Melike Nur ÇELİKAYAR[1]*** , **Muazzez GARİPAĞAOĞLU[1]**

[1] Fenerbahçe University, Faculty of Health Sciences, Department of Nutrition and Dietetics, Istanbul, Türkiye.

Abstract

The purpose of this study was to determine the levels of food neophobia among a group of municipal employees in Bursa and to examine the relationship between the condition of food neophobia and various factors. The study was conducted between September and November 2024 with a total of 205 participants, aged between 18 and 65 years, employed at a municipal institution in Bursa. Data on sociodemographic characteristics and anthropometric measurements were collected through face-to-face interviews using a structured questionnaire. Food neophobia levels were assessed using the standardized Food Neophobia Scale (FNS). Statistical analyses were performed using SPSS version 29.0. The mean age of the individuals was 39.00±9.84 years, and the mean body mass index (BMI) was calculated as 24.82±3.38 kg/m². The mean FNS score was significantly higher among male participants (39.85±10.34) compared to female participants (36.03±11.68). Among the food categories, It was determined that the highest level of food neophobia was observed in relation to fruits and vegetables, followed by cereal products and meat products. A weak positive association (r=0.151 p<0.05, r=0.185 p<0.05) was identified between age and BMI with the food neophobia scale score, while a weak inverse relationship (r=-0.188, p<0.05, r=-0.177 p<0.05) was noted between gender and education level. These findings underscore the importance of implementing training to enhance food diversity and promote healthy eating habits among municipal employees. Furhermore, raising awareness about food neophobia and implementing strategies to improve attitudes towards unfamiliar food are recommended.

Keywords: Food neophobia, food, gender, body mass index

Özet

Bu çalışmanın amacı, Bursa'da bir grup belediye çalışanının besin neofobisi düzeylerini belirlemek ve bu durumun çeşitli faktörlerle ilişkisini incelemektir. Bu çalışma Eylül-Kasım 2024 tarihleri arasında Bursa'da bir belediyede çalışan 18-65 yaş arası 205 katılımcı ile gerçekleştirilmiştir. Bireylerin sosyodemografik özellikleri ve antropometrik ölçümleri yüz yüze anket yöntemi ile toplanmıştır. Besin neofobi düzeyleri Besin Neofobi Ölçeği (FNS) ile değerlendirilmiştir. İstatistiksel analiz için SPSS 29.0 yazılımı kullanılmıştır. Bireylerin yaş ortalaması 39,00±9,84 yıl ve ortalama beden kütle indeksi (BKİ) 24,82±3,38 kg/m² olduğu bulunmuştur. Ortalama neofobi skoru erkeklerde (39,85±10,34) kadınlara (36,03±11,68) göre anlamlı olarak yüksek bulunmuştur. En yaygın besin neofobisinin sebze-meyve grubuna yönelik olduğu, bunu tahıl ürünleri ve et ürünlerinin izlediği belirlenmiştir. Yaş ve BKİ ile besin neofobisi ölçeği puanı arasında pozitif yönde zayıf bir ilişki (r=0,151 p<0,05, r=0,185 p<0,05) bulunurken, cinsiyet ve eğitim düzeyi ile besin neofobisi ölçek puanı arasında ters yönde zayıf bir ilişki (r=-0,188, p<0,05, r=-0,177 p<0,05) olduğu sonucuna varılmıştır. Bu bulgular, belediye çalışanlarında besin çeşitliliğini artırmak ve sağlıklı beslenme alışkanlıklarını geliştirmek için eğitimin önemini vurgulamaktadır. Ayrıca, besin neofobisi konusunda farkındalığın artırılması ve farklı besinlere yönelik tutumların iyileştirilmesi için stratejilerin uygulanması önerilmektedir.

Anahtar Kelimeler: Besin neofobisi, besin, cinsiyet, vücut kütle indeksi

1. Introduction

Health is often perceived in terms of physical well-being; however, the World Health Organization (WHO) broadens this concept by defining health as "a state of complete physical, mental, and social well-being" (WHO, 1946). In this context, nutrition is one of the basic components of both physical and mental health (Zavitsanou & Drigas, 2021; Suárez-López et al., 2023). It is emphasised that nutrition should be assessed not only by individual nutrients but also with regard to the overall dietary pattern. This approach is called 'diet quality' and refers to the adequacy of the individual in terms of energy and nutrients (Di Nucci et al., 2023). Various indices and food diversity scores have been developed to assess diet quality (Dalwood et al., 2020; Petersen and Kris-Etherton, 2021). Food diversity is an important determinant of diet quality and consumption of a wider range of foods can improve health by ensuring that essential vitamins, minerals and micronutrients are met (Lachat et al., 2017).

Food neophobia is defined as the reluctance to consume unfamiliar or novel foods (Dovey et al., 2008). From an evolutionary perspective, this behaviour emerged in the past as a protection mechanism for humans from toxic or harmful foods (Armelagos et al., 2014; Rozin, 1976). Today, food neophobia may negatively affect food diversity and thus diet quality by restricting individuals' eating habits (Rabadán and Bernabéu, 2021; Lafraire, 2016). Studies have shown that consumption of vegetables, fruits, salads, meat and fish is significantly reduced in individuals with high food neophobia (Siegrist et al., 2013; Dos Santos et al., 2020; Cliceri et al., 2019). As a result, it is stated that the energy density of the diet increases in these individuals, which may increase the risk of obesity (Lafraire et al., 2016; Proserpio et al., 2016).

In work life, it is known that inadequate and unbalanced nutrition negatively affects both the health status and work performance of employees. Inadequate nutrition may lead to a decrease in work productivity, an increase in the risk of work accidents, and health problems such as obesity in the long term (Pinto et al., 2016; de Sousa & Paim, 2022). Analysing the effects of food neophobia on specific occupational groups is important for understanding how this phenomenon is shaped at the local level. Existing studies have mostly focused on specific age groups or geographical regions (Finistrella et al., 2012; Addessi et al., 2005). The aim of this study was to determine the level of food neophobia among a group of municipality employees in Bursa and to examine its relationship with various factors.

2. Method

This study was conducted between September and November 2024 with 205 individuals aged 18-65 years who volunteered to participate, all of whom were employed at Bursa Nilüfer Municipality. Women with food allergies, individuals whose food consumption was affected by digestive system diseases or other serious health problems, individuals with eating disorders, and women who were pregnant or breastfeeding were excluded from the study.

2.1. Data Collection Methods

The data for the study were collected by face-to-face questionnaire method and the 'Informed Consent Form' was read and signed by the participants. The questionnaire form included 11 questions aimed at gathering the participants' descriptive information (age, gender, education level, etc.), anthropometric measurements (weight, height) and their knowledge and attitudes towards new foods. The weight and height of the participants were recorded based on on self-reported data. Body weight corresponding to height was assessed using mass index (BMI) formula. BMI (kg/m^2) was calculated by dividing body weight (kg) by the square of height (cm). WHO classification was used for body mass index evaluation (Philip et al., 2004).

2.1.1. Food Neophobia Scale

The Food Neophobia Scale (FNS) is a psychometric scale developed by Pliner and Hobden (1992) to assess food neophobia. The Turkish validation study of the scale was carried out by Duman et al. The FNS consists of a total of 10 items including 5 positive and 5 negative statements about foods and nutritional status. In this scale, which is scored on a Likert-type 7-point scale, 7 points are given for the statement 'Strongly agree' and 1 point for the statement 'Strongly disagree'; intermediate values vary according to the degree of agreement. The FNS score varies between 10 and 70, and high scores indicate a high tendency for food neophobia (Duman et al., 2020).

2.1.2. Ethical Permission

Approval for this study was obtained from Fenerbahçe University Non-Interventional Clinical Research Ethics Committee (protocol no: 86.2024fbu/06.08.2024). Written permission was also obtained from the municipality for the study.

2.1.3. Statistical Analysis

SPSS (Statistical Package for Social Sciences) 29.0 statistical package programme was used for statistical evaluation. In the evaluation of the data; complementary statistics were shown as number of people (n), percentage (%) for nominal variables and mean ($\bar{X}$), standard deviation (SD), arithmetic mean ± standard deviation (X±SS) for continuous variables. Chi-square test was used to compare groups of independent categorical variables and normality distribution was evaluated by Kolmogorov-Smirnov test. Spearman correlation test was used for statistical significance between two quantitative variables. Correlation coefficient values between 0-0.10 were considered as negligible, 0.10-0.39 as weak, 0.40-0.69 as moderate, 0.70-0.89 as strong and 0.90-1.00 as very strong correlation. Statistical significance level was accepted as 5% in all analyses.

3. Results

The general characteristics of the individuals are presented in Table 1. Among the participants, 47.8% were female and 52.2% were male. The mean age was 39.00±9.84 years, mean body weight was 72.86±11.22 kg and mean BMI was 24.82±3.38 kg/m². A statistically significant difference was found in terms of age, height and body weight according to gender (p<0.05).

Table 1. General characteristics of individuals

	Female (n=98)		Male (n=107)		Total (n=205)		
	n	**%**	**n**	**%**	**n**	**%**	**p**
Age (years)							
18-30	63	64.3	56	52.3	119	58.0	
31-45	32	32.7	41	38.3	73	35.6	
>45	3	3	10	9.4	13	6.4	
(X±SS)	36.88±10.04		41.14±9.64		39.00±9.84		
Education level							
High school	13	13.3	15	14.0	28	13.7	
University and postgraduate	85	86.7	92	86.0	177	86.3	0.982
Height (cm)							
150-163	44	44.9	3	2.8	47	22.9	
164-177	51	52.0	51	47.7	102	49.8	<0.001*
178-191	3	3.1	53	49.5	56	27.3	
(X±SS)	164.61±5.80		176.71±6.97		170.66±6.38		
Weight (kg)							
40-55	28	28.6	0	0.0	28	13.7	
56-70	53	54.1	13	12.1	66	32.2	
71-85	15	15.3	59	55.1	74	36.1	<0.001*
86-100	1	1.0	26	24.3	27	13.2	
>100	1	1.0	9	8.4	10	4.9	
(X±SS)	61.97±9.97		83.76±12.47		72.86±11.22		
Body mass index (kg/m^2)							
Underweight (<18.5)	6	6.1	0	0.0	6	2.9	
Normal (18.5-24.9)	70	71.4	37	34.6	107	52.2	
Overweight (25-29.9)	18	18.4	57	53.3	75	36.6	<0.001*
Obese (30-39.9)	4	4.1	13	12.1	17	8.3	
(X±SS)	22.87±3.48		26.78±3.28		24.82±3.38		

Chi-square test, p<0.05

The mean neophobia score was found to be significantly higher in men (39.85±10.34) compared to women (36.03±11.68). Table 2 summarises which foods individuals experience fear of and the factors that cause this fear. The group that causes the highest rate of food fear is the vegetable-fruit group with 37.50%. This is followed by cereal products (20.83%), meat products (25.0%) and oilseeds and seafood (8.33%), which have the same rate. When evaluated according to gender, no statistically significant difference was found between the situations causing neophobia experienced by individuals (p>0.05).

Table 2. Neophobic situations experienced by individuals

	Female (n=98)		Male (n=107)		Total (n=205)		p
Neophobia score (X±SS)	36.03±11.68		39.85±10.34		38.03±11.14		0.014*
	n	**%**	**n**	**%**	**n**	**%**	
Neophobic food group							
Cereal products	4	16.7	1	4.2	5	20.8	
Meat products	2	8.3	4	16.7	6	25.0	
Fruit and Vegetables	6	25.0	3	12.5	9	37.5	0.313
Oilseed	1	4.2	1	4.2	2	8.3	
Seafood	0	0.0	2	8.3	2	8.3	
Problems causing neophobia							
Gastrointestinal problems	6	27.3	2	9.1	8	36.4	
Allergic problems	5	22.7	5	22.7	10	45.4	0.345
Stuck in the throat	2	9.1	2	9.1	4	18.2	

*Chi-square test, *p<0.05*

The food neophobia status of the individuals is presented in Table 3. No statistically significant difference was found in food neophobia based on gender, education level, age and BMI classification (p>0.05).

Table 3. Distribution of individuals' food neophobia status according to demographic characteristics

	Neophilic (<X±SS)		Neutral (X±SS)		Neophobic (>X±SS)		p
	n	%	n	%	n	%	
Gender							
Female	45	48.4	1	50.0	52	47.3	0.875
Male	48	51.6	1	50.0	58	52.7	
Education Level							
High School	10	10.8	2	66.7	16	14.5	0.453
University and postgraduate	83	89.2	0	33.3	94	85.5	
Age (year)							
18-30	30	24.6	2	66.7	31	21.2	0.776
31-45	49	40.2	1	33.3	58	39.7	
>45	25	35.2	0	0.0	30	39.1	
BMI (kg/m²)							
Underweight (<18.5)	4	3.7	0	0.0	2	1.2	
Normal (18.5-24.9)	45	41.3	2	100.0	60	35.0	0.624
Overweight (25-29.9)	35	32.1	0	0.0	40	23.4	
Obese (30-39.9)	9	8.2	0	0.0	8	4.7	

Chi-square test, p<0.05

The evaluation of the relationship between general characteristics of individuals and food neophobia scores is presented in Table 4. A significant correlation was found between age, gender, BMI and education level and Food Neophobia scale score, a positive weak correlation between age and BMI level and Food Neophobia scale score, while a negative weak correlation between gender and education level and Food Neophobia scale score (p<0.05).

Table 4. Correlation between general characteristics of individuals and food neophobia scores according to demografic characteristics

	Age		Gender		BMI		Education level	
	r	p	r	p	r	p	r	p
Food neophobia scale score	0.151	0.031*	-0.188	0.007*	0.185	0.008*	-0.177	0.011*

*Spearman correlation test, *p<0.05*

4. Discussion

In this study, the levels of food neophobia in municipal employees and the factors associated with these levels were examined. The findings revealed that individuals' tendencies towards food neophobia may be associated with demographic variables such as age, gender, BMI and education level. Various findings on these relationships are presented in the literature. Pliner and Hobden (1992) stated that food neophobia is shaped by individuals' personal characteristics and experiences, and that neophobic tendencies generally decrease with increasing age. This view was partially supported in this study. However, in some studies, the decline in neophobia tendencies with age is often generalized, and the differences in individuals' life experiences should also be taken into account.

When considering the effect of gender on food neophobia, conflicting results are observed in the literature. In some studies conducted in adults, it was reported that males may have higher food neophobia scores than females (Dovey et al., 2008; Siegrist et al., 2013). In the study conducted by

Göbel et al. (2023), no relationship was found between gender and food neophobia. In this study, a significant relationship was found between gender and food neophobia. These findings are believed to be influenced by the characteristics of the sample and the cultural context in which the study was conducted. For instance, gender-related expectations and dietary habits within the society may serve as determining factors in food preferences.

The relationship between education level and food neophobia is also noteworthy. It was observed that the levels of food neophobia decreased as the educational level increased. Similar findings are reported in the literature. Hazley et al. (2022) analysed the Irish National Adult Nutrition Survey (NANS) data and found that adults with primary education had significantly higher food neophobia scores than those with secondary and tertiary education. Increasing educational attainment may lead individuals to have a broader knowledge about foods and thus to be more open to new foods. At the same time, lower socioeconomic status, social class and educational level are generally associated with lower dietary diversity and quality (Darmon & Drewnowski, 2008). In this context, it can be said that food neophobia is not only an individual attitude but also shaped by socioeconomic and cultural factors.

It is also important to address the relationship between individuals' body mass index and food neophobia. In this study, a weak but positive correlation was observed between BMI and food neophobia. This finding coincides with the study conducted by Knaapila et al. (2015) in Finland; they reported that individuals with food neophobia had higher BMI levels. In addition, in another study conducted by Proserpio et al. (2017), it was revealed that obese individuals had higher food neophobia scores compared to healthy weight individuals. These findings suggest that food neophobia may be associated with obesity and obese individuals may be more prone to unhealthy eating habits.

Vegetables and fruits are one of the food groups to which individuals exhibit the most neophobic reactions. In the literature, it has been frequently emphasised that there is a relationship between food neophobia and low consumption of vegetables and fruits (Costa et al., 2020; Guzek et al., 2018; Helland et al., 2017). Cooke and Wardle (2005) reported that vegetables were the least accepted foods among all food groups. del Campo et al. (2024) reported that the highest food neophobia in Spanish adults was against vegetables, meat, fish, legumes, legumes, game meat and fruits. Knaapila et al. (2015) found that neophilic individuals consumed approximately 50-80% more vegetables than neophobic individuals. Vegetables are generally less preferred by individuals due to factors such as taste, texture and difficulty in chewing. In addition, the fact that some plants pose a risk of poisoning in the evolutionary process may increase the fear and aversion towards these foods.

Food neophobia is associated with various physical and psychological factors in both children and adults. In this study, physical issues such as gastrointestinal disorders, allergic reactions and choking were reported as contributing factors to neophobia. In children, the influence of parents on eating habits, innate preferences for sweet and salty flavours, sensory properties of foods, pressure applied by parents during meals, lack of encouragement and affection, and anxiety level in childhood are among the main factors that trigger food neophobia (Torres et al., 2020). These findings show that food neophobia is shaped not only by individual but also by environmental and emotional influences.

There are some limitations in this study. The sample being limited to employees of Bursa Nilüfer Municipality restricts the generalizability of the findings. The cross-sectional design does not allow for causal inferences. Additionally, the survey method may lead to social desirability bias, and the self-reported nature of the Food Neophobia Scale may not fully reflect actual food consumption behaviors.

5. Conclusion

This study revealed that the food neophobia levels of employees working in a municipality in Bursa are associated with demographic and environmental factors. Food neophobia can lead to unhealthy eating habits and health problems such as obesity by limiting dietary diversity, especially with negative attitudes towards healthy foods such as vegetables and fruits. While awareness and training programs are important in addressing food neophobia, a more comprehensive approach is needed. Policy interventions, integrating food neophobia education into health programs, and behavioral strategies like gradual exposure to unfamiliar foods may enhance effectiveness in reducing its impact on dietary habits and health. Future research involving larger and more diverse samples is needed to gain a deeper understanding of the underlying causes of food neophobia and develop comprehensive solutions.

Authors Contributions

Topic selection: MNÇ,MG,ME,BY; Design: MNÇ,MG,ME,BY; Planning: MNÇ,MG,ME,BY; Data collection and analysis: MNÇ,ME,BY; Writing of the article: MNÇ ,BY; Critical revision: MNÇ,MG,BY

Conflict of Interest

No conflict of interest was declared among the authors.

References

Addessi, E., Galloway, A. T., Visalberghi, E., & Birch, L. L. (2005). Specific social influences on the acceptance of novel foods in 2-5-year-old children. *Appetite*, *45*(3), 264–271. https://doi.org/10.1016/j.appet.2005.07.007

Armelagos G. J. (2014). Brain evolution, the determinates of food choice, and the omnivore's dilemma. *Critical reviews in food science and nutrition*, *54*(10), 1330–1341. https://doi.org/10.1080/10408398.2011.635817

Cliceri, D., Spinelli, S., Dinnella, C., Ares, G., & Monteleone, E. (2019). Consumer categorization of plant-based dishes: Implications for promoting vegetable consumption. *Food Quality and Preference, 76*, 103727. https://doi.org/10.1016/j.foodqual.2019.04.002

Cooke, L. J., & Wardle, J. (2005). Age and gender differences in children's food preferences. *The British journal of nutrition*, *93*(5), 741–746. https://doi.org/10.1079/bjn20051389

Costa, A., Silva, C., & Oliveira, A. (2020). Food neophobia and its association with food preferences and dietary intake of adults. *Nutrition & dietetics: the journal of the Dietitians Association of Australia*, *77*(5), 542–549. https://doi.org/10.1111/1747-0080.12587

Dalwood, P., Marshall, S., Burrows, T. L., McIntosh, A., & Collins, C. E. (2020). Diet quality indices and their associations with health-related outcomes in children and adolescents: an updated systematic review. *Nutrition journal*, *19*(1), 118. https://doi.org/10.1186/s12937-020-00632-x

Darmon, N., & Drewnowski, A. (2008). Does social class predict diet quality?. *The American journal of clinical nutrition*, *87*(5), 1107–1117. https://doi.org/10.1093/ajcn/87.5.1107v

del Campo, C., Bouzas, C., Monserrat-Mesquida, M., & Tur, J. A. (2024). Food neophobias in Spanish adults with overweight or obesity by sex: Their association with sociodemographic factors and the most prevalent chronic diseases. *Foods, 13*(13), 2030. https://doi.org/10.3390/foods13132030

de Sousa, A. F. L., & Paim, R. T. T. (2023). Food habits of different worker categories: an integrative review. *Revista brasileira de medicina do trabalho : publicacao oficial da Associacao Nacional de Medicina do Trabalho-ANAMT*, *20*(4), 624–632. https://doi.org/10.47626/1679-4435-2022-703

Di Nucci, A., Pilloni, S., Scognamiglio, U., & Rossi, L. (2023). Adherence to Mediterranean Diet and Food Neophobia Occurrence in Children: A Study Carried out in Italy. *Nutrients*, *15*(24), 5078. https://doi.org/10.3390/nu15245078

Dos Santos, Q., Perez-Cueto, F. J. A., Rodrigues, V. M., Appleton, K., Giboreau, A., Saulais, L., Monteleone, E., Dinnella, C., Brugarolas, M., & Hartwell, H. (2020). Impact of a nudging intervention and factors associated with vegetable dish choice among European adolescents. *European journal of nutrition*, *59*(1), 231–247. https://doi.org/10.1007/s00394-019-01903-y

Dovey, T. M., Staples, P. A., Gibson, E. L., & Halford, J. C. (2008). Food neophobia and 'picky/fussy' eating in children: A review. *Appetite, 50*(2-3), 181-193. https://doi.org/10.1016/j.appet.2007.09.009

Duman, E., Akçil Ok, M., & Keser, A. (2020). Adaptation of The Food Neophobia Scale Into Turkish: Validity and Reliability Study. Kocaeli Üniversitesi Sağlık Bilimleri Dergisi, 6(2), 157-161. https://doi.org/10.30934/kusbed.643038

Finistrella, V., Manco, M., Ferrara, A., Rustico, C., Presaghi, F., & Morino, G. (2012). Cross-sectional exploration of maternal reports of food neophobia and pickiness in preschooler-mother dyads. *Journal of the American College of Nutrition*, *31*(3), 152–159. https://doi.org/10.1080/07315724.2012.10720022

Göbel, P., Şanlier, N., Yılmaz, S., Açıkalın, B., & Kocabaş, Ş. (2023). Investigation of the relationship between food neophobia, body perception, and life satisfaction in university students. *Gevher Nesibe Journal of Medical and Health Sciences, 8*(1), 202-212. https://doi.org/10.5281/zenodo.7601544

Guzek, D., Głąbska, D., Mellová, B., Zadka, K., Żywczyk, K., & Gutkowska, K. (2018). Influence of food neophobia level on fruit and vegetable intake and its association with urban area of residence and physical activity in a nationwide case-control study of Polish adolescents. *Nutrients, 10*(7), 897. https://doi.org/10.3390/nu10070897

Hazley, D., Stack, M., Walton, J., McNulty, B. A., & Kearney, J. M. (2022). Food neophobia across the life course: Pooling data from five national cross-sectional surveys in Ireland. *Appetite, 171*, 105941. https://doi.org/10.1016/j.appet.2022.105941

Helland, S. H., Bere, E., Bjørnarå, H. B., & Øverby, N. C. (2017). Food neophobia and its association with intake of fish and other selected foods in a Norwegian sample of toddlers: A cross-sectional study. *Appetite, 114*, 110-117. https://doi.org/10.1016/j.appet.2017.03.025

James, W. P. T., Leach, R., Mhurchu, C. N., Kalamara, E., Shayeghi, M., & Rigby, N. J. (2004). Overweight and obesity (high body mass index), health risks global. Erişim: https://www.who.int/publications/cra/chapters/volume1/0497-0596.pdf

Lachat, C., Raneri, J., Smith, K., Kolsteren, P., Van Damme, P., Verzelen, K., Penafiel, D., Vanhove, W., Kennedy, G., Hunter, D., Oduor, F., De Baets, B., Ratnasekera, D., The, K., Remans, R., & Termote, C. (2017). Dietary species richness as a measure of food biodiversity and nutritional quality of diets. Proceedings of the National Academy of Sciences, 115(1), 201709194. https://doi.org/10.1073/pnas.1709194115

Lafraire, J., Rioux, C., Giboreau, A., & Picard, D. (2016). Food rejections in children: Cognitive and social/environmental factors involved in food neophobia and picky/fussy eating behavior. *Appetite*, *96*, 347–357. https://doi.org/10.1016/j.appet.2015.09.008

Laignelet, L., & Lamy, A. (2021). The role of food neophobia in dietary behavior: Influence on healthy eating patterns among adults. *Public Health Nutrition, 24*(3), 476-485. https://doi.org/10.1017/S136898002000293X

Llewellyn, C. H., van Jaarsveld, C. H. M., Johnson, L., & Wardle, J. (2011). Genetic susceptibility to obesity: A behavioral susceptibility model. *The European Journal of Clinical Nutrition, 65*(5), 358-363. https://doi.org/10.1038/ejcn.2011.62

Lund, T. B., Mikkelsen, M. B., & Holm, L. (2014). Sociocultural factors and food choice behavior among adolescents: A qualitative study of food neophobia and food preferences. *Appetite, 81*, 247-256. https://doi.org/10.1016/j.appet.2014.07.013

Macchiavelli, R., & Leone, L. (2023). The relationship between food neophobia and eating habits in college students: Influence of personality and cultural factors. *Nutrients, 15*(2), 435. https://doi.org/10.3390/nu15020435

Moore, S., & Harnack, L. (2020). Food neophobia and its association with food habits in adults: An exploratory study. *Public Health Nutrition, 23*(10), 1759-1767. https://doi.org/10.1017/S1368980019004440

Petersen, K. S., & Kris-Etherton, P. M. (2021). Diet Quality Assessment and the Relationship between Diet Quality and Cardiovascular Disease Risk. *Nutrients*, *13*(12), 4305. https://doi.org/10.3390/nu13124305

Pinto, L., Duarte, R., Guedes, R., & Santos, L. (2016). Avaliação da adequação do almoço de duas empresas ao programa de alimentação do trabalhador. *Nutrição Brasil, 15*, 184–190. https://doi.org/10.33233/nb.v15i4.447

Pliner, P., & Hobden, K. (1992). Development of a scale to measure the trait of food neophobia in humans. *Appetite, 19*(2), 105-120. https://doi.org/10.1016/0195-6663(92)90014-W

Proserpio, C., Laureati, M., Bertoli, S., Battezzati, A., & Pagliarini, E. (2016). Determinants of obesity in Italian adults: The role of taste sensitivity, food liking, and food neophobia. *Chemical Senses, 41*(2), 169–176. https://doi.org/10.1093/chemse/bjv072

Rabadán, A., & Bernabeu, R. (2021). A systematic review of studies using the Food Neophobia Scale: Conclusions from thirty years of studies. *Food Quality and Preference, 104*, 104241. https://doi.org/10.1016/j.foodqual.2021.104241

Rozin, P., & Fallon, A. E. (1980). A perspective on disgust. *Journal of Abnormal Psychology, 89*(3), 301-307. https://doi.org/10.1037/0021-843X.89.3.301

Ruby, M. B., & Heine, S. J. (2011). Meat, morals, and masculinity. *Appetite, 56*(2), 447-450. https://doi.org/10.1016/j.appet.2011.01.010

Saba, A., & Vassallo, M. (2002). Food choice and diet and lifestyle in Italy. *Public Health Nutrition, 5*(6A), 123-130. https://doi.org/10.1079/PHN2002362

Scarborough, P., Bhatnagar, P., Wickramasinghe, K., Allender, S., & Foster, C. (2011). The economic burden of ill-health due to diet, physical inactivity, smoking, alcohol and obesity in the UK: A cost-of-illness study. *BMC Public Health, 11*, 1-11. https://doi.org/10.1186/1471-2458-11-804

Shepherd, R., & Stockley, L. (1996). The role of food in the development of attitudes towards nutrition in adolescents. *Journal of Human Nutrition and Dietetics, 9*(4), 297-306. https://doi.org/10.1111/j.1365-277X.1996.tb00692.x

Siegrist, M., Hartmann, C., & Keller, C. (2013). Antecedents of food neophobia and its association with eating behavior and food choices. *Food Quality and Preference, 30*, 293–298. https://doi.org/10.1016/j.foodqual.2013.06.013

Suárez-López, L. M., Bru-Luna, L. M., & Martí-Vilar, M. (2023). Influence of nutrition on mental health: Scoping review. *Healthcare, 11*(15), 2183. https://doi.org/10.3390/healthcare11152183

van Strien, T., Frijters, J. E., & Bergers, G. (2004). The prediction of food choice, food intake, and body mass index by food-related characteristics: A study of the role of food neophobia, dietary restraint, and self-esteem. *Appetite, 43*(1), 33-45. https://doi.org/10.1016/j.appet.2004.01.001

Wardle, J., Cooke, L., Gibson, E. L., Sapochnik, M., Sheiham, A., & Lawson, M. (2003). Increasing children's acceptance of vegetables: A randomized trial of parent-led exposure. *Appetite, 40*(1), 47-56. https://doi.org/10.1016/S0195-6663(02)00081-5

Worsley, A., & Burton, R. (2003). The role of food neophobia and variety in consumer food behavior. *Food Quality and Preference, 14*(3), 257-266. https://doi.org/10.1016/S0950-3293(02)00067-4

Zand, N., & Smith, R. (2020). Exploring the relationship between food neophobia and healthful food preferences in adolescents. *Journal of Nutrition Education and Behavior, 52*(2), 133-139. https://doi.org/10.1016/j.jneb.2019.09.010

Zavitsanou, A., & Drigas, A. (2021). Nutrition in mental and physical health. Technium Social Sciences Journal, 23(1), 67–77. https://doi.org/10.47577/tssj.v23i1.4126