

Original Research Article

Impact of screen time on the mental health of adolescents in Bangladesh

Mohammad Masud Parves¹, Sharif Kamrul M. Tanveer², M. Alamgir Hossain³,
A. Z. M. Naser⁴, M. Mominur Rahman⁵, Mohammad Rezwanur Alam⁶,
Tuhin Akter^{7*}, Ehashan Ahmed⁸

¹Department of Pharmaceutical Chemistry, University of Dhaka, Dhaka, Bangladesh

²Department of Dentistry, Rajshahi Medical College Hospital, Rajshahi, Bangladesh

³Department of Clinical Pharmacy and Pharmacology, University of Dhaka, Dhaka, Bangladesh

⁴Department of Pharmacy, Jahangirnagar University, Dhaka, Bangladesh

⁵Senior Technical Advisor, Management Sciences for Health (MSH), Dhaka, Bangladesh

⁶Department of Production, Orion Pharma Limited, Dhaka, Bangladesh

⁷Marketing and Business Development, International Online Journal Hub Ltd., Dhaka, Bangladesh

⁸Department of Research and Publication, International Online Journal Hub Ltd., Dhaka, Bangladesh

Received: 25 June 2024

Revised: 26 July 2024

Accepted: 01 August 2024

*Correspondence:

Tuhin Akter,

E-mail: tuhinbd99@yahoo.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: The rapid increase in screen time among adolescents has raised concerns about its potential impact on mental health. This study aims to examine the relationship between screen time, sleep duration, and anxiety levels among school-going adolescents in Dhaka, Bangladesh.

Methods: A cross-sectional observational study was conducted with 568 students from multiple schools in Dhaka, Bangladesh, specifically targeting Grades 9 and 10. Statistical analyses were performed using SPSS version 25, with Chi-square tests and ANOVA used to determine significance, set at $p < 0.05$.

Results: The study included 568 participants, with 60.2% female and 39.8% male. The majority (54.9%) had a normal BMI, while 32.2% were underweight. Most participants (62.9%) reported getting 7-8 hours of sleep per day, with a mean sleep duration of 7.13 hours ($SD=1.25$). The mean screen time was 4.02 hours ($SD=1.63$), with 68.0% reporting 2-4 hours of screen use per day. Anxiety levels varied, with 54.2% reporting no anxiety symptoms, 35.9% mild anxiety, 7.0% moderate anxiety, and 2.8% severe anxiety. ANOVA results showed a significant association between screen time and anxiety levels ($p=0.043$), with severe anxiety corresponding to the highest mean screen time (5.01 hours).

Conclusions: The study found significant associations between screen time, sleep duration, and anxiety levels among adolescents. These findings underscore the need for interventions promoting balanced screen use and adequate sleep to improve adolescent mental health. Further research is recommended to explore long-term effects and develop targeted interventions.

Keywords: Adolescents, Anxiety, Mental health, Screen time, Sleep duration

INTRODUCTION

The rapid proliferation of digital technology and increased accessibility to smartphones and the internet

have led to a significant rise in screen time among adolescents worldwide. This trend has sparked global concerns regarding its potential negative impacts on the mental health of young individuals, particularly during

the critical developmental stage of adolescence. Research indicates that excessive screen time is associated with various mental health issues, including anxiety, depression, and sleep disturbances.¹ In Bangladesh, urbanization and improved access to technology have further accelerated this trend, especially among school-going adolescents. The interplay between screen time and mental health in this demographic requires comprehensive investigation to inform effective intervention strategies. Adolescent mental health is a critical issue globally, with significant variations observed across different regions and cultures. Studies have consistently shown that mental health disorders in adolescence, such as anxiety and depression, are pervasive and often carry into adulthood if not adequately addressed.² For instance, a study on adolescents in the U.S. found that approximately 36.2% of those with mental disorders had never received treatment, highlighting a substantial gap in mental health care.³ Similarly, research conducted in the Netherlands revealed that 45% of adolescents had experienced a DSM-IV disorder by age 19, with anxiety disorders being the most prevalent.⁴ In the context of Bangladesh, mental health among adolescents is an area of growing concern. The prevalence of depressive symptoms among urban and semi-urban adolescents in Dhaka has been reported at 36.6%, with higher rates observed in females.⁵ Factors such as high screen time, social media use, and sleep disturbances were significantly associated with depressive symptoms. Another study focusing on the relationship between overweight/obesity and mental health disorders found that 30.5% of adolescents experienced moderate to severe depression, although no significant association with obesity was noted.⁶ These findings underscore the multifaceted nature of adolescent mental health issues in Bangladesh. The global statistics on adolescent mental health further highlight the urgency of addressing this issue. In the U.S., the prevalence of mental health care utilization among adolescents remained relatively unchanged over recent years, with a notable increase in internalizing problems such as depression and anxiety.⁷ A study in India reported that 46.4% of adolescents were flourishing, while 2.4% were languishing, with significant associations between mental health and factors such as gender and age.⁸ These statistics provide a comparative backdrop for understanding the mental health landscape in Bangladesh. The impact of screen time on adolescent mental health is well-documented. High screen time is linked to increased risks of anxiety, depression, and behavioral issues. A study by Twenge and Campbell highlighted a strong correlation between high screen time and increased anxiety and depression among adolescents.¹ LeBourgeois et al found that screen time negatively affects sleep patterns, which in turn impacts mental health.⁹ These findings are supported by research in Bangladesh, where high screen time and social media use were associated with increased depressive symptoms among adolescents.⁵ In urban Bangladesh, the rise in screen time among adolescents has exacerbated mental health issues. A cross-sectional study conducted in Dhaka

reported significant levels of anxiety among adolescents, with factors such as irregular physical activity, high screen time, and sleep dissatisfaction being key contributors.¹⁰ Another study revealed that exposure to violence significantly predicted mental health problems among Bangladeshi youth, with distinct gender differences in how these issues manifested.¹¹ These findings suggest that the context in which screen time occurs, including environmental and socio-cultural factors, plays a critical role in shaping its impact on mental health. Understanding the specific context of Bangladesh is crucial for developing effective intervention strategies. The socio-economic stratification and environmental conditions of neighborhoods significantly influence adolescent mental health.^{12,13} For instance, adolescents in low socioeconomic status neighborhoods perceive greater ambient hazards such as crime and drug use, which are associated with higher levels of depression and anxiety.¹⁴ In Dhaka, the quality of life and mental health of adolescents vary significantly between slum and non-slum areas, with slum residents experiencing worse conditions.¹⁵ These disparities underscore the importance of considering contextual factors in mental health research. Despite the growing body of literature, there is a paucity of comprehensive studies focusing specifically on the mental health impact of screen time among urban adolescents in Bangladesh. This gap in research highlights the need for targeted studies that consider the unique cultural, social, and economic factors influencing mental health in this demographic. The present study aims to address this gap by investigating the impact of screen time on the mental health of adolescents in urban Bangladesh, with a particular focus on school-going children in grades 9 and 10.

METHODS

This cross-sectional observational study was conducted to investigate the impact of screen time on the mental health of adolescents in Dhaka, Bangladesh. A total of 568 students, comprising both male and female participants, were selected from multiple schools within the city. The target population included students from Grades 9 and 10. The sample size was determined to ensure adequate statistical power and representativeness of the urban adolescent population in Dhaka. Data were collected using a structured questionnaire, which included sections on demographic information, screen time habits, and the Generalized Anxiety Disorder 7-Item (GAD-7) scale to assess the mental health of the respondents. The questionnaire was designed to capture comprehensive information on the students' screen time, differentiating between leisure and educational activities. Screen time was recorded based on the students' self-reports to ensure an accurate reflection of their daily habits. To ensure the validity of the study, specific inclusion and exclusion criteria were established. Only students from Grades 9 and 10 were included in the study. Students with pre-diagnosed recognized mental disabilities were excluded

to avoid confounding effects related to pre-existing conditions. Additionally, students outside the specified grade levels were also excluded. Prior to data collection, informed consent was obtained from the legal guardians of all respondents. The consent form was included in the questionnaire, and guardians provided their approval via signature, ensuring ethical compliance and the protection of minors involved in the study. The collected data were entered and analyzed using SPSS version 25. Statistical analyses included Chi-square tests for categorical variables and ANOVA tests for continuous variables to determine the significance of associations between screen time and mental health outcomes. Significance was determined at a p-value of less than 0.05.

RESULTS

The age of the participants ranged from 14 to 17 years, with the majority being 15 years old (247 participants, 43.5%). Participants aged 14 comprised 28.2% (160 participants) of the sample, while those aged 16 and 17 made up 24.8% (141 participants) and 3.5% (20 participants), respectively. In terms of gender distribution, the study had a higher representation of females (342 participants, 60.2%) compared to males (226 participants, 39.8%). The majority of the participants were in Grade 10 (466 participants, 82.0%), with the remaining 18.0% (102 participants) in Grade 9. Regarding living situations, almost all participants lived with their parents (562 participants, 98.9%), while a small fraction lived with relatives (6 participants, 1.1%). The body mass index (BMI) distribution indicated that more than half of the participants were classified as having a normal weight (312 participants, 54.9%). Underweight participants comprised 32.2% (183 participants) of the sample. Participants classified as overweight accounted for 10.7% (61 participants), while those with obesity I and obesity II were 1.8% (10 participants) and 0.4% (2 participants), respectively (Table 1).

In terms of academic performance, the majority of participants reported good performance (379 participants, 66.7%), followed by those with average performance (122 participants, 21.5%). A smaller proportion of participants reported excellent academic performance (61 participants, 10.7%), while only 1.1% (6 participants) indicated below average performance. Regarding participation in extracurricular activities, a significant majority of participants (442 participants, 77.8%) reported not participating in any extracurricular activities, while 22.2% (126 participants) did engage in such activities. The experience of bullying or harassment among the participants was extremely low, with only 0.7% (4 participants) reporting such experiences, whereas the vast majority (564 participants, 99.3%) reported no experience of bullying or harassment ((Table 2).

The distribution of participants by average sleep hours per day is detailed in Table 3. The majority of participants reported low sleep hours, ranging from 7 to 8 hours per

day (357 participants, 62.9%). A significant portion of participants experienced severely low sleep, with less than 7 hours of sleep per day (163 participants, 28.7%). Only a small fraction of participants achieved the recommended sleep duration of 8 to 10 hours per day (46 participants, 8.1%), and an even smaller group reported sleep durations above the recommended amount, exceeding 10 hours per day (2 participants, 0.4%). The Mean±SD sleep duration among the participants was 7.13±1.25 hours (Table 3).

Table 1: Distribution of baseline characteristics among the participants (n=568).

Variables	Frequency	Percentage
Age (years)		
14	160	28.2
15	247	43.5
16	141	24.8
17	20	3.5
Gender		
Male	226	39.8
Female	342	60.2
Grade		
9	102	18.0
10	466	82.0
Living situation		
With parents	562	98.9
With relatives	6	1.1
BMI		
Underweight	183	32.2
Normal	312	54.9
Overweight	61	10.7
Obesity I	10	1.8
Obesity II	2	0.4

Table 2: Distribution of educational and lifestyle characteristics among the participants (n=568).

Lifestyle characteristics	Frequency	Percentage
Academic performance		
Excellent	61	10.7
Good	379	66.7
Average	122	21.5
Below average	6	1.1
Participation in extracurricular activities		
Yes	126	22.2
No	442	77.8
Experience of bullying or harassment		
Yes	4	0.7
No	564	99.3

The majority of participants reported screen time between 2 to 4 hours per day (386 participants, 68.0%). A significant portion of participants reported screen time between 4 to 6 hours per day (137 participants, 24.1%). Only a small fraction of participants reported less than 2

hours of screen time (16 participants, 2.8%) and between 6 to 8 hours (9 participants, 1.6%). A minor portion of the participants reported more than 8 hours of screen time per day (20 participants, 3.5%). The Mean $\pm$ SD screen time among the participants was 4.02 $\pm$ 1.63 hours (Figure 1).

Table 3: Distribution of participants by average sleep hour per day (n=568).

Average sleep hours	Frequency	Percentage
Severely low (<7 hours)	163	28.7
Low (7-8 hours)	357	62.9
Recommended (8-10 hours)	46	8.1
Above recommendation (>10 hours)	2	0.4
Mean $\pm$ SD	7.13 $\pm$ 1.25	

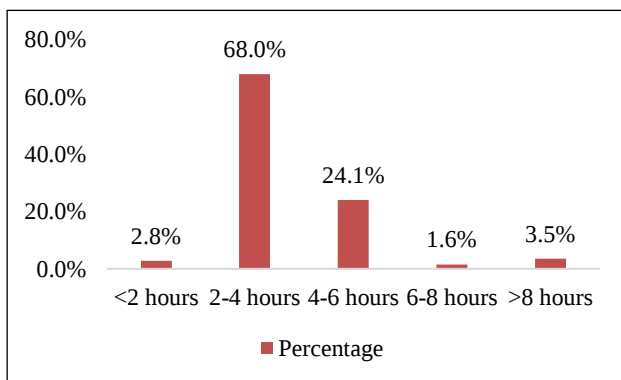


Figure 1: Distribution of participants by average screen usage time among the participants (n=568).

The study examined anxiety symptoms among the participants using the Generalized Anxiety Disorder 7-item (GAD-7) scale. For the feeling of being nervous, anxious, or on edge, 50.2% of participants reported not feeling this way at all, while 39.6% felt this way on several days. A smaller group experienced these feelings more frequently, with 5.6% feeling this way more than half the days, and 4.6% nearly every day. When asked

about being unable to stop or control worrying, 56.5% of participants did not experience this at all. However, 32.2% experienced this on several days, 7.0% more than half the days, and 4.2% nearly every day. Regarding worrying too much about different things, 45.1% of participants did not worry at all, while 30.3% worried on several days. More frequent worry was reported by 9.9% of participants for more than half the days, and 14.8% for nearly every day. For trouble relaxing, 42.6% of participants had no trouble at all, 30.3% had trouble on several days, 13.0% more than half the days, and 14.1% nearly every day. Being so restless that it is hard to sit still was not a problem for 74.8% of participants. However, 13.6% felt restless on several days, 7.0% more than half the days, and 4.6% nearly every day. In terms of becoming easily annoyed or irritable, 48.2% of participants did not experience this at all, while 27.5% felt irritable on several days. Additionally, 13.4% felt this way more than half the days, and 10.9% nearly every day. Lastly, when asked about feeling afraid as if something awful might happen, 75.0% of participants did not feel this way at all, 19.7% felt this on several days, 3.5% more than half the days, and 1.8% nearly every day (Table 4).

The majority of participants, 54.2% (308 participants), did not exhibit any anxiety symptoms. Mild anxiety was reported by 35.9% (204 participants), indicating a significant portion of the participants experienced some level of anxiety. Moderate anxiety was observed in 7.0% (40 participants) of the participants. Severe anxiety was the least common, affecting 2.8% (16 participants) (Figure 2).

The association between average screen time usage and GAD-7 anxiety levels among the participants is shown in Table 5. Participants with no anxiety had a mean screen time of 4.02 $\pm$ 1.59 hours per day. Those with mild anxiety reported a slightly lower mean screen time of 3.90 $\pm$ 1.49 hours per day. Participants with moderate anxiety had a mean screen time of 4.09 $\pm$ 1.84 hours per day. The highest mean screen time was observed in participants with severe anxiety, averaging 5.01 $\pm$ 2.55 hours per day.

Table 4: Distribution of Generalized Anxiety Disorder 7-item (GAD-7) score representations among the participants (n=568).

GAD-7 Category	Not at all, N (%)	Several days, N (%)	More than half the days, N (%)	Nearly every day, N (%)
Feeling nervous, anxious or on edge	285 (50.2)	225 (39.6)	32 (5.6)	26 (4.6)
Not being able to stop or control worrying	321 (56.5)	183 (32.2)	40 (7.0)	24 (4.2)
Worrying too much about different things	256 (45.1)	172 (30.3)	56 (9.9)	84 (14.8)
Trouble relaxing	242 (42.6)	172 (30.3)	74 (13.0)	80 (14.1)
Being so restless that it is hard to sit still	425 (74.8)	77 (13.6)	40 (7.0)	26 (4.6)
Becoming easily annoyed or irritable	274 (48.2)	156 (27.5)	76 (13.4)	62 (10.9)
Feeling afraid as if something awful might happen	426 (75.0)	112 (19.7)	20 (3.5)	10 (1.8)

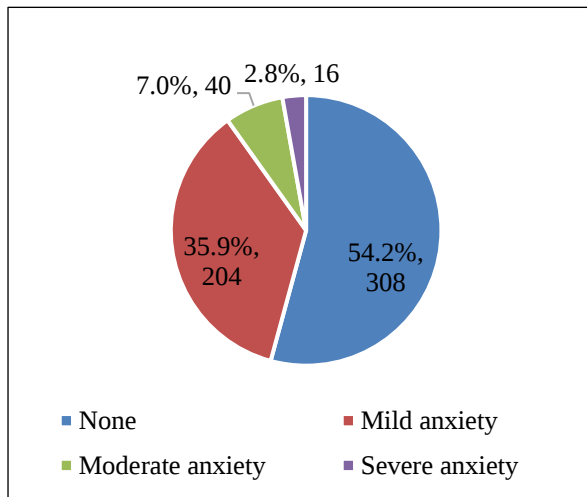


Figure 2: Distribution of participants by GAD-7 measured anxiety levels.

Table 5: Association of average screen time usage with GAD-7 anxiety levels (n=168).

Anxiety level	Mean±SD screen time	P value
None	4.02±1.59	0.043
Mild anxiety	3.90±1.49	
Moderate anxiety	4.09±1.84	
Severe anxiety	5.01±2.55	

Table 6: Bivariate correlation between significant variables (n=568).

Correlations		Age (years)	Gender	BMI	Average sleep hours	Average screen time	Total GAD
Age (years)	Pearson correlation	1	-0.354**	0.113**	0.025	0.087*	-0.017
	Sig. (2-tailed)		<0.001	0.007	0.551	0.039	0.689
Gender	Pearson correlation	-0.354**	1	0.022	-0.077	-0.001	0.104*
	Sig. (2-tailed)	<0.001		0.595	0.07	0.972	0.013
BMI	Pearson correlation	0.113**	0.022	1	-0.027	0.059	0.092*
	Sig. (2-tailed)	0.007	0.595		0.528	0.159	0.029
Average sleep hours	Pearson correlation	0.025	-0.077	-0.027	1	-0.221**	-0.113**
	Sig. (2-tailed)	0.551	0.07	0.528		<0.001	0.008
Average screen time	Pearson correlation	.087*	-0.001	0.059	-0.221**	1	0.024
	Sig. (2-tailed)	0.039	0.972	0.159	<0.001		0.575
Total GAD	Pearson correlation	-0.017	0.104*	0.092*	-0.113**	0.024	1
	Sig. (2-tailed)	0.689	0.013	0.029	0.008	0.575	

**Correlation is significant at the 0.01 level (2-tailed), *Correlation is significant at the 0.05 level (2-tailed).

DISCUSSION

The findings from this study offer a detailed examination of the impact of screen time on the mental health of adolescents in Dhaka, Bangladesh, providing insights specific to the local context and reflective of broader global trends. The demographic characteristics of the sample, predominantly female (60.2%) and mostly in Grade 10 (82.0%), align with existing research indicating that adolescent girls are more likely to experience anxiety and other mental health issues compared to boys.¹⁶ This

The bivariate correlations between significant variables among the participants. Age showed a significant negative correlation with gender ($r=-0.354$, $p<0.001$) and a positive correlation with BMI ($r=0.113$, $p=0.007$) and average screen time ($r=0.087$, $p=0.039$). There was no significant correlation between age and average sleep hours or total GAD scores. Gender exhibited a significant negative correlation with age ($r=-0.354$, $p<0.001$) and a positive correlation with total GAD scores ($r=0.104$, $p=0.013$), indicating that gender differences exist in anxiety levels. There was no significant correlation between gender and BMI, average sleep hours, or average screen time. BMI was positively correlated with age ($r=0.113$, $p=0.007$) and total GAD scores ($r=0.092$, $p=0.029$). However, no significant correlation was found between BMI and average sleep hours or average screen time. Average sleep hours showed a significant negative correlation with average screen time ($r=-0.221$, $p<0.001$) and total GAD scores ($r=-0.113$, $p=0.008$). This suggests that more screen time and higher anxiety levels are associated with reduced sleep duration. Average screen time was negatively correlated with average sleep hours ($r=-0.221$, $p<0.001$), but no significant correlation was found with total GAD scores. Total GAD scores were positively correlated with gender ($r=0.104$, $p=0.013$), BMI ($r=0.092$, $p=0.029$), and negatively correlated with average sleep hours ($r=-0.113$, $p=0.008$), indicating that higher anxiety levels are associated with gender differences, higher BMI, and less sleep (Table 6).

gender disparity is consistent with findings from studies such as those by Campbell et al, which highlight significant gender differences in mental health outcomes across various countries.¹⁶ The family context of the participants, with nearly all (98.9%) living with their parents, suggests strong familial support, a factor often associated with better mental health outcomes. This aligns with Hanson et al.'s findings that family support can mitigate the adverse effects of stress and anxiety in adolescents.¹⁷ However, the high prevalence of normal BMI (54.9%) alongside a considerable proportion of

underweight adolescents (32.2%) raises concerns about nutritional and health issues that could contribute to mental health problems. The positive correlation between BMI and total GAD scores ($r=0.092$, $p=0.029$) observed in this study supports the notion that body image and nutritional status are significant factors influencing adolescent mental health.¹⁸ Academically, the majority of participants reported good performance (66.7%), yet a large proportion (77.8%) did not engage in extracurricular activities. This imbalance might indicate high academic pressure and limited opportunities for holistic development, which are known contributors to mental health issues. Oberle et al have shown that extracurricular activities can serve as protective factors against anxiety and depression, underscoring the importance of balanced lifestyles for adolescents.¹⁹ The lack of engagement in extracurricular activities among participants could be a critical area for intervention. Sleep patterns are a crucial aspect of adolescent health, and the study found that most participants (62.9%) reported 7-8 hours of sleep per day, with a mean sleep duration of 7.13 hours. This is below the recommended 8-10 hours for adolescents, which is consistent with findings from Fuligni et al, who noted that insufficient sleep is linked to higher internalizing and externalizing symptoms.²⁰ The negative correlation between average sleep hours and both screen time ($r=-0.221$, $p<0.001$) and total GAD scores ($r=-0.113$, $p=0.008$) underscores the detrimental impact of excessive screen time on sleep and subsequently on mental health.⁸ Studies by Do et al have similarly highlighted the adverse effects of reduced sleep duration on adolescent health outcomes, reinforcing the need for addressing sleep hygiene in this age group.²¹ Screen time among the participants averaged 4.02 hours per day, with the majority (68.0%) reporting 2-4 hours of screen use daily. The significant association between screen time and anxiety levels ($p=0.043$) observed in the study, where severe anxiety corresponded with the highest mean screen time of 5.01 hours per day, aligns with global research. For instance, Maras et al. found that increased screen time is significantly associated with higher levels of depression and anxiety among Canadian youth.²² The correlation between screen time and mental health is further supported by the work of Kim et al, who found that passive screen time is particularly detrimental to adolescent mental health.²³ The correlations observed in this study reveal complex interrelationships between age, gender, BMI, sleep, screen time, and anxiety. Age was positively correlated with BMI ($r=0.113$, $p=0.007$) and average screen time ($r=0.087$, $p=0.039$), suggesting that older adolescents might engage more in screen time, potentially impacting their BMI and contributing to mental health issues. Gender was positively correlated with total GAD scores ($r=0.104$, $p=0.013$), indicating higher anxiety levels among females. This gender disparity in anxiety aligns with findings from studies like those by Lewinsohn et al, which consistently show higher prevalence rates of anxiety disorders among adolescent girls.²² The negative correlation between average sleep hours and screen time ($r=-0.221$, $p<0.001$) reinforces the

idea that increased screen use reduces sleep duration, exacerbating anxiety symptoms. This relationship is well-documented in literature, such as in the study by Boers et al, which highlights the bidirectional relationship between screen time and mental health over time.¹⁶ Furthermore, the negative correlation between sleep hours and total GAD scores ($r = -0.113$, $p = 0.008$) suggests that poor sleep quality directly contributes to higher anxiety levels, a finding supported by research from Ogawa et al.²⁴ In the context of Bangladeshi adolescents, these findings underscore the urgent need for public health interventions aimed at reducing screen time, promoting sleep hygiene, and encouraging participation in extracurricular activities. The study's findings on screen time and sleep mirror global patterns, suggesting that the adverse effects of these factors on adolescent mental health are universally relevant. Addressing these issues requires a multifaceted approach that includes education for parents and adolescents about healthy screen use, the importance of adequate sleep, and the benefits of a balanced lifestyle that includes extracurricular activities. This study has several limitations. First, the cross-sectional design limits the ability to establish causal relationships between screen time, sleep, and mental health outcomes. Longitudinal studies are needed to better understand these relationships over time. Second, the reliance on self-reported data for screen time and sleep duration may introduce recall bias and affect the accuracy of the findings. Third, the study sample was limited to urban adolescents in Dhaka, which may not be representative of adolescents in rural areas or other regions of Bangladesh. Lastly, the exclusion of adolescents with pre-diagnosed mental disabilities may limit the generalizability of the findings to all adolescents. In conclusion, this study provides valuable insights into the complex relationships between screen time, sleep, and mental health among adolescents in Dhaka, Bangladesh. The findings highlight the significant associations between excessive screen time, insufficient sleep, and increased anxiety, echoing global research trends. Future research should focus on longitudinal studies to further explore these relationships and develop targeted interventions that can effectively address the mental health challenges faced by adolescents in both local and global contexts.

CONCLUSION

This study provides critical insights into the impact of screen time on the mental health of adolescents in Dhaka, Bangladesh, highlighting significant correlations between screen usage, sleep duration, and anxiety levels. The findings reveal that excessive screen time is associated with higher levels of anxiety, particularly among females, and negatively affects sleep duration, contributing to increased mental health issues. The data underscore the importance of promoting balanced screen use and ensuring adequate sleep among adolescents to mitigate these adverse effects. By aligning with global research trends, this study reinforces the universal relevance of these challenges and the need for comprehensive

intervention strategies that include educational initiatives for both adolescents and their parents. Future research should focus on longitudinal studies to further elucidate these relationships and develop targeted interventions that effectively address the mental health needs of adolescents in diverse contexts. Through collaborative efforts and sustained public health initiatives, we can better support the well-being of young people, fostering healthier developmental trajectories and improving overall quality of life.

Recommendations

Based on the findings of this study, several recommendations are proposed to address the impact of screen time on the mental health of adolescents in Dhaka, Bangladesh. Schools, parents, and community organizations should work together to educate adolescents on the importance of balancing screen time with other activities. Implementing guidelines on healthy screen use and encouraging breaks from screens can help mitigate the negative effects associated with excessive screen time. Educational programs focused on the importance of adequate sleep should be integrated into school curricula. These programs should emphasize the relationship between sleep, screen time, and mental health, providing practical tips for improving sleep hygiene, such as establishing consistent sleep schedules and reducing screen time before bed. Schools should provide a wide range of extracurricular activities that cater to different interests, encouraging students to engage in physical, artistic, and social activities. Participation in such activities can serve as a protective factor against anxiety and depression by promoting physical health and social interaction. Parents should be actively involved in monitoring and managing their children's screen time. Workshops and resources should be made available to parents to help them understand the impacts of screen time and how to support their children in achieving a healthy balance. Schools should establish accessible mental health support systems, including counseling services and peer support programs. Early identification and intervention for students exhibiting signs of anxiety or other mental health issues can significantly improve outcomes. Policymakers should develop and implement regulations that limit excessive screen time among adolescents. This could include setting standards for screen use in educational settings and promoting public health campaigns that raise awareness about the risks associated with excessive screen time. Longitudinal studies should be conducted to better understand the long-term effects of screen time on adolescent mental health. Research should also explore the effectiveness of various interventions aimed at reducing screen time and improving mental health outcomes.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Twenge JM, Martin GN, Campbell WK. Decreases in psychological well-being among American adolescents after 2012 and links to screen time during the rise of smartphone technology. *Emotion*. 2018;18(6):765-80.
2. Scheiner C, Grashoff J, Kleindienst N, Buerger A. Mental disorders at the beginning of adolescence: Prevalence estimates in a sample aged 11-14 years. *Public Health Pract (Oxf)*. 2022;4:100348.
3. Merikangas KR, He J ping, Burstein M, Swendsen J, Avenevoli S, Case B, et al. Service utilization for lifetime mental disorders in U.S. adolescents: results of the National Comorbidity Survey-Adolescent Supplement (NCS-A). *J Am Acad Child Adolesc Psych*. 2011;50(1):32-45.
4. Ormel J, Raven D, Oort F van, Hartman CA, Reijneveld SA, Veenstra R, et al. Mental health in Dutch adolescents: a TRAILS report on prevalence, severity, age of onset, continuity and co-morbidity of DSM disorders. *Psychol Medi*. 2015;45(2):345-60.
5. Anjum A, Hossain S, Sikder T, Uddin ME, Rahim DA. Investigating the prevalence of and factors associated with depressive symptoms among urban and semi-urban school adolescents in Bangladesh: a pilot study. *Int Health*. 2022;14(4):354-62.
6. Moonajilin MstS, Rahman MdE, Islam MdS. Relationship between overweight/obesity and mental health disorders among Bangladeshi adolescents: A cross-sectional survey. *Obesity Medi*. 2020;18:100216.
7. Mojtabai R, Olfson M. National trends in mental health care for US adolescents. *JAMA Psych*. 2020;77(7):703-14.
8. Singh K, Bassi M, Junnarkar M, Negri L. Mental health and psychosocial functioning in adolescence: An investigation among Indian students from Delhi. *J Adolesc*. 2015;39(1):59-69.
9. LeBourgeois MK, Hale L, Chang AM, Akacem LD, Montgomery-Downs HE, Buxton OM. Digital media and sleep in childhood and adolescence. *Pediatrics*. 2017;140(Suppl 2):S92-6.
10. Anjum A, Hossain S, Hasan MT, Uddin ME, Sikder MT. Anxiety among urban, semi-urban and rural school adolescents in Dhaka, Bangladesh: Investigating prevalence and associated factors. *PLOS ONE*. 2022;17(1):e0262716.
11. Murshid NS, Irish A. Mapping the association between exposure to violence and mental health problems among a representative sample of youth in Bangladesh. *Child Youth Servi Revi*. 2021;120:105712.

12. Alegría M, NeMoyer A, Falgas I, Wang Y, Alvarez K. Social determinants of mental health: where we are and where we need to go. *Curr Psychiatry Rep*. 2018;20(11):95.
13. Warner TD, R. A. Settersten J. Why Neighborhoods (and How We Study Them) Matter for Adolescent Development. *Advan Chi Develop Behavio*. 2017;52:105.
14. Izutsu T, Tsutsumi A, Islam AMd, Kato S, Wakai S, Kurita H. Mental health, quality of life, and nutritional status of adolescents in Dhaka, Bangladesh: Comparison between an urban slum and a non-slum area. *Social Sci Medi*. 2006;63(6):1477-88.
15. Islam MS, Rahman ME, Moonajilin MS, van Os J. Prevalence of depression, anxiety and associated factors among school going adolescents in Bangladesh: Findings from a cross-sectional study. *PLoS One*. 2021;16(4):e0247898.
16. Campbell OLK, Bann D, Patalay P. The gender gap in adolescent mental health: A cross-national investigation of 566,829 adolescents across 73 countries. *SSM-Population Health*. 2021;13:100742.
17. Hanson RF, Borntrager C, Self-Brown S, Kilpatrick DG, Saunders BE, Resnick HS, et al. Relations among gender, violence exposure, and mental health: The national survey of adolescents. *Am J Orthopsy*. 2008;78(3):313-21.
18. Terhaag S, Fitzsimons E, Daraganova G, Patalay P. Sex, ethnic and socioeconomic inequalities and trajectories in child and adolescent mental health in Australia and the UK: findings from national prospective longitudinal studies. *J Child Psychol Psych*. 2021;62(10):1255-67.
19. Oberle E, Ji XR, Kerai S, Guhn M, Schonert-Reichl KA, Gadermann AM. Screen time and extracurricular activities as risk and protective factors for mental health in adolescence: A population-level study. *Prevent Medi*. 2020;141:106291.
20. Fuligni AJ, Arruda EH, Krull JL, Gonzales NA. Adolescent sleep duration, variability, and peak levels of achievement and mental health. *Child Development*. 2018;89(2):e18-28.
21. Morishima R, Yamasaki S, Ando S, Shimodera S, Ojio Y, Okazaki Y, et al. Long and short sleep duration and psychotic symptoms in adolescents: Findings from a cross-sectional survey of 15 786 Japanese students. *Psych Res*. 2020;293:113440.
22. Maras D, Flament MF, Murray M, Buchholz A, Henderson KA, Obeid N, et al. Screen time is associated with depression and anxiety in Canadian youth. *Prevent Medi*. 2015;73:133-8.
23. Kim S, Favotto L, Halladay J, Wang L, Boyle MH, Georgiades K. Differential associations between passive and active forms of screen time and adolescent mood and anxiety disorders. *Soc Psych Psychiatr Epidemiol*. 2020;55(11):1469-78.
24. Ogawa S, Kitagawa Y, Fukushima M, Yonehara H, Nishida A, Togo F, et al. Interactive effect of sleep duration and physical activity on anxiety/depression in adolescents. *Psych Res*. 2019;273:456-60.

Cite this article as: Parves MM, Tanveer SKM, Hossain MA, Naser AZM, Rahman MM, Alam MR, et al. Impact of screen time on the mental health of adolescents in Bangladesh. *Int J Community Med Public Health* 2024;11:3396-403.