

Association Between Mobile Phone Overuse And Psychiatric Morbidity Among Adolescents And Young Adults

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KEYWORDS

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ABSTRACT:

Background: Clinically it has been seen that after the pandemic all adolescents developed few features like change in sleep cycle, decreased concentration, decreased academic function, irritability, lack of social activities due to increased involvement of different devices as a result a number of adolescents and young adult developed anxiety, depression lack of coping ability leading to stress. The aim of this study was to evaluate the association between mobile phone overuse and psychiatric morbidity among adolescents and young adults. **Methods:** This cross-sectional observational study was conducted at Department of Psychiatry, Bangladesh Medical University (BMU), formerly Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh, from March 2023 to March 2024, from outpatient department (OPD) and a private consultation chamber. The study included 120 adolescents and young adults aged between 14 to 20 years. **Result:** The mean age of participants was 17.4 ± 3.1 years, with females slightly outnumbering males (52.5% vs. 47.5%). The average daily mobile phone usage was 6.7 ± 2.4 hours. PHQ-9 scores indicated mild depression in 40% and moderate in 32.5%. DASS-21 scores revealed mild to moderate psychological distress in over half of the sample, and severe distress in 24.2%. Depression severity significantly varied with age ($p = 0.042$), being higher among older participants. Similarly, psychological distress also increased with age ($p = 0.034$). No statistically significant gender differences were observed in either scale. **Conclusion:** High mobile phone usage is associated with significant levels of depression and psychological distress, particularly among older adolescents.

INTRODUCTION

Psychiatric morbidity among young adults and adolescents has become an emerging global public health problem in the past two decades. The World Health Organization (WHO) identifies depression, anxiety, and behavioral disorders as the globe's principal causes of disease and disability among adolescents.¹ Current longitudinal data from the Global Burden of Disease study highlights that depression alone is currently among the most prevalent and disabling of the disorders in 10-24-year-olds and with females and older teenagers particularly at risk.¹ Undiagnosed early-onset psychiatric symptoms are very likely to persist into adulthood and result in compromised social, academic, and professional functioning and hence to the psychiatric burden globally.² Meanwhile, teenagers and young adults are experiencing an unparalleled increase in digital immersion, particularly through smartphones. In 2023, there were over 5.3 billion individual mobile subscribers globally, with disproportionately high levels of adoption in the 13-29 age group.³

Smartphones pervade the lives of youth today as they have become a ubiquitous feature of communication, education, recreation, and validation.⁴ While these challenges present unparalleled information access and social connectivity, new evidence has worried over their behavioral dependency, displayed as increased screen time, affective dependence on virtual connection, and interference in daily routines.⁵ Young adults increasingly rely on mobile phones for social validation, often in the shape of compulsive checking of applications, fear of missing out, and social comparison as a constant state.⁶

Before pandemic students were using mobile phone for social networking, communication, watching movies all these at their leisure time. During Pandemic they started their classes on line which was uncommon and new to whole nation in our country. Other western countries have their online classes system along with traditional classes but here in Bangladesh it was new system. Initially all students did not know how to attend these classes, communications became one way the teachers use to take classes but interacting between teacher and students lost its charm and significance.⁷ Gradually adolescents started other activities along with classes. As whole nation became home bound these age group started more time on mobile.

Such usage is also typically known as problematic smartphone use or smartphone addiction, and its symptoms are like those of behavioral addictions, compulsive checking, loss of control, withdrawal signs, and tolerance.⁸ Psychometrically tested tools such as the Smartphone Addiction Scale-Short Version (SAS-SV) and Mobile Phone Problem Use Scale have been utilized to assess the severity of problematic smartphone use across various populations.⁹ Barring mere inconvenience, the compulsive behavior has been actively associated with disrupted circadian rhythms, poor sleep quality, impairment in attention regulation, emotional lability, and conflictual interpersonal relationships.^{10,11}

Robust empirical evidence has also established associations between excessive mobile phone use and a range of psychiatric symptoms. Specifically, multiple studies identify correlations between problematic smartphone use and higher depression, anxiety, stress, and sleep issues.^{12,13} These exposure components are typically mediated by psychological and emotional processes such as digital overstimulation, social comparison on social media, blue light-guided circadian disruption, and cyberbullying. Adolescents who are most affected by them typically become more emotionally dysregulated and have trouble with attention, with consequences extending as far as academic underachievement and avoidance of others.^{8,14} Psychosocial processes such as cognitive overload, fear of missing out, and reward system dysregulation similarly explain how these technologies exploit the vulnerability in the developing adolescent brain, increasing risk for psychiatric morbidity.

Despite this body of evidence, however, certain important knowledge gaps persist. Most existing studies are cross-sectional and therefore bounded in drawing inferences regarding causality.^{13,14} Second, disparities between diagnostic tools, cultural environments, and operational problematic smartphone use definitions limit comparability across research studies. Studies are also still unavailable in large-scale regionally embedded inquiries, especially in low- and middle-income nations, where sociotechnical transitions can exacerbate risk factors while limiting mental health support structures.⁴

After the pandemic when adolescents group and young adults who started their new life with traditional classes they started facing several issues. They could not concentrate on their studies, anxiety, sleep disturbances, low mood, lack of drive and behavior problems like anger control issues, self-harming behavior, truancy, school refusal all these. As a result, we have seen a huge number of students developed anxiety disorder, depressive disorder, obsessive compulsive disorder, Oppositional defiant Disorder, panic Disorder.^{15,16} The current study aims to explore the correlation between mobile phone overuse and psychiatric morbidity among adolescents and young adults in an empirical statistical context.

Objectives

To evaluate the association between mobile phone overuse and psychiatric morbidity among adolescents and young adults.

METHODOLOGY & MATERIALS

This cross-sectional observational study was conducted at Department of Psychiatry, Bangabandhu Sheikh Mujib Medical University (BSMMU) that later became Bangladesh Medical University (BMU), Dhaka, Bangladesh, from March 2023 to March 2024 specifically within its outpatient department (OPD) and a private consultation chamber. Total 120 participants aged between 14 to 20 years were included in the study. This age range was selected as these individuals were in early to mid-adolescence during the COVID-19 pandemic and now represent the adolescent and young adult population, allowing for the assessment of post-pandemic psychiatric morbidity in this transitional age group. Those who already had psychiatric diagnosis and going through treatment were excluded from this study. The participants were recruited using a purposive sampling technique, all of whom were visiting the psychiatry OPD or private chamber for psychological assessment or consultation. Each participant was accompanied by at least one parent or guardian, ensuring parental insight into behavioral and emotional patterns. The primary objective was to assess the association between mobile phone overuse and psychiatric morbidity, particularly symptoms of depression, anxiety, and stress. Two validated psychological tools were employed: The Patient Health Questionnaire-9 (PHQ-9) to screen for depressive symptoms, and the Depression, Anxiety, and Stress Scale (DASS-21) to evaluate broader emotional distress. To determine the cutoff

point for mobile phone overuse, this study adopted the recommended screen time limit outlined by OSF HealthCare for children and adolescents aged 5 to 17 years, which advises no more than two hours of screen time per day, excluding time spent on homework.¹⁷ Participants were first briefed about the purpose of the study and informed consent was obtained from both adolescents and their guardians. Data were collected via structured interviews administered by trained clinicians. Demographic data, mobile phone usage patterns, and psychosocial variables were also recorded. Data were analyzed using SPSS version 24. Categorical variables were expressed as frequencies and percentages, while continuous variables were reported as mean \pm SD. Associations were tested using Chi-square test, considering $p < 0.05$ as statistically significant. Ethical approval for the study was obtained from the Institutional Review Board (IRB) of BSMMU prior to initiation.

RESULT

Table I presents the baseline characteristics of the study participants (N=120). The majority of the respondents were in the 17–18 years age group (35.8%), followed by 14–16 years (34.2%) and 19–20 years (30%). The mean age of the participants was 17.4 ± 3.1 years. Females comprised a slightly higher proportion (52.5%) compared to males (47.5%). The average daily mobile phone use among participants was 6.7 ± 2.4 hours, reflecting a notable level of engagement with digital devices in this population. Table II shows the distribution of depression symptoms as measured by the Patient Health Questionnaire-9 (PHQ-9). The most common category was mild depression (40%), followed by moderate (32.5%) and minimal depression (17.5%). A smaller proportion (10%) fell under the moderately severe category, while no participants scored in the severe range (20–27), suggesting a trend toward mild to moderate depressive symptoms across the cohort. Table III displays the findings from the Depression, Anxiety, and Stress Scale (DASS-21). A majority of participants fell into the mild (27.5%) or moderate (30.8%) categories of emotional distress. Severe levels were observed in 24.2% of the participants, while only 17.5% were classified as normal, indicating a relatively high burden of stress-related symptoms in this population. Table-IV presents the distribution of depression severity based on the Patient Health Questionnaire-9 (PHQ-9) across different age groups. Among participants aged 14–16 years, the majority had mild depression (48.8%), followed by minimal and moderate depression (21.95% each), with only 7.3% experiencing moderately severe symptoms. For those aged 17–18, mild depression (41.9%) and moderate depression (32.5%) were most prevalent. Participants aged 19–20 had a higher proportion in the moderate (44.4%) and mild (27.8%) categories, indicating a shift toward greater severity with increasing age. No participants in any age group reported severe depression. The association between age group and PHQ-9 severity was statistically significant ($p = 0.042$, Chi-square test), suggesting that depression severity may vary with age. Table-IV also illustrates the distribution of PHQ-9 depression severity by gender. Both males and females showed the highest proportions in the mild and moderate categories. Specifically, 38.6% of males had mild symptoms and 36.8% had moderate symptoms, while 41.3% of females had mild symptoms and 28.6% had moderate symptoms. Moderately severe depression was more common among females (14.3%) than males (5.3%). However, the p-value obtained from the Chi-square test was 0.345, indicating no statistically significant association between gender and PHQ-9 severity. Furthermore, Table-IV explores the distribution of psychological distress severity based on the Depression, Anxiety, and Stress Scale (DASS-21) across age groups. Mild symptoms were more prevalent in the 14–16 age group (34.2%), while moderate (34.9%) and severe (23.3%) symptoms were more common among the 17–18 group. The 19–20 age group had the highest proportion of severe symptoms (36.1%) and moderate symptoms (33.3%). The Chi-square test revealed a statistically significant relationship between age and DASS-21 severity ($p = 0.034$), indicating that psychological distress tends to increase with age. Lastly, Table-IV also compares DASS-21 severity levels by gender. Moderate and severe levels were more commonly reported by females (25.4% and 28.6%, respectively) than males (36.8% and 19.3%, respectively). Despite this trend, the association between gender and DASS-21 severity was not statistically significant ($p = 0.264$, Chi-square test).

Table-I: Baseline characteristics of the study patients (N=120)

Characteristics	Number of Participants	Percentage (%)
Age Group (Years)		
14–16	41	34.2
17–18	43	35.8
19–20	36	30.0
Mean \pm SD	17.4 \pm 3.1	
Gender		
Female	63	52.5
Male	57	47.5
Mobile Phone Use (Daily Hours)		

Mean ± SD	6.7±2.4
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Table-II: Distribution of Patient Health Questionnaire-9 (PHQ-9) (N=120)

Severity Level	Number of Participants	Percentage (%)
Minimal (0–4)	21	17.5
Mild (5–9)	48	40
Moderate (10–14)	39	32.5
Moderately Severe (15–19)	12	10
Severe (20–27)	0	0

Table-III: Distribution of Depression, Anxiety, and Stress Scale (DASS-21) (N=120)

Severity Level	Number of Participants	Percentage (%)
Normal	21	17.5
Mild	33	27.5
Moderate	37	30.8
Severe	29	24.2

Table-IV: Distribution of age groups by the Patient Health Questionnaire-9 (PHQ-9)

Severity Level	Age Group (Years)			p-value
	14–16 (n=41)	17–18 (n=43)	19–20 (n=36)	
Minimal (0–4)	9 (21.95%)	7 (16.3%)	5 (13.9%)	0.042
Mild (5–9)	20 (48.8%)	18 (41.9%)	10 (27.8%)	
Moderate (10–14)	9 (21.95%)	14 (32.5%)	16 (44.4%)	
Moderately Severe (15–19)	3 (7.3%)	4 (9.3%)	5 (13.9%)	
Severe (20–27)	0 (0%)	0 (0%)	0 (0%)	

p-value obtained by Chi-square test

Table-IV: Distribution of gender by the Patient Health Questionnaire-9 (PHQ-9)

Severity Level	Gender		p-value
	Male (n=57)	Female (n=63)	
Minimal (0–4)	11 (19.3%)	10 (15.9%)	0.345
Mild (5–9)	22 (38.6%)	26 (41.3%)	
Moderate (10–14)	21 (36.8%)	18 (28.6%)	
Moderately Severe (15–19)	3 (5.3%)	9 (14.3%)	
Severe (20–27)	0 (0%)	0 (0%)	

p-value obtained by Chi-square test

Table-IV: Distribution of age groups by Depression, Anxiety, and Stress Scale (DASS-21)

Severity Level by DASS-21	Age Group (Years)			p-value
	14–16 (n=41)	17–18 (n=43)	19–20 (n=36)	
Normal	11 (26.8%)	5 (11.6%)	5 (13.9%)	0.034
Mild	14 (34.2%)	13 (30.2%)	6 (16.7%)	
Moderate	10 (24.4%)	15 (34.9%)	12 (33.3%)	
Severe	6 (14.6%)	10 (23.3%)	13 (36.1%)	

p-value obtained by Chi-square test

Table-IV: Distribution of gender by Depression, Anxiety, and Stress Scale (DASS-21)

Severity Level by DASS-21	Gender		p-value
	Male (n=57)	Female (n=63)	
Normal	12 (21.1%)	9 (14.3%)	0.264
Mild	13 (22.8%)	20 (31.7%)	
Moderate	21 (36.8%)	16 (25.4%)	
Severe	11 (19.3%)	18 (28.6%)	

p-value obtained by Chi-square test

DISCUSSION

This study attempted to explore the association between mobile phone overuse and psychiatric morbidity in adolescents and adults attending a tertiary care center. When the participants were distributed based on age, it was found that 35.8% belonged to the 17–18 years group, followed by the 14–16 years group (34.2%). The mean age was 17.4 ± 3.1 years, which is in accord with other age-specific literature in which mid-adolescence has been described as a vulnerability window to emotional dysregulation and behavioral dependencies.¹⁸ Females constituted a slightly larger percentage (52.5%), and though they reported a higher mean daily smartphone use (6.86 hours compared to 6.57 hours in men), the difference was not statistically significant, as has been found by Elhai et al.¹⁹ too, who also identified that digital activity patterns were comparable across genders in non-clinical populations.

Mean daily mobile phone usage observed during the current study was 6.7 ± 2.4 hours, a much more elevated value from pre-pandemic world estimates but consistent with post-COVID transformations of digital behaviors. Such elevated use is consistent with local data in Southeast Asia, where smartphone penetration and prolonged screen time among adolescents have increased substantially following the transition to online learning and digital socialization.²⁰ Likewise, a study in Malaysia showed that adolescents were likely to average over 5 hours of use per day, primarily for social and entertainment purposes, although no differences by gender or age were observed in measures of use.²¹ Such differences mirror a general trend in which cellular phones have become the center of adolescent life, with a tendency to imperceptibly merge the line between utilitarian and excessive use.

For psychiatric morbidity, PHQ-9 results in the current study revealed that most of the participants reported mild (40%) or moderate (32.5%) depression symptoms and none reported severe symptoms. This trend is consistent with outcomes reported by Richardson et al.²² and Nandakumar and Vande Voort²³, where most of the teen participants scored in the subthreshold, mild-to-moderate range, consistent with the premise that non-clinical samples present with subthreshold but clinically significant depression. The relatively high rate of mild depressive symptoms might reflect early warning signs of broader psychosocial stress within this group that are in need of preventive treatment even when no full expression is present.

Results on DASS-21 also indicated that 27.5% of the participants were at the mild stress level, 30.8% at the moderate level, and 24.2% at the severe level, whereas only 17.5% were in the normal category. This is in line with observations made in studies in the UAE and Nigeria, which used DASS-21 to assess adolescent emotional well-being and also reported high levels of emotional distress without diagnosable psychiatric illness.^{20,24} Worthily, Matic' et al.²⁵ reported the same burden of moderate-to-severe stress in European young people during the post-pandemic period as a testament to the global nature of the psychological impact of increased digital dependence.

The present study explored the association between mobile phone overuse and psychiatric morbidity, particularly depression and psychological distress, among adolescents and young adults. Analysis of PHQ-9 scores revealed a statistically significant relationship between age and depression severity, with older adolescents (19–20 years) exhibiting higher proportions of moderate depression compared to younger age groups ($p = 0.042$). These findings align with results from Anand et al.²⁶, who reported elevated depressive symptoms in older adolescents, and Leung et al.²⁷, who confirmed the validity of PHQ-9 across adolescent age groups. Gender-based differences in PHQ-9 severity were not statistically significant ($p = 0.345$), though moderately severe symptoms were more frequent among females, a pattern consistent with the observations of Andreas and Brunborg¹³, who found slightly higher depressive symptomatology in adolescent girls. Similarly, DASS-21 scores indicated a significant increase in psychological distress with age ($p = 0.034$), with the oldest age group (19–20) showing the highest levels of severe distress. This trend mirrors findings from Shaw et al.²⁸ and Alalalmeh et al.²⁰, who observed escalating distress with age. Although gender differences in DASS-21 severity were not statistically significant ($p = 0.264$), females reported more severe symptoms, echoing prior research.^{24,29}

Limitations of the study

The study was done just in one tertiary level hospital outdoor and one private chamber. As we used PHQ and DASS we could outline the depression, anxiety and stress. Other psychiatric morbidity was clinically diagnosed but we did not mention it in this study. We wanted to prioritize depression and anxiety and stress so any psychiatric intervention can be started earlier and a psychoeducation can be provided towards the pts who are diagnosed. A psychoeducation for the mobile use is significant because every year we are getting more used to with devices for technological advancement. We cannot ignore use of mobile phone but we can manage time and

focusing exact things and thus we can reduce screen time and find time to socialize and interact personally offline rather than online.

Conclusion and Recommendations

This study highlights a high prevalence of mild to moderate depression and psychological distress among adolescents and young adults, with average mobile phone use exceeding six hours daily. Depression severity and emotional distress were found to significantly increase with age, suggesting older adolescents are more vulnerable. While females showed slightly higher levels of moderately severe symptoms, gender differences were not statistically significant. These findings underscore the need for age-targeted mental health screening and interventions to address rising psychiatric morbidity in digitally engaged youth populations.

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