

The Influence of Covid-19 Lockdown on Body Mass Index, Depression, Anxiety and Stress among Medical Students.

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ABSTRACT

The Covid-19 pandemic has wreaked havoc throughout the world, with 150 million cases to date and over 3 million lives claimed worldwide. **Objectives:** To explore the impact of the Covid-19 lockdown on psychological health parameters i.e. depression, anxiety and stress as well as on body mass index among medical students studying in a private medical college in Pakistan. **Study Design:** Experimental study. **Methodology:** This study with enrolled students (n=233) was carried out after ethical review committee's (ERC) approval at CMH Kharian Medical College (CKMC), Physiology Department, Kharian-Pakistan. Both male and female medical students were enrolled. In phase 1, the students reported to the Physiology laboratory where age and gender were recorded. The pre-lockdown readings of BMI and DASS-21 (Depression, Anxiety, Stress) scale were taken. In phase-2, the post-lockdown readings of BMI and DASS-21 scale were taken once the students returned to campus. **Statistical analysis:** Data was analyzed by SPSS software, version 21. BMI and DASS-21 score were presented as mean + SD. Statistical significance was taken at p value <0.05. **Results:** In present study, results showed that there was a decrease in level of depression post-Covid-19-lockdown among enrolled subjects with significant p-values (0.019*) in the pre and post covid-19-lockdown comparison. **Conclusion:** We concluded that significant difference was seen between Pre & Post Covid-19-lockdown depression with p-value of <0.019. However, insignificant difference was seen between Pre & Post Covid-19-lockdown anxiety and stress with p-value of >0.05. **Key Words:** Covid-19 lockdown, Medical students, Depression, BMI and Anxiety.

INTRODUCTION

The Covid-19 pandemic has wreaked havoc throughout the world, with 150 million cases to date and over 3 million lives claimed worldwide.¹ In Pakistan, over 800 thousand cases and almost 17000 deaths have been reported since March, 2020.² In the wake of the first wave of the pandemic, the government of Pakistan imposed an almost six month long lockdown from mid-March to mid-September 2020 wherein all public gatherings were prohibited, offices and educational institutes were shifted to remote work and online education and commercial activity was reduced to the bare minimum. These measures proved to be a double edged sword, as on one hand, they were beneficial in limiting the spread of the disease, while on the other, they had a significant impact on the psychological health of the youth in general and of medical students in particular.³ Medical studies are known to be one of the toughest educational endeavors in the world.⁴ Add to that the stress and mental burden of a rapidly spreading, poorly understood and often fatal infectious disease and the multitude of social and economic complications emerging as a direct or indirect result of it; untoward psychological consequences are all but expected.⁵

Furthermore, most medical students find it difficult to maintain a structured, well rounded daily routine during the five year course of their studies. They often lead a sedentary lifestyle involving long stretches of time spent

sitting down, going through course books and study material. Balanced and healthy nutrition is rarely given priority by medical students when fueling themselves during long study sessions or even during leisure time. Unregulated quantities of fast food and carbonated and/or energy drinks are consumed on a regular basis in medical college cafeterias and hostels throughout the country.⁶ Moreover, the widespread availability of unlimited internet access in college campuses has led to more and more in-living medical students spending their leisure time sitting in front of their laptops and/or mobile devices, either engaged in online games, or watching content on online streaming platforms.⁷ This shift in habits, involving more and more time spent indoors, with minimal physical activity is contributing to the alarming rate of increase in obesity and general lack of physical well-being amongst medical students.⁸ There has been growing scientific evidence highlighting the link between irregularities in body mass index (BMI) and psychological and behavioral disturbances,⁹ but research exploring the influence of the Covid-19 pandemic and the lockdown on psychological and physical health is still evolving and demands deeper understanding. In that vein, this study aimed to explore the impact of the Covid-19 lockdown on psychological health parameters, as well as on BMI, among medical students in a private medical college in Pakistan.

OBJECTIVES

To explore the impact of the Covid-19 lockdown on psychological health parameters i.e. depression, anxiety and stress as well as on body mass index among medical students studying in a private medical college in Pakistan.

Methodology: This study with enrolled students (n=233) was carried out after ethical review committee's (ERC) approval at CMH Kharian Medical College (CKMC), Physiology Department, Kharian-Pakistan. Both male and female medical students were enrolled. A written survey was taken to determine the inclusion and exclusion criteria. The participants were included on the basis of being medical students, aged between 17 to 25 years and in otherwise normal physical health while the exclusion criteria were; age below 17 or above 25 years, previously diagnosed cognitive or psychological disorders, comorbidities such as hypertension, diabetes mellitus, cardiovascular disease and a history of smoking/ drug use. The study was divided into two phases. In phase 1, the students reported to the Physiology laboratory where age and gender were recorded. Height and weight were measured and recorded as well and were used to calculate the Body Mass Index (BMI) by dividing weight in kilograms by height in meters squared (m^2). BMI was classified into four groups; underweight (BMI < 18.5 kg/m^2), Normal weight (BMI 18.5–24.9 kg/m^2), Overweight (BMI 25.0–29.9 kg/m^2) and Obesity (BMI > 30.0 kg/m^2). The pre -lockdown readings of BMI and DASS-21 scale were taken. In phase-2, the post-lockdown readings of BMI and DASS-21 scale were taken once the students returned to campus.

Statistical Analysis: Data was analyzed by SPSS software, version 21. The subjects were then divided into three age groups (in years) i.e. 17-19, 20-21, 22-24 and were presented as frequency along with mean + SD. BMI and the DASS-21 scores were presented as mean + SD. Statistical significance was taken at p value <0.05.

RESULTS:

The subjects were then divided into three age (years) groups. Out of 233 subjects, majority of students (n=141) were in age group 20-21. In age group 17 – 19 Pre-Covid lockdown BMI mean is 23.20 with 4.32 SD while Post-Covid lockdown BMI mean is 21.92 with 3.87 SD as shown in table-1.

Table-1: Pre & Post –COVID lockdown BMI with Age groups (n=233)

Pre-Covid-19 lockdown BMI	Age group	N	Mean	SD	0.551
Pre-Covid-19 lockdown BMI	17-19	44	23.20	4.32	
	20-21	141	21.64	3.27	
	22-24	48	22.76	5.07	
	Total	233	22.16	3.94	
	Post-Covid-19 lockdown BMI	17-19	42	21.92	
20-21		141	21.62	3.82	
22-24		50	22.74	4.35	
Total		233	21.91	3.95	

The p-value for Post-COVID lockdown depression is 0.019 as depicted in table-2, showing that there is difference between variances in all 3 age groups.

Table-2: Pre & Post – COVID lockdown Depression with Age groups (n=233)

Pre-Covid-19 lockdown Depression	Age group	N	Mean	SD	0.019*
Pre-Covid-19 lockdown Depression	17-19	44	23.73	17.56	
	20-21	141	23.79	17.51	
	22-24	48	27.42	19.38	
	Total	233	24.52	17.90	
	Post-Covid-19 lockdown Depression	17-19	42	11.81	
20-21		141	13.83	10.18	
22-24		50	11.17	11.56	
Total		233	12.91	10.18	

*Statistically Significant

In age group 17 – 19 Pre-Covid lockdown anxiety mean is 4.41 with 4.23 SD while Post-Covid lockdown anxiety mean is 14.81 with 8.14 SD, in age group 20 – 21 Pre-Covid lockdown anxiety mean is 4.94 with 4.26 SD while Post-Covid lockdown anxiety mean is 14.81 with 9.10 SD in table-3 with insignificant p-value.

Table-3: Pre & Post-COVID lockdown Anxiety with Age groups (n=233)

Pre-Covid-19 lockdown Anxiety	Age group	N	Mean	SD	0.335
Pre-Covid-19 lockdown Anxiety	17-19	44	4.41	4.23	
	20-21	141	4.94	4.26	
	22-24	48	5.92	5.00	
	Total	233	5.04	4.42	
	Post-Covid-19 lockdown Anxiety	17-19	42	14.81	
20-21		141	14.87	9.10	
22-24		50	12.62	10.60	
Total		233	14.39	9.27	

In age group 17–19 Pre-Covid lockdown stress mean is 4.91 with 4.32 SD while Post-Covid lockdown stress mean is 17.19 with 8.79 SD, in age group 20–21 Pre-Covid lockdown stress mean is 4.85 with 4.25 SD while Post-Covid lockdown stress mean is 15.90 with 9.58 SD with insignificant p-value as shown in table-4.

Table-4: Pre & Post-COVID lockdown Stress with Age groups (n=233)

Pre-Covid-19 lockdown Stress	Age group	N	Mean	SD	0.665
Pre-Covid-19 lockdown Stress	17-19	44	4.91	4.32	
	20-21	141	4.85	4.25	
	22-24	48	4.25	3.61	
	Total	233	4.74	4.13	
	Post-Covid-19 lockdown Stress	17-19	42	17.19	
20-21		141	15.90	9.58	
22-24		50	13.29	11.29	
Total		233	15.59	9.87	

DISCUSSION:

The Covid-19 pandemic has forced many countries to opt for smart or complete lockdown. The government has made few measures compulsory like population confinement and social distancing in-order to control the spread this disease. However, many previous studies have discussed various psychological effects globally⁷ but psychological impact of current pandemic as well as the

lockdown measures in our society demands further exploration.⁸ Due to limited clinical research on mental health under the prevailing circumstances, we carried out this experimental study among medical students to explore the psychological toll after the Covid-19 lockdown.

In the present study, both genders were enrolled (n=233) including male and females. In one previous study, number of enrolled subjects was 600 including both genders.¹⁰ Paradoxically, in another study enrolled subjects were just 30. Hence, our work was different to that study in terms enrolled subjects.¹¹

In many previous studies, enrolled subjects had age ranging from 20-90 years and were grouped into 7 groups.¹⁰ In contradiction, in the present study, young adults were enrolled, ranging in age from 17-24 years and were grouped into 3 categories.

In the present study, results showed that there was an increase in level of psychological parameters like stress post-lockdown, with insignificant p-values (0.665). Similarly, an increase in stress level was shown in one previous study held at 2020 in Italy.¹²

The current study showed that there was an increase in post-lockdown anxiety among enrolled subjects with insignificant p-values (0.335). Similarly, an increase in anxiety level was shown in one previous study held at 2020 in Spain.¹³

In the present study, results showed that there was a decrease in level of psychological parameters like depression post-Covid-19 lockdown among enrolled subjects with significant p-values (0.019*) between pre and post covid-19 comparison. In contrast, an increase in depression level was seen in many previous studies.^{12, 13}

In present study, no significant change in BMI among enrolled subjects was seen. Similar results were shown in many previous studies that showed that body weight was unchanged in both pre & post lockdown groups.^{12, 14}

Limitations: Our study had limitations like financial constraints, lack of resources and lacked the evaluation of ability and strategy formation in everyday life.

Conclusion: We concluded that significant difference was seen between Pre & Post Covid-19 lockdown depression with p-value of <0.019. However, insignificant difference was seen between Pre & Post Covid-19 lockdown psychological parameters like anxiety and stress with p-value of >0.05.

Authors' Contribution:

RM &AFA: Conception and design of work
AK & IN: Collecting and analyzing the data
HA & RA: Drafting the manuscript
MA & RI: Collecting and analyzing the data
SA & SS: Drafting the manuscript
SNH & TL: Drafting and revising the manuscript for intellectual content.

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Conflict of Interest: None to declare

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