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The Association between Perceived Stress, Dietary Intake, and Food Addiction among Saudi Adults: A Cross-Sectional Study

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Abstract

Perceived stress refers to an individual's experience of stress when encountering a stressor and has been linked to behaviors such as overeating and unhealthy eating. This cross-sectional study investigated the relationship between perceived stress levels, food addiction, and food preferences among adults in Saudi Arabia. A self-administered survey among 541 participants was conducted with a sample of adults aged 18 years and above living in Saudi Arabia, capturing data on socio-demographic characteristics, the modified Yale Food Addiction Scale 2.0, dietary intake using short FFQ, and perceived stress scale. Higher stress levels were significantly associated with younger age, being single, female gender, student status, and lower physical activity levels (P < 0.05). After adjusting for potential confounders, perceived stress was negatively correlated with preferences for nuts (-0.881, P = 0.005), vegetables (-0.835, P = 0.006), and fruits (-1.453, P < 0.001). No significant associations were observed between perceived stress and the intake of savory snacks, sweet snacks, fast food, or soft and energy drinks. In addition, a strong inverse association was identified between food addiction and low stress levels (x² = 38.113, P < 0.001). This study highlights significant associations between perceived stress, food addiction, and food preferences in the Saudi Arabian adult population. Future research should implement longitudinal study designs to enhance the understanding of these relationships.

Introduction

Food addiction is defined as uncontrollable eating behavior, manifesting as compulsive overeating, often triggered by exposure to certain types of food.¹ These types of food are typically calorie-dense and contain high levels of sugar, fat, and/or salt.^{1,2} Data from animal, imaging, and epidemiological studies have suggested that foods high in these components, in particular ultra-processed foods, have addictive effects similar to alcohol and drugs.³⁻⁵ As food is consumed not just for necessity but for pleasure, it is associated with the brain's reward mechanisms.⁶

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Keywords

Dietary Intake; Food Addiction; Food Intake; Perceived Stress; Saudi Arabia. Food addiction has a strong correlation with various mental health conditions, including eating disorders, mood disturbances, anxiety, and post-traumatic stress disorder, all of which can detrimentally affect an individual's quality of life.^{3,7-9}

Stress has been recognized as a significant risk factor in both the onset of addictive disorders and the recurrence of addictive behaviors.¹⁰⁻¹² Stress is defined as "the processes of perceiving, appraising, and responding to adverse events or stimuli." Stressful experiences can arise from emotional and physiological challenges.13 Previous research has shown that such exposure can alter eating patterns, leading individuals to cope with stress through unhealthy but often enjoyable behaviors, including undesirable eating habits.14 However, data on the exact association between perceived stress and eating behavior is inconsistent. Some studies have demonstrated that stress can suppress appetite, while others have shown increased consumption of foods high in energy, sugar, and fat.^{15,16} To date, most research in this area has been conducted in Western countries, with limited research on the Saudi population, whose characteristics and food intake differ considerably from those in Western countries. Therefore, this study aimed to examine the association between perceived stress levels, food addiction, and food intake among adults in Saudi Arabia. Specifically, the study was performed with the following objectives: 1) To assess the levels of perceived stress among adults. 2) To estimate the prevalence of food addiction among adults. 3) To determine the association between perceived stress levels and food addiction. 4) To examine the relationship between perceived stress levels and dietary intake. 5) To examine the association between food addiction and dietary intake.

Determining these associations will contribute to the development of interventions aimed at helping adults manage their stress using various techniques without resorting to food addiction.

Materials and Methods Study Design and Population

A cross-sectional study was conducted among adults in Saudi Arabia through an online survey. The survey was distributed in Arabic through social media platforms, including Telegram, WhatsApp, and Twitter. The study involved male and female, aged 18 years and above who live in Saudi Arabia. Inclusion and exclusion criteria: Native Arabicspeaking individuals living in the Kingdom of Saudi Arabia were included in the study, regardless of nationality. Participants were excluded if they had any medical conditions that might affect their typical eating behavior. Pregnant women were also excluded, as were participants under 18 years of age and those who failed to respond to at least one of the scale items.

Data Collection

Data were collected from May 2022 to December 2023. Before collecting the data, an ethics statement was approved by King Abdul-Aziz University's Biomedical Ethics Research Committee (Reference No. 292-21). An online consent form was presented on the first page of the online survey. The estimated minimum sample size needed for this study was 385 adults, based on a 95% confidence level, a 5% acceptable margin of error, and a response distribution of 50%.

Demographic Measurements

Demographic measurements collected included age, gender (male or female), marital status (single, married, divorced, or widowed), education level (high school, diploma, bachelor, or postgraduate), occupation (employee, unemployed, self-employed, unable to work, housewife, or retired).

Participants were also assessed on the presence of any chronic diseases (diabetes, cardiovascular disease, or blood pressure), smoking status (smoking, nonsmoker, or previous smoker), and regularity of physical activity lasting a minimum of 30 minutes response options regarding physical activity included: (every day, 1–2 times a week, 3–4 times a week, and 5–6 times a week). Responses of '3-4 times a week,' '5-6 times a week,' and 'daily' were coded as 'physically active.' Responses of 'never,' 'rarely,' and '1-2 times a week' were coded as 'not physically active.' Additionally, participants were inquired about any existing health conditions, such as cardiovascular disease, high blood pressure, or diabetes.

Food Addiction Assessment

Food addiction was evaluated using the validated Arabic version of the modified Yale Food Addiction Scale 2.0 (mYFAS 2.0). This version has been previously found to be reliable and valid for Arabicspeaking populations.^{17,18} The mYFAS scale was modified to assess symptoms over the past month, unlike the original version that assesses symptoms over the past year. This scale comprises 13 items inquiring about symptoms related to eating habits, particularly the consumption of high-fat/high-sugar foods in the previous month. Among these items, 11 are used to evaluate addictive eating behaviors, while the remaining two assess clinical significance (i.e., distress or impairments). Each item was measured on an 8-point scale reflecting frequency, ranging from 'never' to 'every day.' The severity of food addiction was categorized as mild (score = 2-3), moderate (score = 4-5), or severe (score = 6 or more).

Dietary Intake Measurement

A validated short food frequency questionnaire (FFQ) was administered to participants to assess their dietary intake.¹⁸ Participants were asked to indicate the frequency (days/week) of consuming various food items using a 9-point Likert scale, ranging from '6 times a day' to 'never.' Foods were grouped into the following categories: fast food (e.g., fried foods, pizza, and burgers), sweet snacks (e.g., chocolate, cookies, and cakes), and savory snacks (biscuits, pretzels, and chips), fruit, vegetables, nuts, soft drinks, and energy drinks.¹⁸

Perceived Stress

Stress was assessed using the validated Arabic version of the Perceived Stress Scale (PSS),¹⁹ which measures the extent to which individuals perceive conditions in their lives as stressful.^{19,20} The questionnaire comprises ten items related to feelings and thoughts in the previous month. Each item uses a 5-point scale to indicate frequency, with responses ranging from 'never' (0) to 'very often' (4); items 4, 5, 7, and 8, are reverse-coded in terms of frequency. Scores range from 0 to 40, with higher scores reflecting greater perceived stress levels. Based on the cumulative scores of all ten questions, perceived stress was grouped into three categories: low stress (0–13), moderate stress (14–26), and high perceived stress (27–40).

Analysis

Data analysis was performed using IBM SPSS statistics version 26.0 for Windows. Continuous data were expressed as mean ± SD. Independent

samples t-tests and one-way ANOVA were used for parameters with normal distribution, and the Mann-Whitney U and Kruskal Wallis tests were used for parameters with non-normal distribution. Categorical data were expressed as frequency and percentages and were analyzed using the chi-squared test or Fisher's exact test, as appropriate. Ordinal logistic regression models were used to assess the association between stress and dietary intake, both unadjusted and adjusted for age, gender, marital status, occupation status, smoking status, physical activity, and the presence of chronic disease. A p-value of less than 0.05 (using a two-sided test) was considered statistically significant.

Results

Socio-Demographic Characteristics

The study included 541 participants, with the majority being female (93.3%) and only 6.7% male. The mean age of participants was 27 years. In terms of marital status, 66.7% were single, 29.9% married, and 3.3% divorced or widowed. Regarding education level, most participants held a bachelor's degree (70.6%), while 17.2% had education below the university level; 7.6% had a master's or Ph.D., and 4.6% had a diploma. For occupational status, the largest group was students (56.7%), followed by employed individuals (18.3%), unemployed participants (9.4%), housewives (10.7%), and smaller percentages in free business (1.8%) or retired (3%). A large proportion of participants (91.1%) did not suffer from any chronic disease, while 8.9% had chronic condition. The majority, 91.7%, were non-smokers, while 7.2% smoked and 1.1% had quit smoking. Regarding physical activity, 61.2% of participants were classed as not being physically active, while 38.8% regularly engaged in physical activity (Table 1).

The Association between Socio-Demographic Characteristics and Stress Level

The association between socio-demographic characteristics and stress levels is described in Table 2. The results indicate significant associations between several socio-demographic factors and stress levels. Individuals who are younger, unmarried, female, students and those with lower physical activity reported higher levels of stress. Age was inversely associated with stress, as younger participants showed higher stress levels (P < 0.001). Females showed higher stress levels compared to

males (P < 0.001). Marital status and occupation also showed significant associations, with students and unmarried individuals experiencing higher stress (P = 0.001). Additionally, physically active individuals reported lower stress levels (P = 0.037). No significant associations were found between stress and education level, chronic disease status, or smoking behavior.

Variables	Frequency	Percentage	
Gender			
Male	36	6.7	
Female	505	93.3	
Marital status			
Single	361	66.7	
Married	162	29.9	
Divorced/widowed	18	3.3	
Education Level			
less than university	93	17.2	
Diploma	25	4.6	
Bacholar	382	70.6	
Masters/ PhD	41	7.6	
Occupation			
Employed	99	18.3	
Unemployed	51	9.4	
Students	307	56.7	
Free business	10	1.8	
Retired	16	3	
Housewife	58	10.7	
Chronic disease			
no chronic disease	493	91.1	
with chronic disease	48	8.9	
Smoking			
Smoke	39	7.2	
Non smoke	496	91.7	
quit smoke	6	1.1	
Physical activity			
not physically active	331	61.2	
physically active	210	38.8	
	Mean	SD	
Age	27.16	9.52	
Perceived Stress score	19.92	6.22	
Food addiction score	17.37	15.30	

Table 1: Socio-demographic characteristics of Participants

Association between Stress Levels and Dietary Intake

The analysis of dietary intake across different reported levels of stress reveals several significant associations, as shown in Table 3. Individuals with high perceived stress consumed more soft drinks (0.52 ± 0.8) compared to those with low (0.26 ± 0.48)

or moderate stress (0.35 ± 0.61) , with a significant difference (P = 0.033). Similarly, consumption of energy drinks was higher among those with high stress (0.14 ± 0.44) compared to those with low (0.06 ± 0.3) and moderate stress (0.08 ± 0.26) , with significant difference (P = 0.044). On the other hand, participants with low stress had a higher intake of

nuts (0.38 \pm 0.55), vegetables (0.89 \pm 1.04), and fruits (0.83 \pm 0.95) compared to those with moderate or high stress (P < 0.001, P = 0.006, and P < 0.001,

respectively). However, no significant differences were observed for savory snacks, sweet snacks, or fast-food consumption across stress levels.

	Low stress	Moderate stress	High perceived stress	5 Total	P-value
Age	Mean	Mean	Mean	Total	<0.001ª
·	32 ± 13	27 ± 9	24 ± 6	27 ± 10	
Gender					
Male	14 (38.9%)	20 (55.6%)	2 (5.6%)	36 (100%)	<0.001 ^b
Female	61 (12.1%)	373 (73.9%)	71 (14.1%)	505 (100%)	
Marital status	, , , , , , , , , , , , , , , , , , ,			, , , , , , , , , , , , , , , , , , ,	
Single	35 (9.7%)	270 (74.8%)	56 (15.5%)	361 (100%)	0.001°
Married	34 (21%)	114 (70.4%)	14 (8.6%)	162 (100%)	
Divorced	6 (33.3%)	9 (50%)	3 (16.7%)	18 (100%)	
Education Level	, , , , , , , , , , , , , , , , , , ,	χ, γ	х <i>у</i>	, ,	
less than university	15 (16.1%)	69 (74.2%)	9 (9.7%)	93 (100%)	0.189 ^₅
Diploma	5 (20%)	17 (68%)	3 (12%)	25 (100%)	
Bachelor	45 (11.8%)	279 (73%)	58 (15.2%)	382 (100%)	
Masters/ PhD	10 (24.4%)	28 (68.3%)	3 (7.3%)	41 (100%)	
Occupation					
Employed	22 (22.2%)	70 (70.7%)	7 (7.1%)	99 (100%)	<0.001°
Unemployed	6 (11.8%)	41 (80.4%)	4 (7.8%)	51 (100%)	
Students	25 (8.1%)	230 (74.9%)	52 (16.9%)	307 (100%)	
Free business	1 (10%)	8 (80%)	1 (10%)	10 (100%)	
Retired	8 (50%)	7 (43.8%)	1 (6.3%)	16 (100%)	
Housewife	13 (22.4%)	37 (63.8%)	8 (13.8%)	58 (100%)	
Chronic disease					
No chronic disease	66 (13.4%)	358 (72.6%)	69 (14%)	493 (100%)	0.378 ^b
with chronic disease	9 (18.8%)	35 (72.9%)	4 (8.3%)	48 (100%)	
Smoking					
Smoke	4 (10.3%)	28 (71.8%)	7 (17.9%)	39 (100%)	0.303°
Non smoke	71 (14.3%)	359 (72.4%)	66 (13.3%)	496 (100%)	
quit smoke	0 (0%)	6 (100%)	0 (0%)	6 (100%)	
Physical activity					
not physically active	38 (11.5%)	241 (72.8%)	52 (15.7%)	331 (100%)	0.037 ^b
physically active	37 (17.6%)	152 (72.4%)	21 (10%)	210 (100%)	

Table 2: The association between socio-demographic characteristics and stress lev	e١
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Data are mean \pm SD for continuous variables and n and n% for categorical.

a P-value is for one-way ANOVA

b P-value is for Chi-square test

c P-value is for Fisher's exact test

Association between Levels of Food Addiction and Dietary Intake

Significant associations were observed between levels of food addiction and dietary intake of certain

foods. Participants with severe food addiction reported higher consumption of soft drinks (0.53 ± 0.81) and energy drinks (0.08 ± 0.20), with statistical significance (P = 0.033 and P = 0.044, respectively).

In contrast, individuals with no food addiction had the highest intake of vegetables (0.70 ± 0.86 ; P = 0.006), fruits (0.54 ± 0.66 ; P < 0.001), and nuts (0.26 ± 0.58 ; P < 0.001), while those with severe food addiction showed a decrease in fruit consumption (0.36 ± 0.36)

0.55) (P < 0.001). While no significant differences were found for savory snacks, sweet snacks, or fast food, their consumption tended to be higher among those with higher levels of food addiction (Table 4).

	Low stress (n=75)	Moderate stress (n=393)	High perceived stress (n=73)	Total (n=541)	P-value
Soft Drinks	0.26 ± 0.48 ª	0.35 ± 0.61 ^{a,b}	0.52 ± 0.8 ^b	0.36 ± 0.62	0.033
Energy Drinks	0.06 ± 0.3	0.08 ± 0.26	0.14 ± 0.44	0.09 ± 0.29	0.044
Nuts	0.38 ± 0.55 ª	0.27 ± 0.58 ª	0.17 ± 0.38 ^b	0.27 ± 0.55	<0.001
Vegetables	0.89 ± 1.04 ª	0.68 ± 0.81 ª	0.58 ± 0.88 ^b	0.69 ± 0.86	0.006
Fruits	0.83 ± 0.95 ª	0.5 ± 0.65 ^b	0.37 ± 0.77 °	0.53 ± 0.73	<0.001
Savory snacks	0.2 ± 0.38	0.23 ± 0.36	0.24 ± 0.4	0.23 ± 0.37	0.533
Sweet snacks	1.29 ± 1.23	1.15 ± 1.05	1.13 ± 1.31	1.17 ± 1.11	0.471
Fast food	1.09 ± 1.09	1.25 ± 1.14	1.25 ± 1.03	1.23 ± 1.12	0.367

Table 3: Association Between Stress	Levels and Dieta	y Consumption
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Table 4: Association Between Levels of Food Addiction and Dietary Consumption

	No Food Addiction (n= 310)	Mild Food Addiction (n=117)	Moderate Food Addiction (n=49)	Severe Food Addiction (n=65)	P- value
Soft drinks	0.26 ± 0.46	0.5 ± 0.84	0.4 ± 0.57	0.53 ± 0.81	0.033
Energy drinks	0.08 ± 0.31	0.07 ± 0.18	0.19 ± 0.44	0.08 ± 0.20	0.044
Nuts	0.26 ± 0.58	0.29 ± 0.44	0.24 ± 0.42	0.3 ± 0.67	<0.001
Vegetables	0.70 ± 0.86	0.72 ± 0.73	0.61 ± 1	0.66 ± 0.94	0.006
Fruits	0.54 ± 0.66	0.59 ± 0.83	0.56 ± 1.01	0.36 ± 0.55	<0.001
Savory snacks	0.17 ± 0.25	0.28 ± 0.49	0.24 ± 0.3	0.39 ± 0.55	0.533
Sweet snacks	1.03 ± 0.99	1.17 ± 1.13	1.53 ± 1.25	1.56 ± 1.34	0.471
Fast food	1.08 ± 1.04	1.35 ± 1.14	1.51 ± 1.14	1.52 ± 1.3	0.367

Table 5: The association between for	ood addiction levels a	1d perceived stress
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	No Food Addiction (n= 310)	Mild Food Addiction (n=117)	Moderate Food Addiction (n=49)	Severe Food Addiction (n=65)	P- value
Low stress (n=75)	60 (80%)	7 (9.3%)	5 (6.7%)	3 (4%)	χ2=38.113 P<0.001
Moderate stress (n=393) High perceived stress (n=73)	223 (56.7%) 27 (37%)	94 (23.9%) 16 (21.9%)	33 (8.4%) 11 (15.1%)	43 (10.9%) 19 (26%)	

The Association between Food Addiction Levels and Perceived Stress

stress among participants. In the low-stress group, 80% reported no food addiction, with only minor proportions experiencing mild (9.3%), moderate

The results demonstrated a significant association between food addiction levels and perceived

(6.7%), or severe (4%) food addiction. A strong inverse correlation was found between food addiction and low stress (χ^2 = 38.113, P < 0.001). In contrast, among those with moderate stress, the percentage of individuals without food addiction decreased to 56.7%, while the percentage of mild (23.9%), moderate (8.4%), and severe (10.9%) food addiction increased. The high-stress group revealed a further increase in food addiction levels, with only 37% reporting no food addiction, while mild (21.9%), moderate (15.1%), and severe (26%) food addiction rates increased significantly (Figure 1 and Table 5).



Fig.1 The association between food addiction levels and perceived stress

	Unadjusted Estimate (95% Cl); p-value	Adjusted Estimate (95% Cl); p-value
Soft drinks		
Low stress	Reference	Reference
Moderate stress	0.255 (-0.186, 0.695); 0.258	0.215 (-0.246, 0.677); 0.36
High stress	0.758 (0.184, 1.331); 0.01	0.534 (-0.069, 1.136); 0.083
Energy drinks		
Low stress	Reference	
Moderate stress	0.705 (0.094, 1.316); 0.024	0.521 (-0.128, 1.17); 0.116
High stress	0.902 (0.163, 1.641); 0.017	0.489 (-0.296, 1.273); 0.222
Nuts		
Low stress	Reference	
Moderate stress	-0.465 (-0.904, -0.026); 0.038	-0.22 (-0.676, 0.236); 0.345
High stress	-1.18 (-1.765, -0.595); <0.001	-0.881 (-1.492, -0.269); 0.005
Vegetables		
Low stress	Reference	
Moderate stress	-0.403 (-0.84, 0.033); 0.07	-0.345 (-0.799, 0.109); 0.136
High stress	-0.964 (-1.537, -0.392); 0.001	-0.835 (-1.435, -0.235); 0.006
Fruits		
Low stress	Reference	
Moderate stress	-0.812 (-1.252, -0.372); <0.001	-0.716 (-1.172, -0.259); 0.002
High stress	-1.453 (-2.034, -0.873); <0.001	-1.298 (-1.904, -0.691); <0.001
Savory snacks	NS	NS
Sweet snacks	NS	NS
Fast food	NS	NS

 Table 6: Effect of Stress Levels on Food Intake (Unadjusted and Adjusted Models)

NS: Not significant.

Unadjusted model: Estimates are unadjusted for potential confounding factors. Adjusted model: Estimates are adjusted for age, gender, marital status, job status, smoking status, physical activity, and presence of chronic disease.

Effect of Stress Levels on Food Intake (Unadjusted and Adjusted Models)

Associations between stress levels and dietary intake, specifically focusing on soft drinks, energy

drinks, nuts, vegetables, and fruits, with models both unadjusted and adjusted for potential confounding factors, are presented in Table 5. For soft drinks, individuals experiencing high stress showed a significant increase in consumption (unadjusted estimate: 0.758, P = 0.01), although the adjusted estimate did not show a significant difference (0.534, P = 0.083). For energy drinks, both moderate (0.705, P = 0.024) and high (0.902, P = 0.017)levels of stress were associated with increased consumption, but adjustments weakened the association for each. In terms of nuts, moderate stress was associated with decreased consumption (unadjusted estimate: -0.465, P = 0.038), while high stress led to a significant reduction (-1.18, P < 0.001), which remained significant after adjustments (-0.881, P = 0.005). For vegetables, high stress was linked to a significant decrease in consumption (-0.964, P = 0.001), and this remained significant after adjustment (-0.835, P = 0.006). Fruit also showed a notable decrease in intake with increasing stress levels, with both moderate and high stress associated with significant reductions (unadjusted: -0.812, P < 0.001; high stress: -1.453, P < 0.001), which remained significant in the adjusted model. No significant associations were found for savory snacks, sweet snacks, or fast-food consumption.

Discussion

This study provides evidence regarding the association between perceived stress levels, food addiction, and food intake among adults in Saudi Arabia. Perceived stress was positively correlated with several socio-demographic factors. Younger, unmarried individuals, females, students, and those with lower physical activity all reported higher levels of stress. The results also indicate that higher stress levels are associated with decreased consumption of healthier options like nuts, vegetables, and fruits after adjusting for potential confounders. In addition, a significant association was found between food addiction levels and perceived stress among participants in the high-stress group, revealing a further increase in food addiction levels with high stress.

In terms of gender, the results found that women had a higher level of perceived stress than men, supporting the findings of previous studies, which have also found that women have higher levels of stress compared to men.²¹⁻²³ It has been proposed that while men often exhibit a "fight-or-flight" response to stress, women are more likely to engage in "tend-and-befriend" behaviors. This could result in men and women responding differently to stress, both psychologically and biologically.²⁴ Regarding occupation, the presented results showed that students were more likely to experience high levels of perceived stress. This finding is also consistent with numerous studies conducted among university students.²⁵⁻²⁷ Among students, differences in perceived stress levels have been observed based on gender, with female students reporting significantly higher total PSS levels compared to their male counterparts.²⁸ A study by Brougham, Zail, Mendoza, and Miller also found that stress levels were higher in female students compared to others.²⁹ The results in this study also indicated that physically inactive participants were significantly more likely to report higher perceived stress compared to their physically active counterparts, similar to previous reports conducted in Germany and the USA.30,31

In the current study, higher stress levels were associated with increased consumption of soft and energy drinks and decreased consumption of healthier food options like nuts, vegetables, and fruits. These findings are consistent with other studies that show a relationship between mental health problems and high sugar intake.32,33 Numerous studies have also reported that stress influences food intake and changes dietary behaviors.34,35 Studies have suggested that stress leads individuals to eat when they are not hungry and choose energy-dense foods, likely due to activity in the brain's reward system.^{34,35} Consistent with the current findings, many studies have previously confirmed that perceived stress leads to more snacking and consumption of highcalorie foods, while reducing fruit and vegetable intake.36-39

The results in the current study also showed a negative association between perceived stress and a preference for healthy dietary options, such as fruits, vegetables, and nuts; these effects were maintained after adjusting for potential confounders, including age, gender, marital status, job status, smoking status, physical activity, and presence of chronic disease. These findings are in line with those of previous studies, which indicate that elevated stress levels are associated with decreased consumption of fruits and vegetables.³⁶⁻³⁸ Overall, the current findings and those of multiple previous studies indicate that stress is positively associated with emotional eating,

frequent snacking, and the consumption of energydense foods, while being negatively associated with the intake of fruits and vegetables.³⁶⁻³⁸

This study also showed that higher levels of food addiction are linked to less healthy dietary choices, particularly increased intake of sugary beverages and reduced consumption of fruits and vegetables. This aligns with previous research, which has demonstrated that food addiction is associated with the consumption of less healthy foods, including soft drinks, while high vegetable consumption is associated with a decreased risk of severe food addiction.⁴⁰ The present research highlights a complex relationship between food addiction behaviors and unhealthy dietary patterns.

Finally, the study found a significant association between perceived stress and food addiction; as perceived stress increases, the possibility of experiencing food addiction rises with it. These findings aligned with previous research show a significant positive correlation between psychological distress and symptoms of food addiction.21,22,41 This suggests a possible relationship between psychological stress and unhealthy eating behaviors. The present study is one of the few to examine the association between perceived stress levels, food addiction, and food intake among adults in Saudi Arabia. However, it has several limitations. First, the cross-sectional design does not permit deduction of causality. Second, there may be selection bias in those who completed the online survey, which limits the generalizability of the findings. Finally, body mass index (BMI) was not considered as a variable; BMI is closely associated with stress, eating behaviors, and food addiction. This omission limits the ability to fully understand the relationship between perceived stress, food addiction, and food intake in these results.

Conclusion

This study revealed significant associations between perceived stress levels, food addiction, and dietary intake among adults in Saudi Arabia. To better understand these relationships, future research should utilize longitudinal designs. The findings from this study offer important insights, suggesting the importance of future research examining the impact of stress on food addiction and food consumption. Foods that may help alleviate stress should be investigated to enable individuals to adopt healthier eating behaviors as a coping strategy. Additionally, it is recommended to develop interventions aimed at helping adults manage stress through various techniques without turning to food addiction.

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The authors have no conflicts of interest to declare.

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The manuscript incorporates all datasets produced or examined throughout this research study.

Ethics Statement

The document accurately and thoroughly presents the authors' original research and analysis.

Informed Consent Statement

Informed consent was obtained from all participants involved in this study.

Clinical Trial Registration

This research does not involve any clinical trials.

Permission to Reproduce Material from other Sources

Not Applicable.

Author Contributions

- Huda Wazzan: Conceptualization, data curation, Methodology, Project administration, Writing - original draft & review & editing.
- Mahitab Hanbazaza: Conceptualization. data curation, Methodology, Project administration, Formal analysis, Writing original draft & review & editing.

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