

Level of Insomnia, Symptoms of Depression, and Anxiety among College Students with Mobile Phone Addiction: Basis for Guidance and Counseling Program Enhancement

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Abstract

Mobile phone addiction is a growing concern among college students, with significant implications for their mental health. This study examines the complex relationship between mobile phone addiction and its impact on college students' insomnia, symptoms of depression, and anxiety. A sample of 399 college students from traditional Chinese medicine colleges in Guangxi, China, completed the Mobile Phone Addiction Tendency Scale questionnaire. Among them, 155 students with high Mobile Phone Addiction Tendency scores were selected for the correlation study. The analysis revealed a strong association between mobile phone addiction and insomnia. Furthermore, mobile phone addiction was significantly associated with symptoms of depression, including feelings of sadness, worthlessness, and hopelessness, as well as heightened anxiety symptoms, such as excessive worry and restlessness. These findings emphasized the importance of targeted interventions and preventive measures to address the negative impact of mobile phone addiction on college students' mental health.

Keywords

College Students, Mobile Phone Addiction, Insomnia, Symptoms of Depression, Anxiety, Mental Health, Intervention Program

1. Introduction

In the era of rapid technological advancement, the widespread use of smartphones has become an integral part of college students' daily lives. These devices serve as

versatile tools, facilitating communication, online shopping, and gaming, among other functions. When used appropriately, smartphones can enhance learning efficiency and contribute to students' mental well-being. However, recent studies [1] have shed light on the growing issue of mobile phone addiction among college students, emphasizing its negative impact.

Research indicates that poor self-control and excessive smartphone use have led to a rising prevalence of mobile phone addiction. In fact, recent estimates among domestic college students suggest that this addiction affects between 15.3% and 28.9% of individuals [2]. Furthermore, mobile phone addiction has substantial consequences for both the physical and mental health of college students, impacting sleep quality, exacerbating symptoms of depression, and triggering anxiety.

In the context of the Internet's ubiquity and the surge in mobile device usage, mobile phone addiction has gained recognition as a pressing issue in the digital age, attracting attention from researchers worldwide [3]. Consequently, it is imperative to investigate the relationship between mobile phone addiction and college students' insomnia, symptoms of depression, and anxiety [4].

Mobile phone addiction involves excessive and compulsive smartphone usage, resulting in adverse consequences across various aspects of an individual's life [5]. Notably, it has been associated with detrimental effects on college students' mental health, specifically manifesting as insomnia, symptoms of depression, and anxiety [6] [7]. Insomnia involves difficulties falling asleep, staying asleep, or experiencing restorative rest [6]. Symptoms of depression encompass persistent feelings of sadness, loss of interest in activities, and changes in appetite and sleep patterns [7]. Anxiety is characterized by excessive worry, restlessness, and physical symptoms like a rapid heartbeat and sweating [8]. Understanding the intricate relationships between mobile phone addiction, insomnia, symptoms of depression, and anxiety is crucial for addressing the holistic mental well-being of college students [4].

2. Methods

2.1. Participants and Measures

In May 2023, we selected 399 students from a traditional Chinese medicine university in Guangxi Zhuang Autonomous Region based on their Mobile Phone Addiction Tendency Scale (MPATS) scores, with 155 scoring 32 or higher. Survey questionnaires were distributed through communication with schoolteachers due to participants' unique identities. We initially screened with the MPATS for mobile phone addiction tendencies and subsequently assessed insomnia, depression, and anxiety severity using the Insomnia Severity Index (ISI), Hamilton Depression Scale (HAMD), and Hamilton Anxiety Scale (HAMA).

The Mobile Phone Addiction Tendency Scale (MPATS) demonstrated strong internal consistency reliability (Cronbach's $\alpha = 0.87$) and test-retest reliability (coefficient = 0.85), indicating stable measurement results. The development

process included extensive literature and expert reviews for content validity, with a correlation of 0.75 with established measures, and factor analysis confirming a three-factor structure, affirming its effectiveness.

2.2. Data Analysis

Statistical analysis was performed on all data collected during the research process using SPSS 25.0 software. Descriptive statistical analysis was conducted on the raw data of the four standardized questionnaires using SPSS software. Frequency and percentage were used to describe the general characteristics of the survey participants, while means were used to evaluate the levels of smartphone addiction, insomnia, anxiety, and depression among the participants. Inferential statistics, including independent samples t-tests and one-way analysis of variance (ANOVA), were used to compare the differences in demographic variables. The Pearson product-moment correlation coefficient was employed to assess the relationships between variables.

2.3. Ethical Considerations

For purpose of ensuring that the study was executed in an appropriate manner, some of factors were considered. When conducting the study, all participants were asked to obtain informed consent to comply with ethical considerations. Ethical considerations were strictly followed, ensuring privacy, confidentiality, and ethical approval, safeguarding participants' rights and well-being throughout the study.

3. Results

Table 1. Profile distribution of the respondents (N = 155).

	<i>f</i>	%
Sex		
Male	54	34.8
Female	101	65.2
Age Group		
20 and below	74	47.7
21 - 23	60	38.7
24 - 26	20	12.9
27 and above	1	0.6
Program Enrolled		
Traditional Chinese medicine	91	58.7
Clinical medicine	7	4.5
Nursing science	8	5.2
Medicine of Zhuang nationality	19	12.3

Continued

Rehabilitation therapeutics	5	3.2
Others	25	16.1
Year Level		
1 st year	31	20.0
2 nd year	19	12.3
3 rd year	33	21.3
4 th year	35	22.6
5 th year	37	23.9
Number of Hours of Mobile Use per Day		
Less than 2 hours	1	0.6
3 - 4 hours	19	12.3
5 - 6 hours	39	25.2
7 - 8 hours	49	31.6
Above 9 hours	47	30.3
Commonly Used Apps(Must Choose at Least Two Options)		
Educational apps	85	14.6
Lifestyle apps	92	15.8
Social Media apps	148	25.7
Productivity apps	53	9.1
Entertainment apps	138	23.8
Game apps	64	11.0

Table 2. Respondents level of insomnia (n = 155).

Statements	Weighted Mean	Std Dev	Interpretation
People have trouble sleeping	1.6323	1.11086	<i>Moderate problem</i>
Difficulty maintaining sleep	1.9032	1.04306	<i>Moderate problem</i>
Wake up early	1.2968	1.07010	<i>Mild problem</i>
Satisfaction with your current sleep pattern	1.7806	1.11233	<i>Moderate problem</i>
To what extent do you think your sleep problems interfere with your daytime functioning (e.g., daytime fatigue, ability to handle work and daily tasks, concentration, memory, complex, etc.)	1.6710	1.05750	<i>Moderate problem</i>
To what extent does your insomnia affect or impair your quality of life compared to others	1.7290	1.07697	<i>Moderate problem</i>
How worried/frustrated are you about your current sleep problems	1.5935	1.12641	<i>Moderate problem</i>
TOTAL	11.6065	6.23927	<i>Subthreshold insomnia</i>

Table 3. Respondents symptoms of depression (N = 155).

Items	Weighted Mean	Std Dev	Interpretation
Depressed mood	1.9484	0.77956	<i>Sad most of the time</i>
Feelings of guilt	1.8452	0.87640	<i>Sad most of the time</i>
Suicide	1.4839	0.70577	<i>Sadness</i>
Difficulty falling asleep (initial insomnia)	2.2387	0.86102	<i>Sad most of the time</i>
Insomnia—Middle	1.9484	0.77956	<i>Sad most of the time</i>
Insomnia—Late	1.8452	0.87640	<i>Sad most of the time</i>
Work and activities	1.9355	0.86548	<i>Sad most of the time</i>
Retardation	1.6452	1.15512	<i>Sad most of the time</i>
Excitement	1.1935	1.09365	
Anxiety—Psychological	1.7548	1.09510	<i>Sad most of the time</i>
Anxiety—Somatic	0.9871	1.06897	<i>Sadness</i>
Somatic symptoms—Gastrointestinal	0.9548	1.17519	<i>Sadness</i>
Constitutional symptoms	1.1097	1.15414	<i>Sadness</i>
Genital symptoms	1.2645	1.12283	<i>Sadness</i>
Hypochondriasis	1.9097	0.84028	<i>Sad most of the time</i>
Weight loss	1.9548	0.90699	<i>Sad most of the time</i>
Insight	2.1355	0.90509	<i>Sad most of the time</i>
Symptoms of depression	28.1548	12.00981	<i>Moderate depression</i>

Table 4. Respondents level of anxiety (N = 155).

Items	Weighted Mean	Std Dev	Interpretation
Anxious mood	1.7548	1.09510	<i>Moderately present</i>
Nervous	0.9871	1.06897	<i>Mildly present</i>
Fear	1.6839	1.06145	<i>Moderately present</i>
Insomnia	1.4516	1.17988	<i>Mildly present</i>
Cognitive function	1.6452	1.15512	<i>Moderately present</i>
Depressed mood	1.1935	1.09365	<i>Mildly present</i>
Somatic anxiety (muscular system)	0.9548	1.17519	<i>Mildly present</i>
Somatic anxiety (sensory system)	1.1097	1.15414	<i>Mildly present</i>
Cardiovascular symptoms	1.2645	1.12283	<i>Mildly present</i>
Respiratory symptoms	0.9290	1.11139	<i>Mildly present</i>
Gastrointestinal symptoms	1.4258	1.12786	<i>Mildly present</i>
Genitourinary symptoms	1.3548	1.08557	<i>Mildly present</i>

Continued

Autonomic nervous system symptoms	1.2839	1.08565	<i>Mildly present</i>
Behavior during the interview	1.3226	1.19488	<i>Mildly present</i>
Total Anxiety	18.3613	12.20171	Mild to moderate anxiety

Table 5. Insomnia severity and anxiety as predictors of depression

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	0.746 ^a	0.557	0.548	0.75479	0.557	63.274	3	151	0.000

a. Predictors: (Constant), HAMA, ISI.

4. Discussion

Table 1 displays the participant characteristics. Out of 399 distributed questionnaires, 155 students met the criteria for mobile phone addiction. Among these, 54 (34.8%) were male, and 101 (65.2%) were female. The age distribution indicated a prevalence of younger individuals with mobile phone addiction, with 47.7% aged 20 and below, 38.7% aged 21 - 23, 12.9% aged 24 - 26, and 0.6% aged 27 and above. Traditional Chinese Medicine had the highest proportion of addicted students (58.7%), followed by Medicine of Zhuang nationality (12.3%). Fourth and fifth-year students exhibited the highest prevalence of mobile phone addiction (22.6% and 23.9%, respectively). In terms of daily mobile phone usage, the majority reported using their phones for 7-8 hours (31.6%) or above 9 hours (30.3%) per day. Social media apps were the most commonly used (25.7%), followed by entertainment apps (23.8%). However, a gender imbalance exists in the university, which limits the statistical significance of gender’s association with mobile phone addiction.

Table 2 presents insomnia levels among respondents, with weighted mean scores and standard deviations indicating moderate to mild insomnia problems. The total weighted mean score for all statements was approximately 11.6065, indicating subthreshold insomnia.

Table 3 outlines respondents’ symptoms of depression, showing weighted mean scores and standard deviations for each symptom. Scores ranged from approximately 0.9548 to 2.2387, suggesting moderate depression overall.

Table 4 focuses on anxiety levels, displaying weighted mean scores and standard deviations for various anxiety-related items. Scores ranged from approximately 0.9290 to 1.7548, indicating mild to moderate anxiety.

Table 5 presents a statistical model exploring the relationship between in-

somnia severity and anxiety as predictors of depression. The model explains approximately 55.7% of depression variance and is statistically significant ($p < 0.001$).

5. Conclusions

This study presents a comprehensive view of college students' mental health and mobile phone use, revealing insights. Most respondents are female, under 20 years, studying Traditional Chinese Medicine in their 5th year, averaging 7 - 8 daily phone hours with social media involvement. Worth noting, the gender disparity skews results, diminishing gender's role in phone addiction. Findings indicate sub-threshold insomnia, moderate depression, and anxiety. These challenges yield social withdrawal, relationship struggles, and heightened isolation risks.

In conclusion, addressing the issue of mobile phone addiction among college students holds significant practical implications and calls for actionable strategies:

Promoting Healthy Interactions: Encouraging students to engage in face-to-face interactions, group activities, and meaningful relationships can enhance sleep hygiene and reduce symptoms of depression and anxiety [9].

Digital Detox Initiatives: Teachers can advocate for regular "digital detox" breaks, encouraging students to participate in non-tech activities like sports, hobbies, and mindfulness to reduce mobile device usage [10].

Awareness and Education: Health educators should raise awareness about the adverse effects of excessive phone use on mental health and educate students on healthy phone habits, including setting boundaries and managing screen time.

Sleep Hygiene Integration: University counselors can incorporate sleep hygiene practices into mental health programs, educating students on sleep schedules, conducive sleep environments, and relaxation techniques to improve sleep quality.

Partnerships with Tech Companies: School officials can collaborate with technology companies to develop tools like screen time trackers and notification management features, aiding students in effectively monitoring and limiting screen time.

Research and Intervention: University project teams can seek funding to conduct further research on the relationships between mobile phone addiction, insomnia, depression, and anxiety, exploring various intervention strategies to improve mental health.

Program Enhancement Validation: The proposed Guidance and Counseling program enhancements should undergo expert validation and long-term outcome evaluations to assess their effectiveness.

Implementing these recommendations collectively can contribute to the well-being and mental health of college students, offering a holistic approach to mitigating the challenges posed by mobile phone addiction.

While these findings are insightful, it's essential to acknowledge the potential

sample bias due to the limited number of participants with high mobile phone addiction scores. To address this issue, increasing the sample size or refining the selection criteria may enhance representativeness. In future research, we plan to expand the sample size for a more in-depth investigation.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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