



A Study on Correlation of Problematic Internet Use and Quality of Sleep Among College Students During COVID-19 Pandemic Lockdown in India



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Introduction

- In late December 2019, Wuhan Municipal Health Commission, China reported a cluster of cases of pneumonia in Wuhan, Hubei Province.
- Chinese scientists soon identified the virus causing the disease a novel coronavirus and was initially named as 2019 coronavirus (2019-nCoV) later, the World Health Organization on February 11, 2020, announced a new name for the diseases as Corona Virus Disease (COVID-19). Also, the International Committee on Taxonomy of Viruses along with the WHO renamed the virus as Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2).
- The initial outbreak in Wuhan spread in no time, affecting other cities of China. Cases were soon detected all around the world.
- On January 20, 2020, World Health Organization declared that COVID-19 as a public health emergency of international concern and on March 11, 2020, declared it as a global pandemic. As of June 15, 2020; 7,690,708 cases have been reported globally and 427,630 deaths.
- Contact tracing and social distancing are two strategies effective for containing the disease spread. Social distancing is one such technique to not just limit socialization but also promote physical distancing to prevent the risk of infection of COVID-19.
- With these strategies in mind, nationwide lockdowns were implemented globally to flatten the curve.



- On 24 March 2020, the Government of India ordered a nationwide lockdown for 21 days, restricting outside movement of the whole 1.3 billion population of India as a precautionary measure against the 2020 coronavirus pandemic in India. 3 more lockdown phases were followed the initial lockdown till May 31, 2020.
- Since its inception in 1989, internet use has increased rampantly over these past twenty years in both developed and developing countries mainly because of easy and affordable access to the population.
- Internet is used for activities ranging from teaching, learning, research; exchanging email, business transactions, business meeting via video-conferencing, online gaming, shopping, pornography, gambling, watching movies and videos; social networking via texting, video calling, social websites and applications, etc.
- **Problematic internet use** can be defined as “Internet use that is risky, excessive or impulsive in nature leading to adverse life consequences, especially physical, emotional, social or functional impairment.”
- There are approximately 504 million internet users in India as of January 2020. Since the nationwide lockdown was first introduced, India’s internet consumption rose by 25-30%.
- As the lockdown persists for a long period, online socialization is promoted rather than offline. Since there is no fixed routine to follow; lockdown will not only lead to behavioural addiction disorders but disrupt sleep schedules of individuals as well.
- Sleep plays a pivotal role in modulating of hormone release in the body, cardiovascular activities, and regulation of blood glucose levels, it has been proven that changes in sleep quality have significant implications on the physical health of an individual.
- Internet overuse has been linked with excessive daytime sleepiness and insomnia. Thus the assessment of sleep quality is of dire importance in such uncertain times.



Rationale

- An individual is unconstrained to socialize online, use internet to attend online classes, research purposes, learn new skills and pass their time with entertainment.
- One can assume the period of lockdown lasting for a long time, the use of the internet is also likely to persist during these dire times which may later result in problematic internet use.
- Young people spend a disproportionate amount of time on the internet and tend to ignore sleep and thus, its consequences may lead to pernicious effects on one's physical and mental health.
- Hence, this study was taken to study the correlation between problematic internet use and quality of sleep among college students during the COVID-19 pandemic lockdown in India.



Research Question & Objectives

Research Question

- Is Quality of sleep affected due to problematic internet use among college students during COVID-19 pandemic lockdown in India?

Research Objectives

➤ Broad Objective

- To determine the correlation between problematic internet use and quality of sleep among college students during COVID-19 pandemic lockdown in India

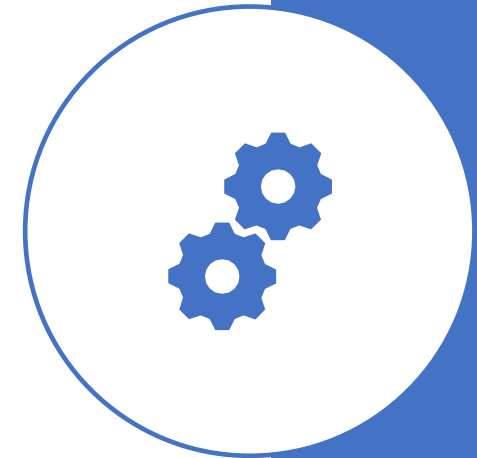
➤ Specific Objectives

- To assess problematic internet use among college students during COVID-19 pandemic lockdown in India
- To assess quality of sleep among college students during COVID-19 pandemic lockdown in India



Research Methodology

- **Study Design:** Cross-sectional Descriptive study.
- **Type of Research:** Primary Research
- **Duration of the Study:** 2 months.
- **Study Setting:** PAN India
- **Study Population:** College students
- **Sample Size:** 252
- **Type of Sampling:** Random sampling
- **Sample Selection:**
 - Inclusion Criteria: College students aged between 18-29 years of age
 - Exclusion Criteria: College students below the age of 18 and above the age of 29



- **Data Collection Tools:** An online survey was carried out using Google Doc Forms which was a self-administered, semi-structured questionnaire with three parts:
 - Socio-demographic Variables along with Patterns of Internet use
 - Young's Internet Addiction Test
 - Pittsburgh Sleep Quality Index.
- **Data Analysis Tool and Technique:** Derived responses were entered into the Microsoft Excel worksheet. Pearson's Correlation Coefficient was applied to investigate the correlation between Problematic internet use and Sleep quality.



Results

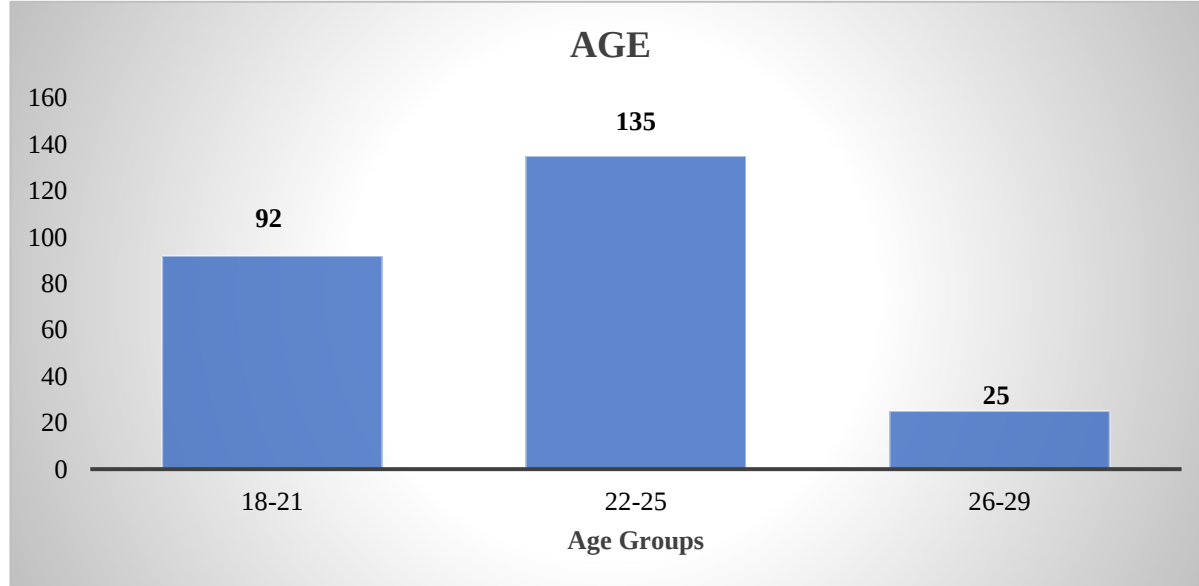


Figure: 1 Age of the Respondents

Table 1: Mean Age

Mean Age	SD
22.38	±2.24

Interpretation: 53% of respondents belonged in the age group of 22-25, while 37% were between 18-21 and 10% in the age group of 26-29.

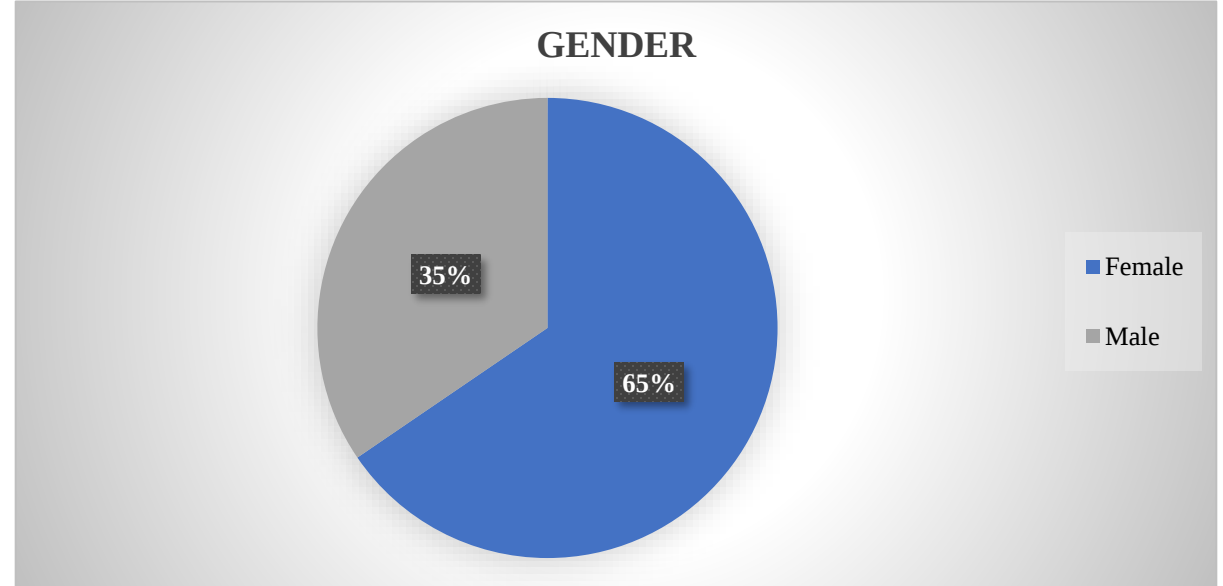


Figure 2: Gender of the Respondents

Interpretation: 65% of respondents were Females while 35% of respondents were Males.



QUALIFICATION

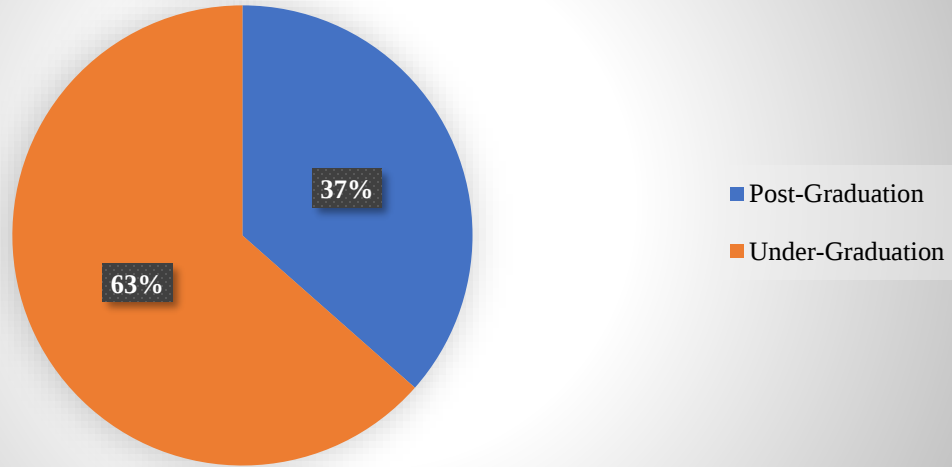


Figure 3: Qualification of the Respondents

Interpretation: 63% of respondents were pursuing Under-Graduation while 37% were pursuing Post-Graduation.

INTERNSHIP STATUS

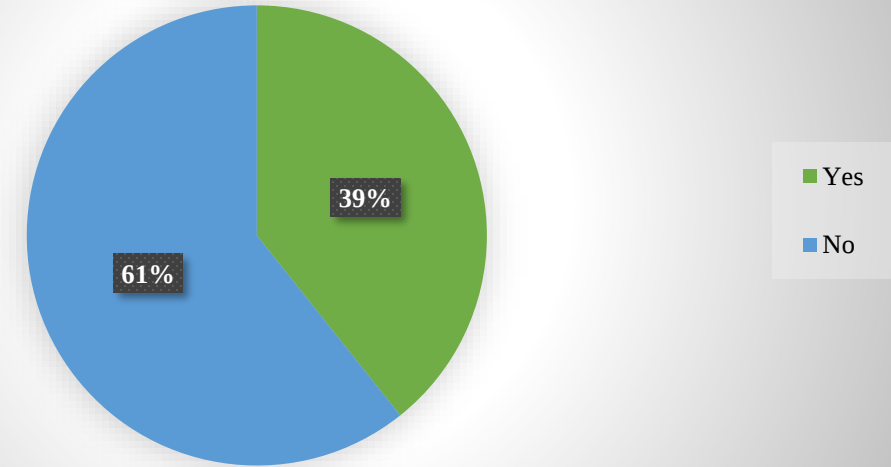


Figure 4: Internship Status of the Respondents

Interpretation: 61% of respondents were not interning while 39% of respondents were interning.



COVID-19 PANDEMIC KNOWLEDGE

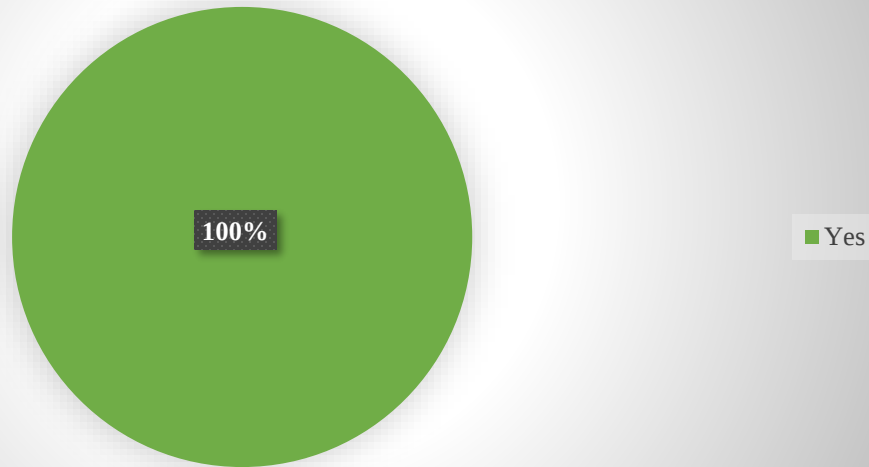


Figure 5: COVID-19 Pandemic Knowledge of the Respondents

Interpretation: All the respondents (100%) were about the COVID-19 outbreak.

KNOWLEDGE OF LOCKDOWN MEASURES

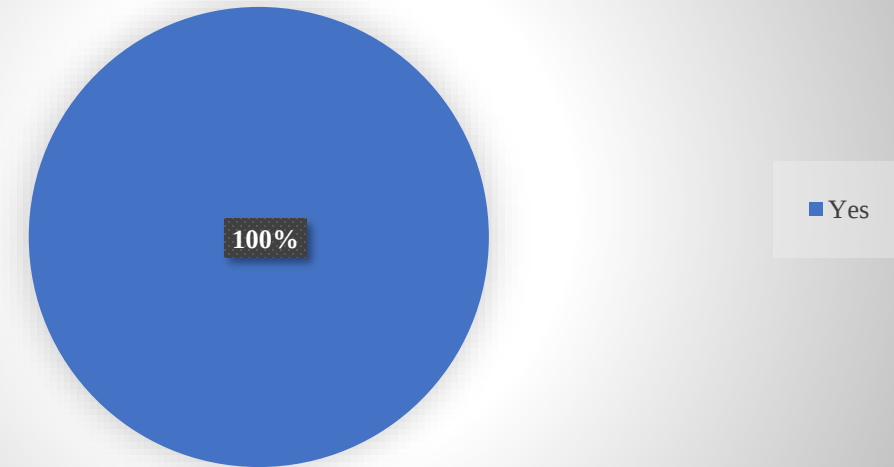


Figure 6: Knowledge of Lockdown Measures

Interpretation: All the Respondents (100%) had knowledge of the Lockdown measures taken by the Government of India.



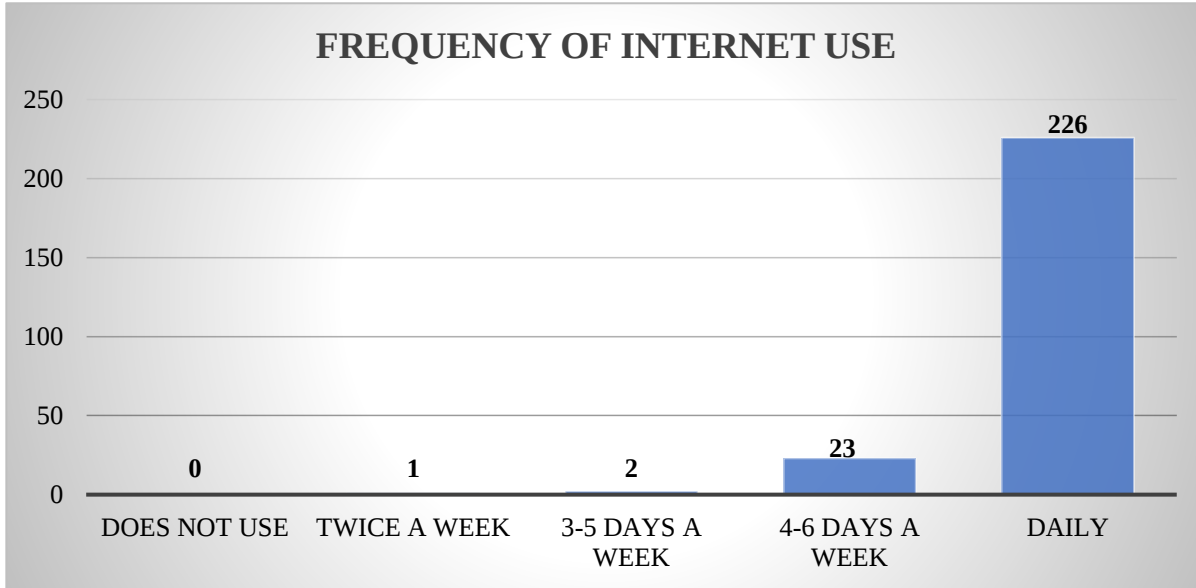


Figure 7: Frequency of Internet use

Interpretation: 89.68% of respondents accessed the Internet daily.

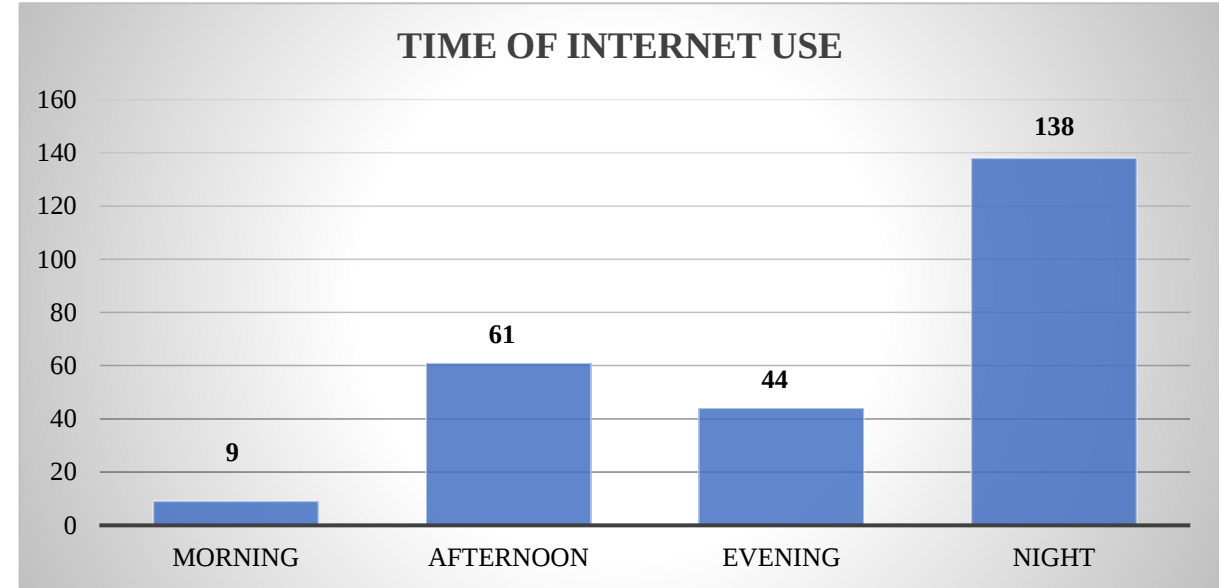


Figure 8: Time of Internet use

Interpretation: 54.76% of respondents accessed the Internet during night.



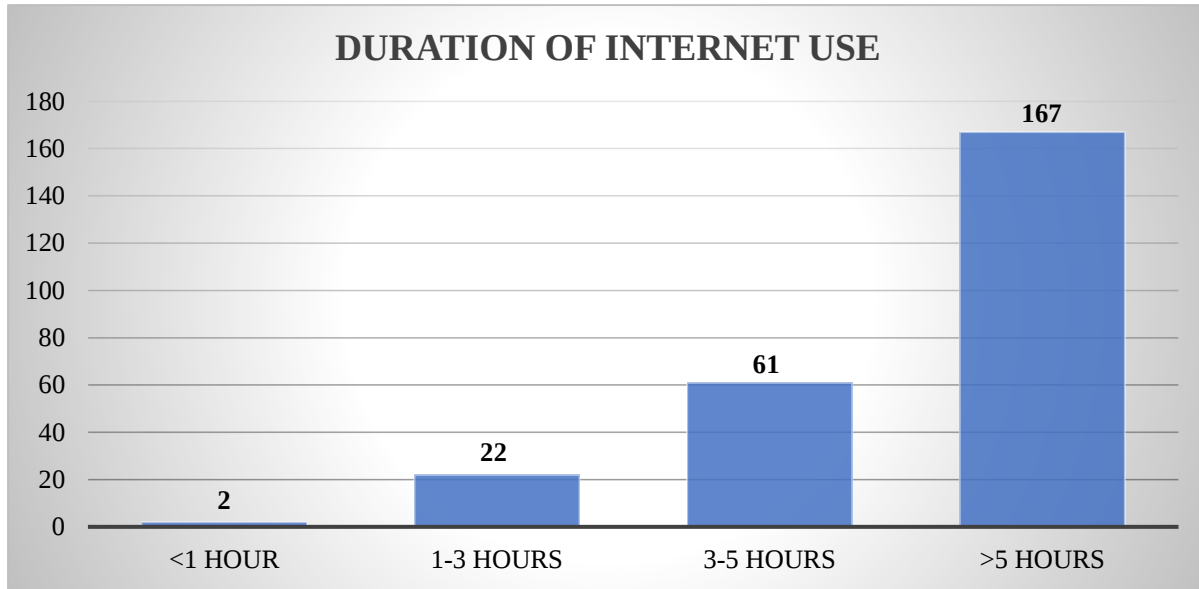


Figure 9: Duration of Internet use

Interpretation: 66.27% of respondents accessed the Internet for more than 5 hours a day.

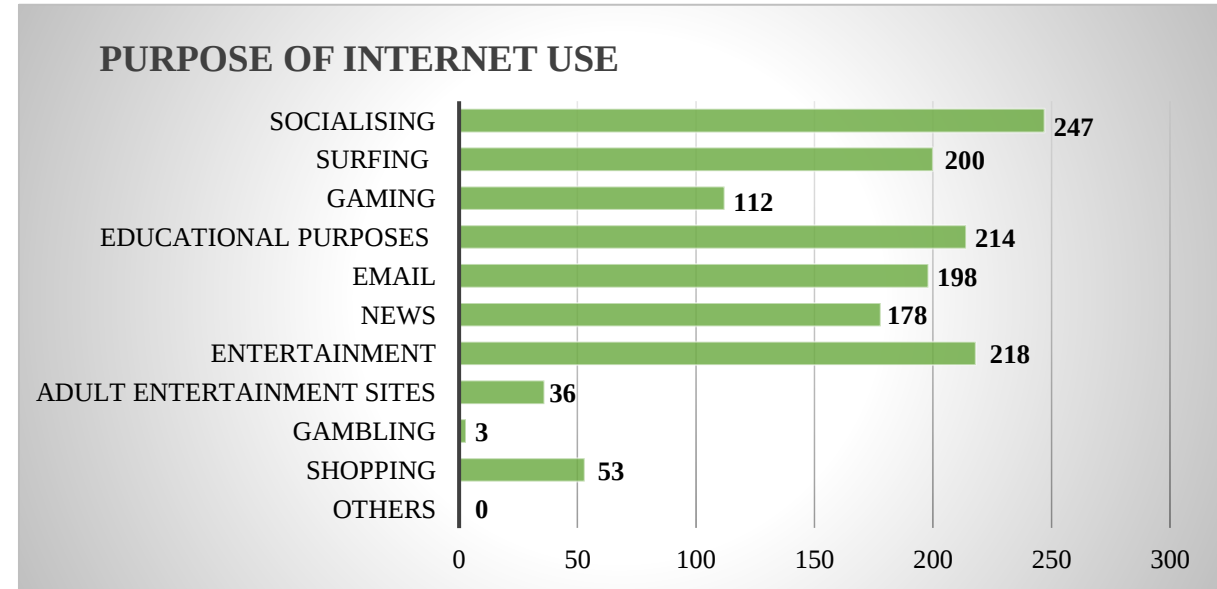


Figure 10: Purpose of Internet use

Interpretation: 98.02% of the respondents used the Internet for Socializing, 86.51% of respondents used the Internet for Entertainment purposes, and 84.92% of respondents for Educational purposes.

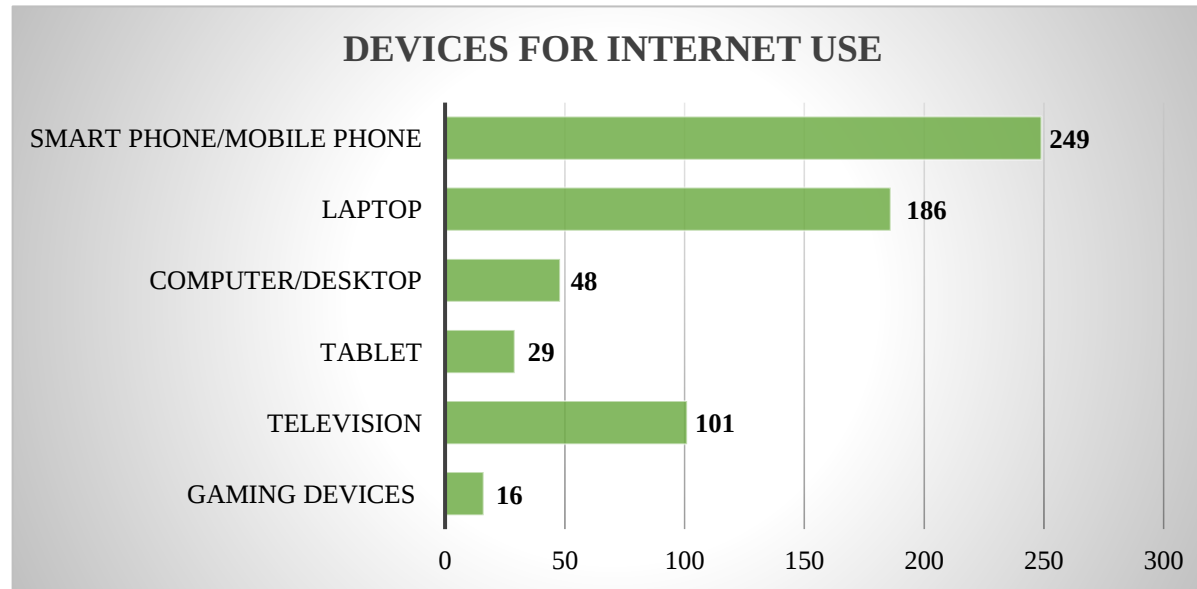


Figure 11: Devices used for Internet use

Interpretation: 98.81% of respondents used Mobile phones/Smartphones to access the Internet.





Figure 12: Internet Addiction Test Score

Table 2: Mean Internet Addiction Test Score

Total Score	Mean	SD
8134	32.28	±17.64

Interpretation:

- 1.19% of respondents were Severe Problematic Internet Users
- 15.08% were Moderate Problematic Internet Users
- 2.94% were Mild Problematic Internet Users
- 50.79% were found to be Normal Internet Users.

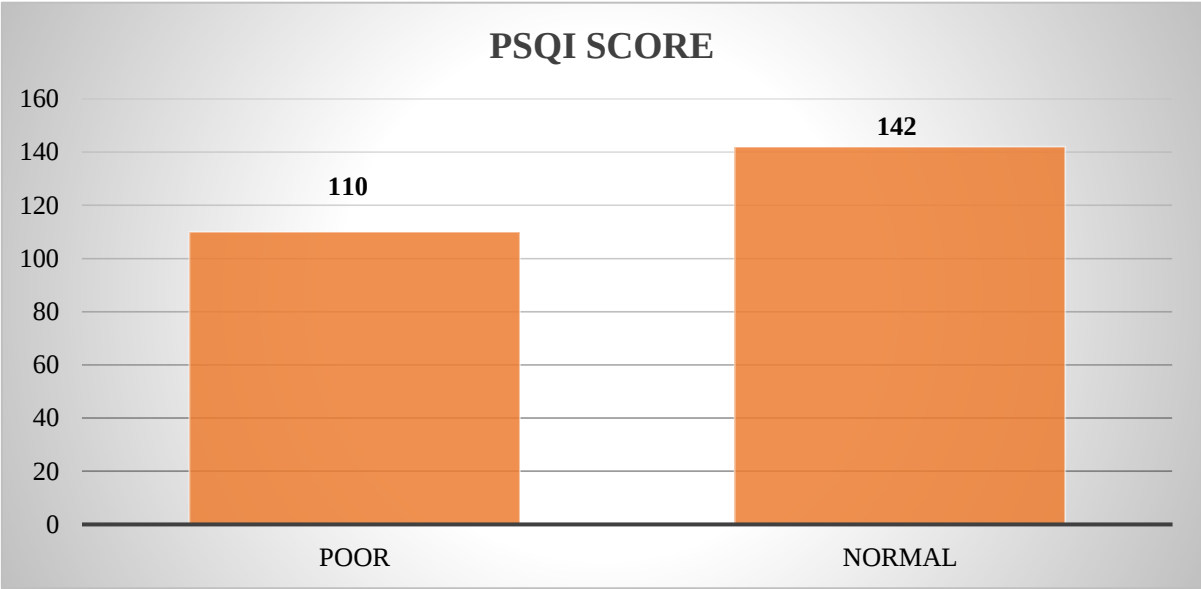


Figure 13: Pittsburgh Sleep Quality Index Score

Table 3: Mean Global Pittsburgh Sleep Quality Index Score

Global PSQI Score	Mean Global PSQI	SD
1381	5.48	±2.81

Interpretation: 44% of respondents had Poor quality of sleep while 56% of respondents had Normal quality of sleep.



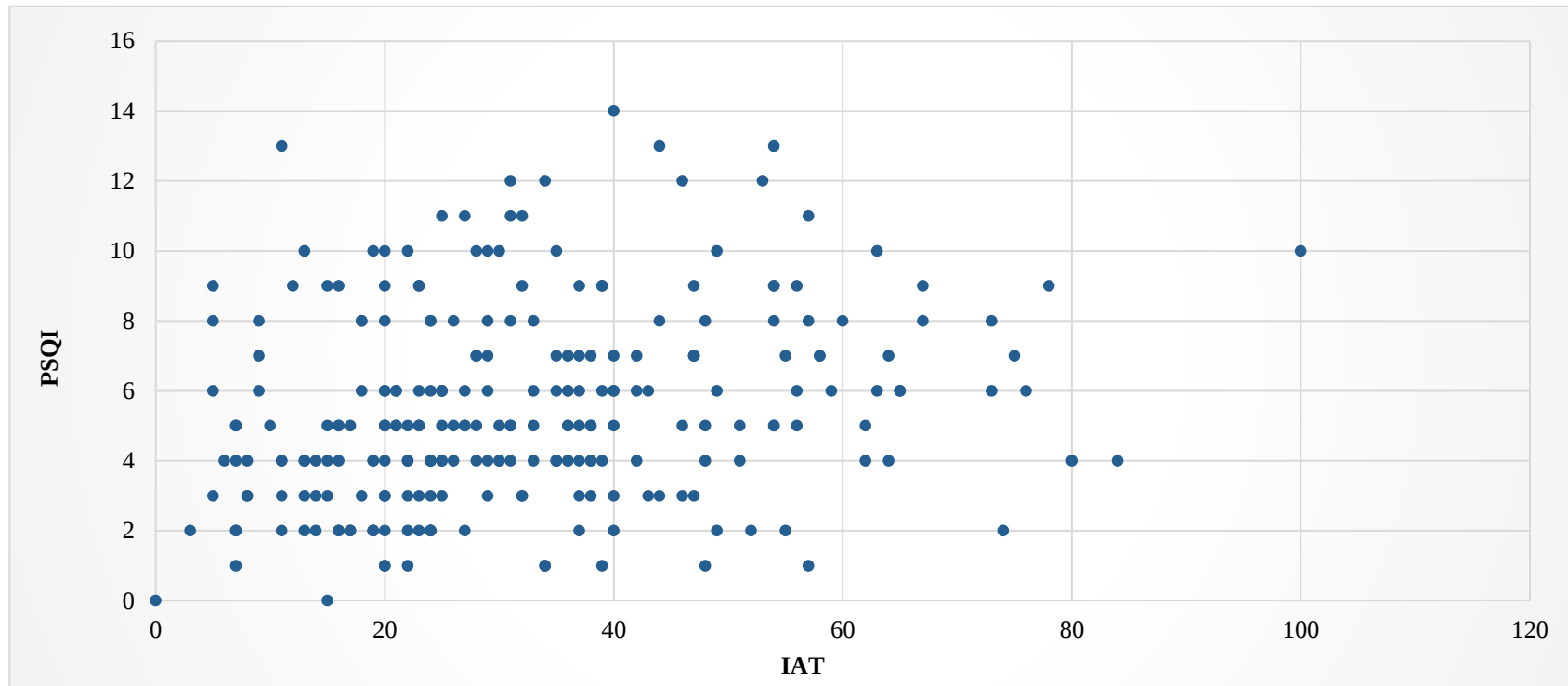


Figure 14: Scatter Plot of Correlation of Internet Addiction Test Score and Pittsburgh Sleep Quality Index Score

Interpretation: There is a positive weak correlation between problematic internet use and sleep quality among the 252 Respondents, $r=0.24$, $p<0.05$.

Conclusion

- The present study concludes that there is a significant ($p < 0.05$) weak association between problematic internet use and quality of sleep ($r = 0.24$) among college students during COVID-19 pandemic lockdown in India.
- The Internet is ubiquitous that its excessive consumption concerns alarming physical and mental health-related problems. Hence, appropriate prevention and awareness should be made to protect the mental and physical health of the students during such difficult times.



Recommendations & Limitations

➤ Recommendations

- Despite numerous publications on the subject of problematic internet use, information about Internet use and its deleterious implications in the context of India remains largely unexplored despite unprecedented national usage. Thus, awareness should be made specially to the vulnerable age group as they thrive for career development and may use the internet in excess and sort maladaptive practices to achieve their goals.
- Prospective studies need to be done further on the topic as the lockdown is still ongoing and also to assess the extent to which quality of sleep is affected and how it is affected by the internet use.

➤ Limitations

- No face-to-face interviews were conducted to explore the phenomenology of Problematic internet use and Sleep quality.
- The present study did not differentiate between the essential and non-essential of internet use.
- Data collected in this study were obtained from self-administered scales. The results may be meagre by the student's lack of openness. Hence, social desirability bias could be present.
- Since participants were asked to report details of past exposure and experiences of 1 month, recall bias cannot be ruled out.



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Introduction to Systematic Review and Meta-Analysis



Introduction

Introduction to Systematic Review and Meta-Analysis is an online course offered by Johns Hopkins University on an online learning platform, Coursera. It is a 6-week graded course with 9 modules along with 2 peer reviewed assignments.

The course has two instructors, Dr. Tianjing Li, an Assistant Professor of Epidemiology and Dr. Kay Dickersin, Professor of Epidemiology at John Hopkins University. The course introduces to comprehensive methods for performing systematic review and meta-analysis.



Course Objectives

An Introduction to Systematic Review and Meta-analysis was created with three objectives,

- To learn the steps that comprise a systematic review and meta-analysis.
- To be able to read critically in the future, read the literature of a systematic review and meta-analysis.
- To be able to integrate the results of systematic reviews in research or clinical practice.



Course Contents

Introduction:

Definition of Meta-analysis by Glass (1976), “The statistical analysis of a large collection of analysis results from individual studies for the purpose of integrating the findings.” Meta-analysis is an optional component of a systematic review.

There are seven steps to perform a Systematic Review:

- Establish a research team
- Develop a protocol
- Data collection, locating the studies and screening the results
- Abstract data and appraise risk of bias in the individual studies
- Synthesize findings, interpret, and assess overall body of evidence
- Summarize in a Report
- Update

Framing the Question:

Components of Well-Constructed and Answerable Clinical Questions,

- **P** – Patients or populations



- **I** – Interventions/Exposure
- **C** – Comparison group(s)
- **O** – Outcome

Finding the Evidence - Searching Principles:

Key Sources for searching evidences: MEDLINE/PUBMED, EMBASE, Cochrane Central Register of Controlled Trials (CENTRAL), LILACS, CINHAI, PsychINFO, OTSeeker, ProQuest, Opengrey or SIGLE.

Assessing the Risk Of Bias in Clinical Trials:

There are three main types of bias:

- Selection bias
- Information bias
- Bias in the analysis.

Minimizing Meta-bias:

Reporting guidelines that help identify areas to consider for reducing bias:

- PRISMA: It is the reporting guideline for systematic reviews of clinical trials.
- MOOSE: It is old but still useful reporting guideline for observational studies.



Qualitative Synthesis: It is defined as “an assessment of the body of evidence that goes beyond factual descriptions or tables. That, for example, simply detail how many studies were assessed, the reasons for excluding studies. The range of study sizes and treatments compared, or the quality of each study as measured by a risk of bias tool.”

Planning the Meta-analysis:

Analysis Plan:

- Obtain size of effect from similar studies estimating the same effect – Method: Standard pair-wise meta-analysis
- Compare multiple intervention for the same condition – Method: Network meta-analysis.
- Investigate the relationship between the size of an effect and characteristics of the studies – Method: meta-regression.

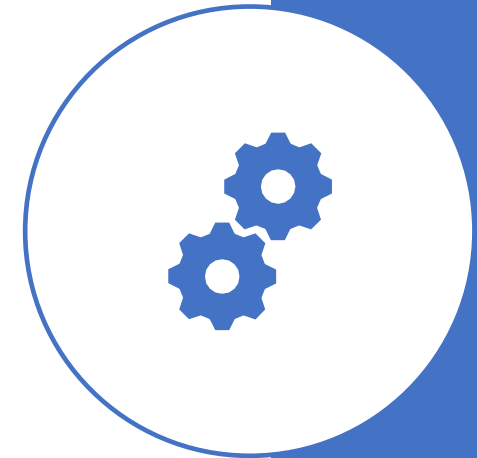
Statistical Methods For Meta-analysis:

1. Fixed Effects Model
2. Random Effects Model



Methodology

- The course is a 6-week online course (approximately 16 hours) divided into 9 modules. The course has 41 videos, 3 readings and 2 peer graded assignments. Weeks 2 to 5 have a graded quiz of 5 questions at the end of the module.
- All the videos are concise and in lucid English language with subtitles to understand. The course is very insightful and contains a discussion page for learners to discuss and ask doubts to the course guide. There are various appropriate pictures and tables used for better understanding.



Key Learnings

- Describe the stages of conducting a systematic review.
- Formulating an answerable research question using the “Participants Interventions Comparisons Outcomes (PICO)” framework.
- Collection and extraction of data from clinical trial studies.
- Critically appraise the risk of bias of studies.
- Explain and interpret the results of meta-analyses.



References

- <https://www.coursera.org/learn/systematic-review>





Thank you

