

A Longitudinal Study on COVID-19 Confinement and Impact on Physical Activity of Medical Students of Rawalpindi

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ABSTRACT

Objective: To assess the impact of COVID-19 confinement on different aspects of physical activity and sedentary time of medical students with special emphasis on gender.

Study Design: This was a longitudinal study in which two samples were taken, one during the confinement period and one after it, to assess the differences between the time spent on physical activity and sedentary time.

Place and Duration of Study: This study was conducted on a total of 300 medical students from two medical colleges of Rawalpindi. The study extended from Apr till Jun 2021 over a period of two months.

Methodology: Modified International Physical Activity Questionnaire (IPAQ) was used as a data collection tool. The respondents filled the questionnaire twice. First during COVID-19 confinement and the second, after the confinement ended.

Results: A total of 300 individuals were selected to fill in the questionnaire, 200 of them filled in the first questionnaire. The second questionnaire was, however, filled by only 146 individuals and the rest were lost to follow-up.

The 146 participants in our study were all students in medical schools in Rawalpindi/Islamabad Pakistan. Out of the total 43.2% (63) were male, while 56.8% (83) were female. The mean age was 20.18±1.72.

Post confinement, the amount of time spent on moderate and vigorous activities by all the individuals increased by 26.7% and 82.5%, respectively. In addition, walking time was increased by 82%, sedentary time was also reduced by 36.4%.

Conclusion: Physical activity of both men and women was found to be reduced during COVID-19 confinement along with increased sedentary time as compared to their normal routine.

Keywords: COVID-19 confinement, Gender, Physical activity, Resumption of normal routine.

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INTRODUCTION

COVID-19 is an infectious disease caused by a new strain of the novel coronavirus. COVID-19 infection started in December 2019 and was declared as a pandemic on 11 March 2020.¹ Due to its highly infective nature and lack of treatment, the only way to deal with the pandemic is social distancing which means keeping a safe space between yourself and other people who are not from your household,² and for people to avoid crowded places and social gatherings and leave their house as little as possible. Like most of the countries in the world, Pakistan also imposed confinement during smart lockdown several times in the last 15 months. This led to the closure of parks, recreational centers, and gyms. In addition, the people were advised to remain inside their homes. Similarly, Government also imposed the closure of medical colleges in Rawalpindi on 24th April 2021,³ and a smart lockdown in the whole country on 8th May 2021.^{4,5}

No specific studies were found which highlighted

the differences in physical activity and sedentary time during and after the COVID-19 lockdown in the literature with a specific emphasis being on medical students and the differences between responses by males and females.

This study aims to analyze how the COVID-19 lockdown has affected the physical activity routines of students.⁶ With an emphasis on the difference in the impact confinement has had on the physical activity routines of males and females, as in Pakistan due to cultural, social, and religious prohibition even before the lockdown females were not easily able to exercise openly and with the vast majority of the female population not having easy access to female only gyms or parks they are already confined to their homes to some extent.⁷

METHODOLOGY

An observational study carried out on the Impact of COVID 19 Confinement on the Physical Activity of Medical Students by approaching the participants at two stages in time: first, when the government man-

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dated confinement was underway followed by the second being administered at a time when the confinement period had ended and the general public had resumed their previous day-to-day routine.

The study was carried out after approval from the Ethical Review Committee (ERC). The certificate dated is attached forthwith. A written consent form was attached along with every questionnaire which had to be duly signed by the participant otherwise the response would not be included. It was made clear to the participants that they could withdraw consent or choose not to submit the questionnaire, if they so desired.

This was an observational study with an assessment conducted during and after the periods of confinement mandated by the government to study the impact of COVID-19 confinement on the physical activity of medical students. Two self-reported questionnaires were utilized, and administered during and after the period of confinement. The target population consisted of 300 medical students ranging from 18 years to 25 years in age. The study spanned a period of two months extending from 25th April 2021 to 25th June 2021. Non-Probability sampling technique was utilized.

Inclusion Criteria: Defined confinement by focusing on the medical students who were at their place of confinement for at least 16 hours of time. It also grouped those participants who had given their explicit consent and filled out both the questionnaires.

Exclusion Criteria: Helped to weed out those participants who did not give their consent, didn't fill out both questionnaires or spent less than 16 hours at their location of confinement.

Modified International Physical Activity Questionnaire was used as a data collection tool. The first close ended question was designed to assess the total time spent at home or in confinement per day which was the basis of inclusion and exclusion criteria. The rest of the 20 open ended questions were about the time spent per day and per week while travelling, cycling, walking, doing moderate and vigorous physical activity with the last two questions regarding time spent sitting during a weekday and a weekend day. Sedentary time was also inquired about. Two self-reported questionnaires were used. Personal particulars were obtained after consent for research purposes. Administering the questionnaires to the participants was organized such that the first was given to participants in a time period during which the government

mandated confinement was underway. Personal particulars were obtained after consent for research purposes. The gap between the dispensation of the two questionnaires was approximately two months. The participants were then approached once again using their contact information and requested to fill out the second questionnaire. The second questionnaire was given to participants once the confinement period had ended and the general public had returned to their normal routines.

The data from the two questionnaires was compared and the various other findings analyzed using Statistical Package for Social Sciences (SPSS) version 25.0.

RESULTS

A total of 300 individuals were selected to fill in the questionnaire, 200 of these were filled in the first questionnaire. The second questionnaire was, although, filled by only 146 individuals and the rest were lost to follow-up.

The 146 participants in our study were all students in medical schools in Rawalpindi/Islamabad Pakistan. Out of the total 43.2%(63) were male, while 56.8%(83) were female. The mean age was 20.18±1.72.

Table-I: Demographic characteristics of participants

Demographic Characteristics (n = 146)	
Age (years)	20.2±1.2
Male/Female	63(43.2%)/83(56.8%)

Post confinement, the amount of time spent on moderate and vigorous activities by all the individuals increased by 26.7% and 82.5%, respectively. In addition, walking time was increased by 82%, sedentary time was also reduced by 36.4%.

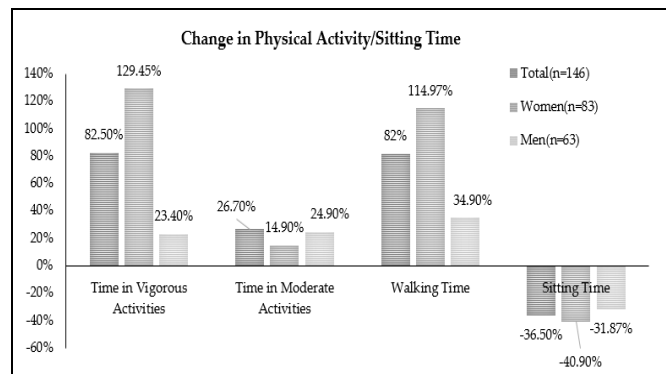


Figure-1: Physical activity/sedentary time of participants

Women reported a higher increase in vigorous activities than men (129.45% and 23.4%, respectively),

whereas men showed a greater increase in moderate activity than women (24.9% and 14.9%, respectively). Walking time was increased in men by 34.9% whereas it was greatly increased in women by 114.9%. However, sedentary time was reported to be decreased in men by 31.9% and 40.9% in women.

DISCUSSION

On 31st Dec 2019, a cluster of cases of pneumonia were reported in Wuhan, the capital of Hubei Province, China.⁸ A novel coronavirus was subsequently

massive 129% boost in time spent doing vigorous activities after the confinement while a sharp contrast was present in time spent doing vigorous activities by men displaying an increase of just 23.4%. Moderate activity levels saw a 50.6% rise across both genders. There was a greater increment in time spent doing moderate activities by men with a 64.4% increase while women had an increase of 26.9%, which was in accordance with a study conducted in Spanish institutes which showed a 25.3% rise in moderate physical activity.¹³

Table II: Physical activity/sedentary time of participants.

Sub Group Analysis	During Confinement		Post Confinement		During Confinement		Post Confinement	
	Time in Vigorous Activities	Time in Moderate Activities	Walking Time	Sitting Time	Time in Vigorous Activities	Time in Moderate Activities	Walking Time	Sitting Time
Total (n=146)	91.573	167.12	310.1152	381.4086	266.7932	486.4648	693.0741	440.6667
Woman (n=83)	62.9846	144.5225	111.3768	128.0275	252.4749	542.7436	729.0678	430.5932
Men (n=63)	168.989	208.4645	326.276	407.5945	344.1091	464.3458	623.25	424.625
Percentages (Increased)								
Total (n=146)	82.50%		26.70%		82%		-36.50%	
Woman (n=83)	129.45%		14.90%		114.97%		-40.90%	
Men (n=63)	23.40%		24.90%		34.90%		-31.87%	

identified which proceeded to wreak havoc around the world in almost every country. One of its main features being its ability to spread promptly via respiratory droplets.⁹ To counter the rapid dissemination, governments around the globe were forced to enact lockdowns to limit the person to person contact.¹⁰ Educational institutes were among the locations that were shut down during surges in the number of cases. The physical, mental and social implications of this confinement resulted in a drop in the opportunity and motivation to be physically active in a large segment of the population.¹¹ Once the cases declined, the lockdowns were lifted and people were eager to get back to their old routines with an emphasis on physical activity. Medical institutions in the city of Rawalpindi went through a similar practice.

The current study aims to highlight the disparity between physical activity levels along with idle time, during and after confinement. As depicted by this data, there was an 82.5% increase in time spent doing vigorous activity after the lockdown as compared to during it, moreover this finding was consistent with the findings of previous studies.¹² Women showed a

An overall increase of 82% was recorded in walking time across both genders,¹⁴ this finding paled in comparison to the findings of another study conducted in Spain where they reported a 34.67% increase in walking time.¹³ Men had an increase of 34.9%, on the contrary, women had an increase of approximately 114.9%.

A unique pattern was seen in time spent sitting with 36.4% decrease post lockdown as compared to during the lockdown. Men had a 31.9% decrease whereas women had a decline of 40.9%. A study conducted in England states "Levels of physical activity in younger adults,¹⁵ may also have decreased as restrictions eased and they replaced time previously spent on physical activity with more sedentary leisure activities, such as socializing". Additionally, being younger and having lower educational attainment is associated with higher levels of anxiety, depression, and loneliness during lockdown all of which could have contributed to reductions in physical activity.¹⁶⁻¹⁸

This study targeted medical students who understand that physical activity is an essential component of good health. As the confinement mandates ended

and the educational institutes opened, people were starved for life. Access to gyms, swimming pools, restaurants, malls etc. was back on the table. People especially medical students embraced this opportunity embraced the resumption of normal activities with open arms and started living the social life to the fullest extent which resulted in an increment of time used for exercise and fall in time used during sitting and laying as depicted by our study.

Educational institutes were back to in-person classes which meant subjects had to travel to their place of study and back. Those who had put on weight during the lockdown began their attempts to lose it again with a renewed vigor. Sports activities also resumed which further helped the cause. The increase in walking time can be attributed to the students having to walk to and from the college and roaming inside the college. More sitting time during the confinement may be due to the fact that people had a lot more leisure time in their homes and were restricted in a fixed space due to confinement. Classes were held online and attended at homes. Post confinement saw a decrease owing to increased opportunities for physical activity which essentially targeted the sitting time inside the home.

The conclusions of this research can enlighten the authorities regarding confinement policies and the implications associated with them. They might also inform the administrations of various educational institutes so that they may be prepared to brief their students on the physical activity implications of such confinement in the case of a new viral epidemic or outbreak.

RECOMMENDATIONS

- Students should be guided by their teachers or through social media to remain physically active by playing indoor games at their places of confinement.
- In order to feel productive, they can work in their gardens or around the houses.
- They can practice aerobic exercises, for instance: long walks and cycling by simultaneously adhering to social distancing and COVID-19 SOPs.

CONCLUSION

Overall activity increased among both genders after the lockdown was lifted, however the increase was more significant in males as compared to females. While time spent sitting decreased which was again more in males than females. More studies on this topic need to be conducted to

better understand the effects of lockdown on physical health of students.

Conflict of Interest: None.

Author' Contribution

Following authors have made substantial contributions to the manuscript as under:

SFM: Conception design, acquisition of data, & final approval of the version to be published.

FR: Conception design, Interpretation & final approval of the version to be published.

SAM: Drafting of article, Conception design, & final approval of the version to be published.

MI: Acquisition of data, Interpretation, acquisition of data & final approval of the version to be published.

MOM:, & TA:, MS: Drafting of article, Acquisition of data & final approval of the version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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