

# Lifestyle and Dietary Habits Among Private College Students: A Cross-Sectional Study in Iraq

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## Abstract

**Background:** Students' lifestyles and eating habits can be disturbed due to their busy work schedule. **Objectives:** This study is aimed to assess the prevalence of healthy habits among students from the private colleges of pharmacy and Physical Education Sport Sciences in Iraq. **Materials and Methods:** A total of 358 students of Al-Mustaqbal University in Babylon province, Iraq were participated in this cross-sectional study. Face-to-face interviews were conducted using a predesigned questionnaire, which includes questions on the student's sociodemographic information, weight status, meal habits, smoking status, alcohol use, fried food consumption, and overall fruits and vegetables intake. The Statistical Program for the Social Sciences (SPSS) software was used to determine descriptive statistics. **Results:** Students' body mass index (BMI) revealed that 2.9% of male students were underweight, 51.2% were normal, and 37.3% were overweight, whereas 6.4% of female students were underweight, 64% were normal, and 26.4% were overweight. Eating irregularly was highly reported between females and males ( $P < 0.001$ ). More students in sports science eat breakfast daily compared with students in pharmacy. Of the total sample, 37.1% and 44.4% of students reported regularly snacking and consuming fried food, respectively. Female student smoking was reported ( $P < 0.001$ ). Students reported rarely drinking alcohol. **Conclusions:** The findings of this study indicated that students attending private college had lifestyle behaviors that range from healthy to unhealthy. These behaviors were potentially affected by gender and college type.

**Keywords:** Body mass index, eating habits, Iraq, meal skipping, smoking and alcohol consumption, students' lifestyle, vegetable consuming

## INTRODUCTION

Lifestyle factors, such as physical activity, eating regular and healthy meals, and maintaining a healthy sleep habit, are directly associated with better health. A healthy lifestyle promotes daily physical activities, which, in turn, enables improved mental and cognitive abilities in young adults.<sup>[1]</sup> Moreover, it prevents diseases such as cardiovascular disease and diabetes.<sup>[2]</sup> Eating breakfast has been shown to boost energy, improve attention and cognitive capacity, and may lower the risk of becoming obese. However, the student may delay or even skip breakfast<sup>[3]</sup> due to decreased appetite, a lack of available food, financial hardship, and a lack of time.<sup>[4]</sup>

The consumption of fried foods, especially fried chicken and fried fish often is classified as an unhealthy habit, because a high level of intake of these foods is found associated with

cardiovascular disease, cancer, and mortality.<sup>[5]</sup> It has been established that smoking among college students is linked to several different factors. For example, some demographic factors that correlate with smoking in this cohort are being female, being of the white race, being in their first year of college, and having parents with college degrees. According to Reed *et al.*'s (2007) research, residing in a co-ed dorm increases the likelihood of smoking, whereas living in a substance-free dorm is associated with a lower smoking prevalence. It has been demonstrated that smoking can

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**Submission:** 01-May-2023 **Accepted:** 06-Jul-2023 **Published:** 23-Dec-2024

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**How to cite this article:** Owadh HK, AbdElrahman M, Salem KH, Kadhim ZF, Malik SA, Fadhil AQ, *et al.* Lifestyle and dietary habits among private college students: A cross-sectional study in Iraq. Med J Babylon 2024;21:921-7.

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10.4103/MJBL.MJBL\_493\_23

be predicted by psychological factors such as a depressed mood, high-stress levels, favorable attitudes toward smoking, effective affect management, high smoking result expectancy, and rebelliousness. It has also been extensively documented that the relationship between the use of alcohol and cigarettes is prevalent in populations of college students. For example, one recent study at a university in Canada found that nearly three-quarters of the student participants (74%) admitted to smoking when drinking. However, early-onset smokers have higher rates of heavy episodic drinking (i.e., consuming five or more drinks on any occasion) than late-onset students (i.e., college initiators). However, serial severe drinking rates among late-onset smokers' approach those of early-onset smokers by the time these individuals reach their senior year in college. According to a number of research findings, severe episodic drinking and marijuana use during college years are also strong predictors of later cigarette smoking. Effects of cigarette smoking and alcohol drinking on students' academic performance are not limited to school pupils but also university students. Bad habits constitute two of the most common environmental causes of cancer and other lifestyle-related disorders.<sup>[6,7]</sup> Fruits and vegetables in various colors, such as dark green, yellow, red, or orange, offer the body several health benefits. Including the provision of essential minerals, vitamins, and fibers, as well as lower cholesterol and glucose levels, both of which help protect individuals from the onset of various diseases. Because of this, educational institutions that deal with food recommend to students of all academic levels that they make fruits and vegetables a regular part of their diet. College students are the perfect people to target with interventions to increase their consumption of fruits and vegetables. The following are the two primary justifications: to begin, college students undergo changes in their bodies, minds, social lives, and emotional states, all of which can prompt them to adopt new behaviors. Any form of nutrition instruction or intervention that is tailored to their stage of development has the potential to foster the formation of new, more beneficial behaviors. Second, because of their increased growth rate, they have a higher demand for both energy and nutrients, particularly the vitamins and minerals that are primarily found in fruits and vegetables. Therefore, providing people in this community with nutritional education would be beneficial.<sup>[8]</sup>

Throughout their time in college, students have likely picked up or developed many new nutritional habits. They will go on to careers as pharmacists, teachers, lawyers, and officers, and their behaviors will likely impact society in the future.<sup>[9]</sup> This study aimed to compare students majoring in pharmacy, whose academic success is dependent on their mental ability, with students majoring in sports science, whose academic success is dependent on their physical status. Focus on how each group's excellent and harmful lifestyle choices affect their nutritional status regarding their excellent and harmful lifestyle practices, focusing on their nutritional status.

## MATERIALS AND METHODS

### Study design and participants

This was a cross-sectional study conducted between January 2 and March 20, 2022. We recruited 358 Iraqi students enrolled in Al-Mustaqbal University from two colleges mainly: Pharmacy and Physical Education Sport Sciences (PESS).

Face-to-face interviews were conducted using a questionnaire translated and adapted from a Bulgarian study among colleges. Although this questionnaire, firstly, was used and standardized on Japanese and South Korean students by Sakamaki *et al.*, it does not contain country-specific questions.<sup>[10]</sup> The questionnaire consisted of 12 closed questions. Five questions evaluate the timing of meals and the frequency of meals. Two questions ask about the consumption of fruits and vegetables; two ask about the cooking method and the food type preferred for balanced nutrition. For example, one asks about eating with friends and family, another asks about smoking, and another asks about drinking alcohol.

This study was approved by the Research Committee of the Pharmacy College, Al-Mustaqbal University. Students provided their verbal informed consent before writing answers to the questionnaire.

### Weight status

Participants' height and weight were assessed to determine their body mass index (BMI)  $\text{kg/m}^2$  ( $\text{BMI} = \text{weight} [\text{in kg}] / \text{height}^2 [\text{in m}^2]$ ), then BMI values were classified into weight status categories: underweight group ( $\text{BMI} < 18.5 \text{ kg/m}^2$ ), normal group ( $\text{BMI}, 18.5\text{--}24.9 \text{ kg/m}^2$ ), overweight group ( $\text{BMI}, 25\text{--}29.9 \text{ kg/m}^2$ ), and obese group ( $\text{BMI} > 30 \text{ kg/m}^2$ ).<sup>[11]</sup>

### Statistical analysis

The Statistical Program for the Social Sciences (SPSS) version 28 was utilized for the coding and entering the data (IBM Corp., Armonk, NY). The data were summarized using the mean and standard deviation for quantitative variables. For categorical variables, the data were summarized by using frequencies (number of instances) and relative frequencies (percentages). The unpaired *t* test was used to compare the groups.<sup>[12]</sup> The Chi-square test was used to compare categorical data. For example, the exact test was employed instead in situations where the anticipated frequency was lower than five.<sup>[13]</sup> Therefore, *P* values that were lower than 0.05 were taken into consideration to be statistically significant.

## RESULTS

### Comparison of age and gender between two colleges

This study included 358 college students, 137 females, and 221 males, mean age of  $22.78 \pm 3$  years old. Females prefer pharmacy, whereas males enrolled in the PESS

**Table 1: Distribution of study participants according to colleges and gender**

Colleges	Age years (mean $\pm$ SD)	Total	Female	Male	P value
Total	22.78 $\pm$ 3	358 (100%)	137 (38.2%)	221 (61.7%)	<0.001
Pharmacy	21.40 $\pm$ 1.991	214 (59.7%)	124 (57.9%)	90 (42.1%)	<0.001
PESS	24.91 $\pm$ 3.076	144 (40.2%)	13 (9%)	131 (90.9%)	<0.001

PESS: Physical Education Sport Sciences

**Table 2: Distribution of participants according to BMI groups and gender (*n* = 358)**

	Underweight (%)	Normal (%)	Overweight (%)	Obese (%)	P
Total	4.1	55.9	33.2	6.5	<0.05
Female	6.4	64	26.4	3.2	
Male	2.9	51.2	37.3	8.6	

**Table 3: Distribution of participants according to BMI groups and colleges**

Nutritional status		College		P value
		Pharmacy	PESS	
		%	%	
BMI	Underweight	4.0	4.4	0.421
	Normal	58.8	51.5	
	Overweight	32.2	35.3	
	Obese	5.0	8.8	

PESS: Physical Education Sport Sciences

college more than females (57.9% and 90.9%, respectively) ( $P < 0.001$ ) [Table 1].

### The BMI of the female students in the class

The BMI of the female students showed a count of underweight students (6.4%), normal-weight students (64%), overweight students (26.4%), and obese students (3.2%). The results for the nutritional status of male students were significantly different from those of female students. While the percentage of male students, who were underweight, was lower than the percentage of female students, who were underweight (2.9%), the rate of male students who were obese was higher than the percentage of female students who were obese (8.6%) ( $P < 0.05$ ) [Table 2].

The data in Table 3 demonstrate that there are no significant differences across the colleges; however, as an observation, the data in Table 3 reveal that the percentage of students in the PESS College who have a normal weight is lower (51.5%) than in the Pharmacy Colleges (58.8%). In addition, in contrast to the pharmacy, this college has a significantly greater number of overweight individuals (35.3%) and obese (8.8%). Generally, the percentage of people of normal weight can be found in all colleges (55.9%) ( $P = 0.421$ ).

### Gender influences the lifestyle and eating habits of the study

Participants in terms of the regularity of their meals, we discovered that even 69.5% of pharmacy students and

44.4% of PESS students had irregular meal patterns. As a result, we determined that the group with the most success was the PESS students, who took breakfast regularly at a rate of 55.6% ( $P < 0.001$ ) [Table 4]. In all, 59% of the participants, particularly females (73.5%), admitted to randomly eating their meals ( $P < 0.001$ ) [Table 5].

For main meals and snacks, according to the findings of this study, only 36% of students consume three main meals daily. However, the percentage of female students who consume three main meals daily is significantly higher than the percentage of male students who consume three main meals daily ( $P = 0.001$ ); furthermore, 40.1% of females and 35.3% of males consume snacks daily ( $P < 0.05$ ), as demonstrated in Table 5. Regarding the colleges, we found that 41.9% of pharmacy students and 28.1% of PESS students consume three significant meals daily ( $P < 0.05$ ). In addition, we found that 38.6% of pharmacy employees and 34.2% of PESS employees consume snacks daily ( $P < 0.05$  for both groups), as shown in Table 4. Regarding the findings of a survey on the consumption of fried foods by college students, we observed that 44.4% of students consumed fried food daily, with females making up 38.0% of that total and men making up 48.6% ( $P < 0.05$ ), as shown in Table 5.

Table 4 contains the following questions on eating vegetables, and fruit data show that 54.8% of PESS students consume colorful veggies, but only 41.1% of pharmacy students consume colored vegetables ( $P < 0.01$ ). Despite nonsignificant variations in fruit intake between genders and colleges, 50% of PESS students consume fruits regularly. In terms of the students' histories of smoking, we discovered that the percentage of PESS students who smoked was the most significant (53.8%), whereas the rate of pharmacy students who smoked was the lowest (18.6%) ( $P < 0.001$ ) [Table 4]. In addition, most people who engage in this practice are males, as 51.6% of male students smoked compared with only 2.2% of female students who smoked ( $P < 0.001$  for both groups), as shown in Table 5. Regarding alcohol use, the results of the questionnaire that we administered revealed that 9.6% and 2.5% of male students majoring in PESS and pharmacy, respectively,

**Table 4: Lifestyle and eating habits among the study participants depend on college**

Question	Level	College		P value
		Pharmacy	PESS	
		%	%	
Do you take your meals regularly?	Always regular	30.5%	55.6%	<0.001
	Irregular	69.5%	44.4%	
Do you always take breakfast?	Rarely	31.0%	14.6%	<0.001
	Daily	31.0%	57.6%	
	One or two times per week	17.4%	10.4%	
	Three or four times per week	20.7%	17.4%	
How many times do you eat meals except snacks during the day?	One time	13.5%	20.5%	0.044
	Two times	31.6%	35.6%	
	Three times	41.9%	28.1%	
	Four times	13.0%	15.8%	
How often do you take snacks apart from regular meals?	Rarely	18.6%	31.5%	0.024
	Daily	38.6%	34.2%	
	One or two times per week	22.3%	14.4%	
	Three or four times per week	20.5%	19.9%	
How often do you eat green, red or yellow colored vegetables?	Rarely	16.8%	20.5%	0.006
	Daily	41.1%	54.8%	
	One or two times per week	18.2%	13.0%	
	Three or four times per week	23.8%	11.6%	
How often do you take alcohol?	Rarely	5.1%	12.3%	<0.001
	Never	92.6%	78.1%	
	Two or three times per week	2.3%	9.6%	
	Current smoker	18.6%	53.8%	
Please state your smoking history	Nonsmoker	81.4%	46.2%	<0.001

PESS: Physical Education Sport Sciences

consumed alcohol two or three times weekly ( $P < 0.001$ ), as seen in Tables 4 and 5.

### Participant distribution based on breakfast time groups and colleges

According to the findings, 14.5% of students have breakfast between 8 and 9 in the morning. In comparison, 34.9% of students eat breakfast consistently between 9 and 11 in the morning. Regarding the college colleges, 47.1% of students majoring in pharmacy eat breakfast between 9 and 11 in the morning. In comparison, 47.7% of students majoring in PESS eat breakfast between 7 and 9 in the morning ( $P < 0.001$ ), as shown in Table 6. In addition, the genders' responses showed that most female students (52.1%) have breakfast between the hours of 9 and 11 AM. In contrast, the majority of male students (52.2%) eat breakfast earlier, between the hours of 6 and 9 AM ( $P < 0.001$ ) as shown in Table 6.

## DISCUSSION

This research aimed to investigate the dietary habits and lifestyle choices made by students attending Al-Mustaqbal University. To the best of our knowledge, investigations of this kind on the behaviors of college students in Iraq are pretty uncommon. Most of the students that took part

in our research were from the city of Babil, although many were from other parts of Iraq.

We discovered a difference in the proportion of males and females studying in each college, with females preferring Pharmacy Colleges and males preferring PESS Colleges. That might be because female pharmacists report higher levels of work satisfaction than male pharmacists, or it could be because of the influence of local cultural variables.<sup>[14]</sup> For example, the nutritional status of students has shown that obesity and overweight problems are more apparent in males than in females; to put it another way, female students are healthier than their male counterparts. Other articles have previously discovered this fact in various locations worldwide.<sup>[15]</sup> Furthermore, it has been shown that female students at Al-Mustaqbal University have a lower average BMI than male students, which may be due to the following findings:

- 1 Among college students, males make up the majority of cigarette users and alcohol consumers. In their research, Raptou and Papastefanou<sup>[16]</sup> found that smoking increased body weight and concluded that quitting smoking was a crucial step in preventing obesity.
- 2 Even though females reported consuming more great snacks daily, more men than women reported eating fried foods. High rates of overweight and obesity in



**Table 5: Lifestyle and eating habits among the study participants depend on gender**

Question	Level	Gender		P value
		Male	Female	
		%	%	
Do you take your meals regularly?	Always regular	48.6	26.5	<0.001
	Irregular	51.4	73.5	
Do you always take breakfast?	Rarely	16.6	37.2	<0.001
	Daily	51.6	25.5	
	One or two times per week	12.9	17.5	
	Three or four times per week	18.9	19.7	
How many times do you eat meals except snacks during the day?	One time	19.0	12.4	<0.001
	Two times	30.3	38.0	
	Three times	31.2	43.8	
	Four times	19.5	5.8	
How often do you take snacks apart from regular meals?	Rarely	27.1	16.8	0.020
	Daily	35.3	40.1	
	One or two times per week	15.4	25.5	
	Three or four times per week	22.2	17.5	
How often do you eat fried food?	Rarely	12.3	7.3	0.012
	Daily	48.6	38.0	
	One or two times per week	10.0	19.7	
	Three or four times per week	29.1	35.0	
How often do you take alcohol?	Never	80.1	97.8	<0.001
	Two or three times per week	8.1	0.0	
Please state your smoking history	Current smoker	51.6	2.2	<0.001
	Nonsmoker	48.4	97.8	

**Table 6: Distribution of participants according to breakfast time groups and colleges and gender**

Question	Breakfast time	Colleges		P value	Gender		P value
		Pharmacy	PESS		Male	Female	
		%	%		%	%	
When do you have breakfast?	6 AM	2.9	8.5	<0.001	6.5	3.4	<0.001
	7 AM	16.1	26.2		26.1	9.4	
	8 AM	13.8	21.5		19.6	13.7	
	9 AM	24.7	16.9		18.5	26.5	
	10 AM	22.4	16.2		16.3	25.6	
	11 AM	13.8	3.1		4.9	16.2	
	12 AM	5.2	5.4		6.0	4.3	

PESS: Physical Education Sport Sciences

men can be attributed partly to the high calorie and fat content of snacks that are essentially extra meals and fried foods.<sup>[17]</sup>

3. Already, women work hard to achieve and maintain a physically attractive and healthy physique.<sup>[18]</sup> It is possible that this factor contributed to the fact that 6.4% of the female students in our research were underweight. Concerning students' smoking habits, we discovered that over half of PESS students were smokers, but the percentage of smokers among pharmacy students was just below one-fifth. This was a significant difference. Primack *et al.*<sup>[19]</sup> popularized the use of tobacco via water pipe in addition to cigarettes

among collegiate athletes in the USA. However, one-third of our sample, or 33%, consisted of smokers. This percentage is significantly higher than the 24% of people who used tobacco at Cairo University,<sup>[20]</sup> whereas 30% of students at Tehran University and Tehran Medical University smoked.<sup>[21]</sup>

In contrast to the unhealthy behavior of smoking, the PESS students reported having a positive health habit of routinely consuming vegetables. Consuming vegetables, which are rich in water and fiber, as part of a healthy, well-balanced diet can help reduce overall calorie consumption, lowering the risk of becoming overweight and obese.<sup>[22]</sup> Breakfast consumption was another

positive practice common among the students in this division. The morning meal, breakfast, is the most crucial one of the day.<sup>[23]</sup> It gets a person mentally ready for all the day has in store. According to the advice of specialists, a person should never go more than 2 h after getting up before eating breakfast. Therefore, you will eat breakfast early if you get up early.<sup>[24]</sup> Even though 56% of students have breakfast after 9:00 AM, 57.8% of PESS students eat breakfast before 9:00 AM, PESS students enrolled with first class quickly, whereas 67.3% of pharmacy students ate the first meal after 9 AM, which means at class time, students either eat quickly and inadequately or skip breakfast, which may lead to decreases in academic and physical performance. Indeed, eating breakfast early will keep students' attention at the top and enhance mental performance and physical activity.<sup>[25]</sup>

## CONCLUSION

Healthy behaviors contributed to ideal BMI, high physical activity, and good academic performance among college students who followed healthy lifestyles. This study should alert males in all colleges about the danger of being overweight or obese. Men should prioritize having regular, nutritious meals and cut down as much as possible on snacking and fried food consumption. In other words, the diversity in the students' lifestyles largely depended on the gender of the students, with females having a BMI that was more conducive to good health. Despite positive findings about the consumption of breakfast foods and vegetables, one of the issues that outbreak PESS students is their usage of cigarettes. To our good fortune, the percentage of pharmacy students who smoke is among the lowest of all student populations. In addition, drinking alcohol was not a typical activity among college students. Another issue was raised when it was discovered that although female students generally have healthy bodies, they occasionally postpone or even decline to eat breakfast. This was particularly noticeable among pharmacy students.

## Acknowledgment

The authors would like to express their gratitude to Al-Mustaqbal University for their assistance, as well as their gratitude to all of the participants for their patience.

## Authors' contribution

Design by H.K.O.; supervision by H.K.O., M.A., and K.H.S.; materials by H.K.O., M.A., K.H.S., Z.F.K., S.A.M., A.Q.F., H.S.N., M.N.S., and S.F.A.H.; data collection and analysis by A.Q.F., H.S.N., M.N.S., and S.F.A.H.; interpretation by H.K.O. and M.A.; drafting by H.K.O., M.A., A.Q.F., H.S.N., M.N.S., and S.F.A.H.; and final approval by H.K.O. and M.A.

## Financial support and sponsorship

This project was made possible with financial support from Al-Mustaqbal University (grant no.: MUC-M-0222). The organization that provides financing is not involved in the planning or execution of any step studies.

## Conflicts of interest

There are no conflicts of interest.

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