ORIGINAL ARTICLE

Effects of Visual Gaming and Motives on Health Hazards Among Adolescents Living in the Southeastern Part of Bangladesh

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ABSTRACT

Online gaming has become a dominant form of entertainment among adolescents, especially in urban areas of developing countries like Bangladesh. While gaming offers opportunities for emotional relief and social engagement, excessive use has raised public health concerns, particularly regarding its impact on adolescents' mental and physical well-being. A cross-sectional study was conducted between July and December of 2024 among adolescents (aged 13–18 years) living in Chattogram, a southeastern city of Bangladesh, to explore the association between online gaming habits and the prevalence of depressive symptoms, musculoskeletal discomfort, psychosomatic complaints. Using a convenience sampling method, a total of 373 students (from two institutions – Islamia College and Govt. City College) were selected. Data was collected through a pre-tested, semi-structured questionnaire. Among 373 adolescents, 172(46.1%) were male and 201(53.9%) were female. Male-female ratio was 1:1.17. Most of the participants were 17 years old (52.3%), followed by 18 years old (22.8%). Only 8.3% of respondents reported depressive symptoms. 81.5% of adolescents reported musculoskeletal discomfort. 58.2% experienced psychosomatic complaints (e.g., headaches, fatigue, sleep disturbances). 43.4% reported issues in their social relationships. Age was not a significant factor for depression and psychosomatic symptoms ($p>0.05$), but associated with musculoskeletal symptoms ($p<0.05$). Gender, gaming type, gaming duration, gaming frequency were found significant with depression, psychosomatic and musculoskeletal symptoms ($p<0.001$). However, gaming motivation was significantly associated with depression ($p<0.001$) and psychosomatic symptoms ($p<0.05$), except with musculoskeletal symptoms ($p>0.05$). Moreover, significant association was observed between social relationships and sociodemographic and behavioral variables among adolescents ($p<0.001$) The results may inform future strategies for promoting healthier gaming habits and supporting adolescent well-being in similar urban settings.

Keywords: Online gaming, adolescents, depression, musculoskeletal symptoms, psychosomatic symptoms.

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INTRODUCTION

Online gaming has become an increasingly popular form of entertainment among adolescents in recent years. As the use of online gaming platforms has grown, so has the concern regarding its potential effects on the mental and physical health of adolescents.[1] It is possible that online gaming provides an escape from these issues and a way to cope with emotional distress[2]. Additionally, the widespread availability of smartphones and affordable internet access may have contributed to the increase in online gaming in urban areas of Bangladesh.[2] While many studies worldwide

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have examined the relationship between online gaming and various health outcomes,[3] there is still a need for research in our country on the role of online gaming time and motives in influencing depressive, musculoskeletal, and psychosomatic symptoms and social behavior in adolescents of Bangladesh.

Globally, depression affects nearly 264 million individuals, with suicide standing as the second leading cause of death among people aged 15 to 29.[4] Bangladesh reflects a similar mental health crisis, where approximately 16.05% of adults are reported to suffer from various mental health disorders – a wide range in prevalence rates between 6.5% and 31% among adults, and 13.4% to 22.9% among children and emphasized the need to evaluate the mental well-being of children and adolescents in the country.[5] These numbers necessitate an assessment of the mental health conditions for children and adolescents in Bangladesh.

Individuals who engage in online gaming often do so for different reasons, as motivations can vary significantly from person to person.[3] Even when the gaming activity remains the same, personal traits influence how rewarding a person finds the experience.[6] These motives especially escapism, have been identified as potential contributors to the negative social effects associated with excessive gaming.[7-9] Notably, escapism is recognized in the DSM-5 as a feature of Internet Gaming Disorder, indicating its use as a mechanism for coping with real-life stress.[10]

The rising popularity of mobile gaming among youth has become a growing public health concern.[11] While brief periods of gaming may provide mental and physical benefits, excessive or long-term engagement has been linked to negative consequences, including impaired health, strained social relationships, and reduced physical activity.[12] The widespread availability of smartphones and affordable internet access may have contributed to the increase in online gaming in urban areas of Bangladesh. Evidence showed that high rates of internet addiction prevail among adolescents as their main source of entertainment.[13] Moreover, another report highlighted that online game addiction is soaring worldwide, and addicted children even forget to eat, drink, and study, while enged in online gaming, which ultimately lead to many negative consequences.[14] Under the circumstances, this study was proposed to investigate the relationship between online gaming time, motives, and the prevalence of depressive, musculoskeletal, and psychosomatic symptoms in adolescents in Bangladesh.

METHODS

This cross-sectional study was conducted between July and December of 2024 among adolescents (aged 13–18 years) living in Chattogram, a southeastern city of Bangladesh. , which highlights the correlation between mental health and screen timing of adolescents. This study was using an anonymous and voluntary questionnaire to be completed by Bangladeshi adolescents aged 13–18 years. The questionnaire was including demographic background, gaming habits, health hazards (depressive, musculoskeletal, and psychosomatic symptoms) and social relationships. The questionnaire was pre-tested, validated and semi-structured in nature. Sampling technique used in the study was convenience sampling technique method, which is a non-probability sampling technique that involves selecting participants based on their availability and willingness to participate. Finally, a total of 373 adolescents participated in this study. Data was collected through face-to-face interview using the pre-tested, semi-structued questionnaire.

Data was scrutinized, compiled and coded. For statistical analysis data was entered into a Microsoft excel spreadsheet and then analyzed by using Statistical Package for Social Sciences (SPSS) version 24.0 for Windows. Data was expressed as frequency and percentage. Moreover, Chi-square was applied to compare. A p-value <0.05 was considered statistically significant.

RESULTS

Among 373 adolescents, 172(46.1%) were male and 201(53.9%) were female. Male-female ratio was 1:1.17. Most of the participants were 17 years old (52.3%), followed by 18 years old (22.8%) (Table 1). Only 8.3% of respondents reported depressive symptoms, suggesting a relatively low prevalence. However, it is important to consider the role of underreporting or lack of awareness among adolescents. A striking 81.5% of adolescents reported musculoskeletal discomfort, highlighting a serious physical health concern linked to prolonged screen time and poor posture during gaming. 58.2% experienced

psychosomatic symptoms (e.g., headaches, fatigue, sleep disturbances) indicating that over half of the sample is affected by physical symptoms stemming from psychological stress or excessive screen exposure. 43.4% reported issues in their social relationships, suggesting that online gaming may be interfering with interpersonal connections, though over half still maintain healthy social ties (Figure 1). Age was not a significant factor for depression and psychosomatic symptoms ($p>0.05$), but associated with musculoskeletal symptoms ($p<0.05$). Gender, gaming type, gaming duration, gaming frequency were found significant with depression, psychosomatic and musculoskeletal symptoms ($p<0.001$). However, gaming motivation was significantly associated with depression ($p<0.001$) and psychosomatic symptoms ($p<0.05$), except with musculoskeletal symptoms ($p>0.05$) (Table 2). Moreover, significant association was observed between social relationships and sociodemographic and behavioral variables among adolescents ($p<0.001$) (Table 3).

Table 1: Age and gender distribution of the study participants (n=373)

Age in years	Male Frequency (Percentage)	Female Frequency (Percentage)
16	5 (1.3)	37 (9.9)
17	101 (27.1)	94 (25.2)
18	31 (8.3)	54 (14.5)
19	35 (9.4)	16 (4.3)
Total	172 (46.1)	201 (53.9)

DISCUSSION

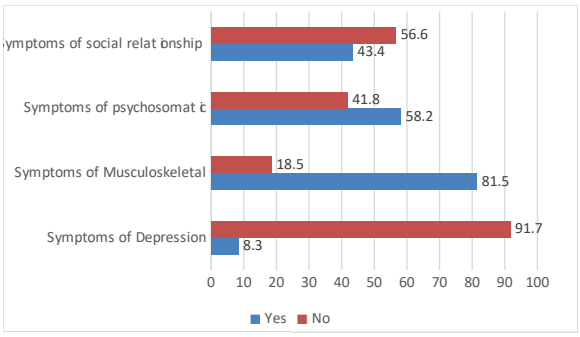

Figure 1: Prevalence of depression, musculoskeletal, psychosomatic, and social relationship symptoms among study participants.

Our findings revealed that extended gaming time and certain gaming motives are associated with negative mental and physical health outcomes among adolescents in urban Chittagong, Bangladesh. Similar results were found in several previous studies found that increased online gaming time during weekdays is associated with a higher probability of depressive, musculoskeletal, and psychosomatic symptoms among adolescents. Evidence showed that specific gaming motives, particularly escapism, are significantly linked to ill health.[2,3,6] Regarding depressive symptoms, the current study observed that male students were more likely to report symptoms of depression compared to their female counterparts. This aligns with findings of previous studies, which argued that societal gender norms may influence recreational behaviors, making males more vulnerable to problematic gaming patterns.[3,6-9,12-17] Similar to the findings of previous studies, we observed that gaming for more than four hours daily, gaming experience exceeding two years, and high-frequency weekly gaming (five to seven days) were significantly associated with increased depressive symptoms.[6-12,16,17]

Musculoskeletal symptoms were also prevalent in the study population and were significantly associated with variables such as age, gender, and gaming behavior. Specifically, 17-year-olds and females reported more symptoms, echoing findings from previous studies.[12,18] Consistent with previous reports, we found that longer gaming hours (over four hours daily) and action game preferences were notably linked to increased musculoskeletal discomfort.[12,18,19] Notably, mobile gaming addicts in our series showed particularly high prevalence of musculoskeletal discomfort. Similarly, regarding psychosomatic symptoms, the present study found that these symptoms were more frequently reported among male students. These outcomes were notably associated with longer gaming hours and gaming for entertainment, mirrored earlier findings that emphasized the negative consequences of excessive gaming beyond five hours daily. Action game players reported a higher rate of psychosomatic issues, further supporting the link between game type and health outcomes. Students who perceived a negative impact of gaming on their academic performance also showed increased rates of these symptoms.[12,18,19]

The influence of online gaming on social

Table 2: Association between sociodemographic and behavioral variables with health hazards

Variables	Depression Symptoms	Musculoskeletal Symptoms	Psychosomatic Symptoms
Age	Not significant (p>0.05)	Significant (p<0.05); peak at age 17	Not significant (p>0.05)
Gender	Significant (p<0.001); males more affected	Significant (p<0.001); females more affected	Significant (p<0.001); males more affected
Game type	Significant (p<0.001); longer hours = more symptoms	Significant (p<0.001); action games linked to symptoms	Significant (p<0.001); action games linked
Gaming duration (hours)	Significant (p<0.001); >2 years = more symptoms	Significant (p<0.001); longer duration = more symptoms	Significant (p<0.001); longer duration = more symptoms
Gaming frequency (days/week)	Significant (p<0.001); 5-7 days = higher risk	Significant (p<0.001); frequent gaming = more symptoms	Significant (p<0.001); more frequent = more symptoms
Gaming motivation	Significant (p<0.001); escapism/ social linked	Not significant (p>0.05)	Significant (p<0.05); entertainment/social linked
Academic performance	Significant (p<0.001); poor academics linked	Significant (p<0.001); linked to symptoms	Significant (p<0.05); linked to symptoms

Table 3: Association between sociodemographic and behavioral variables with social relationships

Variables	Social relationship
Age	Significant (p<0.001), larger proportion of 17-year-old (66%) report having difficulties in their social relationships compared to other age groups.
Gender	Significant (p<0.001); A significantly higher proportion of males (61.7%) report social relationship problems compared to females (37.7%)
Game type	Significant (p<0.001); A higher proportion of respondents who play action games (51.9%) report social relationship issues compared to those who play racing (29.0%) or role-playing games (18.5%).
Gaming duration (hours)	Significant (p<0.001); Respondents who have been gaming for more than 2 years (47.5%) report the most social relationship problems, while those gaming for less than 6 months (4.9%) report fewer issues.
Gaming frequency (days/weeks)	Significant (p<0.001); Respondents who game 5-7 days a week (86.4%) report significantly more social relationship problems than those who game 1-4 days a week (13.0%).
Gaming motivation	Significant (p<0.001); A larger proportion of respondents who game for entertainment (81.5%) report social relationship issues compared to those gaming for social interaction (10.5%) or achievement (6.8%).
Academic performance	Significant (p<0.001); A significantly higher proportion of respondents whose academic performance is affected by gaming (83.3%) report social relationship issues compared to those whose academic performance is not affected (15.4%).

relationships was also explored. Males and younger age reported more issues. The study also found that extended gaming hours, frequent gaming sessions, and action game preferences were strongly associated with difficulties in social relationships. Gaming for entertainment was particularly linked to these challenges, supporting claims by other studies that social interaction within gaming can either support or hinder real-life relationships.[6,10,16] In line with the findings of the previous studies, adolescents who experience psychosocial distress may prefer online interactions, which can contribute to more social isolation and interpersonal difficulties.[3,10,11,16,20-23]

The study also reinforces the notion that gaming addiction and its impact on academic success are shaped by a complex interplay of psychological, social, and environmental factors.[15,22] Adolescents between the ages of 13 and 17 may be especially susceptible to gaming addiction due to developmental characteristics such as identity formation and a desire for autonomy.[15,23] The negative relationship observed between gaming addiction and academic achievement aligns with previous studies, suggesting that the significant time investment required by gaming detracts from academic engagement and performance.[16,17,23]

Several limitations were observed during conducting this study. Firstly, data collected in this study was based on self-reported measures, which may be subject to bias and inaccuracies. We used a cross-sectional design through which the causality cannot be established. Moreover, this research may have limited generalizability to other populations or cultures and conducted on a specific sample of adolescents in a specific region of the country, and the findings may not apply to other age groups or cultural contexts. Despite those limitations, the study provides valuable insights into the relationship among online gaming time and motives and depressive, musculoskeletal, and psychosomatic symptoms and social relationships in adolescents.

CONCLUSION

Our data suggests that although only 8.3% of adolescents reported depressive symptoms, high rates of musculoskeletal and psychosomatic symptoms prevail among them. Moreover, 43.4% reported issues in their social relationships. Overall, the study provided us with a comprehensive understanding of the multifaceted consequences of excessive engagement with virtual gaming in adolescents at secondary and higher secondary education in Bangladesh and their social relationships. The findings of the study would contribute to the development of effective interventions and policies to address the potential negative consequences of excessive engagement with virtual gaming and social relationships among adolescents in urban areas of Chattogram district as well as in whole Bangladesh.

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Ethical approval: Ethical approval for this work was obtained from the Institutional Review Board of the University of Creative Technology Chittagong, Chattogram, Bangladesh (UCTC/IRB/2023/0010). Written informed consent was obtained from the adolescents who are ≥18 years. However, for those who are minors (<18 years), we sought assent from them as well as written informed consent from their parent(s) or legal guardian.

Authors' contribution: S Arabi conceived and designed the study, developed the research strategy, did data collection, compilation and analysis as well as manuscript preparation, editing and final submission. ST Jahan designed the study, conducted data analyses, prepared figures and tables, supervised the study and did manuscript editing and final submission.

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