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Assessment of the Relationship between Alcohol Consumption and Food Addiction and Food Preferences in Young Adults

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Main Points

- Participants who consume alcohol have a higher rate of smoking and the number of cigarettes they smoke per day compared to those who do not.
- Participants who consume alcohol have stated that they are more physically active.
- Participants who consume more than 1 unit of alcohol per day have higher BMI levels compared to other participants.
- It has been determined that the amount of alcohol consumed is positively correlated with the consumption of sunflower and pumpkin seeds, bagels, pastries, popcorn, salty snacks, carbonated drinks, coffee and energy drinks, and negatively correlated with the consumption of soup, vegetables, and fresh fruit.
- There was no statistically significant relationship between alcohol consumption and food addiction.

Abstract

Alcohol is a psychoactive substance that has addictive properties and affects health and nutrition. This study was conducted to evaluate the food preferences and food addictions of young adults according to their alcohol consumption status. In this study, sociodemographic characteristics, food addiction, alcohol, and food consumption frequency were assessed. Young adults were divided into 3 groups as non-consumers, 0 – 1 unit/day, and ⩾1 unit/day alcohol consumers. The rate of smoking in participants who did not consume alcohol was lower than those who consumed 0 – 1 unit and ⩾1 unit of alcohol ($p < .001$). The rate of physical activity in participants who consumed alcohol was higher than those who did not consume ($p = .009$). The mean body mass index of those who consumed ⩾1 unit of alcohol was found to be higher than the other groups ($p = .02$). Daily average consumption of sunflower and pumpkin seeds, pastry products, popcorn, salty snacks, carbonated drinks, coffee, and energy drinks is positively correlated with the amount of alcohol consumption, while vegetables and fresh fruits are negatively correlated ($p < .05$). No statistically significant difference was found between the food addiction status of participants according to alcohol consumption. In conclusion, this study shows that alcohol consumption in young adults changes lifestyle habits as well as food preferences. It is very important to increase food and nutrition awareness in order to encourage healthy eating habits in participants who consume alcohol.

Keywords: Alcohol use, food addiction, food preference

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Introduction

Alcohol is a psychoactive substance that has a complicated relationship with health and addictive properties. When alcohol is used excessively, it can lead to a variety of diseases, traumatic events, and other adverse health consequences, in addition to detrimental social and economic effects (World Health Organization, 2024). Alcohol use was linked to 724 distinct mortality risks in a meta-analysis that included 107 cohort studies and assessed the

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association between alcohol use and mortality risk. Furthermore, the study's findings showed that consuming 25 g or more of alcohol per day considerably raised the risk of all-cause mortality (Zhao et al., 2023).

Drinking alcohol has complicated implications on eating patterns, health, and nutritional state. Consuming alcohol may cause disruption with how food is absorbed and digested and stop nutrients from being used in the metabolism (Barve et al., 2017). Another study showed that consistent alcohol drinking is linked to a reduction in the consumption of certain vitamins and minerals from the diet, and depending on the amount consumed, an increased risk of micronutrient deficiencies (Hillesund et al., 2021). Similarly, it has been determined that moderate and heavy alcohol consumption can lead to imbalances in the intake of macronutrients such as carbohydrates, proteins, and fats, as well as micronutrients, and is associated with a decrease in fiber intake (Fawehinmi et al., 2012). When the relationship between alcohol consumption and dietary habits was evaluated, it was reported that those who consumed alcohol had an unhealthier diet compared to those who did not consume alcohol (Berro et al., 2021; Crovetto et al., 2022). In a study evaluating the relationship between alcohol consumption status and food preferences, it was found that those who consumed alcohol consumed more fried food and pizza (Crovetto et al., 2022). In another study, it was found that participants who consumed excessive alcohol were more likely to skip breakfast and their fruit/vegetable consumption was lower than recommended amounts (Valencia-Martín et al., 2011).

Food addiction is defined as hedonic eating behavior that occurs when individuals have decreased control over food consumption, increased food cravings, and impulsivity (Adams et al., 2019). The concept of food addiction was first defined by Theron Randolph in 1956 as "a specific adaptation to one or more regularly consumed foods to which an individual is hypersensitive" (Randolph, 1956). There are crucial beliefs that the majority of unnatural, highly processed foods with high concentrations of refined carbohydrates and fats are the primary source of addiction that develops with food addiction (Gearhardt and Hebebrand, 2021). Food addiction has been positively correlated with a number of variables in research conducted to date, including body weight, body mass index (BMI), anxiety, depression, excess carbohydrate intake, and binge eating (Praxedes et al., 2022; Cheah and Chin, 2024).

Certain circumstances related to food addiction are believed to bear similarities with other clinically diagnosed substance use disorders, including addiction to alcohol and nicotine (Bonder and Davis, 2022). According to the alcohol use disorders identification test, individuals with problematic alcohol use had a higher probability of developing a food addiction (regardless of weight) in a study examining the link between alcohol use and food addiction (Hoover et al., 2023). This situation arouses curiosity for the investigation and correlation of the results that occur in different situations of food addiction level and alcohol consumption frequency/amount. This study aimed to address a critical gap in the literature by assessing the relationship between alcohol consumption and food addiction and eating habits in young adults. By exploring this relationship, the study provides valuable insights into the complex interactions between these behaviors, which are essential for developing more effective prevention and intervention strategies for this population.

Material and Methods

Young adult volunteers take part in the study in July – September 2024. Permission to conduct the study under GO 2024/354 on June 5, 2024 was granted at the meeting of the Burdur Mehmet Akif Ersoy University Non-Interventional Clinical Research Ethics Committee on June 5, 2024. The study included young adults who volunteered to participate and were between the ages of 18 and 40. Non-alcoholics were those who had either never drunk alcohol or had stopped drinking at least a year prior. Participants with the following conditions were excluded as they may affect the results: mental health problems such as major depression, bipolar disorder, schizophrenia, regular use of psychoactive medication, history of substance use other than alcohol, treatment for alcohol dependence or eating disorders, pregnant or breastfeeding women due to hormonal changes, following special dietary programs.

Data Collection

The study data were collected through a face-to-face survey form. The questionnaire form consists of four sections: general information, information on alcohol consumption, Yale Food Addiction Scale, and food consumption frequency. In the first section of the survey, participants were asked about their gender, age, education level, employment status, smoking, physical activity status, presence of a disease diagnosed by a doctor, and also their body weight (kg) and height (m) based on their statements. The participants' BMI [body weight/(height)^2] was calculated from these measurements. Participants are divided into four classes: underweight (<18.5 kg/m^2), normal weight (18.5 – 24.9 kg/m^2), overweight (25 – 29.9 kg/m^2), and obese (≥30 kg/m^2) (World Health Organization, 2010). The second section of the survey includes information on participants' alcohol consumption, reasons for consumption and non-consumption, people/environments with whom they consume alcohol, and the type/amount/frequency of alcohol they consume. The third section of the survey includes the Yale Food Addiction Scale, and the fourth section includes the food consumption frequency form.

Alcohol Consumption

In order to calculate the amount of alcohol consumption, the consumption frequency of alcoholic beverages was created. The amount of alcoholic beverages consumed at one time was questioned, and the daily consumption amount was calculated. According to the alcohol content of alcoholic beverages, the amount of alcohol consumed was calculated in ethanol.

The Türkiye Nutrition Guideline does not offer a risk limit for alcohol consumption and recommends not consuming alcohol (TUBER, 2022). When looking at international guidelines, it is noteworthy that in order to reduce alcohol-related risks in those who choose to consume alcohol, <1 unit/day for women and <2 units/day for men are recommended. Since both women and men were included in this study, 1 unit of alcohol consumption was determined as the threshold value (United States Department of Agriculture, 2020 – 2025).

Yale Food Addiction Scale

Yale Food Addiction Scale was developed by Gearhardt et al. in 2009 and was validated to Turkish version by Bayraktar et al. in 2012 (Gearhardt et al., 2009; Bayraktar et al., 2012). Prior to beginning the 25-question test, participants were asked to indicate which meals they occasionally found difficult to control. These foods fall into five categories: starchy foods like white bread, salty snacks like chips and crackers, fatty foods like hamburgers and French fries, and sweet foods like ice cream and chocolate. Sugary drinks like soda also fall into this category. The Likert-type, five-point scale's first sixteen items are scored between 0 and 4. Questions 17 through 24 on the scale include yes/no responses, with a point value ranging from 0 to 1. If the criterion score = 0, the criterion is not met, if the criterion score is ≥1, the criterion is met. The number of symptoms that meet the criterion indicates the number of addiction symptoms. The degree of addiction is proportional to the number of symptoms. Questions 15 and 16 are clinically important in determining food addiction, and those who receive at least 1 point from these questions and have 3 or more symptoms are defined as "food addiction." The 25th question asks how many times in the past year you have attempted to cut back on or give up certain meals. Since questions 17 and 18 are prerequisites to the other questions, they are not scored. To ascertain the diagnostic criteria, the questions are split into seven groups. Every diagnostic criterion's score is determined independently. The overall score ranges from 0 to 7 (Gearhardt et al., 2009; Bayraktar et al., 2012).

Food Consumption Frequency

For food consumption frequency, the average portion sizes of foods and beverages were specified under the main headings of dairy group, meat – chicken – fish – eggs – legumes – nuts group, bread and cereals group, vegetable group, fruits group, sugary foods, and beverages group. Taking into account the participants' food consumption in the last month, they were asked to indicate the frequency of consuming the average portion sizes given for each of these foods and beverages from the categories of "Never or less than once a month," "once a month," "two to three times a month," "once a week," "twice a week," "three to four times a week," "five to six times a week," "once a day," and "twice a day and more." Daily consumption amounts were calculated from the monthly consumption frequency and the amount consumed at one time.

Statistical Analysis

The data of the study were analysed using the SPSS® 26.0 package program. The categorized data of the study were expressed as number (n) and percentage (%), and the numerical data were expressed as mean ($\bar{x}$), standard deviation (SD), or median and interquartile range (IQR) values. The normal distribution of the data was determined using visual (histogram and probability graphs) and analytical methods (Kolmogorov – Smirnov/Shapiro – Wilk tests). The chi-square test was used to compare qualitative data. The Kruskal – Wallis test was used to compare variables between independent groups in data that were not normally distributed. The statistical significance level was accepted as $p < .05$.

Results

This study was conducted with 638 participants consisting of young adults. When participants were divided into classes according to their alcohol consumption status, it was determined that 321 participants did not consume alcohol, 249 participants consumed 0 – 1 units/day (3.3 ± 1.96 g/day), and 68 participants consumed ≥1 unit/day (13.3 ± 5.39 g/day). When the gender distribution of participants was examined according to their alcohol consumption status, it was seen that 71.3% of those who did not consume alcohol, 48.6% of those who consumed 0 – 1 units, and 27.9% of those who consumed ≥1 unit were female ($p < .001$). 67.6% of those who did not consume alcohol and 64.3% of those who consumed 0 – 1 units were students, while 48.5% of those who consumed ≥1 unit were students and 39.7% were employees ($p < .001$). Participants who do not consume alcohol have a lower smoking rate (30.8%) than those who consume 0 – 1 units (65.1%) and those who consume ≥1 unit (75.0%) ($p < .001$). The number of cigarettes increases as the amount of alcohol increases ($p = .001$). Participants who consume alcohol have a higher rate of physical activity than non-drinkers ($p = .009$). The mean BMI of those who consume ≥1 unit of alcohol was found to be higher than the other groups ($p = .02$). No statistically significant difference was found in terms of food addiction scores according to alcohol consumption status ($p > .05$).

Participants reported religious reasons as the most frequent reason for not consuming alcohol (43.9%) (not shown in the table). When the reasons for alcohol consumption were evaluated, most participants stated that they consumed alcohol to adapt to the social environment (42.6%) and to enjoy (38.8%). There was no statistically significant difference in terms of the amount of alcohol consumed in the reason for consumption and the participants with whom the alcohol was consumed ($p > 0.05$). The participants consumed 0 – 1 unit of alcohol per day most commonly drank in entertainment venues and at home, while those consumed 1 or more units per day typically drank at home, in open areas, and in entertainment venues, respectively. (Table 2).

Table 3 shows the daily food intake of participants according to their alcohol consumption. Sunflower and pumpkin seed consumption was higher in those who consumed ≥1 unit of alcohol than in the other groups, while vegetable and fresh fruit consumption was lower in both groups that consumed alcohol than in those who did not consume any alcohol. Additionally, in consumer group, salty snacks, carbonated drinks, coffee and energy drink consumption was higher ($p < .05$).

Figure 1 shows the correlation between alcohol and food consumption. Daily average consumption of sunflower and pumpkin seeds, pastry products, popcorn, salty snacks, carbonated beverages, coffee and energy drinks is positively correlated with alcohol consumption, while soup, vegetables and fresh fruits are negatively correlated ($p < .05$).

Discussion

Over 200 diseases, injuries, and other health issues are brought on by drinking alcohol, which also results in over 2.6 million fatalities globally. Worldwide, the prevalence of alcohol use disorders among individuals over the age of 15 is thought to be 7% (World Health Organization, 2024). It was determined that in 2022, 12.1% of individuals aged 15 and over consumed alcohol, 4.6% had previously consumed alcohol but did not currently consume alcohol,

Table 1.
Sociodemographic Characteristics of Participants

	Non-Consumer of Alcohol (n = 321)		Alcohol Consumption (0 – 1 unit/day) (n = 249)		Alcohol Consumption ($\geqslant$1 unit/day) (n = 68)		
	n	**%**	***n***	*%*	*n*	**%**	***p***
Gender							
Female	229	71.3	121	48.6	19	27.9	<.001*
Male	92	28.7	128	51.4	49	72.1	
BMI classification							
Underweight	23	7.2	20	8.0	3	4.4	.54*
Normal	205	63.9	151	60.6	38	55.9	
Overweight	71	22.1	56	22.5	22	32.4	
Obese	22	6.9	22	8.8	5	7.4	
Education status							
Primary school	7	2.2	3	1.2	3	4.4	.76*
Middle school	11	3.4	6	2.4	1	1.5	
High school	227	70.7	181	72.7	45	66.2	
University	74	23.1	56	22.5	18	26.5	
Postgraduate	2	0.6	3	1.2	1	1.5	
Occupation							
Student	217	67.6	160	64.3	33	48.5	<.001*
Worker	70	21.8	79	31.7	27	39.7	
Not working	34	10.6	10	4.0	8	11.8	
Smoking status							
Yes	99	30.8	162	65.1	51	75.0	<.001*
No	222	69.2	87	34.9	17	25.0	
Physical activity status							
Yes	183	57.0	171	68.7	47	69.1	.009*
No	138	43.0	78	31.3	21	30.9	
Food addiction status							
Yes	55	17.1	45	18.1	11	16.2	.92*
No	266	82.9	204	81.9	57	83.8	
	$\bar{x} \pm$ SD	Median (IQR)	$\bar{x} \pm$ SD	Median (IQR)	$\bar{x} \pm$ SD	Median (IQR)	***p***
Age	23.4 ± 4.88	22.0 (3.00)	23.2 ± 3.94	22.0 (3.00)	25.0 ± 5.87	23.0 (3.75)	.05**
BMI	23.4 ± 4.01[a]	23.1 (5.44)	23.6 ± 4.25[a]	23.1 (5.35)	25.0 ± 4.70[b]	24.6 (4.40)	.02**
Number of cigarettes	12.7 ± 8.93[a]	10.0 (14.0)	17.5 ± 11.11[b]	17.0 (10.0)	20.9 ± 11.93[b]	20.0 (17.0)	.001**
Food addiction score	4.7 ± 2.90	4.0 (3.0)	5.0 ± 2.56	4.0 (3.0)	4.9 ± 3.13	4.0 (3.0)	.11**

Note: There is no significant difference between those with the same superscript in the same row.
BMI = body mass index.
*Chi-square test.
**Kruskal – Wallis test was used.

and 83.3% had never consumed alcohol in Türkiye (Turkish Statistical Institute, 2023). Results showed that most study participants drank 0 – 1 units of alcohol daily, and that alcohol was most commonly drunk for enjoyment and in social settings, primarily with friends and in entertainment venues (Table 2). It is believed that sociodemographic features of Türkiye are responsible for this circumstance.

Alcohol consumption not only causes health problems but also affects lifestyle habits such as smoking and physical activity (Berro et al., 2021). The cross-tolerance between alcohol and tobacco, the balancing of the stimulating effect of nicotine with the sedative effect of alcohol, and the fact that both substances affect the brain's mesolimbic dopamine system and stress hormone systems, result in the combined use of the two substances

Table 2.
Information of Participants' Alcohol Consumption Habits

	Alcohol Consumption (0 – 1 unit/day) (n = 249)		Alcohol Consumption (⩾1 unit/day) (n = 68)		Total (n = 317)		
	n	**%**	***n***	**%**	***n***	**%**	***p***
Reason for consuming alcohol							
Habit from family	11	4.4	2	2.9	13	4.1	.30
Adapting to the environment	12	4.8	2	2.9	14	4.4	
Social environment	112	45.0	23	33.8	135	42.6	
Enjoy	92	36.9	31	45.6	123	38.8	
Addiction	1	0.4	1	1.5	2	0.6	
Negative mood	21	8.4	9	13.2	30	9.5	
Person with whom alcohol is consumed							
Alone	18	7.2	11	16.2	29	9.1	.11
Family	15	6.0	4	5.9	19	6.0	
Wife/lover	26	10.4	4	5.9	30	9.5	
Friend	190	76.3	49	72.1	239	75.4	
Where alcohol is consumed							
House	81	32.5	21	30.9	102	32.2	.04
Open space	45	18.1	21	30.9	66	20.8	
Cafe/restaurant	19	7.6	8	11.8	27	8.5	
Entertainment venue	104	41.8	18	26.5	122	38.5	

(Ho et al., 2021). In addition, although the factors and direction of the relationship between physical activity and alcohol consumption are unclear, it is suggested that both behaviours can affect each other. Frequent social interactions among physically active individuals may result in higher alcohol consumption, whereas individuals consumed alcohol may raise their physical activity levels to offset their alcohol intake (Werneck et al., 2019). Research has shown that alcohol consumption is associated with a higher smoking rate than alcohol abstinence (Fontán-Vela et al., 2024; O'Donovan et al., 2018; Werneck et al., 2019). Additionally, smoking rates rise as alcohol consumption does (Kesse et al., 2001; Mitkin et al., 2024). According to the research carried out by Fawehinmi et al. (2012), both male and female who drank a lot of alcohol (≥84 g/day) had higher rates of smoking and daily cigarette consumption. Female who drank a lot were shown to have lower energy expenditure levels during the day when evaluated in terms of energy expenditure. In another study, Fontán-Vela et al. (2024), it was found that participants who regularly drank alcohol were more likely to be sedentary than participants who did not. Only female was found to be in a comparable connection in the Mitkin et al. (2024) study. In the Werneck et al. (2019) study, it was shown that those who drank alcohol were more active than those who did not, both in the middle-aged and elderly groups in female and the old group in male. The outcomes of this study were in line with previous research. It was shown that participants who did not drink alcohol had lower rates of smoking and smoked fewer cigarettes overall ($p < .05$) (Table 1). When the physical activity status of the participants was evaluated, 57.0% of participants who did not consume alcohol, 68.7% of participants who consumed 0-1 unit/day alcohol, and 69.1% of participants who consumed ≥1 unit/day alcohol declared that they were physically active ($p < .05$) (Table 1). As shown in the above studies that alcohol consumption and physical activity level indicates that the physical activity levels of participants who consume alcohol should be questioned in detail. Determining the nutrition plans of participants according to their physical activity level will ensure healthier results.

The fact that alcohol is a direct source of energy (Traversy and Chaput, 2015) and that alcohol consumption changes physical activity levels (Fontán-Vela et al., 2024) and eating habits (Berro et al., 2021) also affects body weight management. Although the study conducted by Crovetto et al. (2022) found no significant difference in the BMI levels of participants who consume alcohol and those who do not, the majority of studies in the literature have found that alcohol consumption status and amount are related to BMI level. According to a study, those who drank alcohol 1 – 4 times/week and ≥5 times/ week had lower BMI levels than those who did not drink, and those who drank alcohol one to two times/month or <1 time in 2 months had higher BMI levels. This finding indicated that there was a bell-shaped link between the frequency of alcohol intake and obesity, with alcohol consumption amount having a positive confounding influence on the relationship (O'Donovan et al., 2018). In the study conducted by Fontán-Vela et al. (2024), it was determined that the rate of being overweight/obese was higher in participants with low (<20 g/day in male and <10 g/day in female) and high-risk (>20 g/day in male and >10 g/day in female) alcohol consumption compared to participants

Table 3.
Daily Consumption Amounts of Some Foods According to Alcohol Consumption Status of Participants

	Non-consumer of Alcohol		Alcohol Consumption (0 – 1 unit/day)		Alcohol Consumption (⩾1 unit/day)		
Foods	**$\bar{x} \pm$ SD**	**Median (IQR)**	**$\bar{x} \pm$ SD**	**Median IQR**	**$\bar{x} \pm$ SD**	**Median (IQR)**	***p***
Milk	68.3 ± 91.79	19.9 (112.08)	77.3 ± 109.42	34.3 (112.08)	57.0 ± 86.76	19.9 (68.64)	.23
Yogurt	104.2 ± 91.70	100 (128.6)	90.3 ± 78.38	57.2 (128.6)	101.7 ± 97.56	100 (128.6)	.26
Cheese	40.5 ± 27.33	30 (30)	39.6 ±27.66	30.0 (42.84)	35.7 ± 30.36	30 (51.42)	.24
Egg	52.9 ± 46.98	50 (64.3)	54.1 ± 46.57	50.0 (64.3)	60.9 ± 51.77	50 (85.7)	.46
Meat/chicken/fish	33.0 ± 29.17	22.9 (28.56)	34.1 ± 31.11	22.9 (28.56)	34.5 ± 26.55	22.9 (17.12)	.73
Legumes	43.7 ± 32.57	37.2 (46.41)	40.3 ± 38.26	37.2 (46.41)	43.9 ± 33.78	37.2 (46.41)	.09
Nuts	10.4 ± 11.08	8.6 (12.51)	10.5 ±1 2.16	8.6 (12.51)	12.8 ± 13.54	8.6 (10.71)	.33
Sunflower, pumpkin seeds	14.8 ± 52.81[a]	5.0 (15.18)	14.5 ± 22.05[ab]	5.0 (15.18)	20.5 ± 27.56[b]	8.6 (28.02)	**.04**
Bread	58.6 ± 33.64	50 (60.7)	55.1 ± 36.26	50.0 (75.0)	65.0 ± 33.98	50 (60.7)	.09
Bagels and pastry varieties	42.6 ± 47.00	28.6 (41.7)	47.0 ± 49.52	28.6 (64.3)	49.0 ± 44.13	39.3 (68.8)	.17
Pasta, bulgur, rice	45.8 ± 33.40	37.5 (37.5)	45.6 ± 33.42	37.5 (37.5)	46.2 ± 34.05	37.5 (53.55)	.97
Soup	113.5 ± 76.93[a]	90 (128.52)	88.9 ± 71.45[b]	90 (115.74)	117.6 ± 75.64[a]	141.5 (128.52)	**<.001**
Cereals	4.6 ± 9.89	1.0 (4.29)	5.3 ± 10.66	1.0 (4.29)	6.0 ± 11.75	0.0 (8.58)	.48
Popcorn	2.2 ± 15.48	0.8 (2.08)	2.1 ± 4.72	0.8 (2.08)	3.6 ± 7.72	0.8 (2.08)	.07
Vegetables	96.9 ± 82.13[a]	100 (128.6)	83.6 ± 79.40[b]	57.2(83.40)	92.3 ± 95.35[ab]	57.2 (71.4)	**.04**
Potatoes	44.6 ± 32.84	50 (21.4)	46.4 ± 37.16	28.6 (64.3)	51.1±41.58	39.3 (21.4)	.66
Fresh Fruit	78.7 ± 64.10[a]	75 (96.45)	65.6 ± 65.68[b]	42.9 (53.55)	76.1 ± 54.08[a]	59.0 (75.0)	**.001**
Dried Fruit	5.6 ± 8.88	2.5 (8.58)	6.2 ± 10.47	2.5 (8.58)	5.1 ± 8.98	1.0 (8.58)	.80
Dessert	63.9 ± 60.93	42.9 (53.55)	67.7 ± 73.55	42.9 (62.55)	64.8 ± 62.93	42.9 (96.45)	.84
Salty snack	38.8 ± 37.97[a]	28.6 (35.7)	48.1 ± 47.45[b]	28.6 (50.0)	50.2 ± 43.28[b]	50 (64.30)	**.03**
Sweet snack	10.1 ± 9.11	10.0 (12.86)	10.5 ± 9.47	10.0 (12.86)	10.3 ± 9.90	7.9 (12.86)	.82
Carbonated drinks	68.7 ± 84.50[a]	57.2(93.40)	111.3 ± 119.15[b]	57.2 (128.6)	104.8 ± 115.73[b]	57.2 (150.60)	**<.001**
Juice/turnip	46.5 ± 65.06	28.6 (50.6)	57.5 ± 76.35	28.6 (93.4)	64.8 ± 82.39	28.6 (93.4)	.25
Coffee	83.1 ± 68.59[a]	78.6 (71.4)	106.8 ± 73.41[b]	100.0 (150.0)	85.6 ± 67.29[ab]	78.6 (71.4)	**.001**
Tea	146.3 ± 500.83	100.0 (150.0)	124.7 ± 73.88	100.0 (121.4)	128.7 ± 72.53	100.0 (121.4)	.51
Energy drink	44.0 ± 140.00[a]	0.0 (16.5)	116.3 ± 227.33[b]	16.5 (143.0)	153.4 ± 246.36[b]	71.5 (143.0)	**<.001**

Note: There is no significant difference between those with the same superscript in the same row.
**Kruskal – Wallis test was used.

who did not consume any alcohol. In a meta-analysis study on alcohol consumption and obesity, it was determined that heavy alcohol consumption (>28 g/day) increased the risks of being overweight/obese and abdominal obesity compared to no alcohol consumption or low alcohol consumption (<14 g/day) (Golzarand et al., 2022). In a study by Kesse et al. (2001), it was found that participants with alcohol consumption >32 g/day had higher BMI levels than participants with lower or no alcohol consumption. Similarly, a variety of studies have found a correlation between elevated BMI levels and alcohol consumption (AlKalbani and Murrin., 2023; Hillesund et al., 2021; White et al., 2019). A 5-year follow-up research found that males who consumed less alcohol experienced a smaller increase in BMI (Butler et al., 2023).

When an evaluation was made according to gender, the results were found to be partly more complicated. According to a meta-analysis study conducted by Siegmann et al. (2022), alcohol consumption was associated with higher BMI in male and lower BMI in female, while the study conducted by Fawehinmi et al. (2012) found that female who consumed high amounts of alcohol (⩾84 g/day) had higher BMI levels compared to those who consumed less alcohol ($p < .05$). Although BMI levels increased with increasing alcohol consumption in male, this increase was not found to be statistically significant. Male who drank alcohol more than five times a day had a higher BMI than those who drank alcohol one or two times a day, according to a study by Butler et al. (2018). However, it was discovered that males with high BMI levels had more hospital readmissions due to alcohol, both in terms

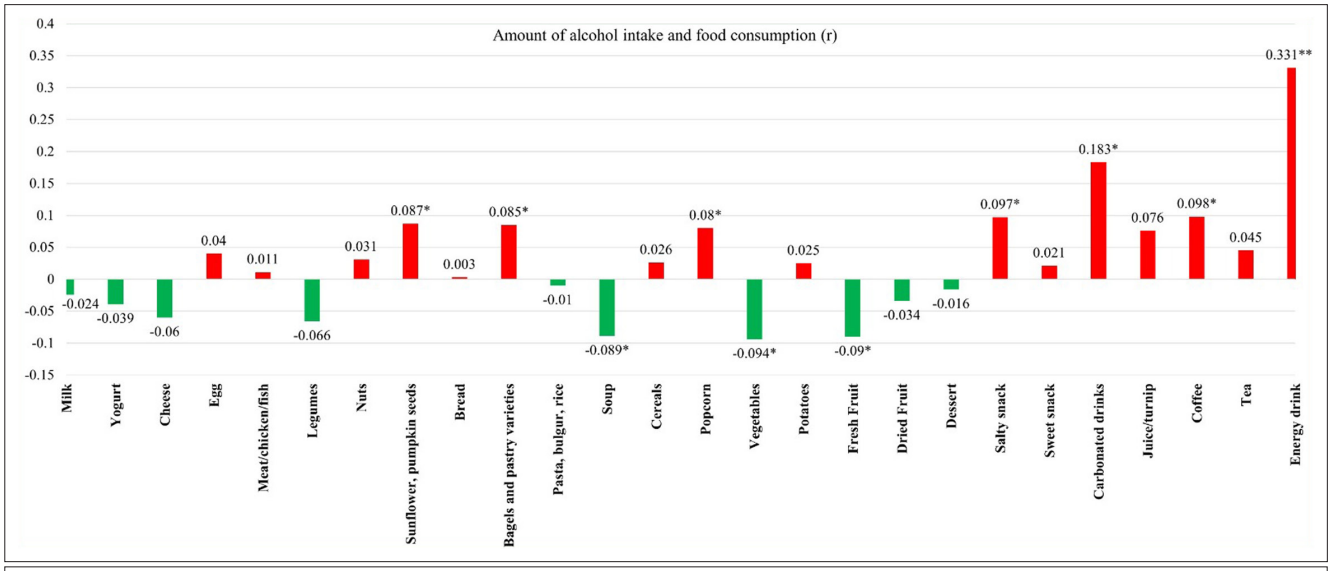

Figure 1. The Correlation Between Daily Alcohol Intake and Food Consumption (r). Red Bars Indicate Positive Correlation and Green Bars Indicate Negative Correlation. *p < .05, **p < .001.

of frequency and number. This association was also found to be stronger in those who were current smokers (Weinland et al., 2019). This finding is corroborated by research by Hoffmann et al. (2023), which found that the male patient group hospitalized for alcohol use disorder had a lower BMI than the daily clinic group. When studies evaluating alcohol consumption according to various tests are considered, it was determined in the study of Berro et al. (2021) that the Alcohol Use Disorders Identification Test score has a positive correlation with BMI. In the study conducted by Mitkin et al. (2024), it was stated that male who consume dangerous levels of alcohol determined according to different tests have higher BMI compared to those who consume less alcohol or do not consume any alcohol.

Although there was no statistically significant difference in the BMI classification based on the status and amount of alcohol consumption ($p > .05$) in this study, it was found that those who consumed ≥1 unit of alcohol per day had a higher BMI than those who consumed 0-1 unit and those who did not consume alcohol ($p < .05$) (Table 1). These findings unequivocally demonstrate a relationship between alcohol intake status and amount and BMI level. However, it should not be ignored that obesity brought on by alcohol use raises the risk of a number of diseases, including fatty liver (Mahli and Hellerbrand, 2016), metabolic syndrome (Park et al., 2022), hypertension (Sun et al., 2022), and cancer (Inan-Eroglu et al., 2023). Dietitians should thus arrange the dietary pattern in accordance with alcohol intake, supervise, and assure body weight control in order to prevent obesity and obesity-related disorders in alcohol-consuming patients.

Alcohol use also has an impact on one's eating patterns (Crovetto et al., 2022). Alcohol can lead to unhealthy eating habits and malnutrition by decreasing food intake and nutrient absorption (Barve et al., 2017; Hillesund et al., 2021). According to several research, those who drink alcohol have worse eating habits and poorer diets than participants who don't drink (Berro et al., 2021; Brenes et al., 2021). According to Mitkin et al. (2024), males who do not drink alcohol or who drink at dangerous levels have a lower quality diet. According to the findings of the study by Fontán-Vela et al. (2024), participants who drink alcohol have lower compliance with the Mediterranean diet, which is marked by a high consumption of fruits and vegetables, the more alcohol they drink in comparison to participants who do not drink alcohol. In the study by Fawehinmi et al. (2012), it was found that male who drank moderate amounts of alcohol (12.0-83.9 g/day) consumed more fruit than those who did not drink, but there was no significant difference in vegetable consumption according to alcohol consumption status and level. In an additional investigation, it was found that those who drank more alcohol (>14 times a week for male and 7 times a week for female) consumed less fruits and vegetables, whole grains, and red meat in comparison to those who drank neither alcohol at all nor at low levels (<two times a day for male and <one time the day for female). Consumption of energy-dense foods, sugary drinks, refined grains and salty foods and total fat intake did not show any significant difference according to alcohol consumption of participants (Parekh et al., 2021).

The majority (90%) of ten observational studies included in the systematic review indicated that regular and heavy alcohol use was linked to a reduced intake of unprocessed carbohydrates (vegetables, fruits, grains, etc.). Furthermore, 45.5% of 11 observational studies discovered that regular light to moderate alcohol use was linked to a lower intake of refined carbohydrates (such as candy, chocolate, and added sugar); in contrast, 27.3% of the studies found no association, and 18.2% found a higher intake of refined carbohydrates (Cummings et al., 2020). According to a study by Deitz et al. (1996), participants who drank less alcohol (≤3 times/week) tended to eat more sugary foods and drinks and less salty snacks and fatty foods than participants who drank more alcohol (≥14 times/week) and moderate (4 – 13 times/week). Consumption of cheese, processed meat, seafood, vegetable oil, poultry, coffee, potatoes, eggs, and lamb were found to be positively correlated with alcohol consumption in a study by Kesse et al. (2001), whereas consumption of soup, yogurt, vegetables, and fruit was found to be negatively correlated with alcohol

consumption. Hillesund et al. (2021) found that there was gender-specific differences in the consumption of sweetened beverages, cakes, desserts, sweets, and snacks among male based on their level of alcohol consumption, and that there was gender-specific differences in the consumption of sugary beverages. According to the findings of the study by Crovetto et al. (2022), there is a correlation between alcohol consumption and the intake of fast food, fried foods, and soft drinks in males, and between sugary foods, fried foods, and pizza in female. Studies have shown that alcohol consumption is higher in participants who drink coffee every day (Kelpin et al., 2018); consumption of coffee, tea, energy drinks, caffeinated soda, etc. and ≥100 mg caffeine per day are positively associated with alcohol consumption (Kristjansson et al., 2022). Some sources do not find a significant relationship between coffee consumption and alcohol consumption status and amount (Fawehinmi et al., 2012). Furthermore, studies have shown that the consumption of energy drinks is highly correlated with alcohol dependence (Arria et al., 2011) and that carbonated beverages are commonly preferred due to their increased ability to absorb alcohol (Roberts and Robinson, 2007).

Similarly, in this study, it was shown that those who drink alcohol consume less soup, vegetables, and fresh fruit; on the other hand, those who do not drink alcohol consume fewer salty snacks, coffee, carbonated drinks, and energy drinks ($p < .05$) (Table 3). Furthermore, the amount of alcohol drank was negatively correlated with the consumption of soup, vegetables, and fresh fruit, but positively correlated ($p < .05$) with the consumption of sunflower and pumpkin seeds, bagels, pastries, popcorn, salty snacks, carbonated drinks, coffee, and energy drinks (Figure 1). Furthermore, it is mentioned that the participants chosen type of alcohol, together with its quantity and status, also influences their dietary pattern (Kosti et al., 2021). According to a Danish study (Johansen et al., 2006), those who drink wine prefer healthier foods such fruits, vegetables, and low-fat cheese, while participants who drink beer prefer more candies, chips, sausages, and soft beverages. This result reveals the importance of questioning the food consumption in detail according to the type of alcohol preferred and the amount consumed in participants who consume alcohol. According to this questioning, it is thought that the problems that alcohol consumption will cause on nutrition and health will be reduced with the nutrition plans that will be prepared and monitored by dietitians who are experts in the field.

Food addiction is comparable to substance use disorders, particularly alcohol addiction, because they have characteristics like activation of the reward mechanism and lack of control (Bonder and Davis, 2022). The results of the Hoover et al. (2023) study showed that food addiction was more common in participants with problematic alcohol consumption (AUDIT score ≥8). In another study, although there was no significant relationship between food addiction and cannabis, heroin, cocaine, alcohol and tobacco addiction, it was determined that the rate of food addiction increased with the increase in the number of substances used (Tinghino et al., 2021). In the study conducted by El Ayoubi et al. (2022), the rate of food addiction in individuals with alcohol use disorder was 10%. In the study conducted by Romero-Blanco et al. (2021), the rate of food addiction was found to be 6% in individuals who consumed alcohol, and no significant relationship between alcohol consumption and food addiction. In this study, the rate of food addiction among individuals who consume alcohol is 17.6% and it was determined that the presence and score of food addiction did not show a statistically significant difference according to the status and amount of alcohol consumption ($p > .05$) (Table 1). At the same time, the higher rate of food addiction in this study compared to other studies may be an indication that food addiction in our country is at a high level independent of alcohol consumption.

In conclusion, this study shows that alcohol consumption in young adults' changes lifestyle habits as well as food preferences. It was determined that while the participants' vegetable and fruit consumption decreased with alcohol consumption, the consumption of foods that play a role in food addiction such as salty snacks and carbonated drinks increased. This situation not only reduces the diet quality of individuals but also disrupts their energy balance and causes an increase in body weight. Therefore, an increase in the risk of obesity and chronic diseases that may develop due to obesity can be observed. Therefore, educational programs can be planned to encourage healthy eating habits and increase food and nutrition awareness in participants who consume alcohol. In addition, it is thought that alcohol consumption can be managed consciously by having the food consumption of participants who consume alcohol evaluated and monitored in detail by dietitians at regular intervals.

Limitation and Directions

Participants in this study were essentially divided into two groups: those who consume alcohol and those who don't. Participants who consumed alcohol were evaluated in two groups: those who consumed <1 unit of alcohol per day and those who consumed ≥1 unit of alcohol per day. There is no group in the study that suffers from alcohol addiction because it is not a clinical study. It can be suggested that food addiction and food preferences be assessed in future research by including an alcohol-addiction group in the groups evaluated in this study. Additionally, the limitations of the study include that participants' food and alcohol consumption and anthropometric measurements were taken self-reported.

Data Availability Statement: The data that support the findings of this study are available on request from the corresponding author.

Ethics Committee Approval: This study was approved by the Ethics Committee of Burdur Mehmet Akif Ersoy University (approval number: GO 2024/354, date: June 5, 2024).

Informed Consent: Written informed consent was obtained from the participants who agreed to take part in the study.

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