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ORIGINAL RESEARCH

A Study on Internet addiction and its relation with the psychopathology and self-esteem among college students

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ABSTRACT

Background: The study investigates internet addiction and its correlation with psychopathology and self-esteem among college students. With the growing reliance on the internet for academic and social purposes, the concern over internet addiction has risen, particularly among adolescents.**Material and methods:** A cross-sectional study was conducted over one year, involving 200 students aged 18-24 from selected college near Faridkot. Participants were assessed using Young's Internet Addiction Test (YIAT), the Depression Anxiety Stress Scale (DASS-42), the Insomnia Severity Index, and the Rosenberg Self-Esteem Scale. **Results:** Results indicated that 50.5% of participants exhibited mild internet addiction, with 23.5% showing moderate addiction and 1% severe addiction. A moderate positive correlation was found between internet addiction and anxiety (r = .312), depression (r = .395), stress (r = .472), and insomnia (r = .284). Furthermore, a negative correlation (r = -.370) between internet addiction and self-esteem was observed. The findings revealed that individuals with higher levels of internet addiction tended to experience increased anxiety, depression, stress, and insomnia, while also exhibiting lower self-esteem.**Conclusion:**The study emphasizes the need for intervention programs to address the growing issue of internet addiction among students. Promoting mental health services, encouraging healthy online habits, and providing support to improve self-esteem and manage stress could alleviate the psychological burden associated with excessive internet use.

INTRODUCTION

The Internet is widely recognized as one of the largest technological platforms on the globe. It provides education, entertainment, brand development, commerce, and knowledge, among many other benefits. In recent years, internet usage on college campuses and in society as a whole has increased significantly. Although the primary purpose of academic internet usage is research and learning, the internet has also emerged as a significant component in the lives of college students.

The Internet has changed our lives, our jobs, and our communication, but it also has a darker side: addiction. An estimated 3.5 billion individuals, or 47% of the world's population, would have access to the Internet by the year's conclusion. The world's highest household Internet penetration is in the Republic of Korea (98.8%), followed by Qatar (96%) and the United Arab Emirates (95%). Sub-Saharan African countries have the lowest rates of Internet usage; for example, in Chad (2.7%), Sierra Leone (2.5%), Niger (2.2%), Somalia (1.8%), and Eritrea (1.1%), less than 3% of the population uses the Internet.[1]

Internet addiction is a psychological condition characterized by the following: (a) a growing reliance on internet-related activities, (b) experiencing negative emotions (such as anxiety, depression, or emptiness) when not connected, (c) developing a tolerance for the negative impacts of online activity, and (d) refusing to acknowledge the problematic behaviours.[2]

Internet addiction is defined not by the number of hours spent online but by the outcomes that result

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from excessive internet usage. A distinction existed between individuals who relied on modern technology but managed to maintain a healthy balance between their offline and online lives, and those whose fixation hindered their ability to carry out daily activities. Similar to other addictions, we assess whether the individual's career is at risk, whether they tell lies about their usage, and whether it disrupts their relationships. A subset of Internet addicts consisted of youthful, intelligent males. They frequently experience social difficulties and suffer from diminished self-esteem.[3]

As of now, there is a scarcity of neuroimaging investigations that have examined the structural and functional alterations in the brains of adolescents at risk for developing internet addiction.[4]The importance of screening for internet addiction disorder in adolescents with mental health issues cannot be overstated, considering the rising incidence of suicidal ideation among this demographic. At this time, no treatment guidelines exist for this condition. Nevertheless, in light of the substantial association between this condition and depression, selective serotonin reuptake inhibitors could potentially mitigate symptoms. There are internet addiction detox centers in South Asian countries that employ psychotherapeutic techniques.

A significant proportion, exceeding 60%, of individuals seeking treatment for internet addiction disorder disclose engagement in inappropriate sexual activities on the internet, including but not limited to excessive pornographic viewing and participation in explicit sexual conversations.[5] Additionally, over half are dependent on substances such as alcohol, drugs, or tobacco. Individuals who encounter difficulties with their internet usage may initially engage in casual internet usage before escalating to dysfunctional technological practices. Internet use may impact an individual's social life, academic performance, or job-related duties.

The hypothesis of this study is that Internet addiction could be a major concern in college students, and examining its relation to sleep, mood disorders, and self-esteem is important, so that further measures can be taken to address this issue. For college students pursuing careers in different fields, the implications of this addiction can hinder their studies, impact their long-term career goals and have damaging effects on society. Hence, there is a need to assess internet addiction and its impact among college going adolescents.

MATERIAL AND METHOD

The study was a one-year cross-sectional observational study conducted at selected degree college near Faridkot. A total of 200 students aged 18-24 years were recruited using a convenient non-probability sampling method. Inclusion criteria included students currently enrolled in the selected college who provided written informed consent. Exclusion criteria encompassed a history of neurological illness, organic brain syndromes, major disabilities, severe medical comorbidities, or psychiatric disorders that could confound the assessment, as well as recent or documented head injuries.

The study was carried out at Guru Gobind Singh Medical College and Hospital, Faridkot, after receiving approval from the ethical committee. Permission was obtained from the principal of Dashmesh Dental College, and the researcher visited individual classes to explain the study's purpose and obtain informed consent from participants. Confidentiality was strictly maintained, with students being assigned codes to anonymize their data. Subjects meeting the inclusion criteria were assessed using several standardized tools, including Young's Internet Addiction Test (YIAT), the Depression Anxiety Stress Scale (DASS-42), the Insomnia Severity Index, and the Rosenberg Self-Esteem Scale (RSE).

Ethical considerations were rigorously adhered to and Data collected from the questionnaires were analyzed using IBM SPSS version 20.1.

RESULTS AND OBSERVATIONS

Sociodemographic		Frequency	Percentage
Age(years)	<=20	105	52.5
	20-24	95	47
Gender	Female	162	81
	Male	38	19
Years	First	48	24
	Second	45	22.5
	Third	66	33
	Fourth	23	11.5
	Internship	18	9
Residence	Urban	129	64.5
	Rural	71	35.5
Family type	Nuclear	129	64.5
	Joint	71	35.5
Living with	Alone	136	68

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	With family	64	32
Religion	Christian	1	0.5
	Hindu	111	55.5
	Jain	2	1
	Muslim	2	1
	Sikh	84	42

Table 1 presents the distribution of study population based on various sociodemographic characteristics:

- **Age**: A majority of the cases (52.5%) are 20 years old or younger, while 47% are aged between 20 and 24.
- **Gender**: Most cases are female (81%), with males 19%.
- **Years**: study population was distributed across different years of course of their study, with the highest number in the third year (33%), followed by first year (24%), second year (22.5%), fourth year (11.5%), and internship (9%).
- **Residence**: 64.5% of cases reside in urban areas, while 35.5% are from rural areas.
- **Family Type**: 64.5% come from nuclear families, and 35.5% from joint families.
- **Living Arrangement**: 68% of cases live alone, whereas 32% live with their families.
- **Religion**: The majority of cases were Hindu (55.5%), followed by Sikh (42%), with small percentages being Christian (0.5%), Jain (1%), and Muslim (1%).

Category	Level/Condition	Frequency	Percentage (%)
Internet Addiction (YIAT)	Normal Level of Internet Use	50	25
	Mild Level Addiction	101	50.5
	Moderate Level Addiction	47	23.5
	Severe Level Addiction	2	1
Anxiety (DASS-42)	No Anxiety	64	32
	Mild	28	14
	Moderate	48	24
	Severe	24	12
	Extremely Severe	36	18
Depression (DASS-42)	No Depression	91	45.5
	Mild	33	16.5
	Moderate	34	17
	Severe	19	9.5
	Extremely Severe	23	11.5
Stress (DASS-42)	No Stress	101	50.5
	Mild	30	15
	Moderate	43	21.5
	Severe	18	9
	Extremely Severe	8	4
Insomnia (Insomnia Severity Index)	No Clinically Significant Insomnia	86	43
	Subthreshold Insomnia	91	45.5
	Clinical Insomnia (Moderate Severity)	19	9.5
	Clinical Insomnia (Severe)	4	2
Self-Esteem (Rosenberg Self-Esteem Scale)	Low Self-Esteem	`33	16.5
	Normal Self-Esteem	167	83.5

Table 2: Table 2 provides a comprehensive overview of the distribution of the study population according to various assessments, including internet addiction, anxiety, depression, stress, insomnia, and self-esteem.

Correlation of young's addiction internet addiction scale

		Pearson Correlation	Sig. (2-tailed)
MEAN INTERNET ADDICTION SCORE	DASS 42 ANXIETY	.312**	0.000
	DASS 42 DEPRESSION	.395**	0.000
	DASS 42 STRESS	.472**	0.000
	INSOMNIA SEVERITY INDEX	.284**	0.000
	ROSENBERG SELF ESTEEM SCALE	-.370**	0.000

This table presents the Pearson correlation coefficients and their significance levels for the relationship between the mean internet addiction score and various psychological and behavioral scales.

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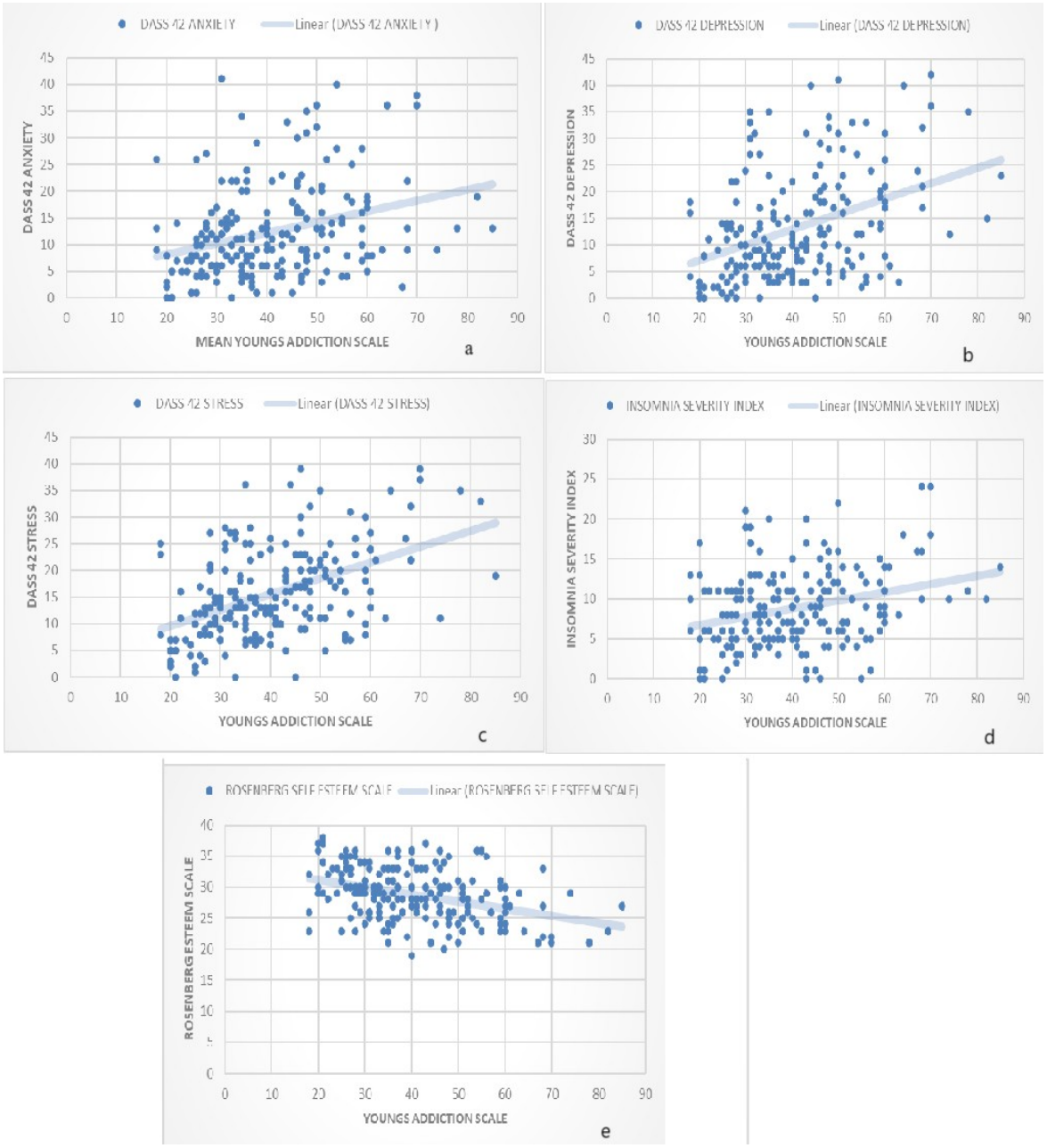

These scatter plots with linear regression lines depict the relationships between internet addiction and various psychological factors. **Graph a**: Correlation between Young's Addiction Scale and DASS-42 Anxiety ;**Graph b**: Correlation between Young's Addiction Scale and DASS-42 Depression; **Graph c**: Correlation between Young's Addiction Scale and DASS-42 Stress; **Graph d**: Correlation between Young's Addiction Scale and Insomnia Severity Index; **Graph e**: Correlation between Young's Addiction Scale and Rosenberg Self-Esteem Scale

DASS 42 Anxiety(a): There is a moderate positive correlation (r = .312) between internet addiction and anxiety, which is statistically significant (p = 0.000). This indicates that higher levels of anxiety are associated with higher levels of internet addiction.

DASS 42 Depression(b): There is a moderate positive correlation (r = .395) between internet addiction and depression, which is statistically significant (p = 0.000). This suggests that individuals with higher levels of depression tend to have higher internet addiction scores.

DASS 42 Stress(c): There is a strong positive correlation (r = .472) between internet addiction and stress, which is statistically significant (p = 0.000). This implies that higher stress levels are closely associated with higher internet addiction levels.

Insomnia Severity Index(d): There is a moderate positive correlation (r = .284) between internet addiction and insomnia severity, which is statistically significant (p = 0.000). This indicates that severity of insomnia is associated with higher levels of internet addiction.

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Rosenberg Self-Esteem Scale(e): There is a moderate negative correlation (r = -.370) between internet addiction and self-esteem, which is statistically significant (p = 0.000). This suggests that higher internet addiction levels are associated with lower self-esteem.

DISCUSSION

The study was conducted in the Department of Psychiatry, Guru Gobind Singh Medical College and Hospital, Faridkot. It was a cross-sectional study comprising 200 students from Dashmesh Dental College, selected by a simple random sampling method to assess Internet addiction, Psychopathology and self-esteem among students. It was then followed by evaluating the relation between Internet addiction and psychopathology and self-esteem among college students. The results of the present study are discussed below:

SOCIO-DEMOGRAPHIC PROFILE OF STUDENTS

The mean age of the study population was 20.61±1.94 years and the majority of the participants were females. The results of the study were in accordance with the study conducted by Kumar et al. in (2018)[6] on 200 undergraduates and found the mean age of the students to be 21.68 ± 2.82 years. A similar kind of study conducted in 2019 by Ali et al.[7]comprised 300 undergraduate students from a teaching dental college in Ghaziabad, comprising 178 females and 122 males, showing female predominance similar to the present study. Overall, the mean age of study population was in accordance with the present study. One more study conducted by Gadem et al. (2017)[8] found that of 846 internet users, 183 (21.6%) were males and 663 (78.4%) were females, which indicates female predomination.

The demographic distribution of the study participants shows a significant majority residing in urban areas, with around 2/3rd of cases from urban settings as compared to rural areas. Urban areas may have a more affluent population with access to more resources, schools, and colleges than rural area.

In terms of family structure, 64.5% of total study participants come from nuclear families. The results were in accordance to study conducted by Aarcharya et al[9] in 2022 showed that that 63.4% of participants were from nuclear families while rest belongs to joint or extended families. This distribution reflects a broader societal trend in India, where there is a noticeable decline in joint family setups in favor of nuclear families.

Furthermore, 68% of the participants reported living alone, whereas 32% lived with their families. This finding is consistent with the fact that many of the students were residing in hostels away from their families due to their academic commitments. This living arrangement is common among university/college students who move to urban centres for their education.

INTERNET ADDICTION AMONG COLLEGE STUDENTS

The present study reveals insightful data on internet usage among dental undergraduates using Young's Internet Addiction Scale. The findings shows that every 1 among 4 (25%) of the participants maintains a normal level of internet use, while the majority, approximately half (50.5%) exhibits mild addiction. Additionally, around 1/4th (23.5%) have a moderate level of addiction, and a small proportion, 1%, suffer from severe addiction.

Comparatively, a study by Ali et al.[7] demonstrated no cases of severe addiction, with 43.67% of students mildly addicted, 28.67% moderately addicted, and 27.66% maintaining normal internet use. Similarly, Laldintluangi's et al.[10] 2022 study of 350 undergraduates in Karnataka reported an 83.6% prevalence of internet addiction, with 44% mildly addicted, 35.6% moderately addicted, and 4% severely addicted. Gedam et al.[8] undertook research to assess the frequency, identify the trend, and identify the link between psychopathology and internet addiction among undergraduates majoring in health-related fields. They discovered that 19.85% of people were addicted to the internet, with 19.5% suffering from moderate addiction and 0.4% from severe addiction.

The consistency of these findings with the present study underscores the validity of Young's Internet Addiction Test, which remains the only validated instrument for identifying varying levels of internet use.

The results of the study by Kumar et al.[6] found that 39.5% of students were severe users of the internet, with 31.5% being moderate users. A significant portion, 29%, was average users, indicating a potential risk for future addiction due to continuous exposure and susceptibility to addictive behaviors. This study was in contrast with the present study.

For students, who are severe internet users, the impact is profound, which hampers their academic performance and leads to social isolation. Also, excessive internet use can interfere with students' cognitive functions and academic responsibilities. Understanding the patterns and consequences of internet addiction is crucial for developing effective interventions and support systems for students.[11-14]

The Present study highlights the importance of monitoring and addressing internet addiction among students to ensure they can balance their online activities with their academic and social responsibilities effectively. It provides a foundation for further research and practical applications in educational settings, something that aligns well with your ongoing analysis and efforts to improve educational outcomes for students.

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The results of the present study reveal that approximately 1/3rd (32%) of participants exhibit no anxiety, while 14% experience mild anxiety, 24% moderate anxiety, 12% severe anxiety, and 18% suffer from extremely severe anxiety. These findings can be compared to several other studies to understand the context and variability in anxiety levels among different populations.

Younes et al.[15] found that most university students had mild to moderate anxiety, similar to the present study, though their study showed slightly higher levels of anxiety. Laldintluangi et al.[10] reported a stronger link between mild internet addiction and severe anxiety, compared to the present study. Gedam et al.[8] found higher levels of low anxiety among health-related students, differing from the more balanced anxiety distribution in this study.

Thus the present study shows a relatively high prevalence of moderate to extremely severe anxiety levels among participants. When compared with Younes et al., Laldintluangi et al.,[10] and Gedam et al.'s[8] studies, it becomes evident that anxiety levels can vary significantly based on the sample population and the presence of factors such as internet addiction. The present study's findings emphasized the need for targeted interventions to address anxiety, particularly for those with moderate to extremely severe levels, to improve overall mental health and well-being.

Younes et al.[15] found a mild positive correlation (r = 0.35) between anxiety and internet addiction, consistent with the present study. Goel et al.[16] also identified a significant link between internet usage and anxiety among Indian adolescents, further supporting our results. Gedam et al.[8] similarly reported that internet addiction is associated with higher anxiety levels, corroborating the findings of this study.

The present study, using the DASS 42 scale, found that 45.5% of participants had no depression, while the remaining showed varying degrees of depression: 16.5% mild, 17% moderate, 9.5% severe, and 11.5% extremely severe. Compared to Younes et al.,41 who reported 72.3% with no depression, the present study shows higher severity levels. A moderately positive correlation ($r = 0.395$, $p = 0.000$) between internet addiction and depression was identified, indicating that higher internet addiction correlates with more severe depression.

Laldintluangi et al.[10] and Goel et al.[16] found similar results, noting that depression severity increases with internet addiction. Younes et al.[15] also reported a mild positive correlation ($r = 0.327$) between internet usage and depression, supporting our findings. Kumar et al.[6] linked high internet usage with increased anxiety, depression, and loneliness, consistent with the present study's results. Overall, these studies highlight the positive correlation between internet addiction and depression, emphasizing the need to address excessive internet use to protect mental health.

The present study found that 50.5% of participants had no stress, while 35.5% experienced moderate to extremely severe stress, according to the DASS 42 scale. Compared to Younes et al.[15], who reported 33.2% with no stress and higher levels of moderate to severe stress, our study shows a higher percentage of participants with no stress. A strong positive correlation ($r = 0.472$, $p < 0.001$) was identified between internet addiction and stress severity.

Laldintluangi et al.[10] also observed that stress severity increased with higher levels of internet addiction, aligning with our findings. Their study reported a Pearson correlation of $r = 0.508$, further supporting the link between internet addiction and stress, depression, and anxiety.

The present study, along with those by Younes et al.[15] and Laldintluangi et al.[10], highlights a significant relationship between internet addiction and stress. As internet addiction increases, so does the severity of stress.

In the present study, the Insomnia Severity Index revealed that 43% of participants do not have clinically significant insomnia, 45.5% experience subthreshold insomnia, 9.5% have moderate clinical insomnia, and 2% suffer from severe clinical insomnia. This contrasts with Rani et al.'s[17] findings, where 64.4% of students reported insomnia, which is lower than in the present study. There was a mild positive correlation ($r = .284$) between internet addiction and insomnia severity, indicating that more severe insomnia is associated with higher levels of internet addiction.

Other studies support this correlation. Younes et al.[15] found that 55.30% of individuals experienced mild insomnia and 9.80% moderate insomnia, with a significant association between internet addiction and poor sleep quality.

Another study conducted at Sohag University assessed the impact of internet addiction on sleep quality among medical students. The findings demonstrated that students with higher YIAT scores, indicative of greater internet addiction, also reported significantly poorer sleep quality and higher levels of insomnia (Middle East Current Psychiatry)[18].

Research carried out among medical students in Delhi, India, further supported these findings. It highlighted that students with internet addiction had significantly worse sleep quality and higher incidences of insomnia compared to their peers who were not addicted to the internet (Community Mental Health Journal)[19].

In the present study, the Rosenberg Self-Esteem Scale revealed that 16.5% of participants had low self-esteem, while 83.5% had normal self-esteem. A mild negative correlation ($r = -0.370$) was found between internet addiction and self-esteem, indicating that higher internet addiction levels are associated with lower self-esteem.

Comparatively, Acharya et al.[20] in Nepal found 29.4% of participants had low self-esteem, while Ali et

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al.[7]found 30%, both higher than in the present study. Other research also supports a significant negative correlation between self-esteem and internet addiction. Younes et al.[15] found that low self-esteem explained 11% of the variance in internet addiction, and negative feelings from addiction further decreased self-esteem by 13%. Cross-cultural studies in Portugal and Brazil[21] and research by Cazan and Fodor[22] and Bozoglan et al.[23] confirmed that individuals with lower self-esteem are more prone to internet addiction, often using the internet as a coping mechanism for feelings of inadequacy.

CONCLUSION

The study revealed significant levels of internet addiction among college students, with mild to moderate addiction prevalent in over 70% of participants. This addiction was strongly associated with higher levels of anxiety, depression, stress, and insomnia, as well as lower self-esteem. Younger students and those from urban areas were more likely to exhibit higher addiction levels. These findings underscore the need for targeted interventions to mitigate internet addiction and its psychological impact. Recommendations include implementing educational programs on healthy internet use, providing mental health support services on campus, and promoting activities that enhance self-esteem and reduce stress, anxiety, and depression among students. Additionally, fostering awareness about the importance of good sleep hygiene can help address insomnia related to internet addiction.

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