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# Psychological impact of COVID-19 on medical college students

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***Abstract: Background***

***The outbreak of coronavirus disease 2019 (COVID-19) in Wuhan, China, has led to the quarantine of peoples from many countries in their homes, in order to mitigate its spread. Some of these people developed mental health problems, and many solutions have been put in place to address the mental health issues of patients and health professionals affected by the disease. However, not much attention has been given to students, particularly those from medical colleges. The present study aims to conduct an online survey to investigate the mental health status of students from a medical college in India.***

***Methods***

***From March to August 2020, a cross-sectional survey was conducted among 470 medical college students from the coastal area in India using standard questionnaires measuring adverse psychological outcomes. Multivariate regression was used to examine the determinants of adverse psychological outcomes.***

***Results***

***Health difficulties faced by students during the lockdown period were measured. Alteration in their sleep pattern was prevalent in this sample of medical college students, and 65.3 % indicated positive screens for significant reduction in their attendance and concentration level. Due to the long-lasting pandemic situation and onerous measures such as lockdown and stay-at-home orders, the COVID-19 pandemic brings negative impacts on higher education. The findings of our study highlight the urgent need to develop interventions and preventive strategies to address the mental health of college students.***

***Key words- COVID-19; pandemic; college student; mental health; stress; anxiety; self-management***

## 1.0. Introduction

Outbreaks of infectious diseases remain a major problem worldwide. They have substantial impacts not only on medical treatment, the economy, and society, but also on the psychological health of healthcare workers, and medical students which has become a prominent public health problem. The novel coronavirus, designated 2019-nCoV and later SARS-CoV-2, is one of the most challenging threats to public health in China and in many other regions around the world (1). With widespread work stop-offs, school suspensions and the shortage of protective materials, this SARS-CoV-2 epidemic exceeds the coping ability of individuals and society, causing anxiety and panic around the world. Recent studies found that 53.8% of the general population rated the psychological impact of the outbreak as moderate to severe stress (2,3)

Many previous studies have indicated that stressful events can have an immense effect on an individual's psychological and physical well-being .The outbreak of infectious diseases, such as severe acute respiratory syndrome (SARS), Middle East respiratory syndrome (MERS),

and COVID-19, and the consequences (e.g. disease-related fear, threat, and anxiety) are indisputable stressors (4,5,6). Many studies have revealed that people presented with psychological responses (such as anxiety and depression) to the SARS and MERS outbreak in different regions. A study on online mental health surveys associated with the COVID-19 outbreak has recently been published, which targeted different populations, and revealed that the prevalence of depression and anxiety was 50.7% and 44.7%, respectively (7,8).

In addition, patients with a history of psychiatric illnesses and who were isolated had a high risk of anxiety and anger at 4-6 months after withdrawal from isolation. The neurotransmitter abnormalities in the emotional center of the cerebrum may lead to poor control of symptoms of anxiety and anger in these patients (9,10).

However, unlike other students, medical students have a deeper understanding of the disease, making them more anxious during the quarantine period. Apart from suffering from anxiety about COVID-19, students who were scheduled to attend classes taught by teachers from the hospital or some senior students who were scheduled to commence clinical practice within the hospital, and other students preparing for their postgraduate entrance examination were also quarantined at home. Furthermore, there was a discontinuation of the normal transport network within the city (11, 12,13). This further disrupted the academic schedule of these students, thereby potentially making them depressed or anxious. Therefore, it was important to analyse whether there were mental health problems affecting medical students during the COVID-19 outbreak, and whether there were gender, geographic, or grade differences, if this problem exists. To further understand the physical and mental health of these medical students, an online mental health survey associated with the COVID-19 outbreak was conducted *via* the Google survey-based survey program Questionnaire, which is an instant surveying tool that has been widely used in India (14, 15,16,17).

## 2.0. Materials and Methods

### 2.1. Google based survey and sample collection strategy

A cross sectional survey design was decided to assess the initial psychological impact of COVID-19, (fears worries and impairment in sleep). We collected data using an online Google survey as per Indian Government's recommendations to minimise face-to-face or physical interaction as citizens continue to isolate themselves at home (18,19).

### 2.2. Measurements

Survey questions included demographic characteristics (i.e., age, gender, education, marital status and occupation), general health status, variables related to the COVID-19 (e.g. whether ever been quarantined, level of concern to the outbreak), perceived threat of COVID-19, perceived stress, anxiety, depression and PTS, perceived social support and coping strategies (20).

### 2.3. Statistical analysis

Data were double-entered into the Statistical Package for the Social Sciences (SPSS for Windows, version 25.0; IBM, Chicago, IL). The chi-square test was used to determine whether there were significant differences between the number of asymptomatic and symptomatic students, in terms of different genders, geographical locations, and grades. The Kruskal-Wallis test was used to determine whether there were significant differences among the number of different degrees of symptomatic students, in terms of different genders, geographical locations, and grades. A $P$-value of $<0.05$ was considered statistically significant (21,22).

## 3. Results and Discussion

Self-declared information from 470 students (265 female and 205 male) from 9 different states India were included. All participants who entered the survey responded to each question. Year and state wise distributions are represented in **Figure 1 and 2.** Participants were provided full consent before participation in the online survey. The majority of responders – 27 % (127) – were from III year.

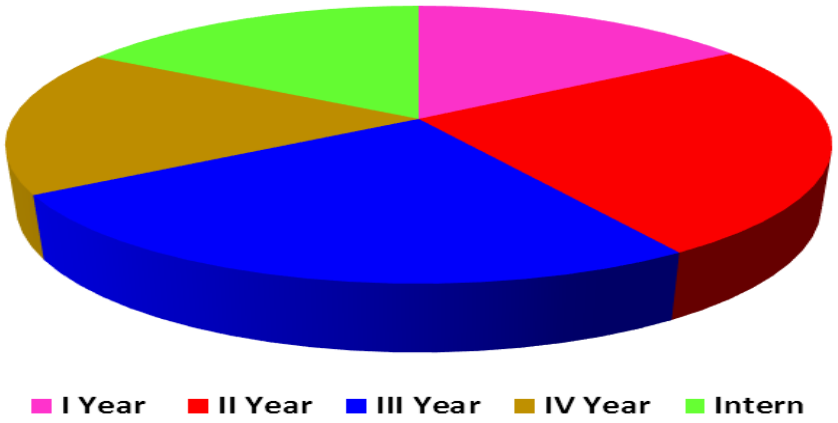


Figure 1 – The year vise data of the medical and paramedical students participated in the study.

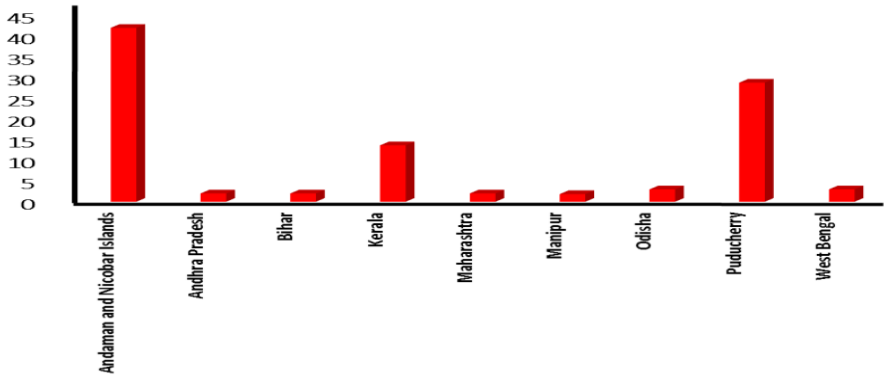


Figure 2 – State wise distribution of study participants

### 3.1. Health difficulties faced by students during the lockdown period

An assessment of students has revealed that a majority of them are suffering from generalized health difficulties such as palpitations, sweating, breathing difficulties, falling of infending doom, chest tightness, dizziness. Nearly 40.1 % and 22.5 % of the students were encountered heavy sweating and breathing difficulties respectively **Figure 3**.

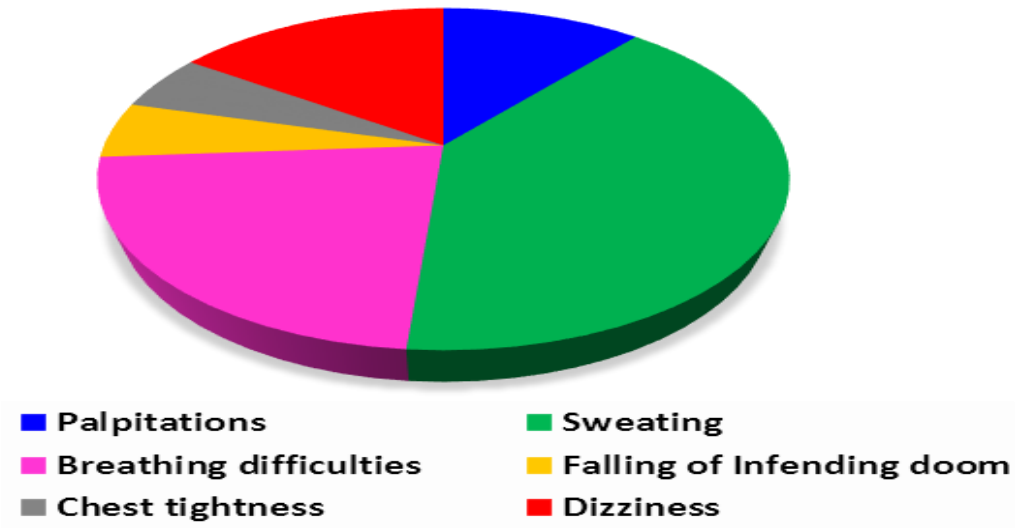

Figure 3 – Health difficulties faced by students during the lockdown period

### 3.2. Alteration in sleep pattern experienced by students

An irregular bedtime schedule is a prevalent problem in young adults, and could be a factor detrimentally affecting sleep quality. Nearly 58.5 % students were experienced altered sleep pattern during Covid 19 pandemic. The results of our study suggest a high prevalence of both an irregular bedtime schedule and insufficient sleep among the medical college students. Students with an irregular bedtime schedule may experience poor sleep quality. These "inadequate sleep hygiene" behaviours include irregular sleep schedules, frequent or prolonged daytime naps, alcohol consumption before bedtime. Since sleep is essential for maintaining the balance of the human psyche, its deprivation during Covid 19 pandemic causes significant damage to concentration, memory and emotional control (**Figure 4 and 5 )**

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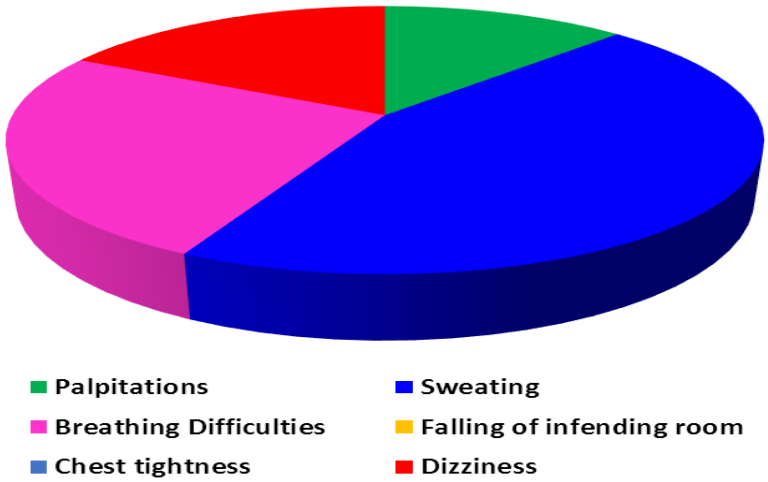


Figure 4 - Covid symptoms experienced

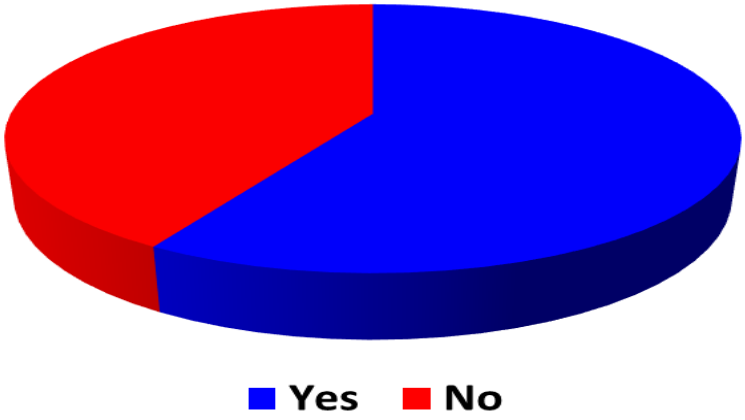


Figure 5 – Alteration in the sleep pattern

### 3.3. Difficulties in concentration

Based on the assumption that students' mental health may deteriorate over prolonged periods of physical distancing and online learning, this experiment was done to investigate the concentration of students during online learning. And, learning situations established by educational institutions whether in-person classes or online classes always require that students focus their attention and consciously control their thoughts. Some cognitive processes require more attention than others. This is particularly the case for activities involving the conscious control of cognitive processes (such as attending lectures, reading or writing), requires attention and mental energy. Not surprisingly, the Covid 19 greatly influences the concentration of students (**Figure 6)**.

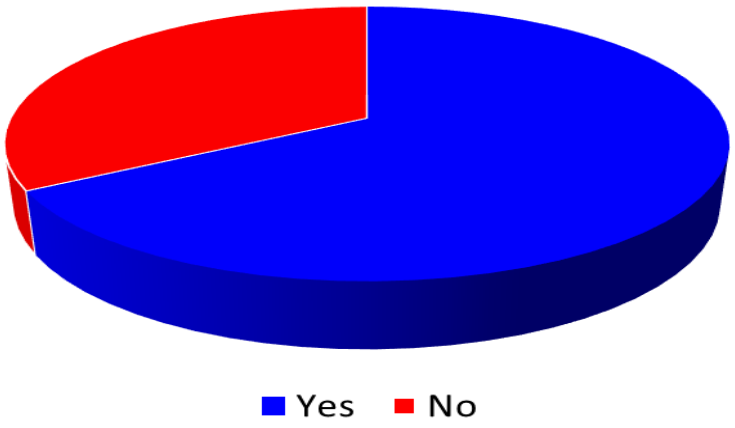


Figure 6 - Difficulties in concentration

**3.4. Covid 19 symptoms experienced by college students during lock down**

In this study, we investigate the symptoms experienced by the students at the time of the COVID-19 crisis. Most of the students have experienced sweating as a major symptom followed by breathing difficulties. The symptoms experienced were detailed in figure 6.

**3.5. Tobacco, alcohol, social media usage during lockdown**

During the COVID-19 lockdown, people self-reported drinking slightly more alcohol compared to before the lockdown, which was positively associated with the stress, unemployment, and homework. The top motive for drinking more was conviviality. The number of cigarettes smoked per day only marginally increased during the lockdown. As per the results of a survey on the impact of the coronavirus (COVID-19) pandemic on media usage in medical college students, it was observed that there was a spike in usage of social networking applications in the first phase of the nation-wide lockdown. Nearly 72 % of responders were spend more time in social media during the extended lockdown (**Figure 7 to 11)**.


Figure 7– Tobacco User


Figure 8 - Response on alcohol consumption

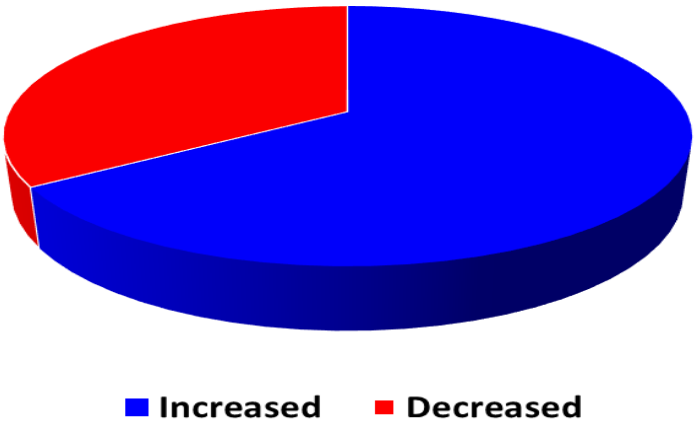


Figure 9 – Changes in the alcohol consumption pattern

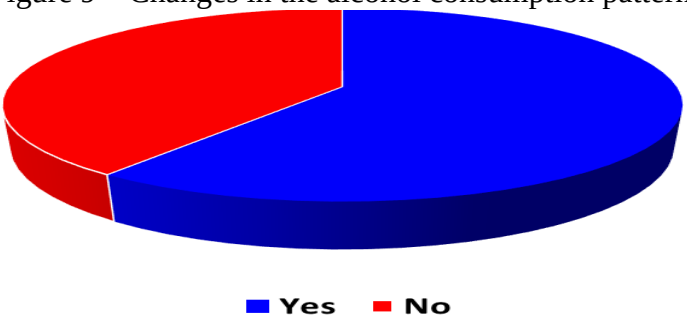


Figure 10- Usage of social media

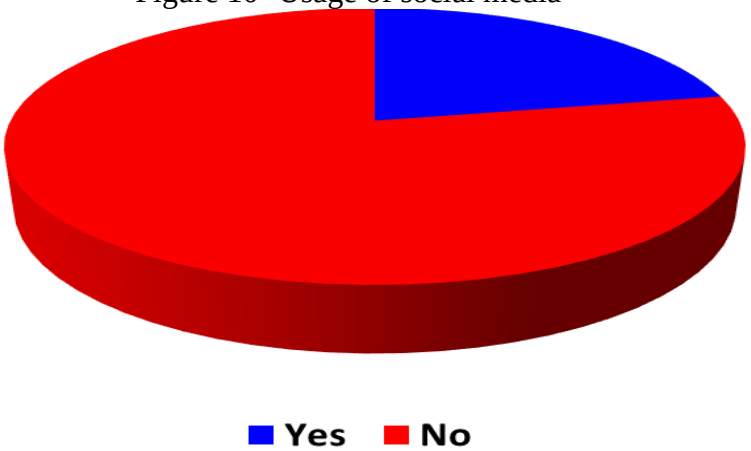


Figure 11 – Later reaction of losing dignity and response

### 3.6. Mental stress and Mental Health

Meanwhile, our study stated that graduate students generally experience significant amounts of stress and anxiety, which also affects their usual behaviour. The findings of our google-based cross-sectional survey indicate that more than two-thirds of the students were experiencing mild to severe depression and anxiety. The results in this study stressed on the fact that the nation-wide lockdown in India is going to cause a significant disruption in the academic programs and create a gap in both teaching and learning in medical colleges. The academic delays could have long-term impacts on the psychology of students as they are more likely to be graduated later than they have expected. In this regard, faculties, as well as university authorities, should stay connected with the students using social media platforms and motivate them to move forward together during this difficult time. Apart from the issues mentioned above, this study found no significant differences between male and female students with relation to depression or anxiety, thus complement previous studies (**Figure 12 & 14)**.

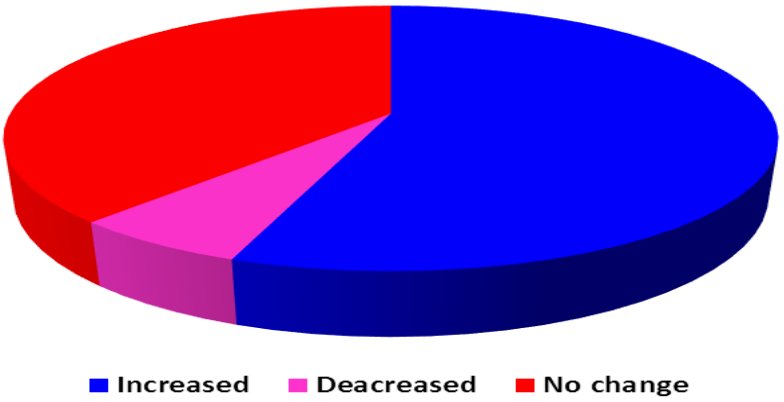


Figure 12 – Response on Family bonding

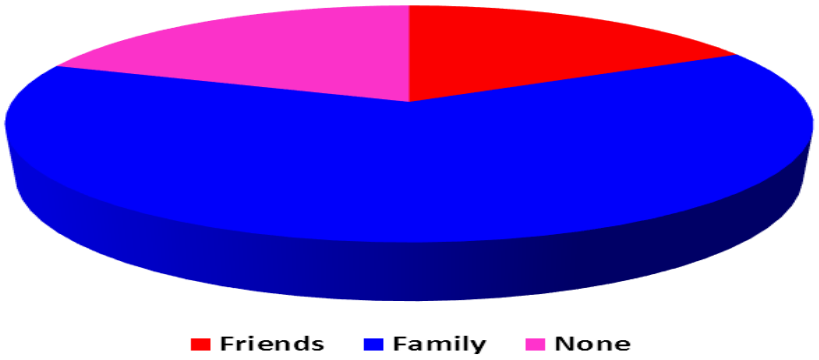


Figure 13 – response on quarantine partners

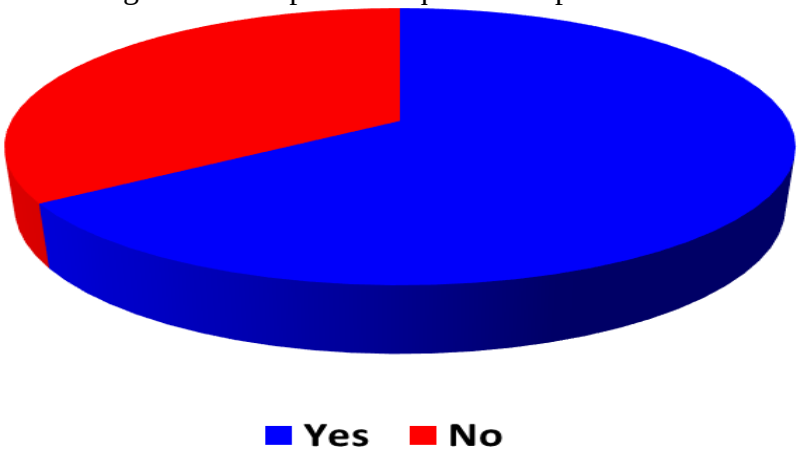


Figure 14 – response on mental Stress

## 4.0 Conclusion

Despite some limitations, this study gives the first empirical evidence that a large percentage of medical college students in India have been suffering from depression and anxiety symptoms during the ongoing pandemic. To ensure the continuous involvement of students in educational processes, the universities should initiate all-inclusive online-based educational programs to reach out the students living in remote areas with or without devices in association with internet-service providers by providing scholarship or student loan. Furthermore, parents should be encouraged, by providing pandemic response and recovery support from the government, to create a friendly and positive family environment for university students without imposing pressure on the future academic and working career.

## 5.0 Acknowledgement

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