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Comparing Eating Habits among Biomedical and Non-Biomedical University Students: A Study of Lifestyle Influences

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Abstract

Background and Aim: Eating habits are crucial for maintaining the health and well-being of university students. This study aimed to compare the eating habits of biomedical and non-biomedical students at Azad medical University in Tehran, Iran.

Materials and Methods: This descriptive-comparative study was conducted on 400 undergraduate students aged 18 to 26 years, who were studying biomedical and non-biomedical programs. Stratified random sampling was used for selecting the participants. Data were collected through self-reporting questionnaires, including a demographic questionnaire, lifestyle and the Food Frequency Questionnaire (FFQ).

Results: The prevalence of overweight and obesity was significantly higher among biomedical students (30.9%) compared to non-biomedical students (25.4%), (p =.014). Biomedical students reported higher consumption of rice (46.1% vs. 41.3%; p=.047), and bread (73.8% vs. 63.8%; p=.001), whereas 54.1% of non-biomedical students reported eating more sweet snacks daily. Also, non-biomedical students consumed fewer daily fruits compared Biomedical students (19.5% vs. 24.1%; p=.03) and also red and white meat (3.3% vs. 4.7%; p=.04) respectively. Both Groups of students were interested in drinking higher soft sugary drinks (38.4% and 39.8%; p = 0.001) respectively, while they ate fish never or less than once per month.

Conclusion: Despite their academic background, biomedical students exhibited higher rates of overweight. Non-biomedical students consumed more unhealthy snacks and fewer nutrient-dense foods. These findings highlight the need for more nutritional education in all students to promote healthier eating habits among them.

Keywords: Eating habits, socio-demographic factors, lifestyle.

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Introduction

A healthy diet plays an essential role in preventing chronic diseases responsible for people's morbidity and mortality [1]. The intake of specific foods has been associated overall health, various diseases and life expectancy [2]. For instance, a healthy lifestyle and high-quality diet can reduce the risk of diabetes and cancer to 50% and 40%, respectively [3]. In contrast, poor diet quality contributes to the development of many chronic diseases, including cardiovascular disease, type 2 diabetes and certain types of cancer [4]. A healthy diet includes a balance of fresh foods, fruits and vegetables, and foods rich in minerals and vitamins [1] . On the other hand, unhealthy diets combined with low levels of physical activity increase the risk of obesity [5]. Moreover, demographic, and environmental factors affect dietary habits especially in young adults [6]. For instance, higher levels of parental education, in particular the mother's education, are clearly associated with healthier dietary habits among adolescents [7].

College life is a critical time of dietary change [8], as students have to adapt to their new environment during the transition from secondary school to university [9]. Students' health can be adversely affected if they do not adjust appropriately [10]. Several studies have shown that university students struggle to maintain a healthy diet considering the lack of time and stress factors. However, eating more snacks and fast-food, using less fruit and vegetables, and having a higher intake of high-fat or high-calorie foods among students have been reported [11-13]. In this regard, the role of universities in providing healthy food on campuses, along with education on the importance of healthy eating habits, is increasingly important [14-15]. Previous study showed that eating habits usually affects by stress, short sleep durations, economic limitations, lack of time [16]. Moreover, information about the eating habits of university students may be helpful for health programs and education. Since biomedical students have enough information about a healthy lifestyle, they are expected to have healthy eating habits. On the other hand, the higher stress and pressure on these students compared to non-biomedical students may affect their healthy lifestyle. In this regard, we examined whether the field of study can be an essential factor in following a healthy diet and lifestyle among university students. The present study aimed to compare the eating habits of biomedical and non-biomedical students at Azad University in Tehran, Iran. Specifically, it thought to investigate how these dietary habits differ between the two groups.

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Methods

This descriptive-comparative study was conducted between March and June 2024 among students of the Islamic Azad University, Tehran Medical Sciences. The study population included undergraduate students from both biomedical (medicine, nursing, pharmacology n=209,) and non-biomedical majors (engineering, chemistry, environmental science n=191). The participants were selected using a multi-stage stratified random sampling method to ensure proportional representation from different faculties. In the first stage, insert number faculties were randomly selected from all available faculties at the university. Then, from each selected faculty, a number of academic departments were chosen, and within each department, specific classes from the insert which academic semesters or years were randomly selected. Students from these classes were invited to participate. In this study, exclusion criteria included students who were pregnant, lactating, or professional athletes, on specific medical or therapeutic diets. Data were collected using two main tools: 1. Demographic questionnaire (age, gender, height, weight, academic major, etc.). 2. Food Frequency Questionnaire (FFQ) and life style factors. For the FFQ, we used a short version of the European Health Survey 2014 that consisted of 15 food items assessing dietary intake over the past 3 months and life style factors. Lifestyle practices included ten questions related to regular meals, daily breakfast, frequency of meals with or without snacks, vegetables, fruits, and fried food consumption, and eating with others, particularly friends and family [17-18, 12]. The Questioners were asked as multiple- choice questions. To measure the daily food intake and assess students' eating habits. BMI [weight (kg)/ (height (m))^2] was calculated for all participants and classified as underweight (<18.5 kg/m2), normal weight (<18.5 to <24.99 kg/m2), overweight (<24.99 to <29.99 kg/m2) or obese (>30 kg/m2) according to World Health Organization (WHO) criteria. To determine the reliability, the questionnaires were given to 30 participants to complete and using the Cronbach's alpha method, a coefficient of 0.87 and 0.84 was obtained for the food frequency and lifestyle questionnaire [19]. The study was approved by the Ethics Committee of Islamic Azad University, Tehran Medical Sciences. Ethics Committee Number: IR.IAU.FARHIKHTEGANH.REC.1402.010. Written informed consent was obtained from all participants prior to data collection. SPSS software version 27 was used to analyze the data. Qualitative variables were expressed as percentages and quantitative variables were presented as mean± SD. To assess the normality of quantitative variables, we used the Kolmogorov Smirnov. Nonparametric Mann-Whitney U test was

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used for data that did not fit normality. For qualitative variables, we used chi square test. All reported P-values were calculated based on 2-sided tests and compared to a significant level of 5%; differences were considered statistically significant at P<0.05.

Results

Characteristics of the students are presented in Table 1. A total of 400 students (79.3% female, 20.8% male) were divided into the biomedical (n = 191) and non-biomedical (n = 209) groups, according to their field of study. Other demographic information is given in Table 1.

Table 1. Socio-demographic and physical activity variables

Variables		Total (n=400)	Biomedical students (n=191)	Non-biomedical students (n=209)	p-value
Age (year)		23.47± 2.14	24.08± 2.24	22.90±1.87	<0.001
Gender	Female	317(79.2)	142(74.3)	175(83.7)	0.014
	Male	83 (20.8)	49(25.7)	34(16.3)	
Marital status	Single	326(81.5)	147(77)	179(85.6)	0.029
	Married	71(17.8)	44(21.5)	30(14.4)	
	Divorced	3(0.8)	3(1.6)	0(0)	
Residence	Own	315(78.8)	155(81.2)	160(76.6)	0.273
	Rent	85(21.3)	36(18.8)	49(23.4)	
Living arrangement	With family	375(93.8)	173(90.6)	202(96.7)	0.013
	Alone	25(6.3)	18(9.4)	7(3.3)	
Monthly income (Dollar)	<200	93(23.3)	43(22.5)	50(23.9)	0.621
	200-400	211(52.8)	98(51.3)	113(54.1)	
	>400	96(24)	50(26.2)	46(22)	
Mothers' education	No formal education	21(5.3)	11(5.8)	10(4.8)	0.024
	Secondary school	52(13)	31(16.2)	21(10)	
	Diploma	162(40.5)	63(33)	99(47.4)	
	University degree	165(41.3)	86(45)	79(37.8)	
Fathers' education	No formal education	14(3.5)	5(2.6)	9(4.3)	0.062
	Secondary school	70(17.5)	28(14.7)	42(20.1)	

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	Diploma	136(34)	59(30.9)	77(36.8)	
	University degree	180(45)	99(51.8)	81(38.8)	
Family membership		3.75±1.22	3.69± 1.27	3.79 ±1.17	0.084
Tab Vitamin C & D intake		88(22)	56(29.3)	32(15.3)	0.001
Vegetarian		11(2.8)	5(2.6)	6(2.9)	0.124
Regular exercise (times/week)	One or less	202(50.5)	105(55)	97(46.4)	0.288
	2-3	130(32.5)	60(31.4)	70(33.5)	
	4-6	45(11.3)	17(8.9)	28(13.4)	
	daily	23(5.8)	9(4.7)	14(6.7)	
How much time do you usually spend exercising? (hour/week)	One or less	214(53.5)	109(57.1)	105(50.2)	0.586
	2-3	128(32)	56(29.3)	72(34.4)	
	3-4	41(10.3)	18(9.4)	23(11)	
	More than 5	17(4.3)	8(4.2)	9(4.3)	
Walking (times/week)	One or less	118(460	88(46.1)	96(45.9)	0.116
	2-3	111(27.8)	54(28.3)	57(27.3)	
	4-6	27(6.8)	18(9.4)	9(4.3)	
	daily	78(19.5)	31(16.2)	47(22.5)	
Walking (hour/week)	One or less	199(49.8)	96(50.3)	103(49.3)	0.136
	2-3	109(27.3)	49(25.7)	60(28.7)	
	3-4	58(14.5)	33(17.3)	25(12)	
	More than 5	34(8.5)	13(6.8)	21(10)	
Weight (kg)		64.87±13.37	66.37±15.29	63.50±11.19	0.002
Height(cm)		167.59±7.96	168.25±8.47	166.98±7.43	0.043
BMI	Underweight	31(7.8)	18(9.4)	13(6.2)	0.014
	Normal	257(64.3)	114(59.7)	143(68.4)	
	Overweight	98(24.5)	47(24.6)	51(24.4)	
	Obese	14(3.5)	12(6.3)	2(1)	

In this study, most of the biomedical (74.3%) and non-biomedical students (83.7%) reported taking main meals irregularly (p=0.021). In addition, 94.2% of biomedical and 92.3% of non-biomedical students ate breakfast daily, and only 8.4% of biomedical and 13.9% of non-biomedical students ate a meal daily for

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three times (p<0.0001). More than half of the participants in both groups reported taking snacks apart from regular meals (52.9% vs. 54.1%, p=0.027). Moreover, the study participants indicated they consumed colored vegetables (31.9% biomedical vs. 38.8% non-biomedical students, p=0.333) and fresh fruits (24.1% biomedical vs. 19.5% non-biomedical students, p=0.030) daily. Less than half of the non-Biomedical students reported eating more fried foods every day (38.3% vs. 25.7%, p=0.031). 66.5% of biomedical students and 61.7% of non-biomedical students ate with their friends and family (p=0.041). Additionally, 60.8 % of students were aware of the concept of nutritionally balanced food that it was not a significant difference between two groups of study. Furthermore, 27.7% of biomedical and 34% of non-biomedical participants wanted to change their eating habits. Moreover, table 2 presents a separate comparison of food consumption frequency between biomedical and non-biomedical students participating in this study.

Table 2: Comparison of food consumption frequency

Bread, Unsweetened cereals consumption	Total	Biomedical	Non-biomedical	*P*-value
Daily	54.5%	73.8%	63.8%	0.001
Three or four times/week	30.6%	17.8%	24.5%	
Once or twice/week	12.0%	6.3%	9.3%	
Rarely	2.9%	2.1%	2.4%	
Fast food consumption frequency				
Daily	34%	26.7%	30.5%	
Three or four times/week	25.8%	30.4%	28%	0.171
Once or twice/week	32.5%	30.4%	31.5%	
Rarely	7.7%	12.6%	10%	
Egg consumption				
Daily	2.9%	0%	1.5%	
Three or four times/week	80.9%	91.6%	86%	0.001
Once or twice/week	12.9%	3.7%	8.5%	
Rarely	3.3%	4.7%	4%	
Fresh fruits				
Daily	15.3%	24.1%	19.5%	
Three or four times/week	42.6%	30.9%	37%	0.030
Once or twice/week	35.9%	35.6%	35.8%	
Rarely	6.2%	9.4%	7.8%	
Fish consumption				
Three or four times/month	0.5%	0.5%	0.5%	0.042
Once or twice/month	25.4%	15.2%	20.5%	
Never or less than once/month	74.2%	84.3%	79%	
Meat consumption				
Daily	1.9%	4.7%	3.3%	
Three or four times/week	46.4%	37.7%	42.3%	0.047
Once or twice/week	45.5%	45.5%	45.5%	
Rarely	6.2%	12%	9%	
Legumes consumption				
Daily	0%	1.6%	0.8%	
Three or four times/week	37.8%	28.8%	33.5%	0.046
Once or twice/week	45.5%	46.1%	45.8%	
Rarely	16.7%	23.6%	20%	
Pasta, Rice, Potato consumption				
Daily	36.8%	46.1%	41.3%	
Three or four times/week	48.8%	35.1%	42.3%	0.047

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Once or twice/week	9.6%	13.6%	11.5%	
Rarely	4.8%	5.2%	5%	
Natural fruits/Vegetable juice consumption				
Daily	0%	0%	0%	
Three or four times/week	13.4%	1%	7.5%	< 0.0001
Once or twice/week	22.5%	40.8%	31.3%	
Rarely	64.1%	58.1%	61.3%	
Sweet snack				
Daily	10%	10.5%	10.3%	
Three or four times/week	41.6%	35.6%	38.8%	0.637
Once or twice/week	34.4%	37.2%	35.8%	
Rarely	13.9%	16.8%	15.3%	
Sausages				
Daily	34%	26.7%	30.5%	
Three or four times/week	25.8%	30.4%	28%	0.171
Once or twice/week	32.5%	30.4%	31.5%	
Rarely	7.7%	12.6%	10%	
Soft sugary drinks consumption				
Daily	8.6%	6.3%	7.5%	0.032
Three or four times/week	29.7%	33.5%	31.5%	
Once or twice/week	51.2%	40.8%	46.3%	
Rarely	10.5%	19.4%	14.8%	
Vegetables				
Daily	35.5%	31.9%	38.8%	
Three or four times/week	31.8%	34%	29.7%	0.333
Once or twice/week	20.3%	19.4%	21.1%	
Rarely	12.5%	14.7%	10.5%	

Discussion

The present study evaluated the socio-demographic characteristics, lifestyle behaviors, and eating habits among biomedical and non-biomedical students at Islamic Azad University, Tehran Medical Sciences. As highlighted in the abstract, the aim was to assess and compare the students' dietary patterns and related factors. To the best of our knowledge, this is the first study in Iran with this number of participants and level of details to explore university students' eating habits, making it a unique contribution to the literature.

Our results showed that the majority of both biomedical (74.3%) and non-biomedical (83.7%) students had irregular meal patterns. This prevalence is notably higher than findings in Saudi Arabia (49.5%) [11], Lebanon (38.6%) [7], Malaysia (42.4%) [14], and Spain (17.0%) [12].

The higher irregularity in Iranian students may be linked to academic pressure, time constraints, and lack of structured eating environments, suggesting the need for university-level interventions promoting regular meals. Breakfast consumption was reported by 94.2% of biomedical and 92.3% of non-biomedical students, The lower breakfast skipping in our study might reflect cultural values or family influence. The main reasons for skipping breakfast in other populations include lack of time, appetite, and parental supervision [20], which may also apply to a minority of our sample. Having sweet snack was reported daily by over half of the students (52.9% biomedical, 54.1%

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non-biomedical), which is similar to results from Malaysia (57.6%) [14], but higher than those in Saudi Arabia (34.7%) [11] and Spain (31–37%) [12]. The habitual snacking observed in our study could be due to the availability of low-cost snack options on campus and students' long hours at university. Furthermore, more than 80% of both groups consumed fewer than three meals per day. This trend reflects findings from previous research indicating medical students often skip meals [17], possibly due to time pressure and academic obligations. Daily vegetables intake was low in both biomedical (31.9%) and non-biomedical (38.8%) students, lower than Spain (51–71%) [12], but higher than the Middle East average (20.4%) [17].

Daily fruit intake was even lower, at 24.1% biomedical and 19.5%, non-biomedical، consistent with earlier studies reporting minimal fruit consumption among students [17]. Fried food consumption was common, with more than half consuming it daily or several times weekly. This is comparable to a Malaysian study reporting 73.5% frequent consumption [14] and higher than in Spain (23.0%) [12]. High intake of fried foods may reflect dietary habits ingrained from childhood or the popularity of fast food among university students. Eating with family or friends was reported by 66.5% (biomedical) and 61.7% (non-biomedical) students, less than in Malaysia (81.8%) [14]. Social eating may be associated with cultural norms or housing arrangements. In terms of nutritional knowledge, more than half of students in both groups correctly identified that a balanced diet includes a variety of food types. This is in line with results from the U.S., where 94.4% of students recognized the need for dietary variety and studies showing high awareness of what constitutes a healthy diet [9,20]. Despite this awareness, actual dietary practices remain poor, suggesting that knowledge alone does not ensure behavior change. Students in our study, like those in the U.S., consumed cereals (bread, rice, pasta) more frequently than fruits and vegetables. In addition, low intake of eggs, dairy and fish, and high intake of processed meats and sweets mirror global student dietary trends. Even though students, especially biomedical ones, are taught the consequences of unhealthy diets, this knowledge often does not translate into healthier eating. Contributing factors may include financial constraints, time for meal prep, and cultural preferences.

BMI classification showed 60.0% of biomedical and 68.4% of non-biomedical students were of normal weight, with overweight/obesity rates of 30.9% (biomedical) and 25.1% (non-biomedical). These data are comparable to Lebanon (24.7% overweight, 7.0% obese [7], but in other studies with obesity rates as high as 13.1% [18]. These differences may reflect

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variations in local dietary patterns, activity levels, and genetic predispositions.

Conclusion

This study provides valuable insight into the socio-demographic characteristics, lifestyle behaviors, and eating habits of biomedical and non-biomedical university students. Although the majority of participants fell within a normal BMI range, a notable proportion of students—particularly those in biomedical fields—were classified as overweight or obese, indicating a potential disconnect between health knowledge and behavior. Irregular meal patterns were prevalent among both groups, with over 80% of students reporting inconsistent meal timing. Emotional eating was also common; a significant number of students reported eating due to boredom, loneliness, or emotional distress, highlighting the psychological component of dietary behavior. Additionally, physical activity levels were generally low, with half of the students exercising or walking for less than one hour per week. Despite a relatively high rate of daily breakfast consumption, the frequency of fruit and vegetable intake and social eating habits varied significantly between the two groups. Non-biomedical students were more likely to eat with family and friends and consumed fried foods more frequently, while biomedical students were more likely to report healthier food choices but still struggled with overweight and obesity issues. Overall, these findings underscore the complexity of dietary and lifestyle behaviors among university students and emphasize the need for targeted interventions. Health education alone may not be sufficient; practical strategies that address emotional eating, promote regular physical activity, and encourage structured meal patterns are essential for both biomedical and non-biomedical students. Our study had several limitations. Our findings are limited to a sample of students from just one university that may not represent all university students in Tehran, Iran. Differences between genders might be another limitation we did not assess in the current study. Universities should consider integrating comprehensive nutrition and mental well-being programs into campus life to foster healthier behaviors and long-term wellness among students. The findings of this study may be used to develop health education and health promotion programs regarding the control and management of obesity and chronic diseases.

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Conflict of Interests

The authors have no conflict of interest to declare.

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