



LEVELS OF PHYSICAL ACTIVITY OF UNDERGRADUATE STUDENTS BEFORE AND DURING LOCKDOWN AMID COVID-19

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ABSTRACT

Introduction: To curb the spread of COVID-19, many states and countries have adopted measures like lockdown which restricted movements of the population. This had both physical and psychological ill effects among people. The great part of the Hyderabad population was forced to live in home-confinement for weeks, increasing the risk of reducing their physical activity (PA). With the announcement of closure of gyms, sports facilities and parks, play grounds, being physically active became challenging.

Methodology:

Type of study: Cross-sectional study

Study tools- A modified questionnaire based on the IPAQ was used to collect the information.

Study setting: The Students Pursuing Mbbs Course From First Year To Internship In Medici Institute Of Medical Sciences, Hyderabad Were Asked To Fill Out The Questionnaire. They Were Informed About The Study During Their Online Classes.

Sampling method: All the students were approached and were forwarded the questionnaire.

Results: Out of 462 study participants, 68.4% (n=316) were females and 31.6% (n=146) were males with a mean BMI of 23.05 ± 4.08 SD. **Conclusion:** There was no difference among study participants in performing various types of physical activity levels before and during lockdown. Sedentary activities like sitting, using phone, watching TV etc has increased compared to before lockdown.

KEYWORDS : Physical activity, Undergraduates, Lock-down, COVID 19, Sedentary behaviors.

INTRODUCTION

In March 2020, The Government of India ordered a widespread lockdown in response to the COVID-19 pandemic as declared by the World Health Organization. At the time, COVID-19 (coronavirus disease 2019), an infectious disease has become a public health emergency of international concern.¹ The absence of specific preventive and medical interventions, alongside its rapid transmission rate and substantial undocumented contamination and transmission numbers had led to a scientifically sound recommendation that said, the individuals must stay at home and avoid social interactions to restrain the disease spread.

Implementation of the lockdown has restricted movements of the population. The COVID-19 pandemic and its associated restrictions showed both physical and psychological ill effects among the population^{2,3,4}. With the announcement of social distancing measures and closure of gyms, sports facilities and parks, malls, playgrounds, achieving the WHO (World Health Organization) recommended physical activity levels has become challenging. The World Health Organization (WHO) recommends at least 150 min of moderate physical activity, 75 min of vigorous activity, or a combination of the two, per week⁵. Independent of the physical activity carried out, it is important to assess the sedentary behaviour (SB) as this is related to increased morbidity and cardiovascular risk factors⁶. Physical Inactivity and sedentary behavior affects human health negatively at cardiovascular, metabolic, endocrine and psychological levels^{4,5}.

Physical activity was shown to be lower during COVID-19 restrictions when compared to the time before the restrictions were put in place^{7,8,9,10}. More recent analysis has shown that between 24 and 49% of samples had decreased PA levels during restrictions, 21–32% had increased PA levels, and 30.5–44% had no changes in PA^{8,10,11,12}.

The lockdown period might have either facilitated or interfered with the motivation of an individual to lead a

healthy lifestyle with adequate physical activity through at-home workouts and household chores. The hypothesis put forward here is that the students' sedentary behaviour has increased and their physical activity levels have decreased under the lockdown circumstances.¹³

OBJECTIVES

1. To know the levels of physical activity and sedentary behaviors among undergraduates during February and March 2020.
2. To know the levels of physical activity and sedentary behaviors among undergraduates during APRIL-MAY, 2020.
3. To know the difference in levels of physical activity and sedentary behaviors among undergraduate students before and during lockdown.

MATERIALS AND METHODS

In order to assess the levels of physical activity of students during the lockdown in comparison with pre-lockdown, a cross-sectional study investigating their PA-related habits before and during the lockdown was designed. An electronic questionnaire via Google forms proposed during academic lessons was used to collect this information.

The first section included the consent form, the next section included questions regarding socio-demographic features of participants (gender, age, height, weight (before lockdown and present weight), year of study).

To assess the students' weekly time spent in PA, the International Physical Activity Questionnaire (IPAQ) was used in the questionnaire

Study Setting

All The Undergraduate Medical Students Pursuing Mbbs Course From First Year To Compulsory Rotatory Internship In Medici Institute Of Medical Sciences, Hyderabad.

Inclusion criteria

Students who are willing to participate in the study.

Exclusion criteria

Students who are not willing to participate in the study.

Study Period

From JULY 1-2020 TO AUGUST 31-2020.

Sampling method:

We included all the students in the college.

Every student was contacted to fill out the web based questionnaire.

RESULTS

Table 1: Sex distribution of students

Year of Study	Number of students		Males		Females		BMI	
	Count	%	Count	%	Count	%	Mean	SD
First year	155	33.5	56	36.1	99	63.9	22.73	3.8
Second Year	92	19.9	29	31.5	63	68.5	23.54	4.2
Third Year	88	19	31	35.2	57	64.8	22.24	3.6
Fourth Year	37	8	11	29.7	26	70.3	23.10	5.2
Intern	90	19.5	19	21.1	71	78.9	23.88	3.9
Total	462	100	146	31.6	316	68.4	23.05	4

Out of 462 study participants, 68.4% (n=316) were females and 31.6% (n=146) were males with a mean BMI of 23.05 ± 4.08 SD.

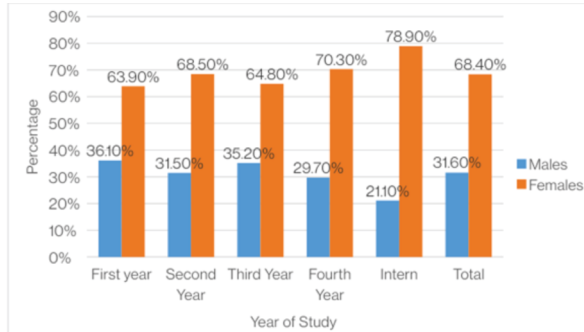


Figure 1: Bar diagram showing sex distribution of students

Table 2: Comparison of weight and BMI among study participants before and during lockdown

Variable	Before Lockdown		During Lockdown		P value
	Median	Range	Median	Range	
Weight (Kg)	59	52 - 69	60	53 - 70	0.22
BMI	22.31	20 - 25	22.39	20 - 25	0.20

The range of weight (in Kg) and BMI of study participants before and during lockdown were 52-69 and 20-25, and 53-70 and 20-25 respectively.

Table 3: Physical activity levels before and during lockdown among the study participants: (Paired t-test)

Variable	Before Lockdown		During Lockdown		P value
	Median	Range	Median	Range	
Vigorous Activity (minutes)	60	29 - 90	60	30 - 90	0.341
Moderate Activity (minutes)	60	20 - 90	60	30 - 90	0.389
Walking (minutes)	60	30 - 120	60	30 - 90	0.554
Sitting (minutes)	420	270 - 600	570	330 - 780	<0.001*
Phone usage (minutes)	203	120 - 300	360	240 - 510	<0.001*
Watching TV (minutes)	120	60 - 180	300	180 - 420	<0.001*

Playing Video games (minutes)	60	10 - 150	120	30 - 300	<0.001*
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There was no difference among study participants in performing various types of physical activity levels before and during lockdown. Sedentary activities like sitting, using phone, watching TV etc has increased compared to before lockdown.

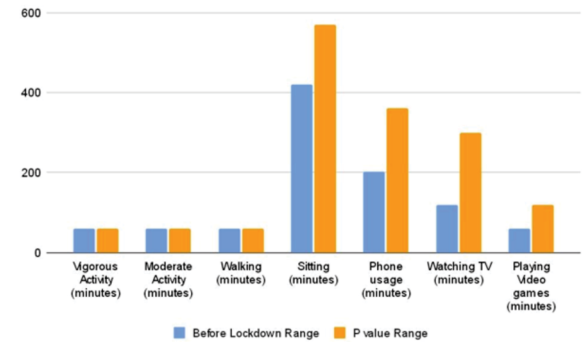


Figure 2: Physical activity levels before and during lockdown among the study participants.

Table 4: Comparison of weight and BMI before and during lockdown among male participants: (Paired t-test)

Variable	Before Lockdown		During Lockdown		p value
	Median	Range	Median	Range	
Weight (Kg)	68	60 - 80	70	60 - 79	0.195
BMI	23.58	19.7 - 26.3	23.36	20.2 - 26.9	0.165

There is no significant difference between weight and BMI among male participants.

Table 5: Comparison of weight and BMI before and during lockdown among female participants: (Paired t-test)

Variable	Before Lockdown		During Lockdown		p value
	Median	Range	Median	Range	
Weight (Kg)	55.5	50 - 64	56	51 - 64	0.664
BMI	21.95	19.6 - 24.2	22.21	20 - 24.4	0.619

There is no significant difference between weight and BMI among female participants.

Table 6: Physical activity levels before and during lockdown among male participants: (Paired t-test)

Variable	Before Lockdown		During Lockdown		p value
	Median	Range	Median	Range	
Vigorous Activity (minutes)	75	30 - 120	60	27.5 - 109	0.529
Moderate Activity (minutes)	60	30 - 120	60	20 - 120	0.671
Walking (minutes)	60	30 - 120	60	30 - 120	0.489
Sitting (minutes)	365	203 - 600	480	253 - 788	<0.001*
Phone usage (minutes)	180	120 - 300	360	180 - 518	<0.001*
Watching TV (minutes)	120	60 - 180	246.50	150 - 432	<0.001*
Playing Video games (minutes)	73	59 - 180	180	85 - 337	<0.001*

There is a significant increase in sedentary activities during lockdown among male participants.

Table 7: Physical activity levels before and during lockdown among female participants: (Paired t-test)

Variable	Before Lockdown		During Lockdown		P value
	Median	Range	Median	Range	
Vigorous Activity (minutes)	60	15 - 75	60	30 - 90	0.066
Moderate Activity (minutes)	45	15 - 80	60	30 - 89	0.335
Waking (minutes)	60	30 - 90	60	20 - 90	0.085
Sitting (minutes)	480	300 - 600	600	360 - 780	<0.001*
Phone usage (minutes)	208	120 - 300	380	240 - 508	<0.001*
Watching TV (minutes)	120	60 - 180	300	180 - 404	<0.001*
Playing Video games (minutes)	60	40 - 146	120	10 - 300	<0.001*

There is a significant increase in sedentary activity levels during lockdown among female participants.

DISCUSSION

The present study aimed to examine the changes in levels of physical activity and sedentary behaviours among students with respect to the implementation of lockdown due to the COVID-19 pandemic. In this study we found no drastic changes in physical activity levels but there was a significant increase in sedentary behaviours among the study population. Recording changes in physical activity levels is significant as there is a close association between physical activity levels and various diseases. Salari et al and Stubbs et al showed that there is an increased prevalence of anxiety and stress which physical activity is known to ameliorate^{14,15}. According to a study conducted by Young D.R et al, an association between sedentary behaviour and cardiovascular morbidity and mortality was found. With the increase in sedentary behaviours there is increased cardiovascular morbidity and mortality⁶. A decrease in physical activity levels and increase in sedentary behaviours results in negative effects on cardiovascular, metabolic, endocrine and psychological levels. Previous researchers found that there was an increase in sitting time and a decrease in amount of time spent on physical activities as the population was obliged to spend more time at home.¹⁶

In this study, among the 462 study participants, 316 are females and 146 are male participants. The current mean BMI of the study participants is 23.05 with an SD of 4.08. Along with assessing the levels of their physical activity and sedentary behaviours we have also measured and calculated weight and BMI of the students before and during lockdown. The weight of the students ranged from 52 to 69 before lockdown and 53 to 70 during lockdown. And the BMI of the students ranged from 20 to 25 before and during lockdown. We have expected an increase in weight and BMI among the study population due to adaptation of sedentary behaviours and an expected call in physical activity.

Perhaps some students showed an increase in physical activity levels as the lockdown provided them the time and they were motivated to do at-home workouts. While the other set of students experienced an interference to their motivation and couldn't use the situation as an opportunity to do any kind of planned physical activity leading to an increase in sedentary behaviour.

In conclusion, there was a slight overall increase in physical activity levels but alongside there was also an increase in sedentary behaviour among the study population. As increased Sedentary behaviour and decreased physical activity forms a base for many kinds of diseases and also reduces the quality of life it is necessary to address the ill effects resulted by the COVID-19 pandemic's lockdown

Limitations of the study:

This study has a few limitations:

- As the data was collected after 2 months after the complete lockdown, there might be a recall bias.
- Few students were completely inactive before and during lockdown, hence there were extreme values in the data.

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