

The Level Of Physical Activity And Its Relationship To Overweight And Obesity Among University Students

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Abstract

The study aimed to identify the level of physical activity and its relationship with weight gain and obesity among students of Dar Al-Uloom University. The study sample consisted of 282 students, including 172 males and 110 females. The International Physical Activity Questionnaire (IPAQ) was used to measure physical activity levels, and body mass index (BMI) was calculated to determine the degree and level of obesity. Percentage, mean, standard deviation, Pearson correlation coefficient, and multivariate analysis of variance were used as statistical methods to analyze the data. The results showed that 50% of Dar Al-Uloom University students had a high level of weight gain and obesity. Additionally, 67% had a low level of high-intensity physical activity, exercising for only 1-2 days per week, while 69% engaged in moderate-intensity physical activity for 2-3 days per week. The sample population varied in their walking exercise, ranging from 1-5 hours per week. The results also showed a statistically significant positive relationship between the level of physical activity and weight gain and obesity. There were no statistically significant differences in the level of physical activity and its relationship with weight gain and obesity based on gender, major, academic level, and place of residence.

Keywords: Physical activity, overweight, obesity.

Introduction:

Over the past few decades, the prevalence of overweight and obesity has increased at an alarming rate worldwide, posing significant public health challenges. These conditions not only negatively affect an individual's physical health, but also their psychological health and academic performance. And college students, in particular, are a vulnerable population due to the lifestyle changes and pressures they experience (El Ansari & Stock, 2010). This study aims to discover the relationship between the level of physical activity and weight gain and obesity among students of Dar Al Uloom University in Saudi Arabia.

Physical activity is an essential component of maintaining a healthy lifestyle and preventing chronic diseases such as obesity and cardiovascular disease. University students are a population at risk for physical inactivity due to the demands of academic life and the availability of sedentary activities. Overweight and obesity are also prevalent among university students, which can have negative impacts on their physical and mental health. Therefore, understanding the level of physical activity and its relationship to overweight and obesity among university students is critical. (González, et al, 2017)

Several studies have investigated the level of physical activity among university students and its relationship to overweight and obesity. A study conducted by Al-Hazzaa et al. (2011) found that only 23% of Saudi university students met the recommended levels of physical activity. Another study by Löf et al. (2017) found that physical inactivity was significantly associated with overweight and obesity among Swedish university students. Similarly, a study by Tassitano et al. (2019) found that low levels of physical activity were associated with a higher risk of overweight and obesity among Brazilian university students.

The impact of physical activity on overweight and obesity among university students is complex and influenced by several factors such as gender, age, and cultural context. A study by Al-Nakeeb et al. (2011) found that male university students had higher levels of physical activity than females, and physical activity levels tended to decrease with age. Additionally, cultural factors such as dress codes and social norms can influence physical activity levels among university students in different regions (Al-Hazzaa et al., 2011).

Understanding the level of physical activity and its relationship to overweight and obesity among university students is crucial for developing effective interventions to promote physical activity and prevent chronic diseases. This study aims to investigate the level of physical activity and its relationship to overweight and obesity among university students in [location]. By understanding the factors that influence physical activity levels and their impact on overweight and obesity, this study will provide valuable insights for developing strategies to promote healthy lifestyles among university students.

On the other hands Recent studies have shown that physical inactivity is associated with a higher risk of overweight and obesity among university students. A meta-analysis conducted by Guthold

et al. (2018) found that the prevalence of overweight and obesity among university students in low- and middle-income countries was associated with a low level of physical activity. Another study by Al-Rethaiaa et al. (2016) reported that physical activity was inversely related to overweight and obesity among university students in Saudi Arabia. Similarly, Sisson et al. (2010) found that physical activity was associated with a lower risk of overweight and obesity among college students in the United States.

The importance of this study lies in the fact that physical activity is a crucial component of maintaining a healthy lifestyle and preventing chronic diseases such as obesity and cardiovascular disease. And because of the importance of the university stage for students and the risk they face of physical inactivity, which causes a rise in weight gain and obesity among students, and understanding the level of physical activity and its impact can contribute to promoting health trends represented in the practice of physical activity and healthy food, which contributes to improving health outcomes for students. It also has an impact on society.

Methods:

The sample included a group of university students whose ages ranged from 18 to 26 years old and who were officially registered in the university for the year 2022. The sample consisted of 282 individuals, including 172 males and 110 females.

Data collection tools: Data was collected using a self-administered questionnaire that included demographic information about the sample (gender, academic level, major, place of residence) and physical activity levels, which were verified using the International Physical Activity Questionnaire (IPAQ).

Physical activity measurement: Physical activity levels were measured using the IPAQ short version, which assesses physical activity levels in four domains: work-related, transport-related, household, and leisure-time activities. The IPAQ has been shown to have good validity and reliability for assessing physical activity levels among adults.

Anthropometric measurements: Anthropometric measurements including weight, height, and waist circumference were taken using

standardized techniques. Body mass index (BMI) was calculated as weight in kilograms divided by height in meters squared. Data was analyzed using statistical software such as SPSS. Descriptive statistics were used to summarize the data, including percentages, means, and standard deviations. Multivariate analysis of variance (MANOVA) and correlation coefficients were used to examine the relationship between physical activity levels and overweight/obesity.

"Table (1) shows the distribution of the sample individuals according to demographic variables."

Variables	Categories	repetitions	Percentage
Gender	Male	110	39.1%
	Female	172	60.99%
Major	Humanities colleges	148	52.48%
	scientific colleges	134	47.51%
Place of residence	Inside Riyadh	168	59.58%
	Out of Riyadh	114	40.42%
Academic level	first year	95	33.68%
	second year	70	24.82%
	third year	48	17.02%
	fourth year	69	24.46%
Total		282	100%

Results and discussion:

1- Calculating obesity levels among students by calculating the body mass index (BMI) and Table (2) illustrate this.

Table (2): "Frequencies, percentages, mean, and standard deviation of the results of calculating the Body Mass Index (BMI) and estimating obesity levels.

Rank	Obesity Level	Frequency	Percentage	Obesity Level Mean	Standard Deviation
1	Healthy weight (18.5 - 24.9)	141	50.0%		
2	Overweight (25 - 29.9)	94	33.33%		

3	Obesity (30 or higher)	47	16.67%	25.70	15.62
Total		282	100%		

Table (2) shows that the levels of overweight and obesity among Dar Al Uloom University students are high, representing approximately 50% with a mean of 25.70 and a standard deviation of 15.62. This may be attributed to the unhealthy lifestyle habits practiced by students, including physical inactivity and unhealthy eating habits, as well as the modern way of life imposed by technology and machines, which promotes an unhealthy lifestyle. This is in line with the World Health Organization's (WHO) estimation in 2014 that approximately 31% of the world's population does not engage in sufficient physical activity to protect them from serious health problems, and they miss out on the health benefits that moderate physical activity can provide. Based on WHO's recommendations to promote physical activity throughout life, many countries around the world have launched initiatives to support and promote physical activity throughout life, such as Saudi Arabia's local initiative called "Movement is Bliss," which aims to encourage people to be physically active (WHO, 2014). This is also supported by a number of scientific studies that

provide insight into the prevalence of obesity among university students in Gulf Arab countries and highlight the need for interventions to address this public health issue.(Al-Rethaiaa et al., 2010), (Al-Raddadi et al., 2019), (Al-Tawil, 2013), (Al-Rifai et al., 2019), (Musaiger et al., 2012). Also, A study by Pei-Lin Hsieh et al. (2014) confirms that body mass index and physical activity are significantly associated with cardiorespiratory fitness levels. These results may provide educators with information to help them develop effective health promotion programs for achieving healthy weight and improving cardiorespiratory fitness levels.

2- Students' physical activity levels were measured using the short version of the International Physical Activity Questionnaire (IPAQ), and Tables (3, 4, 5, 6, 7, 8, 9) illustrate this.

1) During the past seven days, how many days did you engage in high-intensity physical activity?

Table 3: Frequencies and Percentages of the student's responses on how many days they engaged in high-intensity physical activity during the past seven days.

#	The Responses	Frequencies	Percentages	Rank
1	One Day	106	0.375%	5
2	Two Days	87	0.308%	4
3	Three Days	62	0.219%	3
4	Four Days	16	0.06%	2
5	Five Days	11	0.039%	1
Total		282	100.00%	=

Table (3) shows (One Day) ranked firstly with frequencies (106), and percentage (37.5%). (Two Days) ranked secondly with frequencies (87), and percentage (30.8%). While (Five Days) ranked finally, with frequency (11), and percentage (0.039%). The results indicate that most students do not engage in intense or high-intensity physical activity during the week at very low rates, where 67% of the sample only engage in this activity for one or two days. This explains the high rates of weight gain and obesity among students, as this age group of university students is expected to be active and engage in physical activity for at least three days of high-intensity

physical activity or at least five days of moderate-intensity physical activity, according to the World Health Organization's (WHO, 2010) recommendations for health-enhancing physical activity.

2) Typically, how much time did you spend doing vigorous physical activity on one of these days?

Frequencies and Percentages of the student's responses to this question were computed, and the results were shown in table (4).

Table 4: Frequencies and Percentages of the student's responses on how much time they spent doing vigorous physical activity on one of those days.

#	The Responses	Frequencies	Percentages	Rank
1	One Hour or less	126	44.6%	1
2	Two Hours	48	17%	3
3	Three Hours	74	26.24%	2
4	Four Hours	15	0.0531%	5
5	Five Hours	19	0.067%	4
Total		282	100.00%	=

Table (4) shows (One Hour or less) ranked firstly with frequencies (126), and percentage (44.6%). (Three Hours) ranked second with frequencies (74), and percentage (26) . While (Four Hours) ranked finally, with frequencies (15), and percentages (0.0531%). In addition, this practice is insufficient in terms of the time that students spend engaging in this type of high-intensity activity, as the percentage shows that about 60% of students engage in only one to two hours per week, which is a low percentage. And these results are consistent with the findings of studies conducted by Al-Raddadi RM, Saddik B, Al-

Qarni AM, et al. (2019), Al-Tawil NG (2013), Al-Otaibi HH, Al-Mohammadi (2018). These studies have also reported similar patterns of physical activity among university students in Gulf Arab countries.

3) During the past seven days, how many days did you engage in moderate-intensity physical activity?

Frequencies and Percentages of the students' responses on this question were computed, and the results were shown in table (5).

Table 5: Frequencies and Percentages of the student's responses on how many days they engaged in moderate-intensity physical activity.

#	The Responses	Frequencies	Percentages	Rank
1	One Day or nothing	21	7.44%	4
2	Two Days	134	47.5%	1
3	Three Days	61	21.63%	2
4	Four Days	14	4.96%	5
5	Five Days	52	18.43%	3
Total		282	100.00%	=

Table (5) shows (Two Days) ranked first with frequencies (134), and percentage (47.5%). (Three Days) ranked secondly with frequencies (61), and percentage (21.63%). While (Four Days) ranked finally, with frequency (14), and percentage (4.96%).

4) Typically, how much time did you spend doing moderate-intensity physical activity on one of these days?

Frequencies and Percentages of the student's responses to this question were computed, and the results were shown in table (6).

Table 6: Frequencies and Percentages of the student's responses on how much time they spent doing moderate-intensity physical activity on one of those days.

#	The Responses	Frequencies	Percentages	Rank
1	One Hour or less	5	1.77%	5
2	Two Hours	32	11.34%	4
3	Three Hours	95	33.68%	2
4	Four Hours	102	36.17%	1
5	Five Hours	48	17.02%	3
Total		282	100.00%	=

Table (6) shows (Four Hours) ranked first with frequencies (102), and percentage (36.17%). (Three Hours) ranked second with frequencies (95), and percentage (33.68%). While (One Hour or less) ranked finally, with frequency (5), and percentage (1.77%).

5) During the past 7 days, how many days did you walk for at least 10 minutes each time?

Frequencies and Percentages of the student's responses to this question were computed, and the results were shown in table (7).

Table 7: Frequencies and Percentages of the student's responses on how many days they walked for at least 10 minutes each time.

#	The Responses	Frequencies	Percentages	Rank
1	One Day or nothing	27	9.57%	5
2	Two Days	88	31.20%	1
3	Three Days	58	20.56%	2
4	Four Days	54	19.14%	4
5	Five Days	55	19.50%	3
Total		282	100.00%	=

Table (7) shows (Two Days) ranked firstly with frequencies (88), and percentage (31.20%). (Three Days) ranked second with frequencies (58), and percentage (20.56%). While (One Day) ranked finally, with frequencies (27), and percentage (9.57%).

6) Usually, how much time did you spend walking on one of those days?

Frequencies and Percentages of the student's responses to this question were computed, and the results were shown in table (8).

Table 8: Frequencies and Percentages of the student's responses on how much time they spent walking on one of those days.

#	The Responses	Frequencies	Percentages	Rank
1	One Hour or less	45	15.95%	3
2	Two Hours	72	25.53%	2
3	Three Hours	91	32.26%	1
4	Four Hours	33	11.70%	5
5	Five Hours	41	14.53%	4
Total		282	100.00%	=

Table (8) shows (Three Hours) ranked firstly with frequencies (91), and percentage (32.26%). (Two Hours) ranked second with frequencies (72), and percentage (25.53%). While (Four Hours) ranked finally, with frequencies (33), and percentages (11.70%). The results of tables (3,4,5,6,7,8) showed that most university students engage in low-intensity physical activity at a low level (1-

2) days per week, and most students also engage in this moderate activity for a period ranging from (1-2) hours per week. The results showed that more than (69%) of students engage in moderate physical activity for 2-3 days per week for 3-4 hours. The results also showed that most students engage in walking for (2-5) days per week, with varying hours ranging from 11.7% for (4) hours

to 32.26% for (3) hours per week. Overall, these results indicate a low level of physical activity among university students, which has negative implications for their health and is associated with the development of many chronic diseases, particularly obesity and weight gain. International recommendations for health-promoting physical activity for adults aged 18-64 years suggest that they should engage in at least 150 minutes of moderate physical activity per week, 75 minutes of vigorous physical activity per week, or a combination of the two. For additional health benefits, adults should increase their moderate physical activity to 300 minutes per week, or equivalent. (Eslim et al., 2020).

Also, the amount and intensity of physical activity are important factors in preventing weight gain and obesity. Studies have shown that moderate-to-vigorous physical activity, such as brisk walking, running, or cycling, is more effective in preventing weight gain than low-intensity activities such as standing or slow walking. (Lee et al, 2010)

7) During the past 7 days, how much time did you spend sitting on one of these days other than the weekend?

Frequencies and Percentages of the student's responses to this question were computed, and the results were shown in table (9).

Table 9: Frequencies and Percentages of the student's responses on how much time they spent sitting on one of these days other than the weekend.

#	The Responses	Frequencies	Percentages	Rank
1	One Day or nothing	39	13.82%	4
2	Two Days	98	34.75%	1
3	Three Days	70	24.82%	2
4	Four Days	48	17.02%	3
5	Five Days	27	9.57%	5
Total		282	100.00%	=

Table (9) shows (Two Days) ranked first with frequencies (98), and percentage (34.75%). (Three Days) ranked second with frequencies (70), and percentage (24.82%). While (Five Days) ranked finally, with frequencies (27), and percentages (9.57%). The benefits of physical activity for weight management and overall health are dose dependent. The more physical activity you do, the greater the health benefits, including a lower risk of weight gain and obesity. (Haskell et al, 2007)

Overall, these studies highlight the importance of regular physical activity as a key component of a healthy lifestyle that can help prevent weight gain and obesity.

3- The relationship between physical activity levels and obesity levels among students was determined by calculating Pearson's correlation coefficient, and Tables (10, 11) illustrate this.

Table (10): Means and standard deviations of the study sample's estimates for physical activity level and obesity levels

Variables	Mean	Standard Deviation
Physical Activity	2.06	0.324
Obesity Level	25.70	15.62

"Table (10) shows that the mean for physical activity level is 2.06 with a standard deviation of 0.324, while the mean for obesity level is 25.70 with a standard deviation of 15.62. Then, the Pearson correlation coefficient, correlation

coefficient squared, adjusted correlation coefficient, and standard error of estimate were calculated for physical activity level and obesity levels among students, as shown in Table (11):

Table (11): Pearson correlation coefficient, correlation coefficient squared, adjusted correlation coefficient, and standard error of estimate for physical activity level and obesity levels among students."

The Pearson correlation coefficient value, correlation coefficient squared, adjusted correlation coefficient, and standard error of estimate	The Pearson correlation coefficient value, correlation coefficient squared, adjusted correlation coefficient, and standard error of estimate	The Pearson correlation coefficient value, correlation coefficient squared, adjusted correlation coefficient, and standard error of estimate	The Pearson correlation coefficient value, correlation coefficient squared, adjusted correlation coefficient, and standard error of estimate
0.102	0.204	0.511	0.715*

The asterisk (*). Table (11) indicates statistical significance at a significance level of ($\alpha \leq 0.05$). The table shows a statistically significant positive correlation between the study sample's estimates of physical activity levels and their levels of obesity, with a total correlation coefficient of 0.715, a squared correlation coefficient value of 0.511, and a standardized correlation coefficient of 0.204, with a standard error of estimation of 0.102. This result shows a statistically significant relationship between physical activity levels and

obesity levels among students. There have been many recent scientific studies that have investigated the relationship between physical activity and weight gain and obesity. Some of the key findings of these studies indicate that regular physical activity is associated with a reduced risk of weight gain and obesity. Physically active individuals tend to have lower body mass index (BMI) and a lower risk of obesity-related diseases, such as type 2 diabetes, heart disease, and certain types of cancer. (Swift et al., 2014).

4- Differences in the relationship between physical activity levels and obesity levels among students were found according to demographic

variables (gender, major, place of residence, and academic level), and Table (12) illustrate this.

Table (12): Four-way ANOVA test results for the Differences in the relationship between physical activity levels and obesity levels among students were found according to demographic variables (gender, major, and academic level, and place of residence)

Source of Variance	Sum of Squares	df	Mean Square	F-Value	P-Value
Gender	.481	1	.481	.523	.471
major	.059	1	.059	.070	.792
Academic Level	8.624	3	2.847	6.888	.181
Residence Place	.067	1	.067	.214	.644
Error	92.580	276	.313		

- Significant at ($\alpha \leq 0.05$).

Table (12) shows that: There are no statistically significant differences in the relationship between levels of physical activity and levels of obesity among students according to demographic variables (gender, major, academic level, and place of residence).

In conclusion, the level of physical activity among university students is a critical factor in preventing overweight and obesity, which are major risk factors for chronic diseases. Several studies have shown a significant relationship between low physical activity levels and overweight/obesity among university students. However, the relationship between physical activity and overweight/obesity is complex and influenced by several factors such as gender, age, and cultural context.

Understanding the factors that influence physical activity levels among university students and their impact on overweight and obesity is essential for developing effective interventions to promote physical activity and prevent chronic diseases. Strategies that target specific factors such as gender, age, and cultural context may be

necessary to increase physical activity levels among university students and reduce the prevalence of overweight and obesity.

In conclusion, promoting physical activity among university students is crucial for maintaining a healthy lifestyle and preventing chronic diseases. Universities and health organizations should work together to develop effective interventions to promote physical activity and healthy lifestyles among university students.

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