Acta Scientific NUTRITIONAL HEALTH (ISSN:2582-1423)

Volume 6 Issue 8 August 2022

Research Article

Determination of Food Addiction and Mindful Eating in Overweight and Obese Adults

Cansu DÖLEK[1] and M Ali CEBİRBAY[2]*

[1]MSc Dietician, Cansu Dölek Nutrition and Diet Counseling Center, Konya, Turkey

[2]Faculty of Health Science, Nutrition and Dietetic Department, Selcuk University, Konya, Turkey

***Corresponding Author:** M Ali CEBİRBAY, Faculty of Health Science, Nutrition and Dietetic Department, Selcuk University, Konya, Turkey.

DOI: 10.31080/ASNH.2022.06.1103

Received: July 11, 2022

Published: July 27, 2022

© All rights are reserved by **Cansu DÖLEK and M Ali CEBİRBAY.**

Abstract

Aim: The aim of the study is to evaluate the food addiction and mindful eating in overweight and obese adults.

Method: The research was designed as a survey model to determine the food addiction and mindful eating of 592 overweight and obese adults living in Konya, Turkey. The data were obtained by a survey that included demographic characteristics, anthropometric measurements, eating habits, Yale Food Addiction Scale (YFAS) and the Mindful Eating Questionnaire (MEQ-30).

Results: Eating addiction was found in to be available for 76.4% of participants. Food addiction was found 58.0% in women and 42.0% in men. Food addiction did not differ between gender and BMI ($p>0.05$). All MEQ-30 scores except awareness and eating discipline and total score was associated with food addiction ($p = 0.000$). Due to the food addiction in high triggering overeating desire results among groups were found 81.4%, 70.6%, 66.4%, 50.0%, and 45.8% in sweetened snacks ($p = 0.098$), fast food ($p = 0.042$), cereals ($p = 0.886$), meat and products ($p = 0.038$), and fruits ($p = 0.011$), respectively. YFAS symptoms affected ($B = 0.942$) total MEQ-30 scores ($p = 0.000$), but BMI did not correlate with YFAS ($p = 0.626$) and MEQ-30 scores ($p = 0.721$).

Conclusion: The results showed that mindful eating is related to the food addiction, and it can be a key role as a strategy in weight management. High sugar, fat and ultra-processed foods can trigger overeating and it should be gain and sustain healthy eating behaviors.

Keywords: Food Addiction; Mindful Eating; Obesity; BMI; Overeating

Abbreviations

YFAS: Yale Food Addiction Scale; MEQ-30: Mindful Eating Questionnaire; BMI: Body Mass Index; SPSS: Statistical Package for Social Sciences; $\bar{x}$: Mean; n: Number; SE: Standard Error of Mean; TDG: Turkish Dietary Guideline; p: Significance Level; MBSR: Mindfulness-Based Stress Reduction; MB-EAT: Mindfulness Based Eating Awareness Training

Introduction

In the continuation of the problems that occur in eating behavior, various problems such as cardiovascular diseases, diabetes, obesity, etc. may occur due to inadequate and unbalanced nutrition. One of the problems that occur due to the lack of control in eating behavior is food addiction [1]. Food addiction is expressed as uncontrollable and unpreventable food consumption to high-fat and high-sugar content and palatable foods. In some studies [2,3], it was emphasized that the incidence of food addiction in obesity varies between 15% and 25%. Food addiction is also associated with diseases such as binge eating disorder [4,5]. Food addiction is a critical importance in terms of understanding and applying the potential addictive foods and other factors that cause pathological eating disorder factors, especially in obese individuals, and patients diagnosed with eating disorders [6,7]. Medication, bariat-

ric surgery, and lifestyle changes especially healthy eating behavior have been reported as effective interventions in the treatment of food addiction. In this context, it was taken into consideration that food addiction and mindful eating based practices have the effect that can lead to a change in nutrition-related lifestyle [8-10]. Moreover, the predictors of food addiction such as emotional, awareness, eating control were considered in food addiction linked between mindful eating [11]. Initially, the starting point of mindful eating was founded by J. Kabat Zinn developed the Mindfulness-Based Stress Reduction (MBSR) program. Later, at the end of 1990s Mindfulness Based Eating Awareness Training (MB-EAT) modified and using in eating disorders. Mindful eating includes conscious food choices, physical and psychological hunger, and satiety and with healthy eating cue responses. Especially after the 2010s, the concept of Mindful eating has become a very important concept with intervention studies in the treatment process of eating behavior disorders along with obesity, and it still maintains its importance today [12-15]. Therefore, it needs more in-depth scientific evidence on the concepts of food addiction and eating awareness and revealing the eating profiles of overweight and obese individuals, mindful eating is a preventive indicator addictive-like related eating behaviors. The aim of this paper is to determine the food addiction and mindful eating in overweight and obese individuals, compare the relations between other variables such as gender and BMI.

Materials and Methods

The study was designed as a survey model because it was aimed to determine the variables affecting food addiction and eating awareness in overweight and obese individuals. Overweight and obese individuals between the ages of 19-65 living in the city center of Konya were accepted as the study population of the research. In determining the sample size, parameters were entered in the G*Power 3.1.9.2 program as 0.15 for effect size, 0.05 for error margin (α), and 0.95 for power (1-β). As a result of the calculation, the sample size was determined as 592. Individuals participating in the sample of this study were selected by simple random sampling method. A questionnaire was used as data collection method with face-to-face interviews method. Consent form was obtained from the volunteers to participate of the study. The questionnaire form consists of 5 parts; demographic characteristics and anthropometric measurements, stimulate eating foods, Yale Food Addiction Scale (YFAS), Mindful Eating Questionnaire (MEQ-30). First part consists of demographic features (e.g., age, gender,) and anthropometric measurements (e.g., body weight, height) of the participants. Anthropometric measurements were taken by the first author (dietician) with Inbody bioimpedance device (Model 270) and ADE portable stadiometer. Body Mass Index (BMI) were calculated with kg/m^2 formula and classified as overweight (25.0-29.9), obese class I (30.0-34.9), obese class II (35.0-39.9), and obese class III (40.0 or above). Individuals who have 25.0 and above BMI were included according to the Turkish Dietary Guideline (TDG) [16]. YFAS is the second part of the questionnaire. YFAS was developed to measure food addiction symptoms by considering the substance addiction criteria in Diagnostic and Statistical Manual of Mental Disorders (DSM-V) [17]. YFAS first described by Gearhardt., *et al.* in 2009, [18] and validity study was made by Büyüktuncer., *et al*. in 2019 [19] and adapted to Turkish. YFAS is very common useful tool for lighted to the anorexia nervosa, bulimia nervosa and binge eating disorder diagnosis. YFAS was consist of 27 statements and eight criteria and it evaluated Likert type and yes-no questions and they scored. Responses are used to calculate a symptom count of food addiction symptoms ranging from 0 to 7. A diagnosis of food addiction can be made if an individual endorses 3 or more symptoms and indicates clinically significant impairment. The third part is MEQ-30. It was made by Framson., *et al*. in 2009 [20] and Köse., *et al*. [21] was adapted to Turkish in 2016. Emotional eating, disinhibition, eating control, awareness, eating discipline, mindful eating, and interference were the sub-dimensions of the MEQ-30. The last part of the questionnaire is frequency and consumption of stimulated foods for addiction. These foods can be cause excessive eating like as ice cream, chocolate/wafer, apple, donut/sweet muffin, cookies/biscuit, cake, candy, bread rolls/rolls, lettuce, pasta, strawberries/cherries/grapes, rice, crackers, chips, bagels, French fries, sweetened drinks, carrots, meat, bananas, bacon/sausage/salami, hamburger, toast/cheese sandwich, pizza combined under groups as meat and products, cereal products, sweetened snacks, sweetened drinks, salted snacks, ready to eat foods, and vegetable and fruit. The data were analyzed with the SPSS 22.0 (Statistical Package for Social Sciences) program, and the results were obtained by making descriptive analysis. Within the scope of the preliminary analysis, descriptive statistical analysis results such as percentage (%), number (n), standard error (SE), arithmetic mean ($\bar{x}$) were calculated from the data. Parametric (e.g., Independent Samples T Test, Oneway ANOVA) and non-parametric (e.g., Chi Square) analysis were used according to the data. The statistical significance level (p) was determined as $p<0.05$ and the data were tested at the 95% confidence interval.

Results and Discussion

According to the results, it was observed that 57.3% of the participants were female and 42.7% male. When the age groups of participants are examined; 19-25, 26-35, 36-45, 56-55, and 56 and over ages was found 45.1%, 30.1%, 14.5%, 6.4%, and 3.9%, respectively. It was determined that 6.1% of the participants constantly dietary follow-up, 5.7% use dietary supplements, 41.7% of they have received dietary counseling before. The obesity in their family member ratio is found 49.8%. The level of those who thought they had an eating problem was to be 61.7%, and the highest problem with eating was overeating is 64.8%. When the main meal consumption times are examined, those that are less than 15 minutes, 15-30 minutes, 30-60 minutes, and more than 60 minutes was determined 38.1%, 50.4%, 8.8%, and 2.7% respectively. Overweight, obese class I, obese class II, and obese class III was found 40.4%, 35.1%, 11.8%, and 12.7 in women; and 48.6%, 43.1%, 5.1% and 3.2% in men. The total BMI mean is 31.85 ± 0.512 of the participants. The evaluation of YFAS scores, 76.4% (n = 452) of participants (women 58.0%, men 42.0%) have food addiction. YFAS scores did not differ for gender (p = 0.536) and BMI (p = 0.731). YFAS criteria and symptoms for food addition results represented in table 1.

According to the food addiction, the highest YFAS symptom is determined 77.7% in "important social, occupational, and recreational activities given up or reduced". All YFAS symptoms were found significantly differed except "use continues despite knowledge of adverse consequences" (p = 0.127) and "tolerance" (p = 0.060). Another finding is the means of with and without food addiction detected 4.3 ± 1.113 and 1.7 ± 0.980, respectively (p = 0.000) (Table 1). In table 2, according to the MEQ-30 mindful eating scores, only awareness (p = 0.103) and eating discipline (p = 0.541) among the seven sub-dimensions included in the MEQ-30 did not show any difference according to food addiction. Along with the remaining sub-dimensions, the total MEQ-30 score was statistically different (p = 0.000) according to food addiction. Although there are contradictory results in some studies [22-24] on food addiction and mindful eating, our results shows high relevance in both scores represented in table 2. In addition, the limited studies on databases and recent studies of the concepts of mindful eating and food addiction, it prevents a fully inclusive discussion. Another reason is obesity has a cumulative and multifactorial causes to interact between food addiction and mindful eating.

YFAS Criteria	Food Addiction				p
	Yes		No		
	n	%	n	%	
Substance taken in larger amount and for longer period than intended	83	18.3	7	5.0	0.000
Persistent desire or repeated unsuccessful attempt to quit.	243	53.8	18	12.9	0.000
Much time/activity to obtain, use, recover	207	45.8	5	3.6	0.000
Important social, occupational, and recreational activities given up or reduced	351	77.7	41	29.3	0.000
Use continues despite knowledge of adverse consequences (e.g., failure to fulfill role obligation, use when physically hazardous)	214	47.3	56	40.0	0.127
Tolerance (marked increase in amount; marked decrease in effect)	331	73.2	91	65.0	0.060
Characteristic withdrawal symptoms; substance taken to relieve withdrawal.	207	45.8	4	2.9	0.000
Its use causes clinically significant impairment	306	67.7	27	19.3	0.000
YFAS Symptoms					p
$\bar{x} \pm SE$	4.3 ± 1.113		1.7 ± 0.980		0.000
Median	4		2		
Min-Max	3-7		0-8		

Table 1: An Evaluation of YFAS Criteria and Symptoms for Food Addiction.

When we focus on another result is (Table 3), eight group of overeating foods according to the part of YFAS, meat and products, sweetened drinks, fast food, and fruits statistically differed by food addiction status of the participants. In food addiction high overeating results among groups were found in sweetened snacks (81.4%), fast food (70.6%), cereals (66.4%), meat and products (50.0%), and fruits (45.8%), respectively. One of the remarkable results here is that vegetables are the least (34.3%) group besides the trig-

MEQ-30 Sub-Dimensions ($\bar{x} \pm SE$)	Food Addiction		p
	Yes	No	
Emotional eating	3.21 ± 0.038	2.72 ± 0.076	0.000
Disinhibition	3.19 ± 0.033	2.71 ± 0.066	0.000
Eating control	2.99 ± 0.031	2.52 ± 0.058	0.000
Awareness	2.91 ± 0.300	2.70 ± 0.049	0.103
Eating discipline	2.89 ± 0.033	2.85 ± 0.066	0.541
Mindful eating	2.91 ± 0.030	2.70 ± 0.049	0.000
Interference	3.09 ± 0.048	2.49 ± 0.076	0.000
Total MEQ Score	3.07 ± 0.023	2.72 ± 0.040	0.000

Table 2: Total and Sub-Dimension Scores of MEQ-30 for Food Addiction.

Foods	Food Addiction		Trigger Overeating			
			Yes	No	Total	p
Meat and Products	Yes	n	226	226	452	0.038
		%	50.0	50.0	100	
	No	n	56	84	140	
		%	40.0	60.0	100	
Cereals	Yes	n	300	152	452	0.886
		%	66.4	33.6	100	
	No	n	92	48	140	
		%	65.7	34.3	100	
Sweetened Snacks	Yes	n	368	84	452	0.098
		%	81.4	18.6	100	
	No	n	105	35	140	
		%	75.0	25.0	100	
Sweetened Drinks	Yes	n	192	260	452	0.001
		%	42.5	57.5	100	
	No	n	37	103	140	
		%	26.4	73.6	100	
Salted Snacks	Yes	n	196	256	452	0.146
		%	43.4	56.6	100	
	No	n	51	89	140	
		%	36.4	63.6	100	
Fast Food	Yes	n	319	133	452	0.042
		%	70.6	29.4	100	
	No	n	86	54	140	
		%	61.4	38.6	100	

Vegetable	Yes	n	155	297	452	0.156
		%	34.3	65.7	100	
	No	n	39	101	140	
		%	27.9	72.1	100	
Fruit	Yes	n	207	245	452	0.011
		%	45.8	54.2	100	
	No	n	47	93	140	
		%	33.6	66.4	100	

Table 3: An Analysis of Foods that Trigger Overeating Foods for Food Addiction.

gering, but another important result is that fruits are perceived overeating. This result may occur because of fruits contain a high amount of sugar compared to the vegetables (Table 3). Cebioglu., *et al*. emphasized that food addicted participants had significantly lower mindful eating scores, and another result of the study is that food addiction for sex and BMI findings conducted on undergraduates was represented similar finding on this study [25]. But other study findings [22,23] contrary to our results for gender and BMI on adolescents. Ayaz., *et al*. [28] implied that food addicted women represented more total daily intake, protein and fat intakes compared to the non-addicted overweight and obese women. Another study [29], food addiction symptoms positively related increased calorie intake, but not to BMI in younger children. Pedram., *et al*. [30] indicated that participants with food addiction associated with food addiction symptoms on adult women.

The correlation between MEQ-30 total score and YFAS symptoms was determined as r = 0.313 and r^2 = 0.095 the correlation was statistically significant (p = 0.000). Regression analysis according to MEQ-30, YFAS and BMI is given in Table 4. Lemeshow., *et al*. [31] emphasized in their cross-sectional conducted study, food addiction was associated with hamburger, French fries, and pizza. Another study [32] which is carried out cross-sectional in overweight and obese adults, addictive food behaviors related with worse quality dietary choices such as low diet fiber, and more simple carbohydrate food consumption. Another addictive food study on adults [33], relation between higher processed foods such as sweetened snacks and drinks to higher craving and elevated liking. Pedram., *et al.* [30] reported that food addiction statistically differed for higher intake of fat and protein. Keser., *et al*. in 2015 [34], high YFAS scores play an important role in childhood obesity and same triggering to overeating foods French fries, hamburger, and carbonated drinks. Curtis., *et al*. [35] reported ultra-processed foods related with food addiction and YFAS criteria.

The linear regression model analyzed in table 4, it was determined that a positive relation between YFAS symptoms and MEQ-30 scores, a notable difference among coefficients. In this content, YFAS symptoms affected (B = 0.942) total MEQ-30 scores (p = 0.000). Similarly, MEQ-30 scores as the same on YFAS symptoms (p = 0.000). However, YFAS symptoms does not related to the BMI (p = 0.626) and MEQ-30 scores between BMI (p = 0.721). Me-

Dependent Variable	Independent Variable	B	SE	β	t	p
YFAS	MEQ-30	0.942	0.120	0.312	7.876	0.000
	BMI	-0.005	0.009	-0.019	-.0488	0.626
MEQ-30	YFAS	0.104	0.013	0.312	7.868	0.000
	BMI	0.001	0.003	0.014	0.358	0.721

Table 4: Regression Analysis of Total BMI, MEQ-30 for YFAS Symptoms.

seri and Akanalci [36] reported that food addiction significantly increased risk of obesity with logistic regression as same as our results. On the contrary to our on relation with food addiction to BMI, another study [37] found food addiction correlates with BMI in young adults. Schulte., *et al.* [38] showed according to the regression results, food addiction has a relationship BMI and weight gain. Pursey., *et al.* [39] YFAS symptoms associated with BMI and weight gain used with regression on young adults.

Conclusion

This study is important in terms of determining the relationship between food addiction and mindful eating. The results reveal that food addiction related with BMI, and food addiction has a very high level in overweight and obese. Creating awareness about eating is an important function in the prevention of obesity. Eating awareness interventions should be given importance in policies to be developed on obesity and food addiction. It is necessary to evaluate the eating behavior and habits of obese individuals, to make them aware of their addiction to nutrition and to increase their awareness of eating. Instead of addictive foods, access to healthy foods should be facilitated. In addition, it has been determined that the foods that cause triggering overeating that they contain high sugar, fat, and at the same time ultra-processed. Consuming these triggering overeating foods can cause obesity and health problems, as well as addictions. In this context, it is vital to transform the concepts of food addiction and eating awareness of overweight and obese individuals into their diets and healthy eating and nutritional behaviors, and mindful eating is a obligatory strategy to control food addiction. It can be suggested as a suggestion to maintain awareness of eating in treatment and prevention by playing a key role in reducing and preventing the risks of nutrition-related diseases such as obesity that contain multifactorial factors, including food addiction. Longitudinal and interventional studies should be done for to make strong evidence.

Acknowledgements

This study summarized first authors' Master thesis graduated in Selcuk University and the second author as a supervisor.

Conflict of Interest

There are no conflicts of interest.

Bibliography

1. Adams RC., *et al*. "Food Addiction: Implications for the Diagnosis and Treatment of Overeating". *Nutrients* 11.9 (2019): 2086.

2. Meule A., *et al*. "Food Addiction and Bulimia Nervosa". *European Eating Disorders Review* 22.5 (2014): 331-337.

3. Gearhardt AN., *et al.* "An examination of food addiction in a racially diverse sample of obese patients with binge eating disorder in primary care settings". *Comprehensive Psychiatry* 54.5 (2013): 500-505.

4. Gearhardt AN., *et al*. "An examination of the food addiction construct in obese patients with binge eating disorder". *International Journal of Eating Disorders* 45.5 (2012): 657-663.

5. Linardon J and Messer M. "Assessment of food addiction using the Yale Food Addiction Scale 2.0 in individuals with binge-eating disorder symptomatology: Factor structure, psychometric properties, and clinical significance". *Psychiatry Research* 279 (2019): 216-221.

6. Pivarunas B and Conner BT. "Impulsivity and emotion dysregulation as predictors of food addiction". *Eating Behaviors* 19 (2015): 9-14.

7. Mies GW., *et al*. "The prevalence of food addiction in a large sample of adolescents and its association with addictive substances". *Appetite* 118 (2017): 97-105.

8. Cassin SE., *et al*. "Psychosocial Interventions for Food Addiction: a Systematic Review". *Current Addiction Reports* 7.1 (2020): 9-19.

9. Sevinçer GM., *et al*. "Food addiction and the outcome of bariatric surgery at 1-year: Prospective observational study". *Psychiatry Research* 244 (2016): 159-164.

10. Leary M., *et al*. "Current Intervention Treatments for Food Addiction: A Systematic Review". *Behavioral Sciences* 11.6 (2021): 80.

11. Najem J., *et al*. "Prevalence of food addiction and association with stress, sleep quality and chronotype: A cross-sectional survey among university students". *Clinical Nutrition* 39.2 (2020): 533-539.

12. Dalen J., *et al*. "Pilot study: Mindful Eating and Living (MEAL): weight, eating behavior, and psychological outcomes associated with a mindfulness-based intervention for people with obesity". *Complementary Therapies in Medicine* 18.6 (2010): 260-264.

13. Miller CK., *et al*. "Comparison of a mindful eating intervention to a diabetes self-management intervention among adults with type 2 diabetes: a randomized controlled trial". *Health Education and Behavior* 41.2 (2014): 145-154.

14. Warren JM., *et al*. "A structured literature review on the role of mindfulness, mindful eating and intuitive eating in changing eating behaviours: effectiveness and associated potential mechanisms". *Nutrition Research Reviews* 30.2 (2017): 272-283.

15. Kitis C and Cebirbay MA. "Determination of Eating Attitude and Mindful Eating Scores of Patients in Turkey". *Progress in Nutrition* 24.1 (2022): e2022031-e2022031.

16. Turkey Dietary Guideline. "Republic of Turkey, Ministry of Health Public Health Acency" (2016).

17. Psychiatry.org-DSM V

18. Gearhardt AN., *et al*. "Preliminary validation of the Yale Food Addiction Scale". *Appetite* 52.2 (2009): 430-436.

19. Buyuktuncer Z., *et al*. "Turkish version of the Yale Food Addiction Scale: preliminary results of factorial structure, reliability, and construct validity". *Journal of Health, Population and Nutrition* 38 (2019): 42.

20. Framson C., *et al*. "Development and validation of the mindful eating questionnaire". *Journal of the American Dietetic Association* 109.8 (2009): 1439-1444.

21. Köse G., *et al*. "Adaptation Study of the Mindful Eating Questiıonnare (MEQ) into Turkish". *Journal of Cognitive-Behavioral Psychotherapy and Research* 5.3 (2018): 125-125.

22. Hulbert-Williams L., *et al*. "Initial Validation of the Mindful Eating Scale". *Mindfulness* 5.6 (2014): 719-729.

23. Kerin JL., *et al*. "Intuitive, mindful, emotional, external and regulatory eating behaviours and beliefs: An investigation of the core components". *Appetite* 132 (2019): 139-146.

24. Mantzios M. "(Re)defining mindful eating into mindful eating behaviour to advance scientific enquiry". *Nutrition and Health* 27.4 (2021): 367-371.

25. Kaya Cebioğlu İ., *et al*. "Food addiction among university students: The effect of mindful eating". *Appetite* 177 (2022): 106133.

26. Yu Z., *et al*. "Sex differences in disordered eating and food addiction among college students". *Appetite* 129 (2018): 12-18.

27. Yu Z and Tan M. "Disordered Eating Behaviors and Food Addiction among Nutrition Major College Students". *Nutrients* 8.11 (2016): 673.

28. Ayaz A., *et al*. "How does food addiction influence dietary intake profile?" *PLOS ONE* 13.4 (2018): e0195541.

29. Richmond RL., *et al*. "The association of addictive-like eating with food intake in children". *Appetite* 117 (2017): 82-90.

30. Pedram P., *et al*. "Food Addiction: Its Prevalence and Significant Association with Obesity in the General Population". *PLOS ONE* 8.9 (2013): e74832.

31. Lemeshow AR., *et al*. "Food and beverage consumption and food addiction among women in the Nurses' Health Studies". *Appetite* 121 (2018): 186-197.

32. Burrows T., *et al*. "Food addiction and associations with mental health symptoms: a systematic review with meta-analysis". *Journal of Human Nutrition and Dietetics* 31.4 (2018): 544-572.

33. Polk SE., *et al*. "Wanting and liking: Separable components in problematic eating behavior?" *Appetite* 115 (2017): 45-53.

34. Keser A., *et al*. "A new insight into food addiction in childhood obesity". *The Turkish Journal of Pediatrics* 57 (2015): 219-224.

35. Curtis C and Davis C. "A Qualitative Study of Binge Eating and Obesity From an Addiction Perspective". *Eating Disorders* 22.1 (2014): 19-32.

36. Meseri R and Akanalci C. "Food addiction: A key factor contributing to obesity?". *Journal of Research in Medical Sciences* 25 (2020): 71.

37. Lin YS., *et al*. "Food Addiction Mediates the Relationship between Perceived Stress and Body Mass Index in Taiwan Young Adults". *Nutrients* 12.7 (2020): 1951.

38. Schulte EM., *et al*. "A cross-sectional examination of reported changes to weight, eating, and activity behaviors during the COVID-19 pandemic among United States adults with food addiction". *Appetite* 168 (2022): 105740.

39. Pursey KM., *et al*. "Foods and dietary profiles associated with 'food addiction' in young adults". *Addictive Behaviors Reports* 2 (2015): 41-48.