

## Trends in Fast-food Consumption among Kuwaiti Youth

### Abstract

**Background:** We assessed fast-food consumption including frequency, type, and reasons among college students from the Kuwait University, and whether there were any key sex differences.

**Methods:** A cross-sectional survey was conducted from January–March 2016 with 421 students (297 women, mean age = 20.99 ± 3.14 years). Students completed self-administered fast-food questionnaires and weight and height measurements were obtained. **Results:** Most (81.4%) consumed fast food more than twice per week and more men than women were overweight or obese (54.8% vs. 38.7%, respectively;  $P = 0.002$ ); however, there were no differences in the fast-food frequency per body mass index or sex. Taste was the most reported motivator to consume fast food (46.7%) and women were significantly more likely to value taste as compared to men (49.8% vs. 38.9%, respectively;  $P = 0.005$ ). **Conclusions:** Fast food is a key part of college students' diet in Kuwait; therefore, students should be educated on the negative effects of frequent fast-food consumption. University health promotional activities should include nutrition education on healthier fast-food options and how to prepare easy-to-cook meals at home.

**Keywords:** Consumption, fast food, Kuwait, sex difference, taste, weight

### Introduction

The integration of fast food into the Arabian diet in recent years has led to its frequent consumption, particularly by adolescents.<sup>[1,2]</sup> Although all age groups consume fast food, young adults (aged 20–39 years) consume the highest percentage of their calories from fast food compared with other adults.<sup>[3]</sup> Countries such as Kuwait and neighboring Saudi Arabia have reported the high frequency of fast-food consumption among adolescents,<sup>[1,4]</sup> with foods such as French fries and sweets being frequently consumed. This behavior mirrors that of other countries such as USA, where students on university campuses consume fast food approximately 3–8 times per week.<sup>[5,6]</sup>

Frequent exposure to fast foods such as burgers, French fries, hot dogs, and soda is of concern because they are typically considered to be nutritionally low in micronutrients, but high in fat, salt, and sugar.<sup>[7]</sup> Frequent fast-food consumption has also been associated with low micronutrient and fiber intake, but high calorie and glycemic load.<sup>[8]</sup> Additionally, fast food is often served in large portions. This

leads to an excess of daily energy intake, as the estimated energy consumption of the average fast-food meal exceeds 800 k calories.<sup>[9]</sup>

Fast-food consumption is associated with obesity<sup>[7,10,11]</sup> due to the high calorie content, which consequently influences obesity-related comorbidities such as cardiovascular disease, cancer, diabetes, osteoarthritis, and chronic kidney disease.<sup>[12]</sup> The recommendation of the expert panel of the World Cancer Research Fund and American Institute for Cancer Research is to “limit fast food and other processed foods high in fat, starches or sugars” because of the possible association between fast-food intake and weight gain.<sup>[13]</sup>

Processed and fast foods such as hamburgers, pizza, and fried chicken are widely consumed by the younger generation in Kuwait,<sup>[14]</sup> with a reported 92% of people consuming fast food.<sup>[1]</sup> Additionally, between 1980–2013 Kuwait experienced one of the world's largest increases in the rate of obesity, with overweight and obesity prevalence reported as high as 78% and 82% among males and females, respectively.<sup>[15]</sup>

Traditionally, Kuwaitis mainly consumed rice, fish and seafood, sheep and goat

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meat, along with camel milk and dates as their staple diet.<sup>[14]</sup> However, over time the abundance of food outlets has changed the Kuwaiti diet to be more calorie dense, and with a noted decrease in fiber and micronutrient content.<sup>[16]</sup> Many Kuwaitis regularly eat out or order from restaurants that sell fast foods such as pizza, fried chicken, hamburgers, kebab, or sandwiches, and the cold beverages most commonly consumed are fresh juices and carbonated beverages.<sup>[14]</sup>

Research indicates that university students are especially likely to have a poor dietary intake, and university is a critical time where unhealthy changes in eating behaviors can occur in students.<sup>[17]</sup> Most often students entering university are faced with the stressors of changes in academic workloads, trying to adapt and creating networks in their new environment, along with new-found responsibilities.<sup>[17]</sup> Because university students have greater freedom and control over their lifestyles than ever before this can translate into poor dietary choices<sup>[17]</sup> such as frequent fast-food consumption.

Students acclimating to the fast-food culture could potentially shift the population away from traditional dishes and home-cooked meals. Such trends in the population's nutrition transition is associated with lower diet quality,<sup>[16]</sup> disappearance of family traditions and culture.

Few studies have examined the reasons why college students eat at fast-food restaurants. Differences in motivation for fast-food consumption appear to be influenced by many sociodemographic factors such as age, sex, education, employment status, and household size.<sup>[18]</sup> Food choices can also be affected by advertising and media, lack of parental control, taste preferences, self-discipline, time and convenience, and physical environment such as availability and accessibility, prices, and good menu choices.<sup>[5,19]</sup> Some menu choices in the fast-food restaurants offer fruits and greens and integrating options into fast-food orders could improve their diet quality.

Within the scope of this study, fast food was defined as food items that come from restaurants with prompt food service, carryout food options, limited or no wait staff, and payment prior to receipt of food.<sup>[20]</sup>

The high prevalence of obesity among Kuwaiti youth is alarming,<sup>[12]</sup> particularly given the country's large population of youth.<sup>[21]</sup> The growing and consistent consumption of fast food by young adults makes it essential to understand the fast-food consumption frequency and behaviors among university students, as the food preferences of youths often translate into adult food behaviors.<sup>[22]</sup>

To date, there are limited fast-food studies on Kuwait and none have assessed fast-food consumption among university students. Therefore, this study assessed fast-food consumption including frequency, type, and reasons among college students at the Kuwait University (KU), including

an analysis of any key sex differences in these aspects of fast-food consumption.

## Methods

### Design and participants

We conducted a cross-sectional survey from January–March 2016 at the KU. Participants were 421 students (124 men, 297 women) proportionally sampled from all the KU college campuses. The number of students was pre-planned according to the KU enrollment records.

### Survey instrument

A self-administered, fast-food frequency questionnaire was formulated by adopting questions taken from a previous questionnaire,<sup>[23]</sup> with locally relevant questions added. The questionnaire was then translated into Arabic and back translated into English. The questionnaire's content validity was confirmed by two nutrition experts and pre-tested for clarity, timing, and validity with a group of the same age range and education level ( $n = 15$ ), who were not included in the study sample. Both the English and Arabic versions were made available for participants' convenience. The questionnaire consisted of (1) demographic information and (2) fast-food frequency and nutritional knowledge of, attitudes and motives towards, and perceptions of fast food. Participants who completed the study were given a brochure with simple nutrition information on fast food. Fast-food consumption frequency was categorized into seven levels of intake: from "*more than once per day*" to "*once per year.*" Consumption level was compared between sex, weight, and socioeconomic status.

The validity of the questionnaire was confirmed during piloting. Students were asked what constitutes fast foods, and their typical responses were burgers, fried chicken, pizza, and French fries, among other fried foods such as onion rings and nuggets. The questions were not open ended in the survey. Fast-food options were predefined in the local food context and were specifically mentioned in each question.

In this study, fast food was defined as food items that are purchased from restaurants with prompt food service and foods from global fast-food chains. Salad options from these fast-food chains were not included in the questionnaire as during piloting salads were not identified among fast foods in the local context, and their fat, salt, and sugar content often comes from salad dressings. Their nutritional composition and level of consumption are also not comparable to the other fast-food options, such as burgers, fried chicken, or pizza.<sup>[7]</sup>

### Anthropometric measurements

Weight and height were measured by trained research assistants. Body weight was measured with minimal clothing and without shoes to the nearest 0.1 kg using a

calibrated portable electronic scale (Tanita, WB-800H Plus). Height was measured to the nearest 1 cm using a stadiometer, with the participant at full-standing position without shoes. Body mass index (BMI) was calculated as the ratio of weight (kg) to height (m<sup>2</sup>).

### Data analyses

SPSS 24.0 (SPSS Inc., Chicago, IL, USA) was used for data analyses. Categorical variables were expressed as numbers and percentages and analyzed using the Chi-square tests. Continuous variables were expressed as means and standard deviations and analyzed using the one-way analyses of variance. All reported *P* values were based on two-tailed tests. Differences were considered significant at *P* < 0.05.

### Ethics

Ethical approval was obtained (blinded for peer review). All participating students provided written informed consent as per the Helsinki Declaration. Questionnaires were distributed to students at campus cafeterias and in outdoors spaces. To ensure data confidentiality, no personal identifiers were collected.

## Results

### Sample characteristics

Student enrollment per campus was obtained by the KU enrollment records via the KU bureau of statistics, 2015–2016. Sample size calculations per campus were conducted via proportional sampling to ensure the necessary number of students per campus was met. Overall, 421 students (297 women) participated. More

students were single than married (83.4% vs. 16.6%, respectively). There was no significant sex difference in marital status. Men were significantly older and heavier than were women. Male students' mean BMI fell within the overweight category, whereas female students' BMI fell within the normal [Table 1]. Parents' education level did not differ by sex. More male than female students reported a higher monthly income, and women were significantly less likely to know their family income than were men.

### Frequency of fast-food consumption

There were no differences in frequency levels of fast-food consumption per BMI or sex. About 81.4% consumed fast food more than twice per week: 5.8% = more than once per day, 16.6% = once a day, 31.4% = 4–6 times per week, and 27.6% = 2–4 times per week. About 3.3% consumed fast food once per week, 13.3% once per month, and 2.0% once per year.

Significantly more women than men ate fast food once a month (16.8% vs. 4.4%, respectively; *P* < 0.001); however, significantly more men than women ate fast food once a week (7.1% vs. 1.8%, respectively; *P* < 0.001) and once a year (4.4% vs. 1.1%; *P* < 0.001). More men reported not eating fast food than did women (12.1% vs. 4.4%, respectively; *P* = 0.003).

Most participants (52.7%) started eating fast food before they could remember: 22.1% during elementary school, 10.5% during middle school, and 5.5% during high school. More men than women reported being introduced to fast food during high school (8.9% vs. 4%, respectively; *P* = 0.003; Figure 1).

**Table 1: Participants' sociodemographic and anthropometric characteristics (n=421)**

Variable	Women, mean±SD or n (%)	Men, mean±SD or n (%)	Total, mean±SD or n (%)
Age, years	20.50±2.47	22.16±4.13	20.99±3.14
Height, cm	158.71±6.14	173.89±7.20	163.18±9.47
Weight, kg	61.57±13.10	78.62±18.91	66.59±16.92
BMI, kg/m <sup>2</sup>	24.38±4.81	25.93±5.81	24.83±5.17
Marital status	Married	44 (14.8)	26 (21)
	Single	253 (85.2)	98 (79)
Mothers' education level	College diploma or less	132 (44.4)	61 (49.2)
	College degree or higher	165 (55.6)	63 (50.8)
Fathers' education level	College diploma or less	117 (39.4)	53 (42.7)
	College degree or higher	180 (60.6)	71 (57.3)
Family income, KD	I do not know	86 (29)	12 (9.7)
	≤1999	150 (50.5)	52 (41.9)
	≥2000	61 (20.5)	60 (48.4)
BMI	≤24.9	182 (61.3)	56 (45.2)
	≥25	115 (38.7)	68 (54.8)

SD=Standard deviation; BMI=Body mass index

### Fast-food preferences

Both sexes equally reported preferring beef or chicken burgers (women = 89.8% vs. men = 93.8%), followed by French fries (women = 77.2% vs. men = 79.6%) and pizza (women = 74.7% vs. men = 74.3) (all non-significant). The least favorite items were fish fillet and hot dogs; more men than women reported eating these (22.1% vs. 16.6%;  $P > 0.05$  and 24.8% vs. 14.4%;  $P = 0.014$ , respectively; Figure 2).

Most reported choosing the regular or medium portion of fast-food item (total response rate = 39.4% and 40.5%) male and female, respectively; however, significantly more women than men reported ordering the regular size (48.8% vs. 15.9%, respectively;  $P < 0.001$ ) and more men ordered the large size (38.9% vs. 4.9%, respectively;  $P < 0.001$ ). More than half reported ordering a regular soft drink with their order (62.8%) and 12.6% chose a diet soft drink (non-significant sex differences). The others were chosen < 3–5% of the time.

Further, a higher proportion of men compared to women thought the nutritional value of fast food as acceptable (27.7% vs. 15.8%, respectively;  $P = 0.032$ ). However, when other responses of the nutritional value of fast food were evaluated, there were no differences between the sexes [Figure 3]. With 44% of students reporting the

nutritional value of fast food to be poor, 18.8 reporting high nutritional value, while 18.1% did not know about its nutritional value or did not understand the term “nutritional value” [Figure 3].

### Motivators of fast-food consumption

Taste was most often reported as the motivation to consume fast food (46.7%), and women were more likely to report this than were men (49.8% vs. 38.9%, respectively;  $P = 0.005$ ). More men indicated that they eat fast food in response to an attractive advertisement (4.4% vs. 1.1%, respectively;  $P = 0.005$ ) or because of accessibility or availability (22.1% vs. 8.4%, respectively;  $P = 0.005$ ; Figure 4). Peer pressure, convenience, and lack of cooking skills equally affected both the sexes. Diversity of the menu and cost were the least chosen motivations.

Most indicated that fast food is usually consumed on the weekend (42.5%), while 16.3% consumed it mostly during the middle of the week, and 2.8% ate it during the beginning. However, more than one-third (38.4%) indicated no specific time [Figure 5].

Feelings after eating fast food did not differ per sex, with 43.7% feeling full, 23.4% guilty, 18.3% happy, 8.3% nauseous, and 6.3% tired. More than half (58%) reported that at least one of their parents does not agree with eating

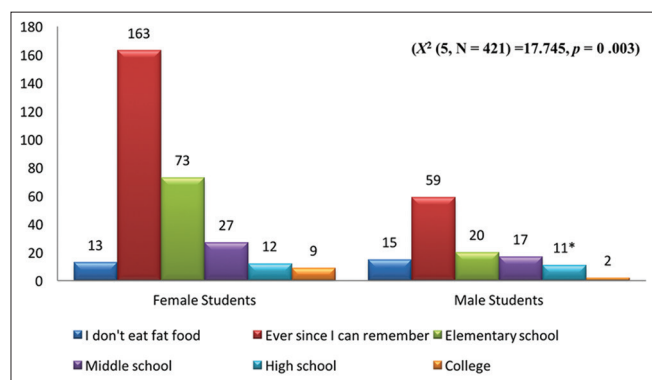


Figure 1: Comparing when female and male students began eating fast food (n = 421)

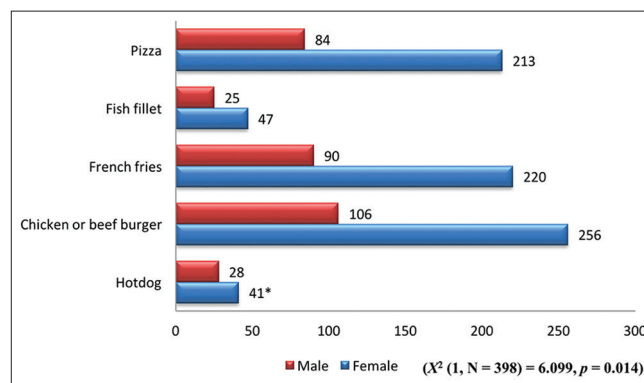


Figure 2: Participants' fast-food preferences per sex

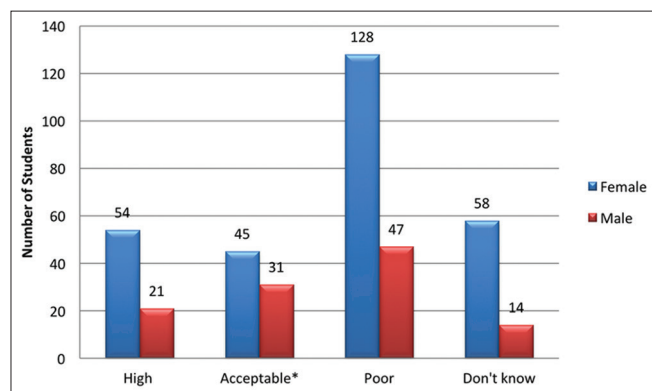


Figure 3: Students' beliefs about the nutritional value of fast food

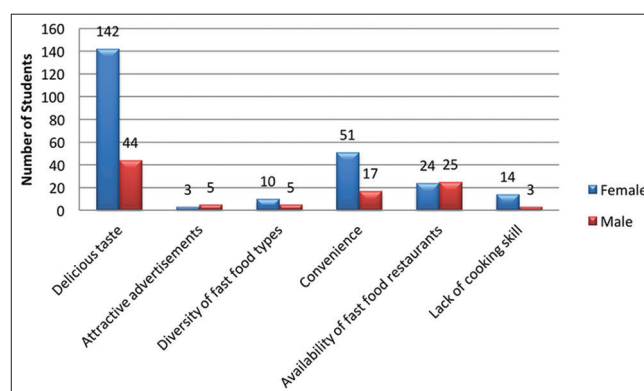


Figure 4: Students' reasons for consuming fast food

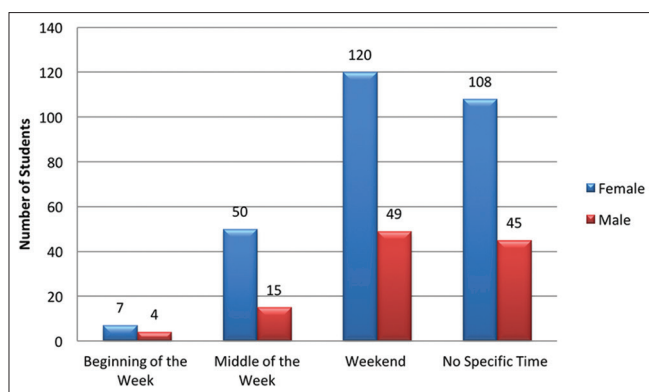


Figure 5: Students' fast-food consumption throughout the week

fast food, which was more significant among women than men (61.1% vs. 50.4%, respectively;  $P = 0.053$ ).

Most (69.8%) do not have someone at home to prepare traditional, home-cooked meals for them; however, 22.1% sometimes find someone. More men than women do not have someone at home to do so (14.2% vs. 5.6%, respectively;  $P = 0.009$ ). More men than women with a low monthly income cannot find someone to cook for them (15.9% vs. 4.1%, respectively;  $P = 0.026$ ). Among students with a BMI  $\geq 25$ , more men than women have no one to prepare home-cooked meals for them (17.7% vs. 4.4%, respectively;  $P = 0.004$ ).

## Discussion

This study indicated that most students consumed fast food more than twice a week, and we found no sex differences in consumption level. This frequency among college students is higher than earlier reports in Kuwait and elsewhere.<sup>[1]</sup> Specifically, in Saudi Arabia, ALFaris and colleagues revealed that 23% of adolescent and young Saudi girls consumed fast food at least twice weekly.<sup>[4]</sup> The high frequency of fast-food consumption “usually/often” has been positively associated with total fat intake and saturated fat intake, with an inverse association to vegetable intake in African-American adults.<sup>[24]</sup> The elevated consumption of fast food in Kuwait could be due to a society that enjoys the flavors of fast food, embraces its convenience, and lacks knowledge about the importance of eating nutrient-dense foods. Additionally, coming together over food is a key social component of Kuwait's culture.<sup>[25]</sup> Traditionally, this has been reserved to home-cooked meals; however, many now have fast-food type meals delivered to the home for social events.

This study did not find a direct association between being overweight/obese and fast-food consumption, in line with other studies examining college students and the general population.<sup>[26,27]</sup> In contrast, limited studies concerning college students found an association between fast food and BMI, including that a higher frequency of fast food and sugar-sweetened beverage consumption was associated

with a higher BMI.<sup>[28]</sup> Further, being obese/overweight was significantly associated with the frequency of fast-food consumption among female Saudi Arabian students who consumed fast food at least twice a week.<sup>[29]</sup> These contradictory findings could be due to the “effect modification” produced by the total caloric consumption, often not assessed (or adjusted for) in most studies investigating this relationship.<sup>[30]</sup> Hence, a causal relationship between the intake of fast food and BMI cannot be stated. However, an increase in fast-food intake leads to increased caloric intake, thus making individuals more susceptible to weight gain and obesity.<sup>[31]</sup> In addition, variations between studies may be attributed to their varying definitions of what constitutes fast food, duration of follow-up, age of participants, perceived body image, and genetic factors.<sup>[31-33]</sup>

The high prevalence of overweight/obesity in men (54.8%) could be due to other factors besides fast-food consumption such as sedentary lifestyle (which is enhanced by the hot climate minimizing outdoor activity), abundant food supply, afternoon napping, availability of domestic help, location of residence, family size and income, eating between meals, and frequent male gatherings (*Diwaniyas*) which often involve high-calorie foods.<sup>[14,34]</sup>

Most students were exposed to fast food before they could remember. Studies have shown that repeated exposure to foods creates a degree of familiarity and a link between early exposure and subsequent food acceptance.<sup>[35]</sup> This could explain why so many participants consumed fast food, regardless of weight.

In this study, many students were found to consume fast food on weekends. There are several possible explanations for this. First, as Kuwaiti families traditionally gather on weekends to share food and spend time together, the influence of parents and family members may affect students' food choices.<sup>[35,36]</sup> Second, without the distraction of study, students may have more time to indulge in “tasty” food cravings and could potentially consider fast food a reward for constrained eating throughout the week. Third, domestic workers (including cooks) are often given the weekends off, resulting in less meal preparation help at home. Fast food, therefore, becomes an easy alternative.

Previous studies among children and adolescents have shown that parental modeling, taste, availability, and other factors such as cost, convenience, and advertisements contribute to the high prevalence of fast-food consumption.<sup>[35-37]</sup> This study found that the primary reason was taste, with women being more inclined than men to order fast food based on taste. This finding is consistent with Al-Towyan's Saudi Arabian study.<sup>[38]</sup> Other studies conducted in Iran and Saudi Arabia also found that taste was the strongest determinant.<sup>[4,39]</sup> Consequently, it is essential to understand what compounds in fast food are positively associated with desired taste.

This study found more men than women were overweight or obese; however, it did not measure body composition, and BMI alone does not distinguish between excess fat, muscle, and bone mass.<sup>[40]</sup> Therefore, some men may have had more muscle mass and were thus categorized as overweight/obese when they were not. In our study, more men than women with a low family income could not find someone to cook for them, and among students who were overweight/obese, more men than women had no one to prepare home-cooked meals for them. These sex differences may indicate that overweight/obese men who consume fast food are doing so because of external environmental influences such as reduced family monthly income and a lack of food preparation support at home. This difference may not be as common among women because in some countries such as China<sup>[41]</sup> they are traditionally expected to cook.<sup>[42]</sup> Therefore, it is possible these beliefs also hold true in Kuwait.

## Conclusions

The findings of this study indicate that taste was the biggest motivating factor for fast-food consumption, even when home-cooked meals were available. Taste preference is difficult to overcome on a public health scale, because it is connected to feelings such as gratification. However, some research indicates that taste perception may be affected by the exposure to food brands throughout childhood.<sup>[43]</sup> Regulating the marketing of fast foods to which children and adolescents are exposed to may lead to young-adults and adults altering their taste perceptions of fast food. Additionally, university students may benefit from education on lower fat options and incorporating fruit and greens into their meals using existing fast-food menus. Students would also benefit from education on how to prepare traditional dishes using healthy and local ingredients and methods on easy-to-cook meals at home. Furthermore, nutrition education programs should promote nutritious foods, and fast-food campaigns should be enforced to educate students about the risks associated with excessive caloric intake from fast food. Lastly, the government should regulate the strategic marketing of fast foods. Future studies would benefit from assessing nutrition labeling efficacy in Kuwait and its impact on caloric intake.

This study had several limitations. First, data were collected from all the KU campuses, but not from the private universities, where students may have distinct attitudes/behaviors concerning fast-food consumption. Second, factors that may be associated with fast-food intake were not addressed and could have provided us with a better understanding of students' fast-food intake, including perceived body image, triggers for consumption (e.g., stress), dietary knowledge, and parental fast-food intake. Third, we did not identify student's proximity to fast-food restaurants, or whether fast-food consumption was done out-of-home or ordered

to be delivered to the home, as some research indicates a difference in obesity prevalence between the two.<sup>[44,45]</sup>

Strengths of this study include a representative sample of the KU students' prevalence and attitudes toward fast food and that this is the first study to examine university students' fast-food habits, highlighting some key concerns.

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## Conflicts of interest

There are no conflicts of interest.

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