



# Junk Food Consumption and its Health Effect among Medical Students in Baghdad, Iraq

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## ABSTRACT

Consumption of unhealthy food is a widespread phenomenon among young individuals, even those studying medicine. The heightened academic workload experienced by medical students has a detrimental impact on their dietary decisions, leading to a stressful lifestyle. This study aimed to assess the incidence of junk food consumption and its impact on the health of Iraqi medical students. A cross-sectional study was done from May 2024 to June 2024 in the medical department, which includes medicine, dentistry, and pharmacy. The study utilized a standardized questionnaire. The participants' ages ranged from 18 to 24. Data was collected to assess the knowledge and health impacts of consuming junk food. This included gathering information on eating habits, preferences, timing of intake, the influence of nutritional information on the choice of junk food, and any history of diseases in the past six months. A total of 628 students took part in the study, with 75.2% demonstrating awareness of the hazards and the significant correlation between obesity and fast food. However, a significant majority of participants, specifically 86.5%, consumed fast food. Out of the three students surveyed, 56.4% cited hygiene concerns, 16.8% claimed stomach problems, and 17.8% reported dental problems. A substantial correlation (p-value 0.009) was found between the eating of unhealthy food and feelings of tiredness or lethargy. The poll indicates that medical students possess a greater understanding of the health hazards associated with junk food, yet its intake continues to be prevalent. This suggests that there is a need for additional research on the dietary elements of our future health professionals. Furthermore, timely interventions should be implemented through education and training to raise awareness about the adverse impacts of consuming junk food in society.

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## Introduction

Junk food refers to unhealthy fast food that is convenient to prepare and consume. It lacks nutritional value. It is a high-calorie food that is rich in refined sugar, white flour, polyunsaturated fats, salt, and other food additives. However, it is lacking in protein, vitamins, and fiber [1]. People sometimes use the terms fast food and junk food interchangeably [2]. Fast food restaurants offer junk food, prepared quickly and effortlessly. However, due to its lack of important nutrients, it does not contribute to the maintenance of good health [3]. Diets that have a high content of sugar and fat can inhibit the production of a brain peptide called BDNF, which plays a crucial role in learning and memory function. Additionally, the brain has synapses that are essential for learning and memory. Excessive calorie consumption can disrupt the healthy formation of these synapses [4].

The overconsumption of unhealthy food is a significant factor contributing to non-communicable diseases, including obesity, hypertension, hypercholesterolemia, and hyperglycemia. Inadequate food handling practices during processing might result in microbial

contamination, which can cause gastrointestinal issues. Research has shown that the energy content of junk food exceeds the necessary dietary intake, while the amounts of micronutrients fall significantly below the recommended dietary allowance. This imbalance can contribute to the development of osteoporosis and other disorders [5]. The adverse effects of these perilous disorders can be partially elucidated by Consuming certain foods can lead to a range of metabolic issues, such as dyslipidemia, oxidative stress, low antioxidant levels, and the promotion of a pro-inflammatory state in the body [6]. Obesity poses a significant health challenge globally, particularly among adolescents and young adults. Diet is the primary risk factor contributing to the global prevalence of obesity [9]. Dietary risk factors for obesity and chronic diseases encompass the consumption of high-energy-dense and nutrient-poor foods that are high in saturated fat, added sugars, and sodium [10]. The presence of food retail establishments has a significant impact on individuals' eating habits and obesity rates in a given population [11]. Evidence for a

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causative relationship between dietary environment and obesity is limited [12]. Nevertheless, subsequent studies have validated a correlation between the consumption of meals from restaurants and takeaways [13].

Junk foods include donuts, cookies, chips, candy bars, fried foods, muffins, burgers, sandwiches, milkshakes, Coca-Cola, pizza, canned goods, and more. Junk food creates psychological dependence. Initially, they were given to children as a "reward" for being obedient, and this early condition persisted into adulthood. This leads to indulgence in overeating and causes changes in the brain that lead to extreme behavior that leads to compulsive eating and thus addiction to junk food [14].

Fast food culture is an emerging trend among the young generation. Availability, taste, marketing strategies, and peer pressure make them popular with children and teenagers. Fast-food restaurants are designed to maximize speed, efficiency, and compliance [15]. In the past decades, there has been a drastic increase in fast-food restaurants worldwide.

Eating out of home is becoming a common and popular dietary habit among university students [16]. Medical students generally are expected to have adequate knowledge regarding the effects of unhealthy dietary habits and act as a role model to the public. In spite of that, their busy curriculum, pressure of examinations, staying away from home makes them prone to intense stress which in turn leads to irregularity in diet, increased junk food consumption, increased intake of soft drinks, lack of exercise and lack of outdoor games each being considered independent risk factors leading to obesity [17]. The objective of the study is to evaluate medical students' patterns of eating junk food as well as their understanding regarding the negative effects of these foods on their health.

## Methods

### Study design

This study was conducted in Baghdad, Iraq. An electronic cross-sectional survey was conducted at the Iraqi medical universities (medicine, dentistry, and pharmacy) from May 2024 to June 2024. Data on medical students' knowledge, attitudes, and habits about fast food intake was obtained using a 26-item questionnaire, which was adapted from a prior study [18]. The data includes details on the frequency of fast-food consumption, factors influencing the preference for fast food, different types of fast-food consumption, number of fast foods consumed, the impact of nutritional information on fast food choices, oral health issues, history of gastroenteritis within the last 6 months, Abdominal discomfort or bloating and passing stool/moving bowels were detected.

### Study participant

This survey was completed by a randomized sample of 628 male and female students. Every medical student who was registered was eligible to take part in the trial. Participation was optional and the received data was handled with confidentiality. Students who had a medically confirmed chronic disease or were taking prescription medication were not included. The

quantification of responses involved assigning a numerical value to each response based on the accompanying question.

### Ethical approval

The study protocol received approval from the Regional Ethical Committee of the Faculty of Pharmacy, Al-Rafidain University College, in compliance with globally recognized medical research norms and ethical standards.

### Data analysis

The questionnaire findings were utilized to gather data, which was subsequently, evaluated using descriptive statistics. The data were inputted and analyzed using Microsoft Excel 2016. Numerical variables were represented as means and standard deviations, while categorical variables were evaluated in terms of frequencies and percentages. The chi-square test was utilized to evaluate whether those who consume junk food are more prone to experiencing distinct health issues compared to those who do not consume it. Additionally, the test aimed to determine if there were any significant differences in their knowledge and attitude. A P-value less than 0.01 was considered to be statistically significant.

## Results

Of the 628 participants, only 86 (13.7%) said their junk food consumption was zero. The majority of the study subject consumed carbonated beverages (n=510, 81.2%). Many of the students (n=404, 64.3%) admitted to consuming junk food 1-2 times per week. Most students (n=289, 46%) eat junk food at dinner time, i.e. 6-10pm, followed by (n=179, 28.5%), i.e. 2-6 pm. The favorite junk food was Pizza (n=213, 34%), followed by burgers (n=201, 32%), French fries (n=146, 23.2%) and sandwiches (n=68, 10.8%). The preference of junk food were Its taste and palatability 357(56.8%), followed by easy to eat and dispose (n=190, 30.2%), Feel satisfied (n=63, 10%) Cost (n= 18, 2.9%) (table 1).

**Table 1. Junk food consumption pattern among medical students.**

Variables	n(%)
Do you usually eat junk food?	
Yes	542 (86.3)
No	86 (13.7)
How many times a week you continue junk food?	
0	38(6.1)
1-2	404(64.3)
3-4	119(18.9)
More than equal to 5	67(10.7)
Do you drink carbonated beverages?	
Yes	510(81.2)
No	118(18.8)
How often? (n=510)	
Daily	134(26.3)
Weekly	251(49.2)
Monthly	125(24.5)

Why you prefer junk food?	
Feel satisfied, satiation	63(10)
Easy to eat and dispose	190(30.2)
Tasty palatable	357(56.8)
Cost price	18(2.9)
What junk food do you usually choose in a restaurant?	
Burger	201(32)
Pizza	213(34)
French fries	146(23.2)
Sandwich	68(10.8)
What time of a day you eat junk food?	
11-12 pm	115(18.3)
2-6 pm	179(28.5)
6-10 pm	289(46)
After 10 pm	45(7.2)

**Table 2. Pattern illustrating the health hazards of consuming junk food among medical students (n=628).**

Variables	n (%)
Do you have any oral hygiene problem?	
Yes	354(56.4)
No	274(43.6)
Type of oral problem? n(354)	
Discoloration	63(17.8)
Sensitivity	36(10.2)
Caries	128(36.2)
missing teeth	12(3.4)
Filling	115(32.5)
Do you have any history of gastroenteritis in the past six months?	
Yes	165(26.3)
No	463(73.7)
Do you often feel abdominal discomfort or bloating?	
Yes	104(16.6)
No	275(43.8)
Sometimes	249(39.6)
How often do you pass stool in a day?	
Daily	285(45.4)
Alternative day	243(38.7)
3 or 4 days	80(12.7)
Constipation	20(3.1)
Do you feel drowsy, poor concentration and lethargic?	
Never	39(6.2)
Often	337(53.7)
Sometime	252(40.1)

When asked about various health problems, 56.4% (354) students reported having problems with oral hygiene, 17.8% (63) complained of discoloration, 10.2% (36) complained of sensitivity, 36.2% (128) reported caries,

3.4% (12) have missing teeth and 32.5% (115) have filling, 26.3% (165) had a history of gastroenteritis in the past six months and 3.1% (20) were constipated, 39.6% (249) complained of occasional abdominal pain and bloating while 16.6% (104) complained more frequently also 53.7%(337) were often feeling drowsy and lethargic (table 2).

Knowledge of the health hazards associated with consuming junk food was reasonable in most of the students. Several questions were asked to analyze student's awareness about the junk food when asked about the diseases and disorders that may occur due to consumption of junk food the majority said it is the cause of obesity (91.2%), insulin resistance, type II diabetes (84.4%), and heart failure (93.1%), and (75.6%) said it increases the risk of NCDs others (Table 3).

**Table 3: Awareness of the health risks of junk Food consumption among medical students.**

Variables	n (%)
Junk food consumption leads to extra weight gain?	
No	108(17.2)
Yes	520(82.8)
Frequent consumption of junk food increases the risk of NCDs	
No	118(18.7)
Yes	475(75.6)
Don't know	35(5.6)
Junk food consumption strongly associated with insulin resistance & T2DM	
No	98(15.6)
Yes	530(84.4)
Junk food lead increase the risk of heart failure	
No	43(6.8)
Yes	585(93.1)
Junk food in the main cause of Obesity	
No	55(8.8)
Yes	573(91.2)
Junk food is carcinogenic for kidney & esophagus	
No	248(39.5)
Yes	380(60.5)

T2DM: Type II diabetes mellitus, NCD: Non-communicable disease

Nevertheless, most students acknowledge that their knowledge of nutrition does impact their choice to consume unhealthy food. Consuming unhealthy food has been discovered to substantially increase sensations of sluggishness and exhaustion. A substantial correlation (p-value 0.009) was found between the eating of unhealthy food and feelings of tiredness and lethargy. Furthermore, there was a significant correlation (p-value 0.050) between the awareness of non-communicable disease risks and the use of junk food among individuals (as shown in Table 4).

**Table 4: Association of the habits and knowledge and of medical students with junk food consumption n= (628)**

Characteristics	Don't eat junk food (n%)	Eat junk food (n%)	Odds ratio	P value	95% CI
Oral hygiene problem					
No	52(61.90)	302(55.61)	1.21	0.549	0.65-2.46
Yes	34(40.4)	241(44.38)			
Pass stool move bowels					
Daily Does not pass stool daily	110(58.20) 79(41)	230(52.15) 211(47.8)	1.27	0.560	0.50-2.03
Often feel abdominal discomfort					
No	42(48)	209(38.4)	1.53	0.701	0.61-1.89
Yes	44(52)	335(62.6)			
Experienced gastroenteritis in past six months					
No	69(78)	395(72)	1.53	0.665	0.76-2.04
Yes	17(22)	149(28)			
Feel drowsy/lethargic					
No	16(18.6)	25(4.6)	5.5	0.009	2.20-12.01
Yes	70(81.4)	519(93.4)			
FF eating may lead to NCD					
No	13(25)	104(19)	0.74	0.050	0.19-1.99
Yes	73(75)	440(81)			
Education can change the behaviors towards FF					
Agree	17(26.5)	114(31)	0.58	0.432	0.87-3.76
Disagree	70(73.5)	276(69)			

CI: confidence interval, FF: fast food, NCD: Non-communicable disease

## Discussion

Fast food has been a prevalent component of the dietary habits of college students, particularly in emerging nations. This study examined the understanding and actions of medical students regarding unhealthy diet and its effects on health. The present study evaluated the dietary habits of medical students on the consumption of unhealthy food. The underlying premise is that due to their extensive understanding of health matters, medical students are expected to exhibit a reduced likelihood of engaging in harmful eating practices. Contrary to expectations, our findings demonstrated that a significant proportion of medical students engage in the consumption of unhealthy food, while being cognizant of its detrimental impact on their well-being. The findings of this study align with previous research, indicating that the eating habits of medical students are comparable to those of non-medical students. In fact, medical students may even have a higher tendency to consume unhealthy food [19].

The findings of this study are in keeping with previous research, which indicates that the eating habits of medical students are not distinct from those of non-medical students. In fact, medical students are even more prone to consuming unhealthy food [19]. Unsurprisingly, medical students possess ample knowledge regarding the detrimental consequences of consuming unhealthy food; nonetheless, they fail to implement this knowledge into their own lifestyle. Children and adolescents have a higher prevalence of consuming junk food compared to other age groups [20]. This is worrisome since maintaining a poor diet during infancy and adolescence might continue into adulthood, hence raising the

likelihood of developing metabolic diseases [21]. The high salt level in junk meals is the primary cause of cravings and excessive consumption of these items. Consuming foods rich in fat and sugar stimulates the brain's reward circuits and increases dopamine signaling during adolescence, according to research [18]. In this investigation, taste preference was the primary determinant for choosing junk food. Previous investigations have also observed this phenomenon, albeit without a specific focus on medical students [22]. Complex changes in the reward circuitry of adolescents' brains may be the cause of their preference for junk food [23]. A considerable proportion of students in our survey rationalized their inclination towards junk food due to its convenience in consumption and disposal. Medical students' daily time constraints may contribute to this tendency. The current study found that students consume junk food at a prevalence of 86.3%, higher than the rates reported in studies conducted in Jordan (59.4%) [16] and Michigan (28%) [24]. Lower than a study conducted in China (97.5%) [25] and a study in Andhra Pradesh, India (100%) [26]

This finding serves as a concerning indication of the prevalent bad habits among young people, since junk food consumption is increasing all over the world. No studies measuring junk food prevalence among university students in Iraq was found. However, comparing the findings with research from other Arab nations with comparable eating cultures, we discovered that two studies conducted in Kuwait and Egypt found that 81.4% and 50.5% of university students, respectively, consume unhealthy food [27, 28].

Similarly, two more studies from Saudi Arabia and Lebanon showed that 74.5% and 58.7% of university students consumed fast food 1-2 times/week, respectively [29,30]. These numbers indicate that junk food consumption is increasingly becoming prevalent among the youth in Arab countries, including Iraq.

The study revealed that pizza was the most preferred junk food (n = 213, 34%), followed by burgers (n = 201, 32%), French fries (n = 146, 23.2%), and sandwiches (n = 68, 10.8%).

Palatability was the primary factor driving the consumption of junk food (56.8%) in our study, which aligns with the findings of a Saudi Arabian study [22]. Time restrictions and the operating hours of food establishments have led to a preference for junk food consumption in Iran (79.7%) and Bangalore, India [17].

This finding contradicts the findings of studies conducted in Egypt [1] and Australia [32], which also found that flavor significantly influences the desire for junk food. The primary factors driving junk food consumption among the study participants were the appealing taste and palatability (56.8%), as well as the convenience of being easy to consume and dispose of (30.2%). A smaller percentage of individuals (10%) reported consuming junk food for the purpose of feeling fulfilled and satiated. The literature demonstrates comparable rationales with varying sequences [33, 28, 34, 35]. These variations can be attributed to distinct study environments. On the other hand, the current respondents mention cost and price the

least, a finding that contradicts previous studies [36, 34] and aligns with a Jordanian study [16].

Soft drink use was a notable contributing factor to the development of overweight and obesity. Consuming fast foods and soft drinks leads to weight gain due to their high calorie content. The user's text is [26]. College students most frequently choose carbonated soda when ordering fast food meals, according to Shree et al. [35]. The present study yielded a similar finding. A study in Australia revealed that 25% of students frequently choose soft drinks, while this particular survey revealed that the majority of students (81.2%) preferred carbonated beverages [32].

Due to their time constraints, the student group consumed a greater amount of unhealthy food compared to other groups. Multiple studies have also demonstrated that students consume unhealthy food at a frequency of more than two times per week, which aligns with our own findings [31, 37]. Students are known to have a preference for fast food due to a variety of factors, including the ability to socialize with friends, the enhanced taste, the chance to go out, the convenience of preparation, and the absence of cooking skills [1]. This study found that students in Abha-Aseir, Saudi Arabia, Baroda, India, and Beijing, China had a higher level of awareness regarding the health hazards associated with consuming junk food [38, 39, 40]. However, despite having a high level of awareness about the negative health effects of junk food, there was a significant gap between the knowledge and actual behavior of the students in this study. Similar to a study in Patna, India [35], individuals in this study were aware of the harmful effects of junk food, yet they continued to consume it due to factors such as taste preferences, strong desire, and convenience.

Parents of college students should be mindful of their dietary habits and behaviors in order to prevent the dissemination of such behavior to other family members. It is important to motivate students to examine the ingredients and calorie content listed on food packaging and to differentiate between meals that are nutrient-rich and those that are high in energy. Additionally, young individuals should establish healthy, responsible, and sustainable lifestyle choices. It is necessary to distribute school- and university-wide messages across the whole curriculum.

### Limitations

According to the cross-sectional nature of the study methodology, it is challenging to apply the findings to the whole population. Furthermore, this study specifically focuses on the eating habits of college students from Iraqi medical universities (medicine, dentistry, and pharmacy) located in Baghdad, with a particular emphasis on their consumption of unhealthy food.

Given that the consumption patterns of junk food exhibit variations across different locations to validate the findings of this study we need extensive multicenter investigations, with high sample sizes.

## Conclusion

The study revealed a significant disparity between students' understanding of fast food and their actual consumption of it. Research findings indicate that medical students frequently consume fast food, despite being aware of its detrimental implications. Disseminating nutritional knowledge and fast-food information in healthcare settings with parental participation and consideration of national assessments and pertinent public, social, and national aspects can be beneficial. Furthermore, it underscores the imperative need for educational programs. Despite being aware of the adverse consequences, the consumption of fast food is prevalent among medical students. There is a large discrepancy between students' knowledge of junk food consumption and their actual consumption. University students present a promising demographic for implementing instructional and support initiatives aimed at enhancing their knowledge and understanding of nutritious eating choices.

### Recommendations

We recommend for encouraging good eating habits and providing education about unhealthy meals might decrease the use of fast food and enhance students' dietary practices. Nutritious snacks can serve as substitutes for unhealthy eating items at food establishments. The government and the media should actively endorse and advocate for such platform. Also, establishing substantial charges on manufactured and imported pre-packaged food goods. Food nutrition labeling is mandated to enhance awareness and maybe restrict the amount of food that kids order.

### Conflict of interest

There are no financial, personal or professional conflicts of interest to report.

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