

ORIGINAL ARTICLE

Changes in Sleep Pattern and Digital Media use During Covid-19 Lockdown

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ABSTRACT

Objective: To find out an association between covid and sleep and how covid lockdown has affected the sleeping habits of the youth in Pakistan compared to pre-lockdown sleeping patterns.

Study Design: Cross-sectional study.

Place and Duration: Current research was conducted at HITEC (IMS-HITEC) Institute of Medical Sciences, Taxila Cantt Pakistan from 5th may to 15th may 2020).

Materials and Methods: It was a quantitative study in which participants filled out an online survey form. The data was collected on Google forms shared through social media focusing on undergraduate individuals from 16 to 24 years of age to acquire a homogenous example of responders, since youth are more liable to digital media use and their routine is more prone to be affected by the lockdown. The participation rate was 98.2%. SPSS was used for the data entry and analysis purpose. The data obtained was compiled, tabulated and analysed statistically. Chi square test was used to check whether the variables yielded significant or insignificant results.

Results: Out of a total of 100 participants, 60 (60%) were females and 40 (40%) were males. The mean age was 21 years and the participants were mostly university students. A set of questions were also asked to determine which social media apps the participants were increasingly using, most of the participants spent time on Instagram (68%) and YouTube (64%), while modest people spent time on Netflix (41%), Snapchat (30%) and Facebook (33%). Lesser participants spent time on TikTok (11%) and Skype/Zoom (25%).

Practical Implications: The use of e-learning and other forms of social interaction are becoming increasingly significant in the education of our young people. The findings of the current research make it possible for us to evaluate the influence of lockdown measures on Pakistani population in light of previously published studies that were carried out during the same time period in other countries and continents.

Conclusion: Participants in the lockdown reported spending more time in front of screens and suffering delayed sleep habits. It was found that risky behaviours were associated with increased screen time.

Keywords: Sleep Pattern, Digital Media, Covid-19 lockdown, Screen Time, Social Applications

INTRODUCTION

A good night's sleep has traditionally been regarded as the hallmark for being active and productive the following day. However, how can drastic changes in sleep pattern impact our day to day lives? We got to see this phenomenon affect a substantial portion of the society worldwide during the extended Covid19 lockdowns. These lockdowns have substituted the normal circadian rhythm sleep with other more addictive activities such as bingeing countless hours on social media platforms. This has massively delayed the time at which a person goes to bed ¹.

Sleep is for the mind what perhaps light is to our eyes; a vague analogy but one that holds true especially considering how integral sleep is to one's psychological and physical health ². Several factors have been known to affect sleeping patterns in individuals and one such factor is isolation. Social isolation can not only lead to stress and mental health problems but disrupt night-time sleep ³. Other factors such as younger age, environment, studies and occupational demands have profoundly affected sleep habits outside what was traditionally considered normal ². It is reported that use of social media devices has been far greater in younger adults than in older age groups and its correlation with sleep has been reported ^{1,3}. The use of social media especially before or near bedtime can disrupt the sleep-wake cycle far more adversely than in general day-time use ^{1,3}. Poor quality of sleep or a complete lack of it has also been linked to down regulation of one's immune system and hormonal imbalance ⁴. Covid-19 has already caused an up scaling of anxiety and moderate to severe depression amongst the people in China ⁵ and its link to changes in sleeping habits cannot be disregarded.

Due to the strong correlation between changes in sleep schedule and sleep disturbance with social media use and the ensuing effect of Covid-19 on both these factors has garnered an

unparalleled interest in understanding the ensuing relationship amongst these three intertwined factors (Datta, 2021). We were also interested on the challenges faced by the targeted database in this unprecedented isolating event especially since loneliness has already been associated with disturbances in sleep and over-all changes in sleep pattern ⁴. We asked the participants to compare the lifestyle changes they faced during lockdown vs. before the initiation of the lockdown.

The objective was to find out an association between covid and sleep and how covid lockdown has affected the sleeping habits of the youth in Pakistan compared to pre-lockdown sleeping patterns. We also wanted to see the effects of the change in sleeping pattern on cognition, energy and general mood of the youth. Covid lockdowns have affected people's lives and caused sleep disturbances all over the world as mentioned above and no such research was conducted in Pakistan, hence our rationale to see if the affect was continuous with what was taking place in other geographic locations or were there any anomalies.

MATERIALS AND METHODS

Study Setting: Current research was conducted at HITEC (IMS-HITEC) Institute of Medical Sciences, Taxila Cantt Pakistan.

Study Design: Cross-sectional study

Study Duration: The data was collected for a limited time (from 5th may to 15th may 2020) **Sample Size:** 116 respondents were asked to participate in the survey.

Methodology: Cross-sectional research was performed concerning Covid-19 lockdown. It was a quantitative study in which participants filled out an online survey form. The data was collected for a limited time window (from 5th may to 15th may 2020) and 116 delegates were asked to participate in the survey.

Convenient sampling technique was used. Participation in the analysis was voluntary, incognito and without monetary or credit compensation. The ethics committee of Hitec-Ims approved the research protocol. The data was collected on Google forms shared through social media focusing on undergraduate individuals from 16 to 24 years of age to acquire a homogenous example of responders, since youth are more liable to digital media use and their routine is more prone to be affected by the lockdown. The participation rate was 98.2%.

Data Analysis: SPSS was used for the data entry and analysis purpose. The data obtained was compiled, tabulated and analysed statistically. Chi square test was used to check whether the variables yielded significant or insignificant results.

The volunteers were mainly university students and were asked to answer a comprehensive questionnaire comprising of 32 questions, which covered a broad spectrum of factors ranging from age and gender to their sleeping patterns before and after lockdown from the novel corona virus and how much time varied that they spent sleeping and also a range of questions regarding the time they spent on social media before and after the imposition of lockdown, which particular apps the students flogged to were also monitored. The questionnaire was based upon the Pittsburgh Sleep Quality Index (PSQI) which has an internal consistency and a reliability coefficient (Cronbach's alpha) of 0.83 for its seven components. The general rule of thumb is that a Cronbach's alpha of 0.70 and above is considered to be good, above 0.80 is considered to be even better and above 0.90 is the most ideal.

In the first phase we asked general questions from the participants like whether they were students or their ages and gender. In the second phase, the questions were regarding sleep and also addressed key factors such as dreams and nightmares, how many times the person got up and were disturbed from sleep and how long it'd take them to fall asleep. Similarly, regarding social media usage, we monitored the tendencies of the volunteers to flog towards social media before sleeping and whether it was easier for them to use such apps after lockdown as compared to before and the general increased in the usage of each app. The selected apps ranged from Facebook and Instagram to TikTok and Netflix.

RESULTS

The study consisted of a majority of females. Out of a total of 100 participants, 60 (60%) were females and 40 (40%) were males.

The mean age was 21 years and the participants were mostly university students.

When comparing the times, the participants went to bed before and after lockdown we saw a drastic shift in sleeping habits. All the given data clearly points to more students preferring to go to bed at very late times during the night, supported by the P value of 0 on Chi-Square showing a very strong association.

Similar to the shift in timings regarding the participants going to bed, the time at which they got up also shifted before and after lockdown. This shift was also supported by the Chi-Square test p value of 0.009. The total sleep duration increased after lockdown despite going to sleep much later. Hence most of the participants saw their sleep time increase as seen in Chi-square test P value of 0.126. Regarding the time spent on social media before and after lockdown by the participants, we also saw some interesting data as social media use increased drastically. This shift is also supported by the P value of 0.

When the participants were asked whether they found it more convenient to spend their free time on social media during lockdown as compared to before, a majority 75% responded in the affirmative, clearly pointing towards the increased time spent on social media. The association that with the enforcement of lockdown participants found it increasingly difficult to fall asleep after going to bed was supported by the Chi-Square test with a P value of 0.001. A set of questions were also asked to determine which social media apps the participants were increasingly using, most of the participants spent time on Instagram (68%) and YouTube (64%), while modest people spent time on Netflix (41%), Snapchat (30%) and Facebook (33%). Lesser participants spent time on TikTok (11%) and Skype/Zoom (25%)

Table 1: Basic details of participants included in the study

Parameters	Variables	Frequency
Age	Mean±Sd	21±4.65
Gender	Male	60(60%)
	Female	40(40%)
Living place during lockdown	Urban	82(82%)
	Rural	18(18%)
Previous medical history before the lockdown	Common medical disorders	27(27%)
	Disorders of sleep	39(39%)
	Completely Medical Fit	34(34%)

Table 2: Screen use and sleep variables both before and after the lockdown

Parameters	Variables	Life before lockdown	Life after lockdown	P-value
Sleep delay	< 30 min	82%	60%	0.003
	< 60 min	12%	22%	
	> 60 min	6%	18%	
During weekdays bedtime	8:00–9:00 PM	6.2%	0.7%	0.001
	9:00–10:15 PM	41.6%	11.4%	
	10:15–11:30 PM	44.3%	37.8%	
	11:30–12:45 PM	6%	27%	
	Later than 12:45 PM	1.02%	23.1%	
During weekdays waketime	5:00–6:30	3.8%	0.02%	0.001
	6:30–7:45	68.7%	8.4%	
	7:45–9:45	20.4%	62.6%	
	9:45–11:00	5.2%	18.4%	
	Later than 11:00	2.5%	10.58%	
Nocturnal Awakenings	Awakenings late night	43%	57%	0.001
Daily screen time in hours	0–2 hrs	47%	7%	0.003
	2–4 hrs	32%	21%	
	4–6 hrs	10%	32%	
	6–8 hrs	6%	21%	
	>8 hrs	5%	19%	
Homework online	Sometime or all the time	53%	87%	0.004
Classes online	Sometime or all the time	3%	97%	0.003
Unhealthy habits	Lack of sun exposure	23%	81%	0.005
	Lack of physical activity	47%	77%	
	Weight increase	21%	62%	

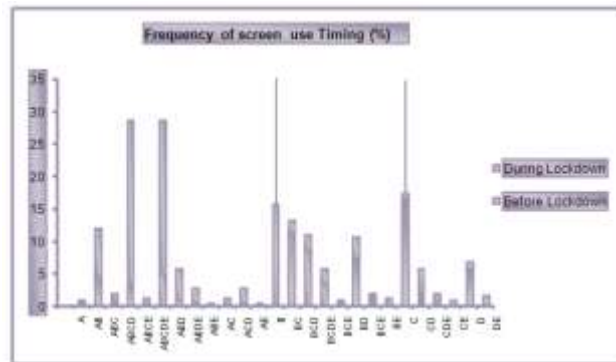


Figure 1: Electronic devices timing before and during the Covid-19 lockdown: A: 9am-13pm in morning, B: 16- 20pm in afternoon, C: 20-21:30pm prior to dinner time in evening, D: >21:30pm after dinner time in evening, and E: in bed time hours. 1st stripe is for timetables that begin about afternoon, and 2nd stripe is for timetables that begin in evening time.

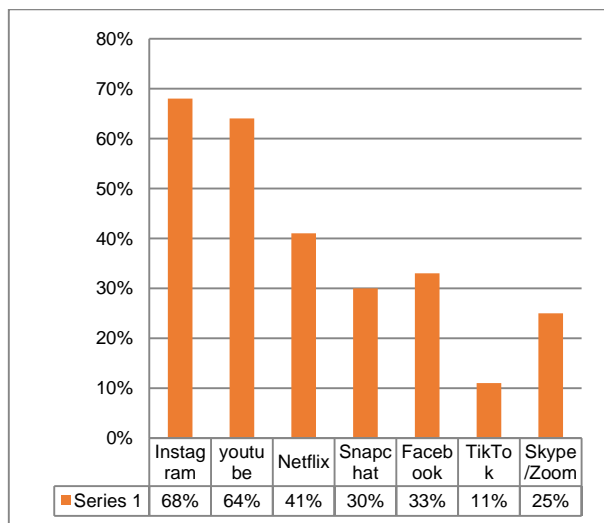


Figure 2: Social media apps the participants used during covid-19 lockdown

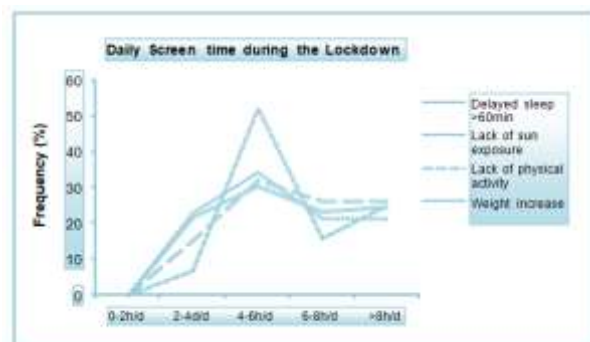


Figure 3: Association between daily screen time & certain unhealthy habits

DISCUSSION

The aim of this critical research and analysis was to determine the effects of the Novel Covid 19 lockdown on a particular segment of the society, university students in Pakistan. We also wanted to see how it has affected their sleep in general and also sought to find the associated changes in social media use and how it relates to sleeping pattern.

One significant association observed was the tendency of the participants to have altered their sleeping pattern after

lockdown and there was an increased tendency to go to bed much later into the night than before lockdown, a finding also consistent with other research conducted in Germany⁶ and also in the US⁷ and India.¹³ Not only this but the total sleep duration in the participants increased massively before and after lockdown, backed up by the same US nationwide study⁷. Perhaps the major contributor to the increased sleep duration and changed sleep schedule was due to having no time restrictions such as attending classes early next morning⁶.

An important derivation from the collected data pointed to the fact that even though participants stayed in bed for a longer than usual time, the time it took them to fall asleep was far greater than before the lockdown was imposed as observed by the study in Nepal⁹. This could perhaps be attributed to the participants sleeping longer than under normal circumstances⁷. The Novel Corona Virus lockdown caused this pattern of increased sleep to occur across other regions of the World as well.¹⁰

As far as the quality of sleep experienced by the participants was concerned, a majority of the participants were fairly satisfied with the quality of sleep they were getting, but perhaps several factors, other than just lockdown backed this finding, as in another study the participants found a general detrimental effect in their sleep quality⁶. The study also found a drastic increase in the time spent on social media by the participants on average throughout the day, which was also observed in India (Shweta Singh) and in the US⁷.

The more free time provided to the participants by the lockdown, the easier was their tendency to spend this time using social media and the internet in general.¹² They found it rather easy to resort to social media as a means to kill time compared to anything else.³ Perhaps this could be presumed to be one of the causes leading to the participants spending longer duration in the bed without being able to fall asleep¹.

We also asked the participants about which social media platform they were found to be mostly using and Instagram, followed by YouTube were the front runners. In general, a rather shallow amount of research has been carried out on the effects of Covid 19 lockdown on the sleeping habits and social media use amongst various groups of society. More widespread research is required to study the broader effects of this lockdown that are negative and then eventually mitigating them.¹⁵

Such a drastic change would have had no doubt affected the circadian rhythms of several of these people and would have had led to several of the behavioral and psychological changes hinted in the research above, more data collection is pertinent, however, to reach a somewhat decisive estimate of the said hypothesis.¹⁴

A few limitations plaguing our research include, firstly, the pool of individuals from whom data was collected was very limited and widespread research is required. Secondly, a majority of our participants were female and gender disparity could have affected the result. Thirdly, the questions we formulated, though extensive could still be improved by eliminating all aspects that could be interpreted as subjective for a much more clearer and accurate data accumulation and lastly, even though we tried to collect data from different university students but the majority were from a specific geographic locality and hence a more dispersed sample collection would be more accurate.

The global Covid 19 pandemic has forced almost all nations to impose some degree of lockdown to try and curb the spread of the virus, but this drastic shift in the daily routine of the masses has led to several expected and some unexpected outcomes. Most university students have adopted a more nocturnal lifestyle, sleeping very late into the night or early morning and sleeping throughout the greater part of the ensuing day. The average time of sleep obtained by the masses has also increased and the hectic routine before the lockdown which had affected the sleep quality of many students waned into a generally better quality of sleep.

This does not exclude the fact that many have to spend a lot longer than normal time trying to sleep and this coupled with the

increased use of social media platforms has also hampered many a student from falling asleep early. The increased amount of leisure time available to the participants is easily utilised by the help of such platforms. However, a limitation should be enforced especially for those having a prolonged exposure as the adverse health effects could be simultaneously accumulating.

CONCLUSION

In conclusion, the COVID-19 pandemic lockdown was linked to significant increases in screen time usage, weekdays of delayed sleep, and other health practises. Further research is needed to examine the long-term effects of disturbed sleep patterns, e-learning approaches, and modifications in youths' health behaviours.

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