

## An Evaluation of Food Neophobia of the Dietitians

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### ABSTRACT

Food neophobia has been described as the fear of eating new or unfamiliar foods and it is very typical for people to generally have a fear of new things. However, some people should be more expected to try new foods especially from some occupational groups (for example nutrition, gastronomy, culinary arts, ext.). This study was carried out to determine food neophobia in dietitians. The study was conducted between October 2018 and December 2018 on 200 dietitians aged between 18-65 years in Ankara, Turkey who volunteered to participate in the study. In this study, a questionnaire form consisting of three parts was used. The first part involved a personal information form with items on age, gender, education levels, anthropometric measurements. The second and the third parts consisted of the multiple choice questions to identify food neophobia and food neophobia questionnaire, respectively. In this study we found that 88.0% of dietitians were female, 92.0% of them were 18 to 27 years of age, 38.4% of them was a university student and 87.5% of them were single. In this study, we found that female dietitians' BMI value did significantly differ among food neophobia groups. Additionally, willingness to try new foods or harmony of different tastes did significantly differ among food neophobia groups. Also, mood, profession, wondered and healthy things encourage dietitians to try new food and this subject did significantly differ among food neophobia groups. Low FN group had selected to consume more sweets and candy consume than others. Also, medium FN group had selected to consume more meet and meet products consume than others. Lastly, high FN group selected to consume fruit and vegetable and they indicated, they had a balanced diet than others. However, these choices did not significantly differ among food neophobia groups. As a conclusion, this study showed that most of the people who are educated in nutrition and dietetics are not willing to try new foods. One of the most innovative occupation groups are dietitians and the results of this study are quite remarkable and unexpected. In order to increase the awareness of dietitians providing nutrition education to the public, more studies should be conducted with a larger number of sample groups on food neophobia.

**Keywords:** Food; Neophobia; Dietitians; Habits; Nutrition

### INTRODUCTION

Food neophobia defined as an unwillingness to eat and/or avoidance of unfamiliar foods and basically people are expected to do this eating behavior to avoid the potential toxicity of an unknown food source. However, even in modern societies (where food safety is generally guaranteed), for example, 40%-45% of the total population are neophobic in USA or

approximately 30% of the total population are neophobic in New Zealand [1].

Every single day people make choices about the foods they purchase, prepare and consume. The researches suggest that people who eat a variety of foods as part of a balanced diet are less likely to suffer from nutritional deficiencies and chronic disease. Food Neophobia (FN) is maladaptive behavior as they decrease diet variety and quality, thus having potentially important nutritional consequences. Several studies have

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revealed that intake of daily fruit and vegetable is diminished in individuals with higher levels of food neophobia. Especially, some studies found that an association between FN and increased body mass index. It is considered that neophobic individuals may choose to eat familiar food which is more energy-dense than fruit and vegetables or maybe less willing to try healthy alternative versions of familiar products. Moreover, it has been demonstrated that food neophobic individuals may experience deficits in intake of protein, monounsaturated fats, magnesium and vitamin E. Additionally, for the new food products entering the market, neophobic people demonstrate negative attitudes towards this new food and products. So, about the food choice and food selectivity, the first profession that comes to mind is a dietitian [2].

Dietitians are an expert in the multifaceted field of food and nutrition, someone who knows food composition and understands the various economic, social, psychological and physiological factors that influence food choices and the relationship of these factors with health and diseases. Additionally, dietitians can manage food production operation, distribute high-quality meals/snacks, develop products, educate people to choose or learn better food and nutritional products. For those reasons, there is very important to recognize and try to new food products for dietitians. So, this present study was carried out to determine food neophobia in dietitians [3].

## MATERIALS AND METHODS

### Participants

The population of the study included 200 dietitians (24 males and 176 females), who volunteered to participate in the study and lived in Ankara-Turkey, between October and December of 2018.

### Measurements

In this study, the questionnaire included an overview of dietitians typical socio-demographic characteristics (age, gender, marital status, educational status etc.) current health status, eating habits and anthropometric measurements. The anthropometric evaluation consisted of measuring height (centimeters), using a stadiometer and weight (kilograms), using a digital portable scale. Then, from these data, it was calculated the Body Mass Index (BMI) using the following formula: Weight (kg)/(height (m))<sup>2</sup> [4].

Food neophobia was quantified using the Food Neophobia Scale (FNS) developed by Pliner and Hobden and Turkish version of FNS by Yigit and Dogdubay. The FNS consists of ten statements evaluated with a 7-point agreement scale ranging from 1=I strongly disagree to 7=I strongly agree. Dietitians' FNS scores were computed as the sum of ratings given to the ten statements, after the neophilic items had been reversed; thus, the scores theoretically ranged from 10 to 70, with higher scores reflecting higher FN levels. The FNS frequency distribution was calculated and respondents were divided into 3 groups according to their FN level: Low, medium and high. In this study FN scores were normally distributed with a mean of 35.7 ± 7.65, a median of 36.0 and range of 13 to 64. Based on tertile cut-offs, participants were classified by their degree of food neophobia including low (10-23; n=14), medium (24-33, n=50) and high (34-67, n=136) [5].

### Data and statistical analysis

Data were analysed with SPSS version 17.0 (Inc., Chicago, IL, USA). Dietitians demographic characteristics, current health status, eating habits and anthropometric measurements were compared between low, medium and high degrees of food neophobia using the *chi-square* test for categorical variables and Analysis of Variance (ANOVA) followed by the Tukey's test for quantitative variables. Mean food neophobia score was also compared among response categories for willingness to try new foods or food products using ANOVA followed by the Tukey's test. Data are presented as n (%) or mean ± SE [6].

## RESULTS

Dietitians' demographic characteristics by Food Neophobia (FN) group are shown in Table 1. The most predominant dietitians' characteristics were female (88.0%), 18 to 27 years of age (92.0%), university student (38.4%) and single (87.5%). Additionally, 83.0% of female and 79.2% of male dietitians' body-mass index of 18.5 to 24.9. Dietitians' demographic characteristics (gender, age, education, marital status) did not significantly differ among food neophobia groups ( $p > 0.05$ ). However, we found that female dietitians' BMI value did significantly differ among food neophobia groups ( $p < 0.05$ ) [7].

**Table 1:** Dietitians' demographic characteristics by Food Neophobia (FN) group (n=200)<sup>a</sup>.

Variables	All (n=200)	Low FN group (n=14)	Medium FN group (n=50)	High FN group (n=136)	p-value <sup>b</sup>
<b>Gender</b>					
Female	176 (88.0)	14 (100.0)	40 (80.0)	122 (89.7)	0.07
Male	24 (12.0)	0	10 (20.0)	14 (10.3)	
<b>Age</b>					

18-27	184 (92.0)	12 (85.7)	47 (94.0)	125 (91.9)	0.705
28-37	13 (6.5)	2 (14.3)	2 (4.0)	9 (6.6)	
38-45	3 (1.5)	0	1 (2.0)	2 (1.5)	
<b>Education</b>					
University student	157 (78.5)	8 (57.1)	37 (74.0)	112 (82.4)	0.202
University graduate	40 (20.0)	6 (42.9)	12 (24.0)	22 (16.2)	
Graduate/Professional degree	3 (1.5)	0	1 (2.0)	2 (1.5)	
<b>Marital status</b>					
Married	25 (12.5)	1 (7.1)	6 (12.0)	18 (13.2)	0.777
Single	175 (87.5)	13 (92.9)	44 (88.0)	118 (86.8)	
<b>Female- BMI(kg/m<sup>2</sup>)</b>					
<18.5	20 (11.4)	2 (14.3)	6 (15.0)	12 (9.8)	0.043 <sup>b</sup>
18.5-24.9	146 (83.0)	9 (64.3)	34 (85.0)	103 (84.4)	
25-29.9	10 (5.7)	3 (21.4)	0	7 (5.7)	
≥ 30.0	0	0	0	0	
$\bar{X} \pm SD$	21.2 ± 2.43	21.5 ± 3.17	20.6 ± 2.40	21.4 ± 2.34	
<b>Male-BMI ( kg/m<sup>2</sup>)</b>					
<18.5	0	0	7 (70.0)	12 (85.7)	0.35
18.5-24.9	19 (79.2)	0	3 (30.0)	2 (14.3)	
25-29.9	5 (20.8)	0	0	0	
≥ 30.0	0	0	0	0	
$\bar{X} \pm SD$	23.89 ± 1.14	-	24.0 ± 1.31	23.7 ± 1.03	

**Note:** <sup>a</sup>Data presented as n (%); <sup>b</sup>Comparison among food neophobia groups using the *chi-square* test

Dietitians' approaches to a new food or food products by Food Neophobia (FN) group are shown in Table 2. Smell affects to try new food or consume to only if the new food is healthy did not significantly differ among food neophobia groups ( $p>0.05$ ). Additionally, the most attention things when trying to eat new

food (for example; hygiene, cooking conditions, nutritional values or taste suitability, etc.) did not significantly differ among food neophobia groups ( $p>0.05$ ) [8].

**Table 2:** Dietitians' approaches to new foods by Food Neophobia (FN) group (n=200)<sup>a</sup>.

Variables	All (n=200)	Low FN group (n=14)	Medium FN group (n=50)	High FN group (n=136)	p-value <sup>b</sup>
<b>Willingness to try new foods or food products</b>					
Yes	158 (79.0)	14 (100.0)	48 (96.0)	96 (70.6)	0.000 <sup>b</sup>

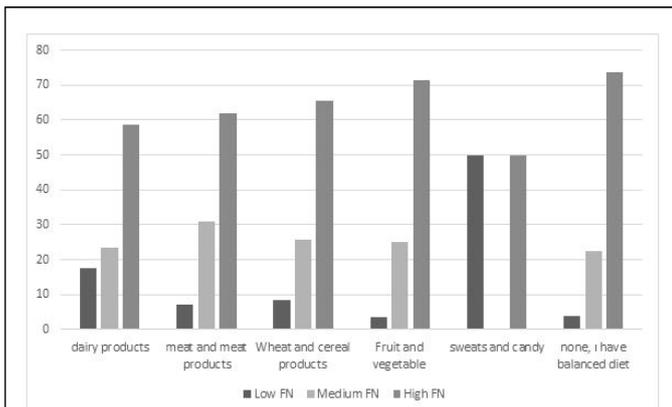
No	42 (21.0)	0	2 (4.0)	40 (29.4)	
<b>Which situation encourages you to try new food</b>					
My mood	61 (37.9)	3 (21.4)	21 (43.8)	37 (37.4)	0.014 <sup>b</sup>
My profession	48 (29.8)	5 (35.7)	17 (35.4)	26 (26.3)	
Thinking healthy	18 (11.2)	0	3 (6.3)	15 (15.2)	
Other people	21 (13.0)	2 (14.3)	4 (8.3)	15 (15.2)	
Wondered	13 (7.5)	3 (21.4)	3 (6.3)	6 (6.1)	
<b>Does smell affect to try new food</b>					
Yes	192 (96.5)	12 (85.7)	49 (98.0)	131 (97.0)	0.073
No	7 (3.5)	2 (14.3)	1 (2.0)	4 (3.0)	
<b>Does consume to try new food only if they are healthy</b>					
Yes	122 (61.0)	5 (35.7)	32 (64.0)	85 (62.5)	0.13
No	78 (39.0)	9 (64.3)	18 (36.0)	51 (37.5)	
<b>What is the most attention when trying to eat new food or food products</b>					
Hygiene, cooking conditions	79 (39.7)	5 (35.7)	21 (42.0)	53 (39.3)	0.48
Nutritional values	19 (9.5)	0	3 (6.0)	16 (11.9)	
Taste suitability	101 (50.8)	9 (64.3)	26 (52.0)	66 (48.9)	
<b>Do you like the harmony of different tastes (sweet/spicy; hot/sour etc)</b>					
Yes	147 (73.5)	11 (78.6)	43 (86.0)	93 (68.4)	0.038 <sup>b</sup>
No	52 (26.0)	3 (21.4)	6 (12.0)	43 (31.6)	
<b>Would you like to eat a cake whose main ingredients are fish, cabbage, sugar, milk, eggs</b>					
Yes	27 (13.5)	5 (35.7)	5 (10.0)	17 (12.5)	0.125
No	171 (85.5)	9 (64.3)	44 (88.0)	118 (86.8)	

**Note:** <sup>a</sup>Data presented as n (%); <sup>b</sup>Comparison among food neophobia groups using the *chi-square* test

On the other hand, we found that willingness to try new foods or harmony of different tastes did significantly differ among food neophobia groups ( $p < 0.05$ ). Also, mood, profession, wondered and healthy things encourage dietitians to try new food and this subject did significantly differ among food neophobia groups ( $p < 0.05$ ) [9].

Dietitians selected which food consume more to daily routine by food neophobia group shown Figure 1. Accordingly; low FN group had selected to consume more sweets and candy consume

than others. Also, medium FN group had selected to consume more meat and meat products consume than others. Lastly, high FN group selected to consume fruit and vegetable and they indicated, they had a balanced diet than others. However, these choices did not significantly differ among food neophobia groups ( $p > 0.05$ ) [10].



**Figure 1:** Selected which food consume more to daily routine by food neophobia group.

## DISCUSSION

This study examined food neophobia on 200 dietitians in lived Ankara, Turkey. Food neophobia has been shown to be a strong influence on food preferences and it is an important barrier to dietary change and addressing diet-related health problems. Therefore, it is important and relevant that modifiable risk factors contributing to nutritional risks, such as food neophobic tendencies, be further investigated. Especially in children, evidence for a negative relationship between food neophobia and dietary variety has been reported, being neophobics less inclined to eat certain types of foods (e.g., fruits, vegetables and foods of animal origin) than their peers [11].

About FN researches in adults is limited, even research in dietitians have no existed. Therefore; this present study was carried out to determine food neophobia in dietitians. In this study, it was determined that 21% of dietitians were not willing to try new foods and their FN score was  $35.7 \pm 7.65$ . Based on tertile cut-offs, dietitians were classified by their degree of food neophobia including 7% of them had low FN (Score: 10-23; n=14), 25% of them had medium FN (Score: 24-33, n=50) and 68% of them had high FN (Score: 34-67, n=136). A recent estimate of high neophobia in a large USA population based on a median split on the food neophobia scale was 40% for men and 45% for women [12].

Increasing neophobia is associated with reduced dietary variety, which is most evident in measures of the acceptability and intake of vegetables, fruits and protein foods, as well as in higher numbers of disliked foods overall. The expression of neophobia varies with age, education, degree of urbanization, income and culture. While associations between FN and food preference varied according to all demographic variables. In this study, dietitians' demographic characteristics (gender, age, education, marital status) did not significantly differ among food neophobia groups. However, we found that female dietitians' BMI value did significantly differ among food neophobia groups ( $p < 0.05$ ). On the other hand, not only demographic characteristics but also personal characteristics are effective on FN. For example, 96.5% of dietitians stated that smell was effective when consuming a new food and it was found that the same results on another study by Dovey, et al.

FN effects on eating behaviors are modifiable; especially, it can also be modified by food experience and exposure to increasing food variety reduces neophobia. In this study, 38.0% of dietitians stated that their diets were variety and balanced pattern. This is important because it is stated that food neophobia is inversely related to fruit and vegetable preference and this situation can become a serious problem for dietary quality [13].

## CONCLUSION

As a conclusion, this study showed that most of the people who are educated in nutrition and dietetics are not willing to try new foods. One of the most innovative occupation groups are dietitians and the results of this study are quite remarkable and unexpected. In order to increase the awareness of dietitians providing nutrition education to the public, more studies should be conducted with a larger number of sample groups on food neophobia.

## REFERENCES

1. Barrera R, Sanchez M. Neophobia, personal consumer values and novel food acceptance. *Food Qual Pref.* 2013;27(1):72-84.
2. August C, Bryan R. The effects of food neophobia and food neophilia on diet and metabolic processing. *Food Nutr Sci.* 2012;2012.
3. Cooke L, Carnell S, Wardle J. Food neophobia and mealtime food consumption in 4-5 year old children. *Intern J Behav Nutr Phys Activ.* 2006;3(1):1-6.
4. Dovey TM, Staples PA, Gibson EL, Halford JC. Food neophobia and picky/fussy eating in children: A review. *Appetite.* 2008;50(2-3):181-193.
5. Galloway AT, Lee Y, Birch LL. Predictors and consequences of food neophobia and pickiness in young girls. *J Am Diet Assoc.* 2003;103(6):692-698.
6. Horacek TM, Salomon JE, Nelsen EK. Evaluation of dietetic students' and interns' application of a lifestyle-oriented nutrition-counseling model. *Patient Educ Couns.* 2007;68(2):113-120.
7. Hill JO, Thompson H, Wyatt H. Weight maintenance: What's missing? *J Am Diet Assoc.* 2005;105(5):63-66.
8. Howard AJ, Mallan KM, Byrne R, Magarey A, Daniels LA. Toddlers' food preferences. The impact of novel food exposure, maternal preferences and food neophobia. *Appetite.* 2012;59(3):818-825.
9. Falciola GA, Couch SC, Gribble LS, Pabst SM, Frank R. Food neophobia in childhood affects dietary variety. *J Am Diet Assoc.* 2000;100(12):1474-1481.
10. Jaeger SR, Rasmussen MA, Prescott J. Relationships between food neophobia and food intake and preferences: Findings from a sample of New Zealand adults. *Appetite.* 2017;116:410-422.
11. Knaapila A, Silventoinen K, Broms U, Rose RJ, Perola M, Kaprio J, et al. Food neophobia in young adults: Genetic architecture and relation to personality, pleasantness and use frequency of foods and body mass index-a twin study. *Behav Genet.* 2011;41(4):512-521.
12. Knaapila A, Tuorila H, Silventoinen K, Keskitalo K, Kallela M, Wessman M, et al. Food neophobia shows heritable variation in humans. *Physiol Behav.* 2007;91(5):573-578.
13. Lacey K, Pritchett E. Nutrition care process and model: ADA adopts road map to quality care and outcomes management. *J Am Diet Assoc.* 2003;103(8):1061.