



Original Article

Impact of COVID-19 on the Sleep and Mental Status of University Students

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ABSTRACT

Quality sleep with good mental health plays an important role for university students. **Objective:** To determine the impact of COVID-19 on the sleep quality of university students in Hyderabad and adjoining areas. **Methods:** It was a cross-sectional study conducted at the University of Sindh from December 2020 to February 2021 during the peak period of COVID-19. There were a total of 232 randomly selected male and female university students during the research work. The data were statistically calculated in percent and frequencies by using SPSS software version-21.0. The statistical difference was determined by applying a chi-square test and the p-value of < 0.05 was set as significant. **Results:** The majority (63%) of males were spending 8-9 hours on sleeping. Most of the females (52%) were spending less time (4-5 hours) on sleeping. Day naps were common in men compared to women and also 25% of males were taking sleeping pills frequently. About 27% of males and 8% of females reported headaches on waking up in the morning. Females were going early for sleeping compared to males. **Conclusions:** COVID-19 affected the sleep that might have also impacted the mental health of male and female university students during a stressful pandemic situation of COVID-19.

INTRODUCTION

The COVID-19 pandemic affected the routine, physical and mental status, and overall behavior of people. The imposition of lockdown after a rise in infection cases led to the atmosphere of isolation and confinement for people around the world. The limited ban on social gatherings and interaction has a negative impact on mental health [1]. In a previous study from Korea, it was learned that the people put in the isolation during MERS (Middle East Respiratory Syndrome) epidemic had severe mental health issues [2]. The change in timings of educational institutes, offices, private shops, etc., led to the change in the sleep and wake cycle of human beings, and such factors were supposed to cause sleep impairment. It is a well-understood fact that the release of sleep hormone melatonin in night is related to the exposure of an individual to bright light in the day [3].

Scientists have also learned that the negative thoughts or feelings of fear and stress before going to bed readily affected the quality of sleep and became the cause of sleep impairment [4]. A study done by Watson et al., in the University of Colorado revealed that the COVID-19 pandemic severely affected the circadian cycle and became the main cause of sleep irregularities among university students [5]. COVID-19 negatively affected the sleep quality of those people who used to get good sleep before the pandemic as reported by Kocavska et al., [6]. The shift in leaning methods from physical to online impacted the sleep and mental status of students affiliated to different schools, colleges and universities. From the health point of view, the quality of sleep matters a lot rather than the duration of sleep because a bad quality sleep

affects mental health. An adequate amount of sleep in the night affects the efficiency, alertness, focus and productivity in day time. A poor sleep quality may give rise to many health issues such as heart problem, diabetes, weight gain, hypertension etc., [7]. Another study done in the US has revealed the connection between Sleep quality and stress level [8]. A group of researchers from UK have worked on the association among sleep quality, duration, medication and health [9]. Recent research revealed that the COVID-19 outbreak reduced the level of quality sleep among Spanish population [10]. Since, the students at university level got a lot of burden due to study and routine alteration, therefore It was very necessary for them in those circumstances to get a good quality sleep every night.

In previous literature, there are numerous studies available about the effect of sleep on human behavior, however, we could not find enough research on the impact of COVID-19 on the sleep and mental health of university students of Jamshoro, Hyderabad and adjoining areas. We hypothesized that the sleep and mental health of University Students from Hyderabad and adjoining areas was substantially affected due to smart lockdown amid COVID-19 waves. Our study aimed to elucidate the impact of COVID-19 pandemic on the sleep and mental status of university students.

METHODS

We used probability sampling method that involved simple random sampling technique to collect samples. We calculated the sample size for our research work through the online sampling size calculator (<https://www.surveymonkey.com/mp/sample-size-calculator/>). According to population size, the confidence level of our sample size was 95% with 5% of the margin of errors. This was a cross-sectional study conducted among 232 randomly selected male and female university students belonging to Hyderabad region. This research work was performed from September to December 2021 on university students during the COVID-19 pandemic. Pre-structured questionnaire was developed with questions regarding the daily sleep and mental status of students. The questionnaire was designed under the supervision of well-trained persons and field experts, and it was used to conduct the online survey. The participants who were interested in our research work were asked to sign an informed consent form. The questionnaire had three important sections which were demographic details, questions about mental health status and questions related to the sleep. Our questionnaire also included the questions from the Pittsburgh Sleep Quality Index (PSQI). The inclusion criterion of our research was the currently enrolled, healthy, university students without any disease

or disorder. The exclusion criteria consisted of any student who was not currently enrolled, not belonging to Hyderabad or adjoining areas, students with any disability, disease or disorder. The data were statistically calculated in percent and frequencies by using SPSS software version-21.0 that was used to transform the response sheets. The raw data such as demographic details were organized and linked to each question, a 'Pivot Table' was created, and then a graph for each question was created to illustrate the data. The statistical difference was determined by applying a chi-test and the p-value of <0.05 was set as significant.

RESULTS

Our results have shown that the majority (63%) of males were spending 8-9 hours on sleeping whereas only 13% of females spent 8-9 hours on sleeping. Some of the respondents expressed that they slept for a very short period of time (4-5 hours per day) and they were 52% of females and 13% of males. About 23% of male university students and 35% of female university students gave normal time (6-7 hours) to their sleep. In the graph, we have mentioned the range of sleeping hours on the x-axis scale and the number of participants on the y-axis scale. The blue color columns represent males and the brown colored columns represent the females in the graph (Figure 1).

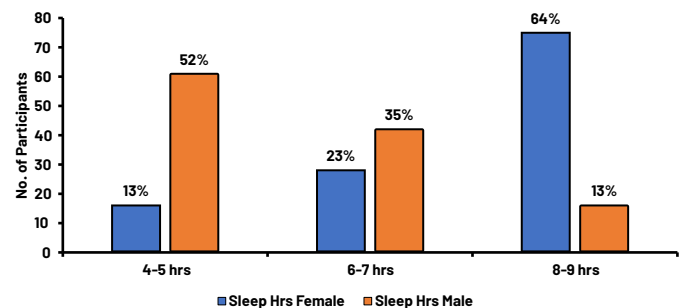


Figure 1: Comparison between males and females regarding time spent on sleeping

The day naps were common in men compared to women as we found that about 49% of male university students took a nap in day time. The female university students seemed reluctant in taking a day nap as only 12% of them could sleep a while in day time. About 88% females didn't report that they had taken a nap in day time from 11.00 am to 6.00 pm. In the graph, we have mentioned both types of respondents who took and who didn't take the day naps on the x-axis and the number of participants has been mentioned on the y-axis scale. The blue color columns represent males and brown colored columns represent the females in the graph. There are two pie graphs above the columns which show the percentage of male and female university students who have taken day naps during the period of COVID-19 pandemic (Figure 2).

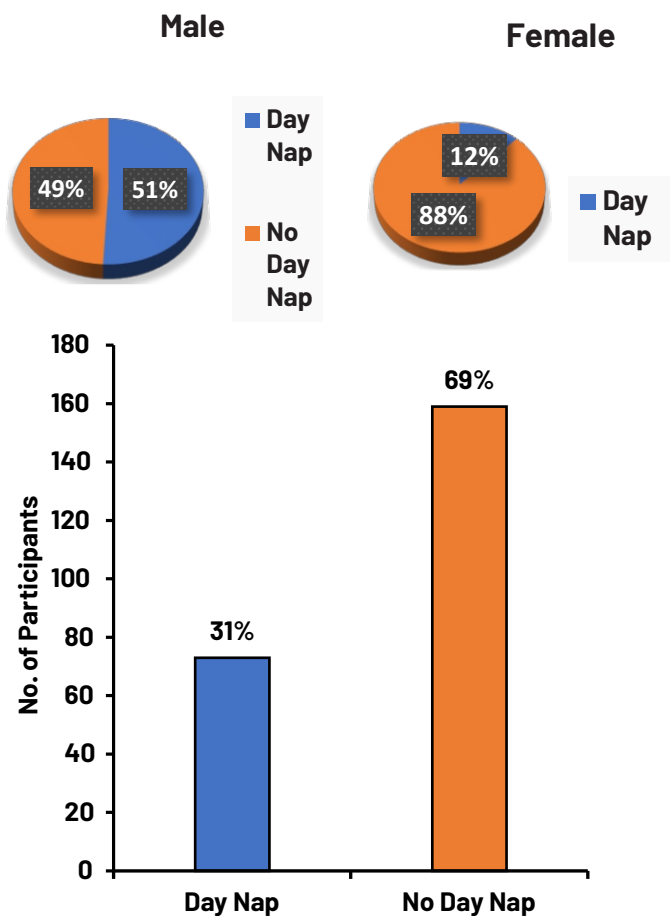


Figure 2: Gender wise comparison regarding day napping

The symptoms related to the lack of sleep were observed together. The status of mental health and attitude towards the use of sleeping pills was also noticed. Our research results showed that about 25% males were taking sleeping pills frequently. On the contrary, only 6% of female university students took sleeping pills every day. About 44% of females and 25% did not like to take sleeping tablets. There were about 27% males who reported headache in the morning after waking up from sleep. The ratio of females who experienced headache was very low. The majority (42%) of females reported that they felt fresh through out the day and did not experience any headache, body ache, mood swings etc. The female university students were also found going early to the bed in the night time. In the graph, we have mentioned different categories such as symptoms of sleep impairment and mental disorders. The four categories consisted of 'feeling of freshness', 'headache', 'sleeping pill takers' and 'sleeping pill non-takers'. The blue color columns represent males and brown colored columns represent the females in the graph whereas x-axis scale shows the number of respondents whose percentage has been tagged on the top of each column (Figure 3).

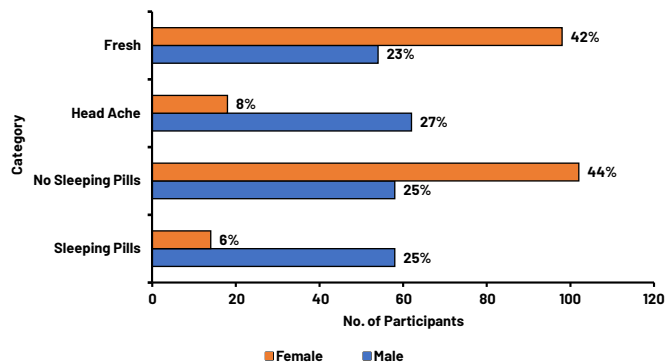


Figure 3: Comparison among sleeping pill takers and non-takers

DISCUSSION

We observed that the male university students spent more time on sleep compared to the females which indicated that the male had a slight effect on their circadian rhythm. The disturbance in the sleeping may have a direct or indirect impact on individual's mental health. A previous literature also matches with our research result as they have reported negative impact of sleep disturbance on mental health of university students [11]. One study suggested that the risk of developing new major depression was much higher in those with insomnia [12]. A small number of females didn't show any effect on their sleep and they didn't get any change in their sleep duration perhaps because of their involvement in the household chores. The previous studies have supported our research work in which the researchers have shown that some females had to do both "work from home" and the "work for home" during the period of COVID-19 pandemic [13]. We observed that most of the female university students had a very short duration of sleep which suggested that the mental health of males and females was equally affected in different ways. The previous research by Galambos et al., findings supported our work as they mentioned that the students with less quantity of sleeping were found more under stress [14]. The reason of having a short duration of sleep in females may be their excessive work load and less exposure to bright light in the day time. Previous studies have been suggesting that inadequate amount of sleep leads to mental health issues and other health disorders [15]. When we compared the normal sleep pattern between males and females, we found that the females were more in number who used to sleep normally every night. From these results we got a piece of knowledge that the males were more under stress and the ratio of sleep impairment was also higher for males compared to females. One previous research results also revealed that the college students were more susceptible to sleep disturbance [16]. The reason behind the work stress in majority of females could also be their less interest in taking a day nap as the studies suggest positive outcomes of day napping [17]. We also noticed that the majority of males used

to take sleeping drugs compared to females who depended on natural sleep cycle. We have learnt from the previous research work that the sleeping pills have a little benefit if taken for short duration but if the sleeping aids will be taken for a longer period than they create many side effects including addiction and mood disorders [18]. In this way our work suggested that the female university students were not having chances of side effects from sleeping pills. Our research work also revealed that around 27% males complained about the headaches after getting up from sleep in the morning. The possible reasons of headache in males may be attributed to the use of sleeping pills, excessive sleep (more than normal duration), impaired quality of sleep etc. The previous research finding has suggested that the sleeping pills were associated with depressive symptoms [19]. On the other hand, most of the females reported a feeling of freshness in the morning which indicated that they were able to get a good quality sleep even during the time of COVID-19 pandemic. The male university students also reported the issues of body ache and mood swings whereas female university students did not mention any of those issues. The possible reason behind the body aches and mood swings in males could be due to their bad quality sleep, bad mental health, side effect of sleeping medication, less exposure to the sunlight, etc. One study suggested that there was a stronger association between sleep quality and mental health than sleep quality and physical health in young adults [20].

CONCLUSIONS

COVID-19 affected the sleep and mental health of male and female university students. The stressful pandemic situation of COVID-19 changed the sleeping pattern of university students and also affected their ability of performing mental tasks. Males were severely affected compared to females. Majority of males were spending more hours on sleeping compared to the females who were spending less time on sleeping. Day naps were common in men compared to women and also a good number of males were taking sleeping pills frequently. Some male and female university reported headaches during wake-up time in the morning. Females went to the beds early compared to males.

Authors Contribution

Conceptualization: AHM

Methodology: AHM

Formal analysis: FUK, LZ

Writing-review and editing: AHM, FUK

All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

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