

# Consumption and Repetition of Fast Food among Female Students of the Health Campus at Jazan University and Their Attitudes towards the Healthy Fast Food Option

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## Abstract

There has been a growing trend toward fast food consumption in Saudi Arabia, especially among students. Although fast foods are high in calories, they are not nutritious. So, the frequent intake or consumption of fast food is associated with many health problems, such as obesity, type 2 diabetes, and other cardiovascular diseases. As fast food consumption significantly increases, obesity and other health conditions become prevalent. This research aims to identify the intake and frequency of fast food meals among the students at the health campus (Jazan University) and its impact on their health. The researchers conducted a cross-sectional study at the health campus of Jazan University, Saudi Arabia, to investigate female college students' consumption and frequency of fast-food meals. Fast food is a common activity among female students at The Health Campus in Jazan, with only 15% of students being overweight or obese. Studies have found that college students consume much fast food, particularly twice a week, and choose lower-fat options to limit their fat intake.

## Keywords

Fast Food Consumption, Processed Food, Obesity, Type 2 Diabetes, Lower Fat Options

## 1. Introduction

Fast-food consumption has become a popular trend nowadays. Eating fast food is

easy, convenient, time-saving, and tasty. It is heavy on the pocket of some, but it is equally tasteful [1]. Consuming fast food is often more common in young adults or adolescents studying in universities than older people [2]. University students emphasize fast food and frequently eat with their friends there to enjoy their days off while constantly on the go [3]. Adolescence is a critical life period marked by substantial changes in living habits. These changes include consuming unhealthier foods, dining out more frequently, engaging in sedentary activities, and engaging in less physical exercise, especially among females, all putting adolescents at risk of malnutrition [4].

Fast food is the consumption of processed and rapidly prepared food from restaurants and markets containing microwaveable or pre-cooked ingredients and ready for consumers to buy [5]. Fast foods include hamburgers, fried chicken, spicy foods, processed, canned and packed foods, pizzas, chips, sausages, meals from university cafeterias, and carbonated and cold beverages, desserts, and confectionaries contain a high-calorie intake [6]. They can quickly turn people obese [7]. Regarding healthy nutrients in fast food, most fast foods are high in sodium, potassium, sugar, cholesterol, and saturated fats. If taken in amounts larger than the RDI value, these nutrients can cause serious health complications such as obesity, cardiovascular diseases, Liver disease, and Bowel disorders (4). Although fast food can be prepared quickly and taste savory and palatable, it still has various negative health impacts. Fast food is high in trans-fat and calories but low in Nutrition [8].

Several harmful effects of consuming fast food or junk food have been reported, As it contains high levels of sodium, potassium, trans-fats, saturated fats, sugars, leading to weight escalation and obesity [9]. The prolonged habit of eating fast food for convenience has been reported to cause cardiovascular diseases, diabetes mellitus, and sometimes even cancers [9]. Weight gain and obesity caused by eating fast food can often lead to diabetes [9] [10]. Consumers that prefer fast food regularly are at a higher risk of having hypertension since fast food diets contain high amounts of sodium. Persistent high salt/sodium diet intake can cause increased blood pressure levels and lead to stroke risk [11]. At a young age, the negative effects are minor and unnoticeable, or people would complain of having stomach issues and being lethargic more often than usual [6].

Apart from all the negative impacts that a meal of fast food and junk food contains, it is also composed of food colorings, additives, oxidants, and preservatives, making it unnatural and less nutritive [12]. Food colorants, preservatives, and additives can be added to processed food to increase its shelf life and store it for longer. Many fast food restaurants order processed meat and other ingredients to save on finance [13]. These food additives, colorants, and preservatives are carcinogenic, meaning if consumed in large amounts over a longer period, they can cause several types of cancers [13].

According to a study, adolescent females identify eating fast food with enjoyment, friendship, and freedom, whereas they associate eating nutritious meals

with their parents and staying home [14]. Increased consumption of junk food is a significant public health problem with an incidence of over 70% internationally and is more common among young students than other age groups. [14]. Dietary change and a rise in sedentary behavior surges the risk of obesity-associated illnesses such as insulin resistance diabetes, neurodegeneration, psychological changes, stroke, hypertension, fatty liver, and cardiovascular diseases [15]. Carbonated soft drinks with added sugar often have high sugar content and little nutritional value. Adolescent type 2 diabetes and obesity are significantly correlated with the intake of sweetened beverages, especially carbonated soft drinks [16]. Most fast meals are heavy in refined carbohydrates, salt, and glucose and low in fruits and vegetables, lowering their nutritive value, increasing empty calories, and making them energy-rich. Fast food intake among adolescents is linked to obesity, metabolic indicators of diabetes, and cardiovascular disease [16]-[18].

As adolescents enter the stage of attending universities where they have little control over their lives, they tend to divert to different eating habits and attitudes [3]. According to a study, due to various factors, including academic pressure, 54% of the students skipped breakfast and got fast food from university canteens or other fast-food restaurants [19]. Even though 98% of the students were aware of the drawbacks of consuming too much fast food, they were severely addicted to it [19]. Adult students migrating from schools to universities struggle to maintain healthy eating patterns owing to a lack of time and academic pressures. Instead, they forget to eat, consume unhealthy meals, visit fast food restaurants frequently, and consume processed foods [20]. The study evaluated that most medical students engaged in sedentary lifestyles and poor eating habits. Unhealthy eating practices included skipping meals, consuming insufficient amounts of fruits and vegetables, and consuming excessive fried and fast foods [21].

According to Harvard University study, the recommended dietary allowance of protein, fats, and carbohydrates according to a 2000-calorie program per day which is set by the Food and Drug Administration (FDA) equals 0.8 grams of proteins, 30 g of fats and 50 g of added sugars [21]. Junk foods contain a high amount of trans-fats and added sugars, surpassing the amount recommended by the FDA [22]. According to some studies linking high levels of TFA to cardiovascular disease, high levels of TFA are a common health issue. There is also proof that consuming trans-fat and saturated fat directly increases the risk of type 2 diabetes, whereas consuming polyunsaturated fat from vegetable sources is the opposite [23]. Consuming high amounts of salt in the diet can raise blood pressure and increase the risk of cardiovascular disease. An individual should not consume more than 6g of salt each day. To prevent cardiovascular disease, the WHO advises a daily salt consumption of fewer than 5g per person [23].

Several studies suggested that the increase in obesity and weight gain is due to low physical activities, high intake of sodium that causes lethargy, and an increase in fast food and processed food consumption [24]. Therefore, introducing healthy diet plans, limitations towards fast food chains, motivation to opt for junk food

substitutes with healthier options, and awareness about the impact of complications caused by fast food consumption is crucial in today's world. Although different studies have reported the prevalence of fast-food consumption on obesity of female adolescents, this study provides an understanding of the association between repetition and consumption of fast food among female university students and their behaviors towards healthy fast food options. A cross-sectional investigation was carried out on September 1, 2022, at the health campus of Jazan University in Jazan City, Saudi Arabia's southwest. These were all Saudi female college students who resided in Jazan. The college's health campus was used to choose the participants randomly. Students with serious medical conditions, students from outside Jazan University, and students who practice a special diet were excluded

## **2. Methodology**

A cross-sectional investigation was carried out on September 1, 2022, at the health campus of Jazan University in Jazan City, Saudi Arabia's southwest. These were all Saudi female college students who resided in Jazan. The college's health campus was used to choose the participants randomly. Students with serious medical conditions, students from outside Jazan University, and students who practice a special diet were excluded.

### **2.1. Questionnaires**

The online questionnaire has 29 items total, broken down into three sections: demographic information (age, height, weight, marital status, and the number of children in the household); fast food consumption habits (10 things); frequent usage of fast food restaurants (4 items); and fast food frequency (15 items).

### **2.2. Data Collection, Instruments and Measurements**

This study was built on a food questionnaire in Arabic languages to check fast food consumption patterns. A target number of pupil was used to investigate the validity of the questionnaire. A standard food frequency questionnaire was used as a tool for the study. There were (35) items in the questionnaire, divided into three sections: demographic data (Age, Height, weight, Marital status, and the number of family members), consumption patterns of fast food (8 items), use of fast food restaurants (4 items), and fast food frequency (10 items), information about attitudes against the consumption of fast food (5 items).

### **2.3. Data Analysis**

All data were analysed by using SPSS software. Categorical variables were reported as frequency and percentages, mean, SD, one sample t-test, and 95% Confidence Interval of the Difference. Using a chi-square test, categorical factors were examined and reported as percentages and amounts. One-way ANOVA was used to assess continuous variables, which were reported as averages and standard deviations. The tables below also mention the P-values for each category

### 3. Results

Before you begin to format your paper, first write and save the content as a separate text file. Keep your text and graphic files separate until after the text has been formatted and styled. Do not use hard tabs, and limit use of hard returns to only one return at the end of a paragraph. Do not add any pagination anywhere in the paper. Do not number text heads—the template will do that for you.

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#### 3.1. Sociodemographic Data

Data collection and analysis reported different responses to the questionnaires, which are given below. This study showed the relation between food choices and fast-food intake patterns.

(**Table 1**) A total 148 female students with an average age of 18 - 23 years, participated in the current study. In (**Table 1**) the majority of students weight ranged between 50 - 70 which is considered normal according to their height. Examining the marital status, there was a significant positive association with participants' marital status indicating that participants who were single were more likely to eat at a fast-food restaurant than participants who were married. turning to family size, (16.8%) were live with 3 member while (78.5%) live within 5 or more family members.

Shifting to family income, 51.5% of the respondents reported a monthly income within SR 5000 – 15,000 SR, whereas 16% exceeding 15,000 SR. The results also provides insight into the association between socio-demographic characteristics and the fast food consumption among female college students The tables below also mention the P-values for each category.

**Table 1.** The sociodemographic data of the participants.

Table 1	Age			Total	P-value
	18 years	19 - 22 years	23 years or older		
Age	10 (100%)	90 (100%)	48 (100%)	148	
	Height (cm)				
>160 cm	3 (30%)	46 (51.2%)	29 (60.4%)	78 (52.8%)	0.343
<160 cm	7 (70%)	44 (48.8%)	19 (39.6%)	70 (47.2%)	
	Weight (Kg)				
50 kg or less	4 (40%)	38 (42.2%)	9 (18.7%)	51 (34.4%)	0.068
50 - 70 kg	4 (40%)	31 (34.4%)	24 (52%)	59 (40%)	
>70 kg	2 (20%)	21 (23.2%)	15 (29.3%)	38 (25.6%)	
	Marital status				
Single	8 (80%)	73 (81.1%)	22 (54%)	103 (69.6%)	0.000***
Married	2 (20%)	17 (19.9%)	26 (46%)	45 (30.4%)	

## Continued

		Family size				
3 members	1 (10%)	11 (12.2%)	13 (27%)	25 (16.8%)		
4 members	1 (10%)	4 (5.6%)	2 (4.3%)	7 (4.7%)	0.089	
or more	8 (80%)	74 (82.2%)	33 (68.7%)	115 (78.5%)		
		Family income				
5000 SR	7 (70%)	7 (8%)	33 (68.7%)	47 (31.7%)		
5500 – 15,000 SR	3 (30%)	64 (71%)	9 (18.7%)	76 (51.5%)	0.704	
More than 15,000 SR	0 (0%)	19 (21%)	6 (12.6%)	25 (16.8%)		

a. Categorical variable was expressed as numbers and percentages and analyzed using a chi-square test. b. Continuous variables were expressed as means and standard deviations and analyzed using a one-way ANOVA test.

### 3.2. Fast Food Consumption Pattern

In terms of fast food patterns (**Table 2**), although the majority of the students (66%) admitted consuming fast food 3 times a week, and most of them consume it one or twice a week, 97.9% of them were aware of the disadvantages of the fast food on their health and 79.7% believed it's bad for their health and 79.7% agreed that fast food lacks essential nutrients.

The data also show that among the total of 148 female students, the majority of participants opted for fast food consumption during evening time. Similarly, 20% of respondents preferred fast food in the afternoon, while 29.7% of respondents chose fast food without a specific time.

Moreover, in terms of disease and fast food consumption, findings indicate that 86.4% of participants don't have any disease, while 13% have obesity. Moreover, 62.4% agreed that their family didn't suffer from any disease while 22.2% had obesity and 22.2% had type 2 diabetes. When the authors asked questions about the obese family and their consumption of fast food, no significant association was found and 70.2% responded that their family don't consume fast food.

**Table 2.** Participants responses to fast food consumption patterns.

Table 2	Age			Total	P-value
	18 years	19 - 22 years	23 years or older		
How often do you consume fast food?					
A. Once a week	2 (20%)	23 (25.5%)	10 (21%)	35 (35%)	
B. Twice a week	4 (40%)	30 (33.4%)	13 (27%)	47 (47%)	0.552
C. 3 times a week	4 (40%)	37 (41.1%)	25 (52%)	66 (66%)	
Do you think that fast food is good for your health?					
A. Yes	0 (0%)	1 (1.2%)	2 (4.1%)	3 (2.1%)	
B. No	10 (10%)	89 (98.8%)	46 (95.9%)	145 (97.9%)	0.434

## Continued

Do you think that fast food contains the necessary nutrients?					
A. Yes	0 (0%)	4 (4.6%)	2 (4.1%)	6 (4.1%)	0.485
B. No	8 (80%)	69 (76.6%)	41 (85.5%)	118 (79.7%)	
C. Maybe	2 (20%)	17 (18.8%)	5 (10.4%)	24 (16.2%)	
When do you usually consume fast Food during the day?					
A. Moring (Breakfast).	1 (10%)	6 (6.6%)	2 (4.1%)	9 (6.2%)	0.722
B. Afternoon (Lunch)	0 (0%)	23(25.5%)	8 (16.6%)	31 (20.9%)	
C. Evening (Dinner)	6 (60%)	33 (36.6%)	25 (47.7%)	64 (43.2%)	
D. No specific time	3 (30%)	28 (31.3%)	13 (27%)	44 (29.7%)	
Which of the following diseases do you have?					
A. Obesity	0 (0%)	6 (6.7%)	3 (6.25%)	9 (13%)	0.669
B. Type 2 diabetes	0 (0%)	0 (0%)	1 (2%)	1 (0.6%)	
C. Cardiovascular diseases	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
D. I do not have anydiseases.	10 (100%)	84 (93.3%)	44 (91.75)	128 (86.4%)	
A. Obesity	2 (20%)	9 (10%)	6 (12.5%)	17 (11.4%)	0.982
B. Type 2 diabetes	1 (10%)	23 (25.5%)	10 (20.8%)	33 (22.2%)	
C. Cardiovascular diseases	1 (10%)	2 (2.3%)	3 (6.2%)	6 (4%)	
D. They do not have any diseases	6 (60%)	56 (62.2%)	29 (60.5%)	85 (62.4%)	
Do family members who are obese consume fast food?					
Yes	2 (20%)	26 (28.8%)	16 (33.3%)	44 (29.8%)	0.681
No	8 (80%)	64 (71.2%)	32 (66.7%)	104 (70.2%)	

a. Categorical variable was expressed as numbers and percentages and analyzed using a chi-square test. b. Continuous variables were expressed as means and standard deviations and analyzed using a one-way ANOVA test.

### 3.3. Preference of Fast-Food Restaurants

**Table 3** Demonstrates that McDonald's is the students' favorite restaurant (52%), following by Albaik 26.3%. The primary reasons driving respondents to consume fast food were taste. Additionally, most of the participants 59.6% enjoy going to fast-food restaurants every month and 67% spend less than 200 SR on fast food restaurants.

**Table 3.** Participants preferences of fast food consumption.

Table 3	Age			Total	P-value
	18 years	19 - 22 years	23 years or older		
What is your favorite fast food restaurant					
A. McDonalds	10 (50%)	44 (56.6%)	23 (46%)	77 (52%)	0.446
B. Herfy	0 (0%)	5 (6.4%)	4 (8%)	9 (6%)	
C. Hardee's	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
D. Domino's Pizza	0 (0%)	9 (11.5%)	7 (14%)	16 (10.8%)	

## Continued

E. Albaik	7 (35%)	17 (21.7%)	15 (30%)	39 (26.3%)	
F. Kudu	3 (15%)	3 (3.8%)	1 (2%)	7 (4.7%)	
Why do you prefer to go to fast food restaurants?					
A. It is a kind of social networking with family and friend	2 (10%)	5 (6.4%)	2 (4%)	9 (6%)	
B. Food taste amazing	12 (60%)	53 (66.7%)	39 (78%)	104 (70.4%)	0.693
C. Easy to prepare	2 (10%)	11 (14.1%)	4 (8%)	16 (10.8%)	
D. Food presentation	4 (20%)	10 (12.8%)	5 (10%)	19 (12.8%)	
E. Speed of application					
How often do you go to fast food restaurants?					
A. Daily	1 (5%)	3 (3.8%)	1 (2%)	6 (4%)	
B. Weekly	18 (90%)	30 (38.4%)	16 (32%)	54 (36.4%)	0.460
C. Monthly	1 (5%)	45 (57.8%)	33 (66%)	88 (59.6%)	
How much money do you spend on fast food restaurants?					
A. 200 SR or less	15 (75%)	47 (60.4%)	37 (74%)	99 (67%)	
B. 250 - 800 SR	3 (15%)	28 (35.8%)	11 (22%)	42 (28.3%)	0.284
C. 850 SR or more	2 (10%)	3 (3.8%)	2 (4%)	7 (4.7%)	

a. Categorical variable was expressed as numbers and percentages and analyzed using a chi-square test. b. Continuous variables were expressed as means and standard deviations and analyzed using a one-way ANOVA test.

### 3.4. The Frequency of Fast Food Consumption

**Table 4** Examining the frequency of fast food consumption, most students (87%) do not have a favorite fast food and enjoy all fast foods. Despite the constant consumption of fast food, the data shows that the quantities consumed were within reasonable limits, with (83%) consuming only 150 g of burger per serving, (74.4%) consuming 3 slices of pizza per serving, (51.5%) consuming 110 g of French fries, and (84.6%) preferring to add more ketchup to fast food. (55.6%) of students prefer sugary soft drinks, and (93.3%) consume soft drinks at least once daily. Furthermore, (53.5 %) like a small piece of sweets, while just (9.4 %) prefer a large portion. According to the data, the fragrance or sight of the meal (51.9%) and sitting with friends and family (37.1%) increase the student's hunger to consume more fast food.

**Table 4.** The frequency of fast food consumption.

Table 4	Age			Total	P value
	18 years	19 - 22 years	23 years or older		
What type of fast food do you usually consume?					
A. Pizza	2 (10%)	4 (5.1%)	3 (6%)	9 (6%)	0.188
B. Burger	2 (10%)	9 (11.5%)	1 (2%)	13 (8.7%)	

**Continued**

C. Shawarma	2 (10%)	3 (3.8%)	1 (2%)	6 (4%)	
D. French fries	2 (10%)	3 (3.8%)	1 (2%)	5 (3.3%)	
E. All above	12 (60%)	59 (75.8%)	44 (88%)	115 (78%)	
If you prefer to eat a burger, what size would you choose?					
A. Single burger sandwich (150 grams) or less	15 (75%)	65 (84.7%)	42 (84%)	122 (83%)	
B. Double Burger Sandwich (180 gm to 225 gm)	3 (15%)	10 (12.8%)	7 (14%)	21 (14%)	0.684
C. Triple burger sandwich (300 grams) or more	2 (10%)	2 (2.5%)	1 (2%)	4 (2.7%)	
If you prefer to eat pizza, how many slices do you usually eat at each meal?					
A. 3 slices or less per serving	17 (75%)	56 (70.8%)	37 (74%)	110 (74.4%)	
B. From 4 to 7 slices per serving	2 (10%)	22 (28%)	13 (26%)	37 (25%)	0.282
C. 8 slices or more	1(5%)	1 (1.2%)	0 (0%)	1 (0.6%)	
What side dish do you usually eat with a fast food?					
A. French fries	15 (75%)	63 (80.9%)	42 (84%)	120 (71%)	
B. Green salad	3 (15%)	11 (14%)	6 (12%)	20 (13.5%)	0.866
C. Another side dish	2 (10%)	4 (5.1%)	2 (4%)	8 (5.4%)	
If you eat French fries as a side dish, what size do you usually order?					
A. Small (110 g)	1 (55%)	39 (50%)	26 (52%)	76 (51.5%)	
B. Medium (154 g)	5 (25%)	28 (35.8%)	17 (34%)	50 (33.7%)	0.049
C. Large (220 g)	4 (20%)	11 (14%)	7 (14%)	22 (14.8%)	
What tops do you usually like?					
Mayonnaise	1(5%)	5 (6.4%)	2 (4%)	8 (5.4%)	
B. Ketchup	17 (90%)	66 (84.8%)	45 (88%)	128 (84.6%)	
C. Mustard	0 (0%)	2 (2.5%)	1 (2%)	3 (2%)	0.073
D. Ranch sauce	0 (0%)	2 (2.5%)	1 (2%)	3 (2%)	
E. Cheese	1(5%)	3 (3.8%)	2 (4%)	6 (4%)	
What kind of soft drinks do you usually have with fast food?					
A. Soft drink without sugar	1(5%)	10 (12.8%)	7 (14%)	18 (12.1%)	
B. Soft drink with added sugar	11 (55%)	41 (52.8%)	30 (60%)	82 (55.6%)	
C. Energy drinks	1 (5%)	3 (3.8%)	1 (2%)	4 (2.7%)	0.653
D. Water	2 (10%)	12 (15.3%)	3 (6%)	18 (12.1%)	
E. Fresh juices	5 (25%)	12 (15.3%)	9 (18%)	26 (17.5%)	
If you drink a soft drink added sugars, how many cans do you usually drinks at each meal?					
A. One	19 (95%)	72 (92.4%)	4 (94%)	138 (93.3%)	
B. Two to three	0 (0%)	4 (5.1%)	2 (4%)	6 (4%)	0.505
C. Four or more	1 (5%)	2 (2.5%)	1 (2%)	4 (2.7%)	

Continued

Which of these factors do you think increases your appetite most often?					
A. Psychological stress	2 (10%)	9 (11.5%)	5 (10%)	16 (10.8%)	0.954
B. The smell or appearance of food	9 (50%)	36 (46.3%)	25 (50%)	70 (51.9%)	
C. Watching TV	2 (10%)	2 (2.5%)	2 (4%)	6 (4%)	
D. Sitting with friends and family	6 (30%)	31 (39.7%)	18 (36%)	55(37.1%)	
How large a dose of sweets do you usually eat?					
A. Small	12 (65%)	37 (47.6%)	29 (52%)	78(53.5%)	0.694
B. Medium	3 (15%)	35 (44.8%)	17 (34%)	55 (37.1%)	
C. Big	4 (20%)	6 (7.6%)	4 (8%)	14 (9.4%)	

a. Categorical variable was expressed as numbers and percentages and analyzed using a chi-square test. b. Continuous variables were expressed as means and standard deviations and analyzed using a one-way ANOVA test.

### 3.5. The Attitudes Against the Consumption of Fast Food

**Table 5.** Participants attitude against fast food consumption.

Table 5	Age			Total	P value
	18 years	19 - 22 years	23 years or older		
When you prepare a meal at home, what is your favorite food?					
A. Grilled	4 (40%)	38 (42.2%)	13 (27%)	55 (37.2%)	0.071
B. Fried	6 (60%)	47 (52.2%)	28 (58.5%)	81 (54.7%)	
C. Boiled	0 (0%)	5 (5.6%)	7 (14.5%)	12 (8.1%)	
How many servings of fruits and vegetables do you eat daily?					
A. At least two	8 (80%)	57 (63.3%)	36 (75.1%)	101(68.4%)	0.693
B. At least five	0 (0%)	8 (8.8%)	1 (2%)	9 (6%)	
C. I don't eat fruits and vegetables	2 (2%)	25 (27.9%)	11 (22.9%)	38 (25.6%)	
Do you include high-fiber foods in your meals?					
A. Yes	6 (60%)	63 (70%)	34 (70%)	103(69.6%)	0.791
B. No	4 (40%)	27 (30%)	14 (30%)	45 (30.4%)	
How many glasses of water do you drink daily?					
A. 8 cups or less	10 (100%)	78 (86.69%)	43 (89.7%)	131(88.6%)	0.495
B. 10 to 12 cups	0 (0%)	10 (11.11%)	4 (8.3%)	14 (9.4%)	
C. 13 cups or more	0 (0%)	2 (2.2%)	1 (2%)	3 (2%)	
How often do you usually do sports?					
A. Once to three times a week	5 (50%)	55 (61.2%)	27 (56.25%)	86 (58.8%)	0.634
B. Four or more times aweek	4 (40%)	31 (34.4%)	18 (37.5%)	53(35.8%)	
C. I don't do sports at all	1 (10%)	4 (4.4%)	3 (6.25%)	8 (5.4%)	

a. Categorical variable was expressed as numbers and percentages and analyzed using a chi-square test. b. Continuous variables were expressed as means and standard deviations and analyzed using a one-way ANOVA test.

Regarding the students' responses to their attitudes toward fast food consumption. In **Table 5**, (54.7%) said they like fried food, even if they make it at home. While 37.2% like grilling food. Eating fruits and vegetables on a regular basis was reported in only 68.4% with consumption at least two servings daily. Similarly, 69.6% include high-fiber foods in their meals, (88.6%) do not drink enough water (less than 8 cups), and (58.8%) participate in sports regularly (once to three times a week) with no significant differences see **Table 5**.

#### 4. Discussion

University students frequently consume fast food, although it offers less nourishment. This study aims to assess female students enrolled in the Health campus of Jazan University food preferences, eating patterns, attitudes about fast food consumption, repetition and frequency of fast food consumption, and its effects on health.

The present study found that most participants were between the ages of 19 and 22 and their weight ranged between 50 and 70 kg (40%). However, only 25.6% of the whole population is overweight in relation to their height, which is less than 160 centimeters. These findings contrast with the findings of the few studies that have been conducted in Saudi Arabia on the prevalence of obesity and overweight in the general population, which has been reported to be high in both males and females and ranges from 20.6% to 64.3% in females. [25]-[27]. Moreover, the present study finds no significant association between family income and fast food consumption with almost 51.5% of students coming from families with incomes between 5500 and 15,000 Saudi Riyals, however, higher rates of fast food consumption were seen in the middle and high-income subjects. Data from other study in Saudi Arabia concur with these results [27]. This may suggest that having more money could result in spending more on high-calorie meals [28]. Moreover, in this study 78.5% of the students live with friends and family and 70% are single this may make them more likely to consume unhealthy eating habit. In another study

Likewise, the results of the present study indicate distinct fast food consumption pattern with (66%) of the students consuming fast food 3 times a week, whereas (47%) consumed it twice, and liked to be consumed at evening time (dinner). The majority of the female students in this study reported ordering medium or small meals from fast food restaurants. This research revealed that 83% of female students were aware that fast food contributes to poor health, which was to be expected given that these students are studying nutrition and are aware of the negative effects that fast food may have on their bodies. This is aligned with [29] with study conducted at Almajma University (a city in the Saudi Arabia) which show that 85.15% of the students aged 18 to 26 years were consuming fast food at least 2 - 3 times a week. Another research study also conducted shows that 82.02% of the participants had consumed unhealthy food during the week, while 10.96% had eaten fast food in fast-food restaurants more than three times a week and

approximately 11% of them indicated a preference for consuming fast foods during dinner [30]. Possible reasons might lead students to shift toward fast food restaurants; their busy schedules, time constraints may not be adequate for lunch in the canteen [31], waiting in line for meals, the meals offered in canteens do not comply with nutritional recommendations which may affect the level of satisfaction about canteen services [31]. A study conducted at Polish universities found that only 35.5% of students and staff members regularly use the cafeterias daily or at least once a week [32]. Moreover, a study in a Belgian university canteen concluded that the portion of fruit and vegetables at the canteen was relatively small or not included in the menu and had to be purchased separately [31].

This study found that McDonald's was the most popular and often frequented restaurant among the numerous fast food chains and eateries, with 52% of female students choosing to visit McDonald's to sate their hunger and cravings. Fast food tastes better and is more convenient, according to 70.4% of female students who answered the questionnaire. Similar findings were found in many studies conducted with university students in UK, USA Türkiye, India and Bangladesh reveals that the reason for consumption of fast food was mostly pleaser taste of food and social activities with easy access [13] [33]-[36].

A cross-sectional study on university students interpreted that 39.7% preferred fast food for flavor, convenience, productivity, and social engagements and consumed it at least once every 15 days. Male students consumed fast food at a younger age (13.6%), and the servings were larger than those of vegetables as compared to female students [37]. In this study, it was reported that around 80% of students' portion size was 150 grams or less, which equals a single serving of sandwich along with a soft drink with added sugars. Approximately 52% of students reported being drawn to fast food because of its aroma, appearance, and taste. It is usually hard to attain the same aroma, texture, flavor, and appearance as fast food.

Another factor in increasing weight gain leading to obesity is the preference for fried food over boiled or grilled food [25]. Although much awareness has been spread these days about choosing appropriate cooking methods and making the right food choices, people, especially adolescents, still consider eating fried and processed food [9]. As fast-food consumption has been increasing worldwide, vegetable, fruits, whole grains, and fiber intake has been reported to decrease [9]. People who frequently eat fast food get addicted, so they automatically reduce their consumption of fruits and vegetables. According to our study, around 68.5% of female students take 2 servings of fruits, while 25% of female students do not eat fruits and vegetables. This eating behavior can lead to several chronic diseases and disorders, such as obesity and cardiovascular disorders [25]. However, including fibrous foods can reduce hunger, induce the feeling of satiety, and aids in weight loss. It also keeps the metabolism working efficiently [26]. According to our study, approximately 70% of students drink 8 glasses of water daily with high fiber in their diets. This percentage showed a positive correaltion between the

attitude of female students towards fast food intake.

One study reported that some colleges did not have a proper nutritional food plan and did not reach the minimal dietary recommendation to include fruits, vegetables, and dietary fibers into the diet [26]. However, many students ate fruits and fibrous meals by choice and habitually kept themselves hydrated [26]. Another study held at the College of Arts and Science and Applied Medical Science in Wadi Ad-dawasir, reported that approximately 97% of the students consumed high-sodium fast food diets and cold drinks with added sugars almost daily [11].

In another study in Isfahan, Iran, a survey questionnaire was distributed among 350 people to evaluate consumers' attitudes toward fast food consumption. The result interpreted that consumers do not actually judge their fast-food intake based on their standards but instead emphasize trust and health awareness. As a result, customers look for food chains that they think are reliable and will not cause them to contract a foodborne disease [10].

Fast food consumption has grown significantly, particularly among young people and teens. Many study findings revealed that young individuals, higher-income populations, and children and adolescents consumed more fast food [38]-[40]. One of these studies also reported that parents with better awareness of healthy foods could provide their adolescents with red meat, white meat, fish, eggs, fruits, and vegetables [35]. A cross-sectional study on university students interpreted that 39.7% preferred fast food for flavor, convenience, productivity, and social engagements and consumed it at least once every 15 days. Male students consumed fast food at a younger age (13.6%), and the servings were larger than those of vegetables as compared to female students [38].

Fast food consumption is the most prevalent cause of obesity and chronic diseases like cardiovascular diseases and hypertension. Students who consume fast food frequently undergo obesity and other chronic diseases later on in life if the repetition of fast food consumption remains. According to an investigation conducted at King Faisal University of Saudi Arabia on female students, the incidence of obesity among female university students was close to 24% due to the consumption of fast food and unhealthy meals. [7]

A subcategory of fast food, processed and ultra-processed foods, is equally popular and available in the market [40]. They include ready-to-eat foods and ready-to-heat foods manufactured in industries containing a significant amount of food additives, preservatives, food colorings, acidulants, and very few whole foods [41]. They include nuggets, noodles, chips, confectionary items, and many more. These processed foods are equally deteriorating human health as quickly prepared fast food. Consuming these processed or ultra-processed foods leads to obesity, overweight, and cardiovascular diseases [40] [41]. According to a study, ultra-processed meals' extremely deteriorated physical structure may impact the makeup and function of the intestinal bacteria, appetite, glucose response, and cardiovascular risk health [42].

Analysing the mentioned reports, consuming fast food and processed food can adversely affect an individual's health and BMI. It can cause serious health problems.

Students who habitually consume fast food frequently have a lower intake of whole foods like whole grains, beans, meat, dairy, fruits, and vegetables [42]. Repeating meals in a fast food restaurant prevails over obesity and overweight in female students. Therefore, it is direly necessary to spread awareness of the impacts of fast food consumption on adolescents and to limit the intake of processed foods.

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## 5. Conclusion

This study concludes that a significant percentage of female students are aware of the health impacts of fast food consumption and 79.7% of students realize that fast food meal lacks essential nutrients, but 47% consume them twice a week, and 79.7% with friends. The students reputedly consumed fast food because of the taste, convenience, and wanting to spend quality time with friends. The study also revealed that students' attitudes toward healthy diet options are associated with their preferences. The findings of this study underscore the need to develop interventions to design strategies to promote healthy eating habits in universities, which can have a significant long-term effect in fostering healthy behaviors and reducing the chances of chronic illnesses.

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The study has been ethically approved by Standing Committee for Scientific Research Jazan University (HAPO-10-z-001) vide reference no-REC-44/03/340.

## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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## Appendix

Section A: This section includes sociodemographic data about students in the female college of Jazan

Student's Age

A- ≤18 years old

B- 19 – 22 years old

C- 23 years old or older

Student's Height (cm)

.....

Student's weight (kg)

.....

Marital Status

A- Single

B- Married

How many members are in your family?

A- 3 members

B- 4 members

C- 5 members or more

What is the average family income?

A- ≤ 5000 SAR

B- 5500 – 15000 SAR

C- *more than* 15000 SAR

Section B: This section includes some information about the fast-food consumption patterns of the students

Which type of foods do you consume the most?

A- Healthy food prepared at home

B- Fast & junk food

C- I consume both types equally

How many times do you take a fast-food meal?

A- Once a week

B- Twice a week

C- Three times a week or more

Which meal do you usually take as a fast-food meal?

A- Breakfast

B- Lunch

C- Dinner

Do you think that fast food is good for your health

A- Yes

- B- No
- C- I don't know

Why do you usually prefer fast food?

- A- Easy to get
- B- Speed
- C- Taste
- D- A kind of socializing with friends and family
- E- Others

Do you think fast food is nutritious?

- A- Yes
- B- No
- C- I don't know

Do you have any obese members in your family?

- A- Yes
- B- No

Which of the following conditions do you have? (you can select more than one)

- A- Obesity
- B- Type 2 Diabetes
- C- I don't have any of these conditions

Do obese family members consume fast food?

- A- Yes
- B- No

Which of the following conditions do your family members have? (you can select more than one)

- A- Obesity
- B- Type 2 Diabetes
- C- They don't have any of these conditions

Section C: This section includes some information about the use of fast-food restaurants Which fast-food restaurant do you prefer?

- A- McDonald's
- B- Hardees
- C- Albaik
- D- Herfy
- E- Kudu
- F- Another restaurant .....

Why do you prefer to go to fast-food restaurants?

- A- It's a kind of socializing with friends & family
- B- The food taste is amazing
- C- They are inexpensive

How often do you go to fast-food restaurants?

- A- Daily
- B- Weekly
- C- Monthly

How much money do you spend on fast-food restaurants per month?

- A- 200 SAR or less
- B- 250 – 800 SAR
- C- 850 SAR or more

Section D: This section includes some information related to fast food frequency Which Fast food meal do you usually prefer to eat?

- A- Burger
- B- Pizza
- C- French Fries
- D- Shawerma
- E- Broasted Chicken
- F- Others

If you prefer eating burger, what is the portion size you usually eat for each fast food meal?

- A- Single burger sandwich (150 grams) or less



- B- Double burger sandwich (180 grams to 225 grams )



- C- Triple burger sandwich (300 grams or more)



If you prefer eating pizza, how many slices do you usually eat each fast food meal?

- A- Three slices or less per meal
- B- 4 to 7 slices per meal
- C- 8 slices or more per meal



(The averages size of the slice:107 gm)

Which side dish do you usually prefer eating with a fast food meal?

- A- French Fries
- B- Green Salads
- C- Another side dish

If you prefer eating French fries as a side dish, which size do you usually order with your meal?

- A- Small (110 gm)



- B- Medium (154 gm)



- C- Large (220 gm)



Which sauce do you usually order with your fast food meal? (you can choose more than one answer)

- A- mayonnaise
- B- ketchup
- C- Ranch
- D- Mustard
- E- Cheese
- F- Others

Which type of soda do you usually drink with a fast food meal?

- A- Diet Pepsi with zero sugar
- B- Pepsi with added sugar
- C- Energized soda drinks

If you usually drink a Pepsi can with added sugars, how many cans do you usually drink each meal?

- A- One can
- B- Two to three
- D- Four or more

What are the factors that could boost your appetite to eat fast food? (You can choose more than one answer)

- A- Stress
- B- The taste of food
- C- Watching TV
- D- Going out with family or friends
- E- Others

What is the portion size of desserts you usually take?

- A- Small
- B- Medium
- C- Large

Section E: This section includes some information about attitudes against fast food consumption

When you take a homemade meal, which type of food do you consume the most?

- A- Grilled
- B- Boiled
- C- Roasted

How many servings of fruits and vegetables do you usually take daily?

- A- At least two
- B- At least five
- C- Don't usually take

Do you incorporate foods with high fibers into your meals?

- A- Yes
- B- No

How many cups of water do you usually drink?

- A- 9 cups or less
- B- 10 – 12 cups
- C- 13 cups or more

How often do you usually exercise?

- A- I don't exercise at all
- B- One to three times weekly
- C- Four times or more.