

## An observational study on stress and sleep variation among paramedical students during Covid-19 lockdown

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### Abstract

Background-Enforcement of nationwide lockdown to prevent the further spread of Covid-19 infection, the advisory of social distancing and isolation has imposed mental health challenges to the students. This abrupt onset of changes leads to fear, stress, and anxiety in all the concerned paramedical students. Objectives: To evaluate the association between sleep onset and perceived stress score in paramedical students. Material and Methods- An observational study was done on 134 first year paramedical students of the Government Medical College of Jabalpur (Madhya Pradesh) who participated in the study. The data was collected through online questionnaires. Data was analyzed using the chi-square test. Results- The mean age of the participants was  $19.98 \pm 1.21$  years and body mass index (BMI) was  $20.93 \pm 3.40$  Kg/m<sup>2</sup>. The Mean Perceived Stress Score Scale (PSS Score) was  $18.19 \pm 11.19$ . The association between difficulty in falling asleep and PSS Score was found to be non significant ( $p=0.157$ ). 24.62% of students pursued art/painting, 7.46% dance, 15.67% exercise, 25.37% music, and 14.18% yoga as their hobbies to cope up with the stress. Conclusion- Covid 19 lockdown has a substantial impact on the paramedical students in terms of the increased level of stress.

**Keywords:** Covid-19 pandemic, paramedical students, stress.

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### Introduction

Covid-19 pandemic has brought social challenges to students throughout the world. The onset of the pandemic has put a substantial impact on the lives of people around the world including the students in an unprecedented manner. The closure of educational institutes and workplaces lead to the confinement of people in their homes due to regional lockdown. Isolation in homes, separation from loved ones, uncertainty, loss of freedom, deprivation of entertainment had contributed to stress and anxiety.<sup>[1]</sup> Stress has also contributed to insomnia and sleep related problems in many individuals during the Covid -19 pandemic, especially lockdown. Sleep deprivation causes fatigue, mood changes, generalized weakness, loss of interest in routine activities, difficulty concentrating, and memory problems. All this has affected the academic performance of students.<sup>[2]</sup>

In India, since March 2020, regional and national lockdown measures were taken. One of the main measures was the closure of educational institutes and activity areas. The colleges have been shut all of a sudden. Paramedical students are also not untouched by the outside scenario of the pandemic. Paramedical includes the students pursuing physiotherapy, laboratory technician, radiology technician, dialysis technician, and nursing courses. They were previously following a fixed schedule of attending their subject class (both theory and practical). They had one-to-one interaction with their

mentor and peer groups. Further, due to prolonged confinement at home, the students spend their time surfing compulsively. Their overall screen time has increased.<sup>[3]</sup> Due to stress, they were persistently enquiring about the status of the Covid- 19 pandemic. The home confinement of paramedical students is associated with uncertainty, feeling of sadness, distress, worry for their exams and future. All this is attributed to a disruption in their education, physical activities, and opportunities for socialization. The absence of structured settings of college for a long duration resulted in disruption of routine, boredom, and lack of innovation activities (academic and extracurricular activities).

We hypothesized that stress can adversely affect sleep quality and duration, while insufficient sleep can increase stress levels. Both stress and lack of sleep can lead to lasting physical and mental health problems. This vicious cycle needs to be broken, as it can lead to permanent damage to an individual's physical and mental health.

The Questionnaires included the following set of items:

- 1) Consent and the course pursued
- 2) Demographic Details: Age, Sex, Gender, Height, Weight,
- 3) Sleep Disturbances: difficulty in the onset of sleep(yes/no), frequent night awakenings(yes/no), total duration of sleep (less than 6 hours, 6 to 8 hours, more than 6 hours)
- 4) Relaxation techniques adopted (art/painting, music, dance, yoga, exercise, none)

### Material and Methods

A total of 134 paramedical students (BPT, MPT, BXRT, DMLT, OT, and BSc Nursing) of the first year of Netaji Subhash Chandra Bose, Medical College Jabalpur (Madhya Pradesh) participated in the

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cross-sectional study. The period of study was from April 2020 to June 2020. In accordance with the safety norms for Covid-19 such as following social distancing and avoiding physical contact, the online questionnaire was prepared for the survey and was mailed to the students on their e-mail IDs. All the students participated voluntarily with their consent in the study by answering the survey questions. No personal details were asked from any of the participants to prevent interviewer bias. So, our study questionnaire did not have any personal identifiers, disclosures and was non-interventional in intent. This type of survey is exempted from approval by the institutional ethics committee in India. This agrees to the ethical review procedures of the National Ethical Guidelines for Biomedical and Health Research involving human participants, as per 2017 guidelines of the Indian Council of Medical Research.<sup>[4]</sup> The questionnaire was validated by conducting the pilot test on 30 students initially to enquire whether meaningful data can be acquired from the study.

The questionnaire comprised of the following sections:

- 1) Consent and the course pursued
- 2) Demographics: age in years, sex, height in centimeters (cms), and weight in kilograms (kgs). Body Mass Index (BMI) was calculated by Quetelet Index (weight/height in square meters (kg/m<sup>2</sup>)).<sup>[5]</sup>
- 3) Stress: Stress assessed by Perceived Stress Score Scale (PSS-10). PSS Score<sup>[6]</sup> contains 10 questions to be answered by the candidate about their feelings and thoughts during the past one month. Each question on the scale is rated on a 5-point Likert Scale [0=never, 1=almost never, 2=sometimes, 3=fairly often, 4=very often].

**Table 1: Demographic description of the paramedical students**

Demographic Details	Mean ± SD
Number(n)	134
Age (years)	19.98± 1.21
Height (cms)	154.53 ± 8.5
Weight(kgs)	49.89 ± 9.50
BMI (Kg/m <sup>2</sup> )	20.93 ± 3.40

The Mean PSS Score was 18.19 ± 11.19. Among 134 participants, 48(35.8%) had low scores, 74(55.2%) moderate scores, and 12(8.9%) high scores (Table 2). However, the association

**Table 2: PSS Score of the participants**

PSS Score	Low Score (0-13)	Moderate Score (14- 26)	Severe Score (27- 40)
Number (n)	48	74	12
Percentage (%)	35.8%	55.2%	8.9%

**Table 3: Association between difficulty in falling asleep and PSS Score**

Difficulty in falling asleep	PSS Score		
	Mod. to Severe Score (14- 40)	Low Score (0-13)	Total
YES	58	8	66
NO	26	42	68
TOTAL	84	50	134

Chi-square = 2.000, DF=1, p-value=0.157

Among the total participants 17.2% reported less than 6 hours of sleep, 74.6% reported 6-8 hours of sleep, and 8.20% > 8 hours of sleep (Graph 1)

31 paramedical students had complaints of frequent night awakenings and 66 students had difficulty in falling asleep. (Graph

The ten questions consist of six positively worded questions and four negatively worded questions (thoughts and feelings). The total score varies from 0 to 40. High scores on PSS indicate higher levels of perceived stress. Based on PSS score the participants were divided into three categories: low stress: 0 to 13, moderate stress: 14 to 26, and high stress: 27 to 40 score.

4) Sleep disturbances: Difficulty in falling asleep (yes or no), frequent night awakenings (yes or no), total duration of sleep (6 to 8 hours)

5) Techniques adopted for stress relaxation: (yoga/exercise/art or painting/dance/music/indoor sports/none) and to write about any other hobby pursued to cope up with their stress.

The exclusion criteria for students included the past history of any chronic illness/disease, as it can exaggerate their stress, addiction history, students already on the treatment of insomnia by the specialist, or any other psychiatric treatment or counseling.

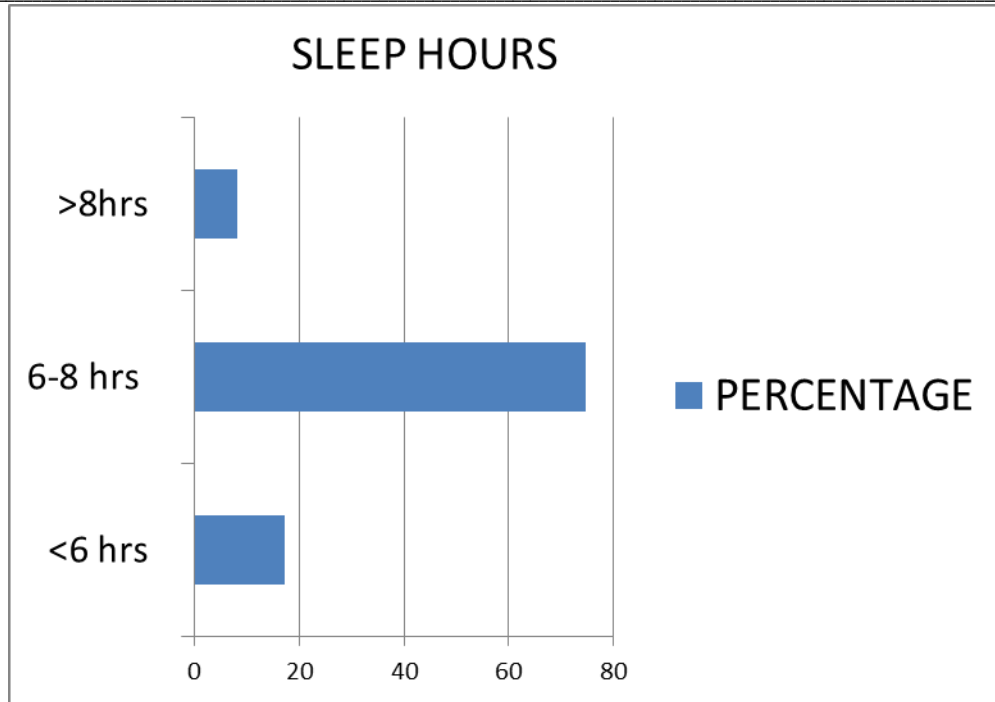
The data collected through online questionnaires were tabulated on a Microsoft excel sheet using a personal computer and Mean ± SD was calculated. To find out the association between sleep onset and stress score, the chi-square test was calculated using the SPSS 20 software. p-value less than 0.05 was considered statistically significant.

## Results

The Demographic details of the paramedical students are shown in Table 1. The mean age of the participants was 19.98± 1.21 years, height: 154.53 ± 8.5 cms, weight: 49.89 ± 9.50 kgs, and body mass index (BMI) was 20.93 ± 3.40 Kg/m<sup>2</sup>.

between difficulty in falling asleep and PSS Score was found to be not significant (p=0.157) (Table 3).

2) Out of total 134 paramedical students, 33 (24.62%) pursued art/painting, 10 (7.46%) dance, 21 (15.67%) exercise, 34 (25.37%) music, 19 (14.18%) yoga and 17 (12.69%) no hobbies. (Graph 3).



17.2% : < 6 hours(hrs) sleep,74.6% : 6-8 hours sleep,8.20% : > 8 hours sleep

Fig. 1: Sleep hours (Percentage) in the participants

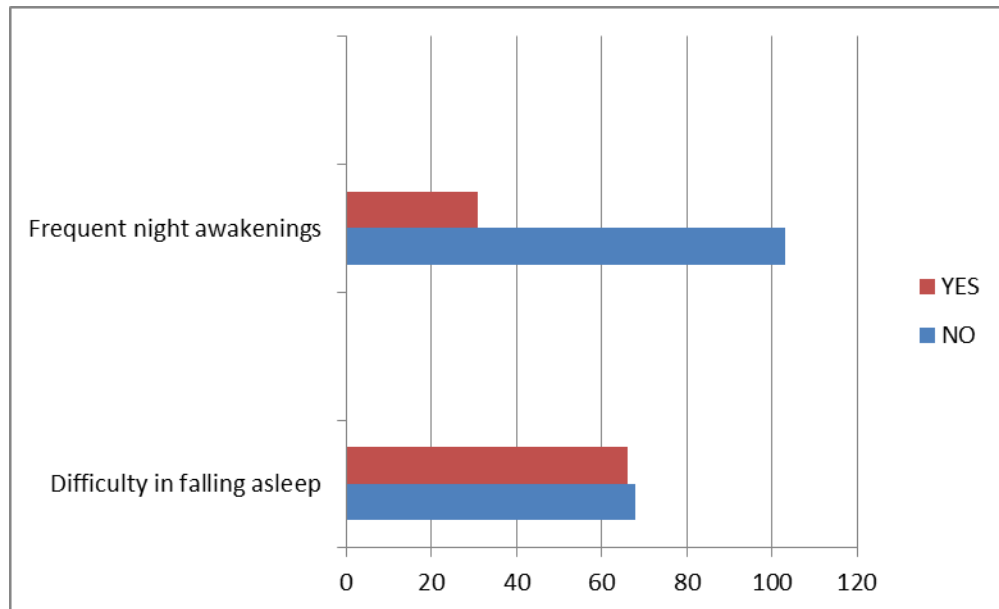


Fig. 2: Number of participants having sleep disturbances

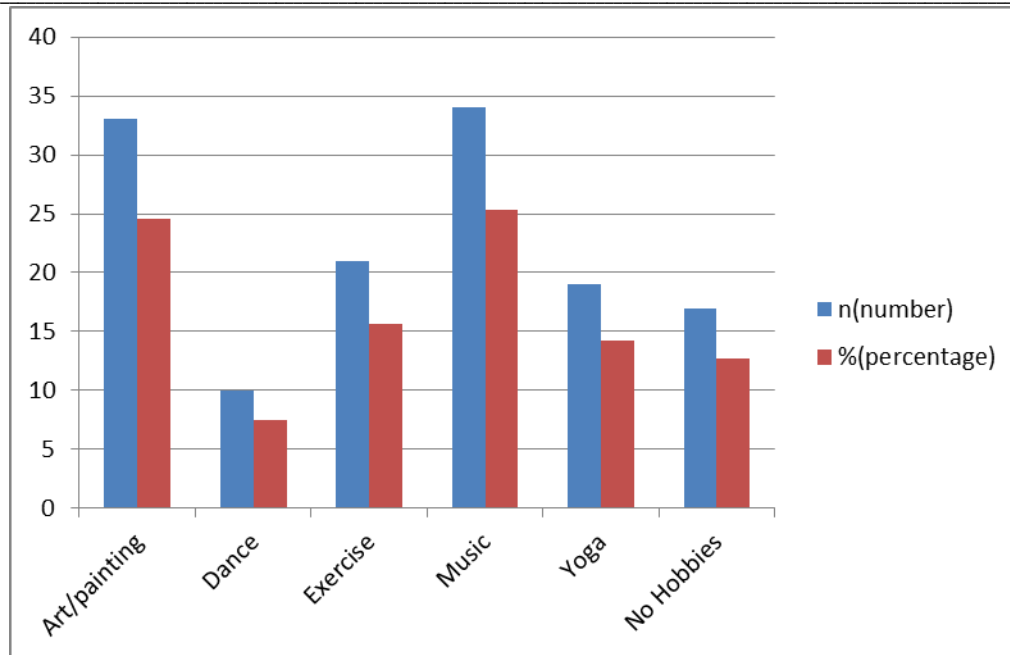


Fig. 3: Percentage and number of participants involved in stress relaxation techniques

### Discussion

The mean age of students was  $19.98 \pm 1.21$ . The mean BMI of the participants was  $20.93 \pm 3.40$ . (Table 1)

A high prevalence of stress is a matter of concern amongst paramedical students. Lockdown during Covid 19 pandemic created stress in paramedical students. 64.1% of the students encountered stress as the corona wave hit the country. The maximum number of students (55.2%) had a moderate score of PSS. 8.9 % of students had a severe score of PSS. (Table 2) The Mean PSS Score was  $18.19 \pm 11.19$  (which falls under the range of moderate score 14 to 26). Dahlin m et. al., have reported in their study that high-stress levels can affect concentration level, cognitive functioning, and academic performance of students.[7]Swaminathan et. al. also found out similar results of maximum students falling in the range of moderate score of PSS in their study in medical students. [8]

We observed that almost half of the students (49.2% ) had difficulty in falling asleep and % had complained of frequent night awakenings. (Graph2). 17.6% of students slept for less than 6 hours(Graph 1). However, we did not find any significant association of sleep disturbance with PSS score in our study (p value= 0.157)(Table 3). Abdullah et al found a significant association between poor sleep quality and stress in medical students. [9]Lee Shih Yu et al found out an association between high stress levels and sleep disturbances, less nocturnal sleep time (less than 6 hours) in female college students.[10]The mean BMI of the participants was within the normal range( $18.5-24.9$ ). So, the effect of BMI on sleep quality is nullified in our study.

Paramedical students were engaged in some of the hobbies to cope up with their stress. 14.18% of students did yoga, 24.62% of students were engaged in making art/painting, 15.67% of students in exercise, 7.46% of students in dance, and 25.37% of students in music, and 12.69% were not engaged in any hobbies. (Graph 3)

Stress becomes a problem when too much is experienced and it has a negative impact on behaviors, relationships, and health. During the times of paramount stress, when the mental health of children and adolescents around the globe is directly or indirectly impacted.

Various studies in the past have shown that Yoga reduces subjects to stress, anxiety, blood pressure, and quality of life. [11, 12]Yoga

modulates the stress response system of the body. It reduces stress both by psychological and biological mechanisms. The mindfulness, self-compassion, positive effect along with post hypothalamic inhibition and salivary cortisol secretion helps in mental and physical relaxation.[13]

Exercise also helps in relaxation by releasing endorphins (a feel-good neurotransmitter in the brain ) and reduced levels of adrenaline and cortisol (the body's stress hormone ).[14]Chang et al, shown in their study that 30 minutes of listening to music, singing for 2 weeks reduced stress, anxiety, and depression in residents. [15] Abbott and colleagues in a study reported that Painting and drawing caused a significant reduction in stress in students as compared to the control group. [16]

The strength of our study is a detailed analysis of stress and sleep quality, especially in paramedical students during the lockdown, and how they were coping with their stress. The limitation of the study is that fewer students participated in the study.

### Conclusion

Covid- 19 pandemic is not just a disease burden due to a virus, but it has affected an individual's mental health also. Health education efforts to make the students more alert and active to avoid the occurrence of psychological health risks.

Efforts should be made so that a consistent routine is followed by the students with enough opportunities to play, read, rest and engage in physical and creative activities like art, music, and dance.

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