Physical Activity and Eating Habits Impact on Attentiveness and Academic Achievement Among Health Specialty Students in University of Hail

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Abstract

Background: Healthy lifestyle behaviors such as eating well, exercising, getting enough sleep, managing stress, not using drugs, depending on social support, and limiting screen time are well-established factors of continuing good health, as they reduce the risk of sickness and increase well-being. The importance of nutrition in the development of young individuals cannot be overstated. Eating habits formed as teens and young adults have a long-term impact on behavior and have a significant impact on adult life. The aim of our study was to assess the pattern of physical activity, eating habits and their impact on academic performance among university students.

Methods: A cross-sectional study was conducted by a self-administered structured online survey tool through the "SurveyMonkey" platform among medical university students. All participants fulfilling the inclusion criteria were invited to participate.

Results: Our study concluded with 317 respondents. Mild activity like walking was performed by 31.2% of respondents on average of six-seven days while 71.3% respondents performed moderate activity on a once-a-week basis and vigorous activity was performed by 61.5% participants on average of one day a week. Among our participants only 30.5% agreed to have regular eating habits.

Conclusion: Health education and promotion to create awareness and highlight the importance of physical activity among university students is the need of the hour. Students should also be encouraged to have healthy eating habits which will not only improve academic performance but will also have positive impact on their lifestyle.

Keywords: Physical activity, eating habits, university students, academic, performance

Introduction

Healthy lifestyle behaviors such as eating well, exercising, getting enough sleep, managing stress, not using drugs, depending on social support, and limiting screen time are well-established factors of continuing good health, as they reduce the risk of sickness and increase well-being. Adolescents' academic achievement is linked to healthy habits, suggesting that living an unhealthy lifestyle may impair cognitive function and, as a result, reducing the likelihood of succeeding in academics (1, 2). The importance of nutrition in the development of young individuals cannot be overstated. Eating habits formed as teens and young adults have a long-term impact on behavior and have a significant impact on adult life. During their school years, students have more opportunity to experiment with diet, health-related behaviors, sports participation, and developing their own lifestyle. As a result, the shift to a new living environment with hectic schedules has begun (3, 4).

Between the ages of 18 and 29, there is a steady increase in overweight and obesity, according to the Behavioral Risk Factor Surveillance System (5). Students who consume an unhealthy diet and engage in little physical activity throughout their undergraduate years are more likely to have health problems later in life. Obesity and related disorders have become a global problem that must be addressed. Given the strong link between poor food quality and weight increase, researchers have concentrated on determining the relationship between dietary nutritional quality and health consequences (6, 7). Studies have found an inverse relationship between improved diet quality and chronic disease-specific mortality, implying that a healthy lifestyle can help to reduce the alarming overall mortality caused by non-communicable diseases (8, 9).

Noncommunicable diseases (NCDs) account for 70% of all global fatalities each year. NCDs are caused by high blood pressure, high cholesterol, a lack of fruits and vegetables in one's diet, obesity, lack of physical activity, and smoking (10). Physical inactivity is linked to cardiovascular disease (CVD), diabetes, some types of cancer, and excessive cholesterol levels, and is a major cause of death. Premature death is also linked to a lack of physical activity. Physical activity, on the other hand, is critical for lowering the risk of these diseases and also reduces chances of stroke, obesity, depression, and dementia (11).

Academic learning is a critical stage characterized by physiological maturation and health-related behavioral shifts. Human behaviors and lifestyle should determine an individual's health status and quality of life. Healthy conduct is critical and is regarded as one of the most important determinants of students' academic success. Meanwhile, impulsive actions characterize academic life, resulting in changes in nutritional and physical activity patterns as a result of peer pressure and media influence (12). The aim of our study was to assess the pattern of physical activity, eating habits and their impact on academic performance among university students.

Methods

Study Design and Population
This is a cross-sectional study that was conducted by a self-administered structured online survey tool through the "SurveyMonkey" platform from a period of October 2021 to February 2022. The inclusion criteria were all individuals who agreed to participate in the study, university students studying in health specialties aged ≥18 years. There were no restrictions on gender, year of education, and nationality of the participants. The exclusion criteria were non health specialty students and students <18 years old.

Sampling and Data collection
All individuals fulfilling the inclusion criteria were invited to participate. The sample size was calculated according to the previous literature studies conducted. Non-probability consecutive sampling was used to select the study participants. An online link of the web-based questionnaire was developed using "SurveyMonkey" for assessing the pattern of physical activity and eating habits of the participants. Only the participants providing consent to participate in the study can move to the next section. Upon confirmation, the participants were moved to the next pages containing the self-administered questionnaire.

Questionnaire formulation and validation
Prior to developing the questionnaire, an extensive review of the relevant literature was conducted, followed by a discussion with experts on physical activity and eating habits of young adults. Following the development of the first version of the questionnaire, it was validated by a panel of experts for face, content, criterion, and construct components. For the validation purposes, a pilot study of 30 participants was performed to assess the feasibility. For language validity, we formulated the survey in the English language then translated it into Arabic, followed by a backward translation which was done by two independent translators. The translations were finally reviewed by a team of investigators and translators to resolve any discrepancies.

Study tool
The final format of the survey tool consisted of 28 questions, which were divided into four different sections: (1) Socio-demographic characteristics (five questions); (2) Pattern of physical activity (seven questions); (3) eating habits (eleven questions); and (4) academic performance (five questions).

Ethical approval
The study was conducted in alignment with the known ethical research and surveillance recommendations. The study was approved by the ethical committee at University of Ha'il number H-2021-191, The survey link was available on the SurveyMonkey platform, and it did not require the participant to log in before filling in the survey to ensure Anonymity and protect data confidentiality. The process did not gather IP addresses, web cache, or cookies. The SurveyMonkey platform was used to store the data during the availability period, and the final dataset was exported as a Microsoft Excel file.

Statistical analysis

All data were analyzed using Statistical Package for Social Science (SPSS) version 25.0. Standard descriptive data were calculated for each question or item individually. The continuous variables like age were expressed in mean and standard deviation while frequency and percentages were calculated for categorical variables. Chi-square test was used to determine association among variables of interest. A p-value of <0.05 was considered statistically significant.

Results

The study assessed the physical activity, eating habits and their impact on the academic performance among the university student respondents. Our study concluded with 317 participants. Most of the respondents were males (170 , 53.6%) with a mean age of 20.97±1.516 years. The majority of the students were from medicine specialty (110, 34.7%) followed by nursing (39, 12.3%) and pharmacy field (37, 11.6%). There were only (43,13.5%) smokers in our study population. Among our respondents the majority of students were in their fourth year of study (105, 33.1%) followed by students in second year of study 94 (29.6%). In our study population (18, 5.7%) had chronic illness with asthma (10 ,55.5%) being most prevalent. (Table 1). Physical activity was assessed by asking respondents about their routine of performing mild moderate or vigorous activity in the past seven days. Mild activity like walking. was performed by (99, 31.2%) respondents on average of six-seven days while (226, 71.3%) respondents performed moderate activity on a once-a-week basis and vigorous activity was performed by (195, 61.5%) participants on an average of one day a week. (Table 2)

Among our participants only (97, 30.5%) agreed to have regular eating habits; breakfast was consumed daily by (126, 39.7%) respondents while (279, 88%) agreed to skip meals. Role of eating on academic performance was agreed by (232, 73.1%) participants. Energy booster drinks like red bull were consumed by only (57, 17.9%) respondents while studying, junk food was preferred by (170, 53.6%) participants. Caffeinated coffee was consumed by (257, 81%) students among whom (130, 48.5%) took it to increase their level of concentration. (Table 3). The majority of the participants (249, 78.5%) agreed to concentrate during lectures, workshops, and practical attachments while (123, 38.8%) had trouble in keeping concentration during conversations with professors and friends. The majority of the respondents (168,53%) lacked concentration while reading subject textbooks and listening to long lectures. Also, according to our major group of respondents (154, 48.6%) there was no difference in their performance in exams after meals. Mostly the students (174, 54.9%) had high GPA in a range of 3.5-4.00. (Table 4). A strong statistically significant association was determined between hours of vigorous physical activity and regular eating habits of respondents p-value 0.000.(Table 5) Similarly, concentration levels during lectures, workshops, and practical attachments were also found to be statistically significant with eating before exams p-value 0.000.(Table 6) Also, the performance in exams after meals was found to be statistically significant with role of eating in academic performance.(Table 7)

Table 1: Socio-demographic characteristics of our study population

S. No	Variable	Frequency/Percentage (N=317)
1.	Age (Mean±S.D)	20.97±1.516
	Gender	
	• Male	170 (53.6%)
	• Female	147 (46.4%)
2.	Specialty	
	• Clinical laboratory Sciences	12 (3.7%)
	• Clinical Nutrition	10 (3.1%)
	• Dentistry	13 (4.1%
	• Diagnostic Radiology	31 (9.7%)
	• Health Informatics	17 (5.3%)
	• Health Management	11 (3.5%)
	• Medicine	110 (34.7%)
	• Nursing	39 (12.3%)
	• Pharmacy	37 (11.6%)
	• Physiotherapy	27 (8.5%)
	• Public Health	10 (3.1%)
3.	Smoking Status	
	• Smokers	43 (13.5%)
	o Cigarettes	21 (48.8%)
	o Electronic cigarettes	17 (39.5%)
	o Cigarettes & electronic cigarettes	2 (4.6%)
	o Cigarettes, cigar, electronic cigarettes & Madwakh	1 (2.3%)
	o Hookah	2 (4.6%)
	• Non-Smokers	274 (86.4%)
4.	University Level	
	• 2nd Year	94 (29.6%)
	• 3rd Year	82 (26%)
	• 4th Year	105 (33.1%)
	• 5th Year	17 (5.4%)
	• 6th Year	19 (5.9%)
5.	Do you have any chronic disease?	
	• Yes	18 (5.7%)
	o Allergy	1 (5.5%)
	o Ankylosing Spondylitis	1 (5.5%)
	o Asthma	10 (55.5%)
	o Chronic kidney disease	1 (5.5%)
	o Diabetes	2 (11.1%)
	o Diabetes and heart disease	1 (5.5%)
	o Epilepsy	1 (5.5%)
	o Hypothyroidism	1 (5.5%)
	• No	299 (94.3%)

Table 2 :Physical activity pattern of respondents

S. No	Variable	Frequency/Percentage (N=317)
1.	During the last 7 days, on how many days did you do vigorous physical activities like heavy lifting, digging, aerobics, or fast bicycling? 0-1 day 2-3 days 4-5 days 6-7 days	 195 (61.5%) 70 (22.1%) 33 (10.4%) 19 (5.9%)
2.	How much time did you usually spend doing vigorous physical activities on one of those days? 0-1 hour 2-3 hours 4-5 hours >5 hours I didn't do any vigorous physical activity	 106 (33.5%) 47 (14.8%) 6 (1.8%) 1 (0.28%) 157 (49.5%)
3.	During the last 7 days, on how many days did you do moderate physical activities like carrying light loads, bicycling at a regular pace, or doubles tennis? Do not include walking 0-1 day 2-3 days 4-5 days 6-7 days	 226 (71.3%) 59 (18.6%) 22 (6.9%) 10 (3.2%)
4.	How much time did you usually spend doing moderate physical activities on one of those days? 0-1 hour 2-3 hours 4-5 hours >5 hours I didn't do any moderate physical activity	 107 (33.7%) 44 (13.9%) 5 (1.6%) 2 (0.6%) 159 (50.1%)
5.	During the last 7 days, how many days did you walk for at least 10 minutes at a time? 0-1 day 2-3 days 4-5 days 6-7 days	 78 (24.6%) 69 (21.8%) 71 (22.4%) 99 (31.2%)
6.	How much time did you usually spend walking on one of those days? 0-1 hour 2-3 hours 4-5 hours >5 hours I didn't spend anytime walking	 176 (50.7%) 56 (17.7%) 31 (9.8%) 7 (2.2%) 47 (14.8%)
7.	During the last 7 days, how much time did you spend sitting on a weekday? 0-1 hour 2-3 hours 4-5 hours >5 hours	 35 (11%) 72 (22.7%) 151 (47.6%) 59 (18.6%)

Table 3: Eating Habits of the study population

S. No	Variable	Frequency/Percentage (N=317)
1.	Do you have regular eating habit? Yes No	97 (30.5%) 220 (70%)
2.	Do you eat breakfast every day? Yes No	126 (39.7%) 191 (60.2%)
3.	Do you eat lunch every day? Yes No	183 (57.7%) 134 (42.3%)
4.	Do you eat dinner every day? Yes No	190 (59.9%) 127 (40%)
5.	Do you skip meals? Yes No	279 (88%) 38 (11.9%)
6.	Do you think what you eat has any role in your academic performance? Yes No	232 (73.1%) 85 (26.8%)
7.	Do you prefer energy boosters (Red Bull, Code Red, Power Horse, etc.) while studying? Yes No	57 (17.9%) 260 (82%)
8.	Do you prefer junk to healthy food while studying? Yes No	170 (53.6%) 147 (46.4%)
9.	Do you eat before exams? Yes No Sometimes	87 (27.4%) 82 (25.9%) 148 (46.7%)
10.	What type of coffee do you consume? Caffeinated Decaffeinated I don't drink coffee	257 (81%) 11 (3.5%) 49 (15.4%)
11.	Why do you drink coffee? To increase concentration To be awake Because I love it	130 (48.5%) 120 (37.8%) 18 (5.7%)

Table 4: Academic Performance of the study population (N=317)

1.	Can you concentrate during lectures, workshops, and practical attachments? Yes No	 249 (78.5%) 68 (21.4%)
2.	Do you have any trouble in keeping concentration during conversations with professors and friends? Yes No	 123 (38.8%) 194 (61.2%)
3.	Can you concentrate while reading subject textbook and listening to long lectures? Yes No	 149 (47%) 168 (53%)
4.	How is your performance in exams after meals? Got Better Got worse No difference	 139 (43.8%) 24 (7.5%) 154 (48.6%)
5.	Accumulative GPA out of 4 1.75-2.74 2.75-3.49 3.5-4.00	 27 (8.5%) 116 (36.5%) 174 (54.9%)

Table 5: Association between physical activity and regular eating habit

How much time did you usually spend doing vigorous physical activities on one of those days?	Do you have regular eating habit? Yes 97 (30.5%) No 220 (69.4%)	P-value
0-1 hour 2-3 hours 4-5 hours >5 hours I didn't do any vigorous physical activity	106 (33.5%) 47 (14.8%) 6 (1.8%) 1 (0.28%) 157 (49.5%)	0.000*

*Statistically strong association between physical activity and eating habit

Table 6: Association between academic concentration and eating habit before exam

Can you concentrate during lectures, workshops, and practical attachments?	Do you eat before exams? Yes 87 (27.4%) No 82 (25.9%) Sometimes 148 (46.7%)	P-Value
Yes No	249(78.5%) 68(21.5%)	0.000**

**Statistically strong association between eating habit and concentration

Table 7: Association between academic performance and response to role of eating

How is your performance in exams after meals?	Do you think what you eat has any role in your academic performance? Yes 232 (73.1%) No 85 (26.8%)	P-Value
Got Better Got worse No difference	139 (43.8%) 24 (7.5%) 154 (48.6%)	0.000***

***Statistically strong association between academic performance and response to role of eating

Discussion

Physical inactivity and poor nutritional consumption are two factors that have an impact on one's health and well-being, as well as the ability to maintain a healthy weight. These factors contribute to the risk of lifestyle-related non-communicable diseases. Behavioral and biological health factors such as physical inactivity, poor food habits, and overweight/obesity are connected to the risk of ischemic heart disease, stroke, type 2 diabetes, osteoporosis, various malignancies, and depression. For adults, the health advantages of regular physical activity are widely documented. Physical activity promotion has been a popular public health strategy for preventing chronic diseases[13]. Physical activity and healthier diets (i.e., diets low in saturated fats and refined sugars) are also advantageous to cognition, implying that health behaviors may influence cognitive function thus having a positive impact on academic performance [14].

Among our study population only 13.5% were smokers. Smoking has a wide range of negative consequences for the human body, the environment, social life, and even academic performance. Data from literature reveals a link between dangerous behaviors including cigarette use and poor academic performance. This indicates that students with higher grades are less likely than their lower-graded peers to use tobacco, and students who do not use tobacco receive higher grades than their tobacco-using counterparts [15, 16]. This is in accordance with our study findings as the majority of our participants 54.9% had high GPA in range of 3.5-4.00 also showing less prevalence of smoking. However, it is contrary to a study conducted by Ansari in Saudi Arabia on sample size of 340 individuals who reported 28% smokers in their study, almost double the number of smokers from our study [17].

In our study the majority of the students were from medicine specialty 34.7% followed by nursing 12.3% and pharmacy field 11.6%. In comparison to non-medical students, medical students are expected to have healthier eating habits. Despite having sufficient understanding of good eating habits, medical students were found to be unable to put this knowledge into practice. Medical students are more likely to follow a Western diet (processed foods with high fat, sugar, and salt content) and engage in less physical exercise. According to the findings, medical students chose less healthy dietary patterns than healthy dietary patterns [18, 19].

Our findings revealed that mild activity like walking was performed by 31.2% respondents on average of six-seven days a week while moderate activity was performed by 71.3% respondents on once-a-week basis and vigorous activity was performed by 61.5% participants on average of one day a week. Most respondents were physically active only once a week. Similarly, a cross-sectional study on 376 participants in Saudi Arabia in 2019 concluded that 51.1% of the respondents were physically inactive. Physical inactivity has been identified as a growing trend in the adult age group and is now recognized as a severe medical concern that has a detrimental impact on health around the world [20]. Another study conducted on 1,257 students in Saudi Arabia reported that 58% of the respondents were physically inactive. Time constraints were the most commonly stated barrier to physical activity among inactive students [21].

Our results depicted that 30.5% participants agreed to have regular eating habits; breakfast was consumed daily by 39.7% respondents. These results are similar to a study conducted by Sami H Alzahrani et al. in 2020 among 2410 medical students who reported that around 30.7% of the students considered themselves to be healthy eaters. Nearly half of the participants 50.5% ate meals on a daily basis, and 34.7% ate breakfast every day [22]. Increased habitual breakfast frequency was consistently linked to improved academic performance. According to some data, the quality of a regular breakfast, in terms of offering a broader range of dietary categories and sufficient energy, was favorably connected to academic achievement [23]. Another cross-sectional study conducted in Saudi Arabia among 300 students reported that 36% had breakfast and considered it to be an essential part of their nutrition and have it on a daily basis while the majority of students eat breakfast on occasion. Furthermore, just a small percentage of students 10% skip breakfast on a daily basis [24].

Because of changes in dietary habits and physical inactivity, morbidity, and mortality from noncommunicable illnesses linked to lifestyle have grown in the Kingdom of Saudi Arabia over the previous three decades. This shift in lifestyle has had a significant negative influence on society's health. Indeed, the epidemic of noncommunicable diseases and associated complications in the country is regarded to be the result of this lifestyle change [17]. To combat the rising frequency of overweight and obesity later in life, programs to prevent poor eating habits and awareness regarding importance of physical activity among students is required. From the educator's perspective, university studies offer the last opportunity to implement nutritional education among many students. Students' diets are frequently categorized as unhealthy, lacking in fruits and vegetables, with irregular eating patterns and a high frequency of fast-food selections, which is of particular concern because eating habits formed at this age can have a significant impact on people's long-term health [25].

Conclusion

Mild activity was performed by only 31.2% of respondents on a daily basis. Health education and promotion to create awareness and highlight the importance of physical activity among university students is the need of the hour. Students shall also be encouraged to have healthy eating habits which will not only improve academic performance but will also have positive impact on their lifestyle. Increased youth awareness may result in a considerable reduction in related morbidity and consequences which in turn may help reduce the burden of noncommunicable diseases later in life, easing the strain on society and the health-care system.

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