SPORTLOGIA
Scientific-Expert Journal of Anthropological Aspects of Sports, Physical Education and Recreation

Submitted: 02/04/2024
Accepted: 15/05/2024
Published: 27/05/2024
UDK: 796.012.1-057.875:159.922.4(569.3)

Original article

Eating Behavior and Body Composition Analysis of Active College Students: A Cross-Cultural Perspective between Lebanon and Foreign countries

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Abstract

This study aims to examine and compare the Nutrition Habits and body composition among Lebanese universities' active students according to gender characteristics, as well as to explore the effect of these Nutrition habits on body composition parameters. A sample of 200 students (100 males, 100 females) from the Lebanese University, faculty of education were studied. The standardized self-administered dietary questionnaire (Turconi et al., 2003) was used to assess the students' Nutrition habits. In addition, the method of multi-frequency bioelectrical analysis was used to assess five Body Composition parameters: (BH), (BM), (BMI), (PBFM), and (PSMM). Regarding Nutrition Habits, the Lebanese students showed satisfactory results and scored above average in all sections of the nutrition survey. The Frequency of food consumption showed that only (32%) of the students reported skipping fast food consumption, while (16.5%) of them reported skipping sweet consumption. Daily consumption of 2 portions or 200 g of Fruits and Vegetables was reported by (30.5% and 50%) of the students respectively. As for body composition, both male and female students were found in normal body weight (Males: BMI=23.12, and PBFM=12.0), and (Females: BMI=20.9, and PBFM=22.2). In addition, the Pearson correlation analysis that discovered multiple relations between the body composition measures and dietary habits determined low to moderate negative and positive significant correlations. Therefore, Nutrition Habits could predict body composition in Lebanese college students. Lebanese students might benefit from college nutrition educational programs to translate theoretical nutritional knowledge into a practical daily-life eating pattern.

Keywords: University students, Lifestyle, Nutrition Habits, Health

Citation: Fayad, F. (2024). Eating Behavior and Body Composition Analysis of Active College Students: A Cross-Cultural Perspective between Lebanon and Foreign countries. *SportLogia. 20(*1), 38-47. doi: 10.7251/SGIA2420038F

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Introduction

Diet and exercise have a big impact on weight management, fitness, health, and preventing chronic diseases (Kljajevic et al., 2021). Consuming more energy than required leads to the formation of fat, which is the cause of obesity. Eating only enough to maintain daily energy output might result in an unaltered accumulation of fat, injury to the body and mind, and a shorter life span (James, 2004). Due to obstacles including time management problems, stress from studies, environmental adjustment, and hectic schedules, young adults attending college tend to be less attentive to their health. According to Ganasegeran et al., (2012), they indulge in unhealthy behaviors such as smoking, eating fast food, skipping meals, and using the internet excessively. Sedentary behaviors like sitting, watching TV, and using computers have also been linked to weight growth and obesity (Ganasegeran et al., 2012; Meyer et al., 2008).

Body composition analysis is a sensitive component in biological understanding and an essential screening technique for managing nutritional and health status. It also indicates changes in health. (1992, Wang et al.; 2000, Ellis). According to Wang et al. (2004), "body cell mass serves as a biomarker of these processes and is altered by nutritional status, physical activity level, and disease state" (Wang et al., 1992; Wang et al., 2004; Ellis, 2000). Over time, poor eating habits have become more common among Arab adults and children (Rahim et al., 2014). Over the last few years, fast food has replaced the traditional Mediterranean diet as the main source of nourishment in Lebanon. As a result, the number of overweight and obese youth is rising (FAO, 2010).

Research from around the globe indicates that smoking, eating poorly, and not getting enough exercise are the three main health issues that college students face (Irwin, 2004; Steptoe et al., 2002). Studies (Deliens et al., 2015; Vella-Zarb et al., 2009; Yahia et al., 2016; Martins et al., 2021) have reported a significant prevalence of overweight in university settings. As far as we are aware, there are only two Lebanese research on university students who do not participate in sports that found that most of them had normal weights but poor eating habits (Assaf et al., 2019; Yahia et al., 2008).

Based on the aforementioned information, it can be said that a study is required to determine the profiles of dietary habits and body composition among active Lebanese university students and investigate the impact of dietary habits on body composition parameters based on gender characteristics. Dietary habits may be an independent variable that statistically significantly influences Lebanese university students' body composition quality. Knowing the dietary habits and body composition profiles of active university students in Lebanon is important for promoting overall health and well-being in this population. The study intends to better understand the dietary habits and body composition profiles of active university students in Lebanon to inform interventions and instructional initiatives aimed at enhancing physical fitness and nutritional habits.

Methods

Design of the study

This study is a cross-sectional descriptive study of a deductive quantitative research approach.

Participants

The study sample comprised two hundred (200) physically fit students, with a mean age of 22.1± 4.1 years. Of them, 100 were male and 100 were female. Both the anthropometric measurements and the online survey have been completed by all participants. They were selected from the Lebanese university's faculty of education, physical education department, and sports major. The participants had to be of college age and enrolled full-time in the three-year bachelor's degree programme in order to be eligible for participation. One was excluded if they were unable to participate in body composition assessments due to a significant accident, chronic disease, or handicap. The student affairs office assistant randomly selected students from the physical education and sports classes.

Measurements and Procedures

To get pertinent data, two procedures were used. Students were required to perform the anthropometric and body composition measurements after completing the Eating Habits questionnaire.

Step 1: The study assessed eating behaviors using a self-reported questionnaire (Turconi et al., 2003), with an emphasis on food consumption frequency, Eating habits, physical activity, dietary beliefs, and nutrition knowledge. Secrecy and anonymity were guaranteed by using Google Forms to administer the questionnaire. With statistically significant Pearson correlation coefficients and Cronbach's alpha ranging from 0.55 to 0.75, the results demonstrated adequate reliability.

Step 2- Following the completion of questionnaires, the InBody 270 analyzer (Biospace Co. Ltd., Seoul, Korea) was used to measure the following aspects of body composition: body height, weight, body mass index, percentage of body fat mass, and percentage of skeletal muscle mass. To ensure accuracy, participants stayed off meals and liquids for at least three hours before taking their measures while standing on a scale with only their hands and feet. Each subject's body mass was measured to the closest 0.1 kg while they were wearing light clothing. Standing height barefoot was measured using a wall-mounted stadiometer, which was accurate to within 0.5 cm. By responding to the first question on the questionnaire, participants submitted a consent form that verified their participation in the study.

Additionally, students were given the assurance that the data collected would be kept private and utilized only for scientific research. The information was gathered in 2021. The research protocol was authorized by the University of Belgrade's Faculty of Sports and Physical Education's Ethical Committee under the number 484–2 and was acknowledged in the Declaration of Helsinki (World Medical Association, 2013).

Statistical analyses

All of the statistical analyses were carried out using IBM's Statistical Package for the Social Sciences (SPSS, version 25). A significance level of $p < 0.05$ has been established. In descriptive statistics, the measures of central tendency and variability were presented by the mean, standard deviation (SD), minimum, maximum (max), and coefficient of variation (cV%). In addition, the inferential statistics included the Mann-Whitney U test, Pearson correlation, and the Chi-square analysis to determine the relations, significant differences, and predictions among the variables of both nutrition habits and body composition parameters of the Lebanese students.

Results

Anthropometric Measurements

As expected, male students tended to be heavier and taller than female students (Table 1 and 2). Male students had higher values for most BC parameters, contributing to their higher total body mass. The one exception is that women's body fat percentage is higher than men's (22.2% vs. 12.0%). Even enough the mean body fat percentage of women was higher than that of men, both genders' values were within the permissible range (10–20% for men and 18–28% for women) (InBody, 2018).

Table 1. Descriptive Statistics for male PE and Sport students.

Variable	Mean	SD	Min	Max	cV (%)
Age	21.5	2.9	18.0	38.0	13.3
BH (cm)	177.0	0.07	159.0	199.0	3.8
BM (kg)	72.8	10.2	52.9	102.2	13.7
BMI	23.12	2.4	18.6	29.3	10.4
PBFM (%)	12.0	4.3	5.0	23.6	35.6
PSMM (%)	47.7	6.7	26.9	68.8	12.7

Table 2. Descriptive Statistics for female PE and Sport students.

Variable	Mean	SD	Min	Max	cV (%)
Age	21.8	4.1	18	41	18.9
BH (m)	164	0.06	152	177	3.4
BM (kg)	56.4	7.0	42.3	73	12.5
BMI	20.9	2.3	15.9	27.7	10.9
PBFM (%)	22.2	5.8	11	35.4	27.6
PSMM (%)	33.3	3.4	25.5	42.0	8.1

Nutrition Habits

Regarding the Nutritional Habits assessment presented in Table (3), both genders received satisfactory results in the first section of the Nutrition Survey (Dietary Habits), with no significant difference in the mean of the section score (p=.228), according to the Mann-Whitney U Test, which examined the mean scores of the Nutrition Survey sections for both genders. While girls were better at consuming vegetables than boys, with 62% to 38% of them reporting regular intake, almost one-third of the students reported frequently taking at least two servings of fruits daily (27% of males and 34% of females). Students of both genders occasionally ingested cakes and sweets during meals (56% vs. 57%, respectively). 51% of the males and 59% of the females reported eating three meals a day regularly.

In regards to the results of the Physical Activity section, the gender-based classification indicated that students of both genders were equally active, with male students (n = 100) scoring a mean of 16 and female students (n = 100) scoring a mean of 16.2 (p=.519). In comparison, 49% and 24% of female students assessed their lifestyle as moderately active to very active, whereas around one-third of male students (28% and 34%) described it as moderately active to very active.

Students demonstrated an adequate understanding of what a healthy diet entailed in the Dietary Beliefs section, with a statistically significant difference (p=.031) between female students and male students. The mean score for females was 8.9 for males and 9.3 for females out of a total score of 12. In both sample groups, students answered the three questions about what constitutes a healthy diet accurately.

Table 3. Mean Scores of the Nutrition Survey sections by Gender- Mann-Whitney U Test

	Questionnaire Section	Scores	Males (100)	Females (100)	p value
1	Dietary Habits Total Score 52	Lowest	22.8	21.3	**.228**
		Mean	**35.8**	**35.1**	
		Highest	47	44.6	
2	Physical Activity and Lifestyle- Total Score 24	Lowest	9.0	11.5	**.519**
		Mean	**16**	**16.2**	
		Highest	19	18.1	
3	Dietary beliefs Total Score 12	Lowest	7.0	8.3	**.031**
		Mean	**8.9**	**9.3**	
		Highest	10	11.1	
4	Nutrition Knowledge Total Score 11	Lowest	5.4	2.0	**.016**
		Mean	**6.7**	**6.3**	
		Highest	9.0	10.1	

In the nutritional knowledge section, the mean score for males and females was 6.7 and 6.3 respectively, on a total score of 11. When it came to questions about foods high in dietary fiber, foods low in fat, foods high in protein, various food substances containing energy, the roles of vitamins and minerals, and the "definition" of daily energy expenditure, men reported having a better understanding of nutrition with clear significant difference (p=.016).

Chi-square for Physical Activity and Nutrition variables

The Chi-square technique found significant differences between the expected and observed numbers of students in the nutrition variables including questions of section (B - Frequency of food consumption) (Table 4). Regarding nutrition variables, the frequency of healthy food consumption by Lebanese university students was found below the 4th percentile in all the 12 variables.

Table 4. Chi-square –Nutrition Variables: Section B – Frequency of Food Consumption.

Variable	Healthiest option	Expected (N)	Observed (N-%)	p value
Eating Habits				
Meat/Week	1-2 times/week	200	15 (7.5%)	0.000
Fish/Week	1-2 times/week	200	11 (5.5%)	0.000
eggs/Week	1-2 times/week	200	69 (34%)	0.000
Cheese/Week	More than 4 times/week	200	91 (45.5%)	0.000
Ham,Salami,Sausags /Week	Never	200	6 (3%)	0.000
Legumes/Week	More than 4 times/week	200	133 (66.5%)	0.000
Fruits/Day	at least 2 portions or (200g)	200	61 (30.5)	0.000
Veggies/Day	at least 2 portions or (200g)	200	100 (50%)	0.000
Sweets/Week	Never	200	33 (16.5%)	0.000
Fried Potato/Week	Never	200	3 (1.5%)	0.000
Fast Food/Week	Never	200	64 (32%)	0.000
Pizzeria/Week	Never	200	9 (4.5%)	0.000

Pearson Correlation Analysis for Body Composition and Nutrition Habits

In addition, the Pearson correlation analyses that discovered multiple relations between the body composition measures and dietary habits presented in tables (5, 6, 7, and 8) determined low to moderate negative and positive significant correlations between variables of the two lifestyle factors. The greatest influence on body composition represented by their correlations with Dietary habits variables among the two students' samples were as follows:

In the male sample (Tables 5, and 6): Consuming pizzeria per week showed low positive and negative influence on PBFM and PSMM. Moreover, Eating Breakfast showed same the correlation level with BM, BMI, and PSMM.

Table 5. Pearson Correlation Coefficients for Body Composition indices and Weekly Frequency of Food consumption indices in male sample group

Variable	Meat	Fish	Eggs	Cheese	Ham, Salami, Sausages	Legumes	Sweets	Fried Potato	Fast Food	Pizzeria
BW	-0.104	0.108	-0.018	0.033	0.051	-0.002	-0.122	0.007	0.115	0.186
BH	-0.114	0.157	0.001	-0.035	0.106	0.114	0.020	0.041	0.078	0.082
BMI	-0.046	0.040	-0.019	0.071	0.000	-0.096	-0.180	-0.024	0.099	0.193
PBFM	-0.060	0.005	-0.038	0.084	0.065	-0.098	-0.113	-0.107	0.062	**.288****
PSMM	0.026	0.015	0.040	0.063	0.059	0.114	0.117	0.148	-0.125	**-.226***

Note: r (Pearson correlation coefficient). * $p < 0.05$; ** $p < 0.01$.

Table 6. Pearson Correlation Coefficients for Body Composition indices and Dietary Habits indices in male sample group.

Variable	BW	BH	BMI	PBFM	PSMM
Eating Breakfast	**-.200***	0.006	**-.261****	-0.180	**.273****
Beverages at Breakfast	-0.015	0.070	0.017	0.135	0.164
Breakfast Content	0.044	-0.031	-0.084	0.041	0.016
Fruits/Day	0.136	0.170	0.065	-0.022	-0.053
Veggies/Day	0.010	0.024	-0.013	-0.133	0.101
Cake/dessert at meals	0.026	0.141	-0.076	-0.109	**.220***
Three meals daily	-0.163	-0.013	**-.200***	-0.143	**.226***
Diet type	0.057	-0.099	-0.001	-0.053	-0.047
Diet content	-0.094	-0.186	0.009	-0.118	-0.094
Snacks content	0.169	0.024	0.193	-0.098	-0.034
Beverages between meals	-0.052	-0.036	-0.036	. 0.135	-0.132
Milk or yogurt/day	0.030	0.078	-0.014	0.049	0.007
Mineral water/day	0.011	**.239***	-0.165	**-.221***	-0.148

Note: r (Pearson correlation coefficient). * p < 0.05; ** p < 0.01.

Table 7. Pearson Correlation Coefficients for Body Composition indices and Weekly Frequency of Food consumption indices in female sample group.

Variable	Meat	Fish	Eggs	Cheese	Ham, Salami, Sausages	Legumes	Sweets	Fried Potato	Fast Food	Pizzeria
BW	0.007	**.238***	0.177	-0.021	-0.032	-0.163	**.246***	0.005	0.005	-0.159
BH	**.219***	0.091	**.361****	**.227***	**.266****	0.031	0.029	**.198***	-0.149	-0.179
BMI	-0.128	**.221***	-0.022	-0.157	**-.198***	**-.205***	**.279****	-0.131	0.101	-0.053
PBFM	-0.034	**.210***	0.132	-0.102	-0.100	-0.171	**.335****	-0.046	0.094	-0.007
PSMM	0.012	-0.190	-0.140	-0.007	0.151	0.078	**-.312****	0.064	**-.273****	0.107

Note: r (Pearson correlation coefficient). * p < 0.05; ** p < 0.01.

Table 8. Pearson Correlation Coefficients for Body Composition indices and Dietary Habits indices in female sample group.

Variable	BW	BH	BMI	PBFM	PSMM
Eating Breakfast	0.072	0.015	0.070	-0.044	-0.130
Beverages at Breakfast	**-.412****	0.124	**-.381****	**-.344****	0.184
Breakfast Content	**-.274****	0.070	-0.072	-0.188	**.199***
Fruits/Day	0.056	**.203***	-0.045	-0.025	-0.060
Veggies/Day	-0.120	**.289****	**-.318****	**-.242***	**.328****
Cake/dessert at meals	**.215***	-0.086	**.308****	**.221***	**-.236***
Three meals daily	-0.014	0.060	-0.059	0.025	-0.122
Diet type	-0.173	-0.116	-0.129	-0.090	0.087
Diet content	**.266****	0.071	0.037	0.077	-0.126
Snacks content	0.044	-0.030	0.064	-0.038	0.111
Beverages between meals	-0.104	-0.140	-0.026	.068	0.118
Milk or yogurt/day	0.169	0.054	0.065	0.106	-0.105
Mineral water/day	0.148	0.131	0.090	0.178	-0.089

Note: r (Pearson correlation coefficient). * p < 0.05; ** p < 0.01.

In the female sample (Tables 7, and 8): Consuming sweets per week showed a (low positive and negative influence on BM, BMI, PBF, and PSMM. In addition, Beverages at breakfast displayed (low to moderate positive and negative influence on BM, BMI, and PBFM.

Therefore, dietary habits variables carried a significant low to moderate positive and negative effect on most body composition indices among both Lebanese student samples. To summarize, the Pearson correlation analysis has found significant (Low to moderate) correlations between the Nutrition habits and body

composition of the Lebanese students and therefore, Nutrition Habits could predict body composition in this sample.

Discussion

The purpose of the study is to examine and compare the Nutrition Habits and body composition among Lebanese universities' active students according to gender characteristics, as well as to explore the effect of these Nutrition habits on body composition parameters. In terms of body composition, women's body fat mass percentage was found to be higher than men's, while it was still within the healthy range recommended by InBody (2018). The demand for "thinness" in academic contexts and women's increased self-consciousness about their weight and body type may be the causes of this (Sheldon et al., 2010; Ferguson et al., 2011).

The National Heart, Lung, and Blood Institute (1998), states that the BMI levels for both samples were within the normal range of 18.50–24.99 kg/m2. Male BMI values were higher than female BMI values. Overweight or obese students are more likely to stay that way as they get older (National Research Council and Institute of Medicine, 2013; Strong et al., 2008). Male students from Madrid (Spain), Valencia (Spain), Valparaíso (Chile), and Valencia (Spain) had the lowest averages in terms of PBFM, with male students from Lebanon having higher averages (12%) than those from Poland (Gdansk) and Spain (Murcia) (Lopez Sanchez et al., 2019). Additionally, Dopsaj et al. (2015) reported that the average BMI of female students at the University of Belgrade in Serbia was similar to that of Lebanese students (20.9 kg/m2). Furthermore, the percentage of skeletal muscle mass (PSMM) in the Lebanese male student sample group was suitable (47.7%), and considered higher than the percentage of male Abu Dhabi police officers (42.2%).

Results regarding dietary habits revealed that students of both genders get satisfactory outcomes. The four sections of the dietary habits survey (Turconi et al., 2003) nutritional knowledge, dietary beliefs, physical activity and lifestyle, and dietary habits, showed mean scores higher than averages in each category. The survey was given to samples of both students. Comparing American university students to Lebanese students, Yahia et al. (2016) showed that American students had superior physical activity, dietary beliefs, and nutritional knowledge. The Lebanese and American male students received comparable average percentages (68.8% and 67.3%) in the Dietary Habits section. On average, American female students scored higher (71.1%) than their counterparts from Lebanon (67.5%) in the nutrition habits section. The average percentages for American male students (76%), and female students (70%), in the Physical Activity part were higher than the scores for Lebanese students (66.7% and 67.5%, respectively). Male students from Lebanon and the United States got comparable average percentages (74.7% and 74.2%, respectively) in the Dietary Beliefs section. On the other hand, the average percentage of American female students (82%) was higher than that of Lebanese female students (77.5%). The nutrition knowledge section was the last one in the nutrition survey. American students scored (68.8%) and (63.8%) for males and females, respectively, while Lebanese students had lower average percentages for both genders (60.9%) and (57.3%).

According to the study, at least two servings of fruit are consumed every day by Lebanese students—27% of male students and 34% of female students. This is less than the findings of a study conducted by Yehia et al. (2016), which showed that over half of American students—especially female students consume at least two servings of fruits per day. Obesity is linked to low fruit and vegetable consumption (Lin & Morrison, 2002; Cho et al., 2003; Tohill et al., 2004). The percentage of students who ate breakfast every day (53%) in the study by Yahia et al. (2016) was less than that of the Lebanese sample students (63%). In contrast, the percentages of Lebanese and American university students who reported eating breakfast every day (89.3%) were lower than those of their Canadian university counterparts (2010). Breakfast consumption reduces the amount of fat in the diet and reduces the amount of impulsive snacking (Schlundt et al., 1992; Yahia et al., 2008).

About half of the Lebanese students (51% of the males and 59% of the females) reported eating three meals a day regularly. About this criterion, the results were better than those of the American pupils (43% males and 38% females). Males demonstrated significant disparities in their food patterns from females when it came to daily water consumption of at least 1-1.5 L. Women demonstrated (66%) and men demonstrated (81%) with a statistically significant difference between the sexes (p=.019). There was a significant gender difference in the daily water consumption as compared to the results of (Yahia et al., 2016) on this dietary habits variable. More men than women reported consuming at least 1-2 L of water per day (p=.001).

The results of the Physical Activity and Lifestyle section showed that the Lebanese students had a very physically active lifestyle. Furthermore, this section's gender-based classification demonstrated that both genders were equally engaged. In terms of the classification based on gender, the majority of male students (79%) and nearly all female students (99%) stated that they engaged in physical exercise for the entire year; more than four hours per week were reported by 78% of male students and 62% of female students. In comparison, 49% and 24% of female students assessed their lifestyle as moderately active to very active, whereas around one-third of male students (28% and 34%) described it as moderately active to very active. When compared to Central Michigan University's American student body, half of the American students reported engaging in physical activity, but only approximately one-third (33%) of the students said they exercised for more than four hours each week. Compared to females, males were more active.

The findings in the Dietary Beliefs section showed that students, particularly female students, had a sufficient understanding of what a healthy diet entail. These findings support previous research (Turconi et al., 2008; Croll et al., 2001) and imply that students' understanding of what constitutes a healthy and harmful diet complies with dietary recommendations (Dietary Guidelines Advisory Committee, 2010). Lebanese students were found to have enough nutritional knowledge in the last section of the Turconi et al. (2003) questionnaire. However, male students reported having greater understanding in areas such as energy, dietary fibers, vitamins, minerals, and energy expenditure. The results of Yahia et al., (2016), and Von Bothmer & Fridlund, (2005) who discovered that female students had a higher nutritional knowledge score than male students are contrasted with this section's results depending on gender. In general, women are more likely than men to be motivated to make healthy changes, manage their weight, and pay attention to nutrition (Von Bothmer & Fridlund, 2005; Livingston et al., 2012).

The non-parametric Chi-square test used to determine expected and observed results in healthy eating habits of the Lebanese students' sample has demonstrated the following general result: the healthiest eating habits (Mediterranean food) determined in "Krause's food, nutrition, and diet therapy textbook" authored by Kathleen, Mahan, and Stump (2004), were reported by less than one-third of the Lebanese students' sample (n=200). These results were found poor when compared to other relevant American and Canadian studies assessing similar nutrition variables (Yahia et al., 2016; Lachance et al., 2010). Yahia et al. (2016) study found for instance that fast food consumption was prohibited by 33% of Central Michigan University students. The same percentage, (32%) of Lebanese university students were skipping fast food consumption. Previous studies have indicated that consumption of fast food was associated with weight gain and obesity (Malik et al., 2006; Bachman et al., 2006). Only (7.5% n= 15) of Lebanese students were consuming meat 1-2 times per week in comparison to Central Michigan University students (26%, n= 62). Moreover, (5.5%, n=11) of Lebanese students were consuming fish 1-2 times per week compared to (53%, n=126) of American students, and Canadian students (72%, n= 2262), (34%, n=69) of the Lebanese students were consuming eggs 1-2 times per week compared to (69%, n= 164) of American students. (45.5%, n=91) Lebanese students were consuming cheese more than 4 times per week in comparison to their American university peers (65%, n=154). Consumption of legumes more than 4 times per week which was considered the best eating habit among frequency of food consumption section included the only dietary habit that showed Lebanese students supremacy over their American peers since it was reported by (66%, n=133) of the Lebanese sample

and (22%, n=52) of the American students of Michigan university. Prevention of weekly consumption of sweets, fried potato, pizzeria and ready-to-eat meat (Ham/salami/sausages), was reported by (16.5%, 1.5%, 4.5%, and 3% of the Lebanese students' samples respectively), and (11%, 50%, 0%, and 46% respectively) by the American students.

Our research few constraints. First, out of about 40 national private and public universities in Lebanon, the study sample only included one faculty from one institution: "The Lebanese University, Faculty of Education." Furthermore, it is challenging to establish the causative nature of the observed associations due to the cross-sectional approach of the study. Additionally, because the students self-reported their eating habits, the respondent may have underestimated the results or been biased. Nonetheless, the measurements of body composition were gathered using a scientific approach that resulted in validated tests that assessed body composition.

Conclusion

The study found that male students dominate body composition measurements, dietary habits, and nutrition knowledge, while female students show superior results in physical activity and lifestyle and dietary beliefs. Although females had a greater mean body fat percentage than males, both genders' values fell within the range of acceptable body fat percentages. In addition, although the Lebanese students showed satisfactory Nutrition habits having scored over average scores in the four nutrition sections, the healthiest Mediterranean Diet eating habits were reported by less than one-third of the Lebanese students' sample.

Lebanese students might benefit from college nutrition educational programs to convert theoretical nutritional knowledge into a practical daily-life eating pattern. Future research must study more lifestyle factors and health predictors such as physical activity and must approach diverse Lebanese population samples including different regions, socio-economic backgrounds, academic specialties, and ages. Also, future research in this field must utilize diverse objective measurement methods like personal interviews and high-technology methods. Researchers may be able to develop appropriate health promotion strategies that are tailored to the needs of students to encourage healthy eating habits, physical activity profiles, and positive lifestyle changes among students and create a healthy campus community. By implementing these recommendations and lifestyle guidelines, customized interventions and programs aimed at improving youth students' wellness and lifestyle behavior may be developed.

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