

## Original Research Article

# INTERNET ADDICTION AND ITS RELATIONSHIP WITH INSOMNIA AND OBSESSIVE COMPULSIVE DISORDERS AMONG YOUNG POPULATION IN URBAN AREA OF PRAYAGRAJ DISTRICT-A COMMUNITY BASED STUDY

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### ABSTRACT

**Background:** The increasing digital engagement among youth has raised concerns about internet addiction and its potential impact on health outcomes such as sleep quality and obsessive-compulsive disorder (OCD). Understanding these associations is crucial for promoting healthy behavioral patterns among young urban populations. **Objective:** To assess internet addiction and its association with insomnia. 2. To show the relationship between internet addiction and obsessive compulsive disorders.

**Materials and Methods:** A community-based cross-sectional study was conducted among 258 participants aged 18–24 years. Internet addiction was measured using the Internet Addiction Test (IAT), sleep quality using the Pittsburgh Sleep Quality Index (PSQI), and OCD symptoms using the Yale–Brown Obsessive Compulsive Scale (Y-BOCS).

**Results:** The prevalence of mild internet addiction was highest (46.51%), followed by normal users (25.97%), moderate (24.81%), and severe addiction (2.71%). A highly significant association was observed between internet addiction severity and sleep quality ( $\chi^2 = 114.710$ ,  $p < 0.001$ ), with higher addiction levels linked to poorer sleep, increased sleep latency, reduced sleep duration, and greater daytime dysfunction. In contrast, the relationship between internet addiction severity and OCD was not statistically significant ( $\chi^2 = 6.455$ ,  $p = 0.6157$ ).

**Conclusion:** Internet addiction is prevalent among young adults, predominantly at mild to moderate levels, and is strongly associated with impaired sleep quality. However, it does not show a significant relationship with OCD severity. These findings highlight the importance of early identification and intervention strategies to promote balanced internet use and improve sleep health among youth.

**Keywords:** Internet Addiction, Sleep Quality, Insomnia, Obsessive-Compulsive Disorder, Young Adults, IAT, PSQI, Y-BOCS.

## INTRODUCTION

The prevalence of internet addiction varies widely across different populations and geographical regions, with reported rates ranging from 1.5 percent to 38 percent globally. Asian countries, particularly China, South Korea, and India, have reported higher

prevalence rates, possibly due to rapid technological advancement, increased internet accessibility, and cultural factors. In India, the proliferation of affordable, smartphones with low-cost of data plans has led, to a dramatic increase in internet usage, especially among adolescents and young adults. Recent estimates suggest that India has over 600 million active internet users, with a significant

proportion being young individuals aged 15-35 years<sup>1</sup>.

Young people are particularly vulnerable to developing internet addiction due to several psychosocial and developmental factors. Adolescence and early adulthood represent critical periods characterized by identity formation, peer relationships, and increased autonomy. The internet provides an attractive platform for social interaction, entertainment, and escapism during this developmental stage. However, excessive internet use can interfere with normal developmental tasks, academic performance, family relationships, and overall well-being<sup>2</sup>. Emerging research has identified significant associations between internet addiction and various psychiatric comorbidities, including depression, anxiety, and attention deficit hyperactivity disorder (ADHD), and social phobia<sup>3</sup>. Among these, insomnia and obsessive-compulsive disorder (OCD) have gained particular attention due to their complex bidirectional relationships with internet addiction. Understanding these associations is crucial for developing comprehensive intervention strategies and preventive programs targeting at-risk populations. "Insomnia characterized by difficulty initiating or maintaining sleep, early morning awakening, or non-restorative sleep accompanied by daytime impairment, represents one of the most common sleep disorders worldwide"<sup>4</sup>.

The relationship between internet addiction and insomnia appears to be multifaceted and bidirectional. Excessive internet use, particularly during evening and night time hours, can disrupt normal sleep-wake cycles through multiple mechanisms including blue light exposure from screens, psychological arousal from engaging content, displacement of sleep time, and irregular sleep schedules. Conversely, individuals with pre-existing sleep problems may turn to internet use as a coping mechanism or time-filler during periods of wakefulness, potentially establishing a vicious cycle<sup>4</sup>. The prevalence of insomnia among young adults has been increasing globally, with estimates ranging from 10 percent to 30 percent in various populations.

Obsessive-compulsive disorder (OCD) is characterized by recurrent, intrusive thoughts (obsessions) and repetitive behaviors or mental acts (compulsions) performed to reduce anxiety or prevent feared outcomes. The relationship between internet addiction and OCD may be bidirectional and complex. Individuals with OCD traits may be more susceptible to developing internet addiction due to their tendency toward repetitive behaviors, difficulty with impulse control, and use of internet activities as avoidance or neutralizing strategies. Conversely, chronic internet addiction may potentiate OCD-like symptoms through the reinforcement of compulsive checking behaviors, excessive concern about online activities, and anxiety when unable to access the internet<sup>5</sup>. Understanding this relationship is crucial for

accurate diagnosis, appropriate treatment planning, and prevention strategies.

The present study aims to investigate the prevalence of internet addiction among young individuals aged 18-24 years residing in the urban area of Prayagraj district and examine its relationship with insomnia and obsessive-compulsive disorders through a community-based approach.

## MATERIALS AND METHODS

This community-based cross-sectional study was carried out among young individuals aged 18 to 24 years residing in the selected urban area. The study was conducted from 1 February 2025 to 31 January 2026 for a period of 12 month. Approval for conducting the study was obtained from the Institutional Ethics Committee.

### Inclusion Criteria

- Individuals aged 18–24 years.
- Permanent residents of the selected area.
- Those who use the internet on smartphones, laptops or computers.
- Individuals who provided informed consent.

### Exclusion Criteria

- Individuals with diagnosed psychiatric illnesses before the onset of internet use.
- Those having any terminal illness.
- Individuals not willing to participate.

### Sample Size Calculation

For this research, the prevalence of internet addiction in Southeast Asia has been referenced as 20% based on the findings of Chia et al<sup>6</sup>. The required sample size was calculated using a 5% margin of error, a 95% level of confidence, and an additional 5% for contingency.

**The following equation was used for sample size determination:**

$$n = Z^2 \times P \times (1 - P) / I^2$$

By substituting these values, the sample size 258 was calculated.

### Sampling Technique

A multistage random sampling technique was employed for the study. Initially, in stage 1 from the total urban wards of Prayagraj district, two wards (Alopibagh and Allenganj) were selected using simple random sampling by the lottery method. In stage 2, from each selected ward, three colonies were further selected by simple random sampling by the lottery method. In the third and final stage, study participants were selected from each selected colonies. One house was randomly selected from each colony and then subsequent houses were visited and eligible study participants were enrolled in the study till the desired sample size was achieved that is 43 study participants from each colony.

### Data Collection Tools

A structured questionnaire was used, consisting of four parts:

1. Sociodemographic profile

2. Internet Addiction Test (IAT) – a standardized tool to assess levels of internet use
3. Pittsburgh Sleep Quality Index (PSQI) – to measure sleep quality and insomnia symptoms
4. Yale–Brown Obsessive–Compulsive Scale (Y-BOCS) – to assess obsessive–compulsive behaviour

All tools were used in their validated forms, and questions were explained to participants in simple language.

Data were entered in Microsoft Excel and analysed using IBM SPSS 26 statistical software. Descriptive statistics such as frequency and percentages were used for socio demographic variables. Chi-square test was used to assess associations between variables. A  $p$  – value  $< 0.05$  was considered statistically significant, indicating strong evidence against the null hypothesis.

## RESULTS

The distribution of participants across age groups shows that the majority were aged 18–20 years (38.37%), followed by those aged 23–24 years (35.66%), and 21–22 years (25.97%). The gender distribution among the study participants shows a clear predominance of males (70.54%) compared to females (29.46%). The study population was predominantly Hindu (98.06%), with a small proportion of Muslim participants (1.94%).

The majority of participants in the study were unmarried (86.05%) compared to married individuals (13.95%). This demonstrates that the study population was predominantly unmarried, which may influence the interpretation of findings related to social or demographic factors.

The educational profile of the study participants shows that most individuals had completed higher education, with 43.41% being graduates or higher and 41.09% having completed intermediate education. A smaller proportion had high school (13.57%), middle school (1.55%), or were literate only (0.39%). This suggests that higher education was predominant in the study population, which may influence the generalizability of findings related to literacy or knowledge-based outcomes.

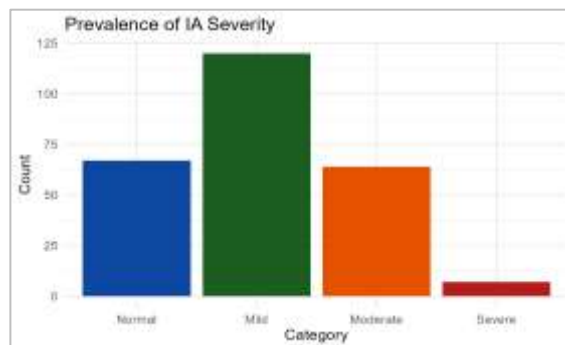
All study participants (100%) reported living with their family. This indicates a uniform family structure among the participants, which may provide a consistent social context for interpreting study outcomes.

The distribution of participants across socioeconomic classes shows that nearly half belonged to Class 2 (48.84%), followed by Class 1 (40.31%) and Class 3 (10.85%). This suggests that the study population was predominantly from the middle and upper socioeconomic strata, which may influence the generalizability of socioeconomic-related findings.

All participants (100%) reported living in pakka (permanent) houses. This indicates a uniform

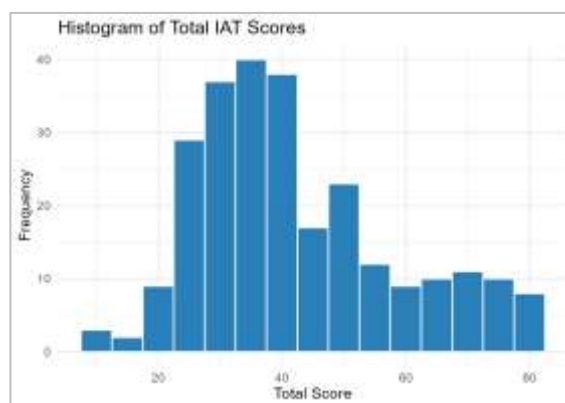
housing type among the study population, providing a consistent environmental context for the study.

The distribution of severity levels indicates that most participants experienced mild severity (46.51%), followed by normal (25.97%), moderate (24.81%), and severe (2.71%) cases. This suggests that mild cases predominated in the study population, while severe cases were relatively rare, which may have implications for clinical management and resource allocation.



**Figure 1: Severity Levels Among Study Participants**

The summary statistics for IAT total scores indicate that the mean score among participants was 42.31 with a standard deviation of 16.32, suggesting a moderate level of variability in internet addiction levels within the study population. The scores ranged from a minimum of 8 to a maximum of 80, with a median value of 39, indicating that half of the participants scored below this level. Overall, these findings suggest that participants exhibited varying degrees of internet use behaviors, with the average score reflecting a moderate tendency toward internet addiction in the study group.

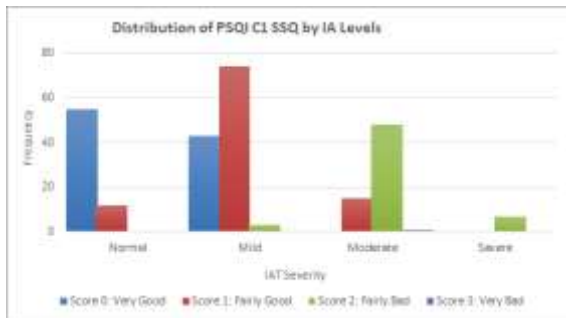


**Figure 2: Summary Statistics for IAT Total Scores**

The distribution of sleep quality among participants shows that a slightly higher proportion experienced good sleep quality (53.49%) compared to those with poor sleep quality (46.51%).

The distribution of sleep quality scores across IAT severity levels demonstrates a clear pattern in which individuals with normal internet use predominantly reported very good (Score 0) and fairly good (Score 1) sleep quality, while those with mild internet

addiction were more likely to report fairly good sleep with a small proportion experiencing fairly bad sleep. Participants with moderate and severe internet addiction showed a shift toward poorer sleep quality, with most moderate cases reporting fairly bad sleep and severe cases exclusively reporting fairly bad sleep. The chi-square test yielded a value of 228.107 with a p-value <0.001, indicating a highly statistically significant association between IAT severity and sleep quality.



**Figure 3: Association Between IAT Severity and Subjective Sleep Quality Scores**

The relationship between IAT severity and sleep latency demonstrates that individuals with normal internet use predominantly reported shorter sleep latency durations (Score 1: 1–2), whereas those with mild internet addiction showed a gradual increase in moderate sleep latency scores. Participants with moderate and severe internet addiction exhibited a clear shift toward longer sleep latency durations (Scores 2 and 3), indicating greater difficulty in falling asleep. The chi-square test yielded a value of 116.072 with a p-value <0.001, indicating a highly statistically significant association between IAT severity and sleep latency.

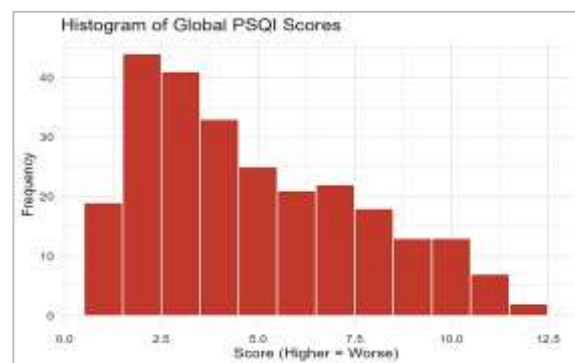
The relationship between IAT severity and PSQI Component 3 (sleep duration) indicates that individuals with normal internet use predominantly reported adequate sleep duration of more than 7 hours (Score 0), while those with mild internet addiction showed a distribution across both >7 hours and 6–7 hours of sleep. Participants with moderate and severe internet addiction demonstrated a shift toward shorter sleep durations, particularly within the 6–7 hours and 5–6 hours categories. The chi-square test yielded a value of 128.037 with a p-value <0.001, indicating a highly statistically significant association between IAT severity and sleep duration. The relationship between IAT severity and PSQI Component 4 (sleep efficiency) shows that most individuals with normal and mild internet use reported high sleep efficiency levels (>85%). However, participants with moderate and severe internet addiction demonstrated a gradual shift toward slightly reduced sleep efficiency, particularly within the 75–84% category. The chi-square test yielded a value of 48.404 with a p-value <0.001, indicating a highly statistically significant

association between IAT severity and sleep efficiency.

The relationship between IAT severity and PSQI Component 5 (sleep disturbances) indicates that individuals with normal internet use predominantly reported lower levels of sleep disturbances (Score 1: 1–9), while those with mild internet addiction also showed a similar pattern with a small proportion experiencing moderate disturbances. Participants with moderate and severe internet addiction demonstrated a shift toward higher disturbance scores, particularly within the 10–18 range. The chi-square test yielded a value of 92.99 with a p-value <0.001, indicating a highly statistically significant association between IAT severity and sleep disturbances.

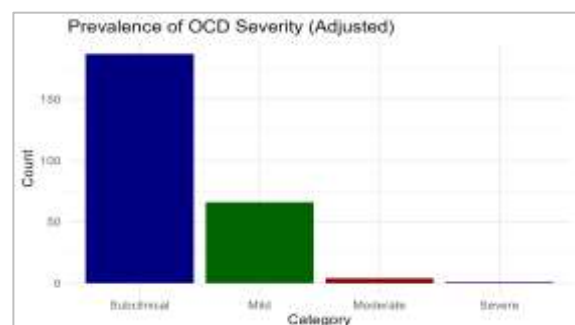
### Summary Statistics for Global PSQI Scores

The summary statistics for global PSQI scores indicate that the mean score among participants was 4.88 with a standard deviation of 2.82, reflecting moderate variability in sleep quality within the study population. The scores ranged from a minimum of 1 to a maximum of 12, with a median value of 4, suggesting that half of the participants had PSQI scores below this level.



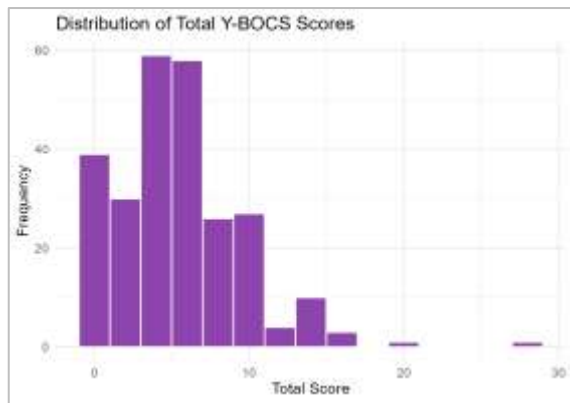
**Figure 4: Summary Statistics for Global PSQI Scores**

The distribution of OCD severity based on the Yale–Brown Obsessive Compulsive Scale (Y-BOCS) indicates that the majority of participants were categorized as subclinical (72.48%), followed by mild OCD symptoms (25.58%), while only a very small proportion exhibited moderate (1.55%) and severe (0.39%) OCD symptoms.



**Figure 5: Prevalence of OCD Severity (Y-BOCS) Among Study Participants**

The summary statistics for total Y-BOCS scores indicate that the mean score among participants was 5.95 with a standard deviation of 4.12, reflecting relatively low levels of obsessive-compulsive symptoms with moderate variability within the study population. The scores ranged from a minimum of 0 to a maximum of 29, with a median value of 6, suggesting that half of the participants had scores at or below this level.

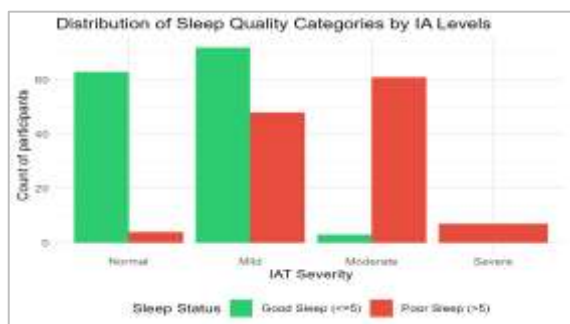


**Figure 6: Summary Statistics for Total Y-BOCS Scores**

**Table 1: Relationship Between Internet Addiction and Sleep Quality**

IAT Severity	Good (n)	Poor (n)	Good (%)	Poor (%)	Chi-Square ( $\chi^2$ )	P-Value
Normal	63	4	94.03	5.97	115.625	<0.001
Mild	72	48	60.00	40.00		
Moderate	3	61	4.69	95.31		
Severe	0	7	0.00	100.00		

The summary of association testing demonstrates a highly statistically significant relationship between internet addiction severity and sleep quality among the study participants. Using the Pearson Chi-square test, a chi-square value of 115.625 with a p-value of <0.001 was obtained, indicating strong evidence of an association between the severity of internet addiction and the quality of sleep.

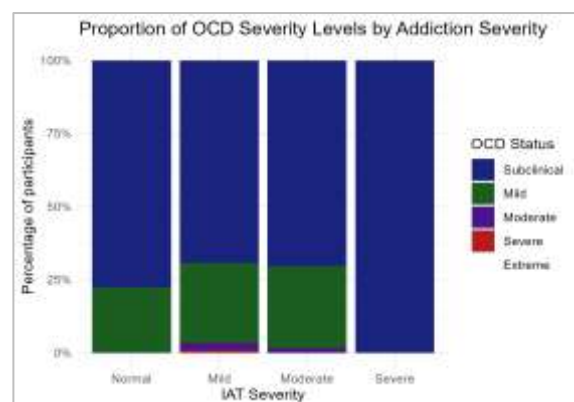


**Figure 7: Summary of Association Testing Between Internet Addiction Severity and Sleep Quality**

The distribution of individuals across obsessive-compulsive disorder (OCD) severity categories in relation to internet addiction severity shows that the majority of participants in all internet addiction groups were classified as having subclinical OCD symptoms. Specifically, 77.61% of individuals with normal internet use, 69.17% with mild addiction,

The relationship between internet addiction severity and sleep quality demonstrates a clear trend in which individuals with normal internet use predominantly reported good sleep quality (94.03%), while those with mild internet addiction showed a moderate proportion of poor sleep (40.00%). Participants with moderate and severe internet addiction exhibited markedly higher rates of poor sleep quality, with 95.31% and 100.00% respectively reporting poor sleep. The chi-square test yielded a value of 115.625 with a p-value <0.001, indicating a highly statistically significant association between internet addiction severity and sleep quality.

70.31% with moderate addiction, and 100% with severe addiction fell into the subclinical category. Smaller proportions were observed in the mild and moderate OCD categories, while severe and extreme OCD cases were rare or absent across most groups. The chi-square test yielded a value of 6.586 with a p-value of 0.5922, indicating that there was no statistically significant association between internet addiction severity and OCD severity categories in this study population.

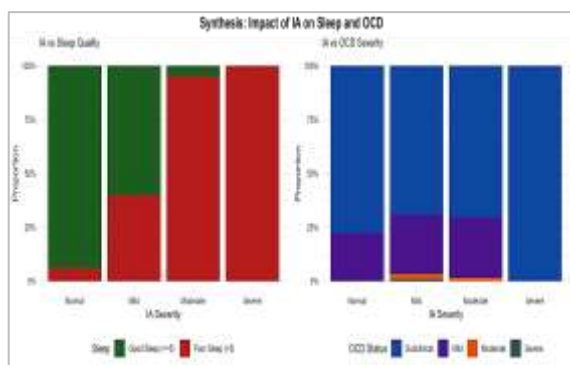


**Figure 8: Distribution of Individuals Based on OCD Severity Categories and**

The summary of association testing between internet addiction severity level and obsessive-compulsive

disorder (OCD) severity category indicates that there was no statistically significant relationship between the two variables among the study participants. The Pearson Chi-square test produced a chi-square value of 6.586 with a p-value of 0.5922, which is greater than the conventional level of statistical significance ( $p < 0.05$ ).

The advanced relationship analysis demonstrates differing patterns of association between internet addiction severity and the selected health outcomes. A highly statistically significant association was observed between internet addiction severity and sleep quality ( $\chi^2 = 114.710$ ,  $p < 0.001$ ), indicating that higher levels of internet addiction are strongly linked to poorer sleep quality among participants. In contrast, the relationship between internet addiction severity and obsessive-compulsive disorder (OCD) severity category was not statistically significant ( $\chi^2 = 6.455$ ,  $p = 0.6157$ ), suggesting that variations in internet addiction severity did not correspond to meaningful differences in OCD severity levels.



**Figure 9: Advanced Relationship Analysis (Synthesis) Between Internet Addiction Severity, Sleep Quality, and OCD Severity**

## DISCUSSION

The findings revealed that a substantial proportion of participants exhibited mild to moderate levels of internet addiction, indicating that problematic internet use is common in this age group. A key finding of this study is the highly significant association between internet addiction and sleep quality. As the severity of internet addiction increased, participants demonstrated poorer sleep quality, prolonged sleep latency, reduced sleep duration, and increased daytime dysfunction.

In contrast, the relationship between internet addiction and OCD severity was not statistically significant. Although a higher proportion of participants exhibited subclinical or mild OCD symptoms, these did not vary significantly with increasing levels of internet addiction. Overall, the study highlights that internet addiction is an important behavioral factor affecting sleep health, but its association with OCD appears limited. These findings emphasize the need for awareness, early screening, and interventions targeting healthy

internet use to improve sleep outcomes among young individuals.

### Prevalence of Internet Addiction

In the present study, the distribution of internet addiction severity showed that mild internet addiction was the most common category (46.51%), followed by normal users (25.97%), moderate addiction (24.81%), and a smaller proportion with severe addiction (2.71%). This indicates that a significant proportion of the study population falls within the mild to moderate range, suggesting early stages of problematic internet use, while severe addiction remains relatively uncommon. These findings are consistent with studies conducted in similar populations. Rani et al.<sup>[7]</sup> reported that the majority of medical students exhibited mild to moderate internet addiction, with fewer cases of severe addiction.

In contrast, Younes et al.<sup>[8]</sup> reported a relatively higher prevalence of moderate to severe internet addiction among university students, which may be attributed to differences in study settings, academic demands, and psychosocial factors.

### Internet Addiction and Sleep Quality (Insomnia)

The present study demonstrated a highly statistically significant association between internet addiction and sleep quality, with increasing severity of internet addiction being associated with poorer sleep outcomes. Participants with mild internet addiction showed a moderate proportion of poor sleep, while those with moderate and severe addiction exhibited markedly higher rates of poor sleep quality. Additionally, higher levels of internet addiction were associated with increased sleep latency, reduced sleep duration, and greater daytime dysfunction, indicating a clear negative impact on overall sleep health.

Younes et al.<sup>[8]</sup> reported a significant association between internet addiction and insomnia among university students, highlighting the impact of excessive internet use on sleep disturbances. Similarly, Pandey,<sup>[9]</sup> and Maiwal et al.<sup>[10]</sup> found that higher internet addiction scores were significantly associated with poor sleep quality and increased insomnia among young adults.

### Public Health Implications

The findings of the present study have important public health implications, particularly in the context of the increasing digitalization of daily life among young individuals. The high prevalence of mild to moderate internet addiction, along with its strong association with poor sleep quality, highlights internet addiction as an emerging behavioral health concern that warrants attention at both individual and community levels. This study is significant as it provides evidence that excessive internet use is not merely a lifestyle habit but a factor that can adversely affect sleep and overall well-being. Poor sleep quality, as observed in individuals with higher levels of internet addiction, can lead to multiple negative outcomes including reduced academic performance, impaired concentration, mood

disturbances, and decreased productivity. Over time, these effects may contribute to the development of more serious mental health issues such as anxiety, depression, and chronic stress.

Among youth, who represent a highly vulnerable and digitally engaged population, the impact is particularly concerning. Easy access to smartphones and the internet, combined with lack of awareness regarding healthy usage patterns, increases the risk of developing problematic internet behaviors. The absence of significant association with OCD in this study suggests that internet addiction may function as an independent behavioral issue, primarily affecting sleep and daily functioning rather than severe psychiatric conditions. From a public health perspective, these findings emphasize the need for preventive strategies, including awareness programs on responsible internet use, promotion of good sleep hygiene, and early screening for internet addiction in educational institutions. Interventions targeting behavioral modification, digital detox practices, and counseling support may help mitigate the adverse effects.

## CONCLUSION

Internet addiction represents an emerging public health challenge in the current era of rapid technological growth. Its significant relationship with sleep disturbance indicates that its impact extends beyond screen time alone and affects essential aspects of health and functioning. Even though a direct relationship with OCD was not established in this study, the behavioral and psychological implications of problematic internet use remain substantial. Therefore, coordinated

efforts involving healthcare professionals, mental health experts, educators, parents, and policymakers are essential to promote healthy digital habits, prevent excessive internet dependency, and safeguard the physical, mental, and social well-being of the younger generation.

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