

Impact of covid-19 pandemic on physical activity and academic performance among medical students; a single center study from Saudi Arabia

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Objectives: To investigate the impact of COVID-19 pandemic on physical activity and academic performance among students of Majmaah University, KSA.

Methodology: This descriptive cross-sectional study included 200 all year's medical students of either gender of Majmaah University. Complete enumeration technique was used for data collection. An online google form was shared with the study participants. Data were analyzed using SPSS version 24. The study was completed in six months.

Results: Students with higher grades spent most of their time sitting without engaging in mild to moderate or severe physical activity. We found that 43 (21.5%)

participants gained 1-5kg, 42 (21%) 5-10kg, 14 (7%) gained more than 10kg. On the other hand, 38 (19%) participants lost 1-5kg, 30 (15%) lost 5-10kg, 18 (9%) lost more than 10kg and 114 (57%) of the participants had no change in weight during the corona pandemic.

Conclusion: Regardless of the COVID-19 pandemic, physical inactivity is considered as a separate pandemic. Students' capacity to engage in sufficient amounts of physical activity to preserve health and avoid disease may have been hampered by the COVID-19 pandemic.

Keywords: Covid -19 pandemic, physical activity, academic performance.

INTRODUCTION

The outbreak of the coronavirus (COVID-19) pandemic has affected almost every perspective of our life. Students no longer had access to physical activities. According to recent estimates, over three-quarters of American children and youth aged 6 to 15 do not fulfill the 2018 Physical Activity Guidelines for Americans' requirement of 60 minutes of moderate-to-vigorous physical activity (MVPA) per day. Inadequate physical activity and excessive sedentary behavior among students is a significant issue because it can lead to overweight/obesity, Type II diabetes, and metabolic syndrome.¹

Apart from affecting students' physical activity, the Covid-19 pandemic has also had an impact on their academic performance. COVID-19 pandemic had a negative impact on Afghan pupils' academic achievement.² A study found only 30% of students had higher GPAs, with the remaining 40% reporting no change and the remaining 30% having worse GPAs.³ Online learning software may prove to be a useful teaching strategy.⁴

A study done by Mahdy showed that COVID-19 pandemic lockdown affected the academic performance of most participants with varying degrees.⁵ The majority

of studies found that students prefer face-to-face activities and have a negative attitude and low motivation for virtual learning.⁶⁻⁸ The current study investigated the impact of COVID-19 pandemic on physical activity and academic performance among students of Majmaah University, KSA.

METHODOLOGY

This descriptive cross-sectional study was conducted in College of Medicine, Majmaah University, KSA. It included all year's male and female students of Majmaah University. Any students outside Majmaah University were excluded from the study. The study was completed in six months. Ethical approval was taken by Majmaah Research Institutional Ethics Committee of Basic & Health Science Research Center, Al-Majmaah, and an Informed consent was obtained from all subjects. A complete enumeration technique was used to collect data. An online google questionnaire was sent to all the students studying at Majmaah University but only 200 responded.

Statistical Analysis: Data were analyzed using SPSS Statistics 24. $p < 0.05$ was considered significant.

RESULTS

Out of 200 students, 115 (57.5%) were males, 185 (92.5%) were aged from 18 to 24 years old while the remaining 24 (7.5%) were more than 24 years old. At work, more than half of the participants were usually walking, 25.5% were mostly sitting or standing, 17.5% were doing mostly hard physical work or physically demanding work, whereas 3.5% were unsure of their type of work. Life style of students is shown in Table 1.

Regarding the academic performance during the corona pandemic, 149 (74.5%) of participants had a negative influence on their academic performance, whereas 51 (25.5%) of individuals had a good impact on their academic performance. Corona virus had infected 115 (57.5%) of the participants, while the remaining 85 (42.5%) had not been affected. Table 2 shows a comparison of GPA before one year regarding physical activity. The statistical analysis revealed a non-significant relationship between GPA and gender, vigorous activity, moderate activity, and gaining and losing weight during the pandemic ($p=0.146$, 0.790 , 0.689 , 0.180 , respectively), but a significant relationship between GPA and participants who spent most of their day sitting and those who lost weight during the pandemic ($p=0.016$, 0.032). Table 3 shows comparison of GPA during corona pandemic in terms of physical activity. Table 4 shows a comparison of student's current GPA and physical activity.

Table 1: Lifestyle of the students (n=200).

Lifestyle Characteristics	No. (%)
When you are at work, which of the following describes what you do?	
Mostly sitting or standing	51 (25.5)
Mostly walking	107 (53.5)
Mostly heavy labor or physically demanding work	35 (17.5)
Don't know/not sure	7 (3.5)
Does students do Vigorous physical activity?	
Yes, I do	89 (44.5)
No, I don't	111 (55.5)
Do you do Moderate physical activity?	
Yes	130 (65)
No	70 (35)
How would you rate your physical performance during the Corona pandemic?	
Active	29 (14.5)
Moderately active	99 (49.5)
Rarely active	72 (36)
Did you gain weight during the corona pandemic?	
1-5kg	43 (21.5)
5-10kg	42 (21)
More than 10kg	14 (7)
No change	101 (50.5)
Have you lost weight during the Corona pandemic?	
1-5kg	38 (19)
5-10kg	30 (15)
More than 10kg	18 (9)
No change	114 (57)

DISCUSSION

Regardless of the COVID-19 pandemic, physical inactivity itself is considered as a separate pandemic. It is a leading cause of non-communicable chronic diseases, causing more than three million premature deaths each year worldwide. Prior to the COVID-19 outbreak, 23% of adults and 81 percent of adolescents (aged 11–17 years) in the world did not meet the WHO's global recommendations for physical activity and time spent on sedentary behavior was on rise.⁹

We found that 55.5% participants engaged in vigorous physical activities, while 44.5% did not. Physical performance during the pandemic was rated as active by only 14.5% participants. During the pandemic, 21.5% participants gained 1-5kg, 21% gained 5-10kg, 7% gained more than 10kg, and 50.5% gained no weight. Approximately 19% of the participants lost 1-5kg during the pandemic, 15%, 9% lost more than 10kg and 57% had no weight change. Our findings were similar to

Table 2: Relation between academic performance and physical activity.

Physical Activity	GPA Before One Year		p value
	Low and average (1.0-3.99) (n=94)	High (4.0-5.0) (n=106)	
Gender			
Male	49 (52.1)	63 (59.4)	0.146
Female	45 (47.9)	43 (40.6)	
Vigorous activity			
Yes	39 (41.5)	40 (37.7)	0.790
No	55 (58.5)	66 (62.3)	
Moderate activity			
Yes	62 (66)	63 (59.4)	
No	32 (34)	43 (40.6)	0.689
How many hours a day do you spend sitting			
2-4	3 (3.2)	24 (22.6)	0.016*
4-6	22 (23.4)	20 (18.9)	
8-10	39 (41.5)	26 (27.6)	
10-12	23 (24.5)	21 (23.7)	
more than 12	7 (7.4)	15 (17)	
Did you gain weight during the pandemic			
1-5kg	20 (21.3)	23 (24.5)	0.180
5-10kg	21 (22.3)	22 (23.4)	
More than 10kg	5 (5.3)	14 (14.9)	
No change	48 (51.1)	47 (50)	
Did you lose weight during the pandemic			
1-5kg	12 (12.8)	22 (21)	0.032*
5-10kg	16 (17)	17 (18.1)	
More than 10kg	13 (13.8)	10 (10.6)	
No change	53 (56.7)	58 (61.7)	

University of Mississippi students.¹

Our study results are also consistent with another comprehensive electronic search, which was conducted in the databases of Cochrane Library, PubMed, SPORT Discus, and Web of Science up to the 20th of October 2020. A total of ten studies were reviewed and nine revealed a significant decline in physical activity levels. Five studies found a 32.5 to 35.5% reduction in light/mild physical activity (walking) compared to pre-lockdown values, whereas seven studies found a 2.9 to

52.8% reduction in high/vigorous physical activity.² During the COVID-19, levels of walking, moderate, vigorous, and total physical activity were lowered in university students from many countries.¹¹⁻¹⁴

Since the beginning of the COVID-19 pandemic, educational institutions all over the world have had to adopt a non-face-to-face mode of operation in order to continue with their educational plans. Despite the fact that some studies suggest that the pandemic has had a negative impact on students,^{3,10} our findings show that

Table 3: Comparison of GPA with Physical activity during corona pandemic.

Physical Activity	Academic Performance			p value
	Low (1.0-3.99) (n=65)	High (4.0-5.0) (n=85)	No Change (n=50)	
Vigorous activity				
Yes	31 (47.7)	36 (42.3)	22 (44)	0.117
No	34 (52.3)	49 (57.6)	28 (56)	
Moderate activity				
Yes	44 (67.7)	49 (57.6)	37 (74)	0.757
No	21 (32.3)	36 (42.3)	13 (26)	
How many hours a day do you spend sitting				
2-4	7 (10.8)	16 (18.8)	2 (4)	
4-6	10 (15.4)	20 (23.5)	16 (32)	0.008*
8-10	21 (32.2)	30 (35.3)	16 (32)	
10-12	20 (30.8)	14 (16.5)	11 (22)	
More than 12	7 (10.8)	5 (5.9)	5 (10)	
Did you gain weight during the pandemic				
1-5kg	16 (26.4)	18 (21.2)	10 (20)	
5-10kg	18 (27.7)	13 (15.3)	11 (22)	0.031*
More than 10kg	4 (6.1)	7 (8.2)	3 (6)	
No change	27 (41.5)	48 (56.5)	26 (52)	
Did you lose weight during the pandemic				
1-5kg	11 (16.9)	14 (16.5)	13 (15.3)	
5-10kg	18 (27.7)	6 (7.1)	6 (7.1)	0.051*
More than 10kg	5 (7.7)	10 (11.8)	3 (3.5)	
No change	31 (47.7)	55 (64.7)	28 (32.9)	

students' academic performance had improved when compared to their average before the pandemic. There were certain benefits of pandemic, such as increased engagement with family, more parental monitoring, and the ability to engage in other interests and hobbies that are less likely when they have to go to college, all of which may influence academic achievement.¹⁵

Another factor for the improvement is the educational institutes' adaptation of their curricula to a non-face-to-face format. Educational objectives can be met if teachers are appropriately educated to teach their classes using this method.⁹

We found that 149 (74.5%) participants had a negative influence on their academic performance during the

corona pandemic, while 51 (25.5%) had a good impact on their academic performance. There was no significant association between GPA and gender, vigorous activity, moderate activity, and gaining and losing weight during the pandemic ($p=0.146$, 0.790 , 0.689 , 0.180 , respectively), but there was a significant association between GPA and participants who spent most of their day sitting and those who lost weight during the pandemic ($p=0.016$, 0.032). Participants who dropped weight had a higher GPA, as did those who had spent the majority of the day sitting. Gender ($p=0.01$) and age ($p=0.01$) were the demographic characteristics that predicted academic achievement, as majority of students improved their grades.⁴

Table 4: Comparison of Students' current GPA and Physical activity.

Physical Activity	GPA Now		p value
	1.0-3.99 Vigorous (n=96) Moderate (92) Sitting (n=92) Weight (n=92)	4.0-5.0 Vigorous (n=70) Moderate (n=74) Sitting (n=74) Weight (n=74)	
Vigorous Activity			
Yes	41 (42.7)	29 (41.4)	0.115
No	51 (53.1)	45 (64.3)	
Moderate activity			
Yes	60 (65.2)	43 (58.1)	0.506
No	32 (34.8)	31 (41.9)	
How many hours a day do you spend sitting?			
2-4	5 (5.4)	17 (23)	
4-6	21 (22.8)	6 (8.1)	0.052*
8-10	35 (38)	23 (31.1)	
10-12	23 (25)	12 (16.2)	
More than 12	8 (8.7)	8 (10.8)	
Did you gain weight during corona pandemic?			
1-5kg	17 (18.5)	18 (24.3)	0.217
5-10kg	19 (20.6)	18 (24.3)	
More than 10kg	8 (8.7)	5 (6.75)	
No change	48 (52.2)	23 (31.1)	
Did you lose weight during corona pandemic?			
1-5kg	13 (14.1)	15 (20.3)	0.625
5-10kg	17 (18.5)	10 (13.5)	
More than 10kg	10 (10.9)	6 (8.1)	
No change	52 (56.5)	43 (58.1)	

Our study results are similar to another global study with 1,392 participants from 92 countries with a 94.1% response rate. COVID-19 pandemic lockdown affected the academic performance of the majority of participants (96.7%) to varied degrees, according to the data.⁵

The study limitations include quite small sample size and representing only a localized area of students. Secondly, the information was gathered by self-report, which is prone to cognitive bias.

CONCLUSION

Students' capacity to engage in sufficient amounts of physical activity to preserve health and avoid disease were hampered by the COVID-19 pandemic thus the levels of walking, moderate, vigorous, and total physical activity were reduced. Many pupils' academic performance was impacted by lockdown. Students who had sedentary lifestyle had better GPA scores.

It is recommended that efforts should be carried out to maintain services like leisure centers, local gyms, and fitness facilities so that students can continue their

physical exercise regimens. Such initiatives would significantly lessen the impact on students' physical and academic well-being.

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