

Assessing the Impact of Social Media and Gaming Apps on Adolescent Mental Health in West Bengal

Subrata Khan^{1*}, Supriya Khan², Dr. Lalit Lalitav Mohakud³, Dr. Sharif Khan⁴

ABSTRACT

The increasing use of social media and gaming apps has raised concerns about their impact on adolescent mental health. This study examines the effects of social media and gaming app usage on stress, anxiety, and depression among secondary school students in West Bengal. A cross-sectional survey design was used to collect data from 328 students through a snowball sampling technique. Standardized instruments, including the Bergen Social Media Addiction Scale (BSMAS), Internet Gaming Disorder Scale–Short Form (IGDS9-SF), and Depression, Anxiety, and Stress Scale (DASS-21), were used for data collection. The results show that male students are more addicted to gaming apps, while female students are more addicted to social media. Female students also experience higher stress, anxiety, and depression than males. Rural students have higher levels of social media and gaming addiction, as well as greater stress, anxiety, and depression, compared to urban students. These findings highlight the need for mental health awareness programs and digital well-being strategies, particularly for female and rural students, to help manage the negative effects of excessive social media and gaming use.

Keywords: *Social Media, Gaming Apps, Adolescents, Stress, Anxiety, Depression, West Bengal*

In the digital age, social media platforms and gaming applications have become integral to students' lives (Wang & Bashir, 2021). These technologies provide opportunities for entertainment, communication, and learning (Shadiev et al., 2018; Velayutham et al., 2022; Chassiakos & Stager, 2020). However, their excessive use has raised concerns about mental health implications, particularly among adolescents (Alfaridzi et al., 2024; Yang, 2024). Secondary school students, who primarily belong to the adolescent age group, are at a crucial stage of cognitive and emotional development (Ravindranath et al., 2022; Kumar et al., 2024) and are highly vulnerable to the psychological effects of prolonged screen time (Nathiya & Meenakshi, 2024; Firth et al., 2025). Several studies have demonstrated a strong correlation between excessive social media and gaming app usage and increased levels of stress, anxiety, and depression among adolescents (Oxendine et al., 2024; Alfaridzi et al.,

¹Research Scholar (PhD), Department of Education, Jadavpur University, Kolkata, India

²Former student, Department of Education, Visva-Bharati, West Bengal, India

³Associate Professor, Department of Education, Jadavpur University, Kolkata, India

⁴Assistant Professor, Department of Education, Jadavpur University, Kolkata, India

*Corresponding Author

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2024; Amran et al., 2024). Contributing factors such as cyberbullying, social comparison, gaming addiction, and disrupted sleep patterns have been identified as potential causes of mental health issues (Agustiniingsih et al., 2024; Ventriglio et al., 2024; Dave, 2024). Additionally, these digital platforms' immersive and interactive nature often fosters psychological dependence, negatively affecting students' emotional well-being, academic performance, and interpersonal relationships (Shari et al., 2024; Wangqu et al., 2024; Hidayat & Usanto, 2024). This study aims to investigate the impact of social media and gaming app usage on the mental health of secondary school students, with a specific focus on stress, anxiety, and depression levels. By analyzing students' responses, this research seeks to provide insights into the extent of the issue and suggest possible interventions for educators, parents, and policymakers.

Significance of the Study

The increasing prevalence of social media and gaming app usage among secondary school students has raised concerns about its impact on their mental health and overall well-being (Balamurali, 2025; Qian, 2024). This study is significant as it provides a focused understanding of the impact of social media and gaming app usage on the mental health of secondary school students in the Paschim Medinipur and Kolkata districts of West Bengal. By examining digital engagement patterns concerning gender and habitat, the research offers valuable insights into how these factors influence students' exposure to stress, anxiety, and depression. Identifying social media usage and gaming addiction based on these demographic variables will be valuable for educators, parents, and policymakers in designing targeted interventions, awareness programs, and policies that address excessive social media and gaming use while promoting mental well-being. Additionally, the study will contribute to the broader discourse on adolescent mental health, emphasizing the need for digital literacy and responsible technology usage in different socio-cultural contexts.

Delimitation of the Study

Due to a shortage of time restrictions, the present study was confined to the following delimitation-

1. This study was only conducted in Paschim Medinipur and Kolkata districts in West Bengal.
2. This study was conducted only among secondary school students.
3. The study was delimited to only 328 students as a sample.
4. The study was delimited to only two independent or demographic variables, i.e., gender and habitat and five dependent variables, i.e., social media addiction, gaming apps addiction, stress, anxiety and depression.

Research Objectives

1. To identify the social media use among secondary school students concerning their gender and habitat.
2. To identify the addiction to gaming apps among secondary school students concerning their gender and habitat.
3. To identify the stress, anxiety and depression among secondary school students concerning their gender and habitat.

Hypothesis of the Study

- **H₀₁**: There is no significant mean difference in the use of social media among secondary school students concerning their gender.

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- **H₀2:** There is no significant mean difference in the use of gaming apps among secondary school students concerning gender.
- **H₀3:** Gender has no significant mean difference in stress among secondary-level students.
- **H₀4:** Gender has no significant mean difference in anxiety among secondary-level students.
- **H₀5:** Gender has no significant mean difference in depression among secondary-level students.
- **H₀6:** There is no significant mean difference in the use of social media among secondary school students with respect to their habitat.
- **H₀7:** There is no significant mean difference in the use of gaming apps among secondary school students concerning their habitat.
- **H₀8:** Habited has no significant mean difference in stress among secondary-level students.
- **H₀9:** Habited has no significant mean difference in anxiety among secondary-level students.
- **H₀10:** Habited has no significant mean difference in depression among secondary-level students.

METHODOLOGY

Study Design

To achieve the study's objectives, the researchers employed a cross-sectional survey design and used snowball sampling. The study population comprised all secondary-level students from the Paschim Medinipur and Kolkata districts. From this population, a sample of 328 students was selected from various secondary schools in Paschim Medinipur and Kolkata districts.

Tools used for data collection

In this study, three standardized scales were used for data collection. The **Bergen Social Media Addiction Scale (BSMAS)** assessed social media addiction severity through six items based on core addiction components (salience, mood modification, tolerance, withdrawal, conflict, and relapse) rated on a 5-point Likert scale, with a composite score range of 6 to 30. The **Internet Gaming Disorder Scale-Short Form (IGDS9-SF)** measured the severity of Internet Gaming Disorder using nine items aligned with DSM-5 criteria, rated on a 5-point Likert scale from 1 (Never) to 5 (Very often). Lastly, the **Depression Anxiety Stress Scale (DASS-21)** was employed to evaluate negative emotional states- depression, anxiety, and stress using three subscales with seven items each, rated on a 4-point scale from 0 (did not apply) to 3 (applied very much or most of the time).

RESULTS

Descriptive statistics

Table 1.1 Showing independent variables wise mean distribution on social media, gaming apps, stress, anxiety and depression.

Independent Variables	Dependent Variables	Category	N	Mean	SD
Gender	Social Media addiction	Male	112	14.42	4.449
		Female	216	15.58	4.103
	Gaming Apps Addiction	Male	112	15.97	7.467
		Female	216	13.08	5.789

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Independent Variables	Dependent Variables	Category	N	Mean	SD
Gender	Total Stress	Male	112	4.89	4.459
		Female	216	6.04	4.491
	Anxiety	Male	112	3.87	4.010
		Female	216	4.63	4.072
	Depression	Male	112	4.90	4.490
		Female	216	5.58	4.711
Habitation	Social Media addiction	Rural	257	15.45	4.309
		Urban	71	14.35	4.050
	Gaming Apps Addiction	Rural	257	14.31	6.856
		Urban	71	13.30	5.287
	Stress	Rural	257	5.74	4.322
		Urban	71	5.46	5.302
	Anxiety	Rural	257	4.53	3.970
		Urban	71	3.90	4.498
	Depression	Rural	257	5.57	4.464
		Urban	71	4.70	5.376

Figure 1.1 Showing independent variables wise mean distribution on social media, gaming apps, stress, anxiety and depression.

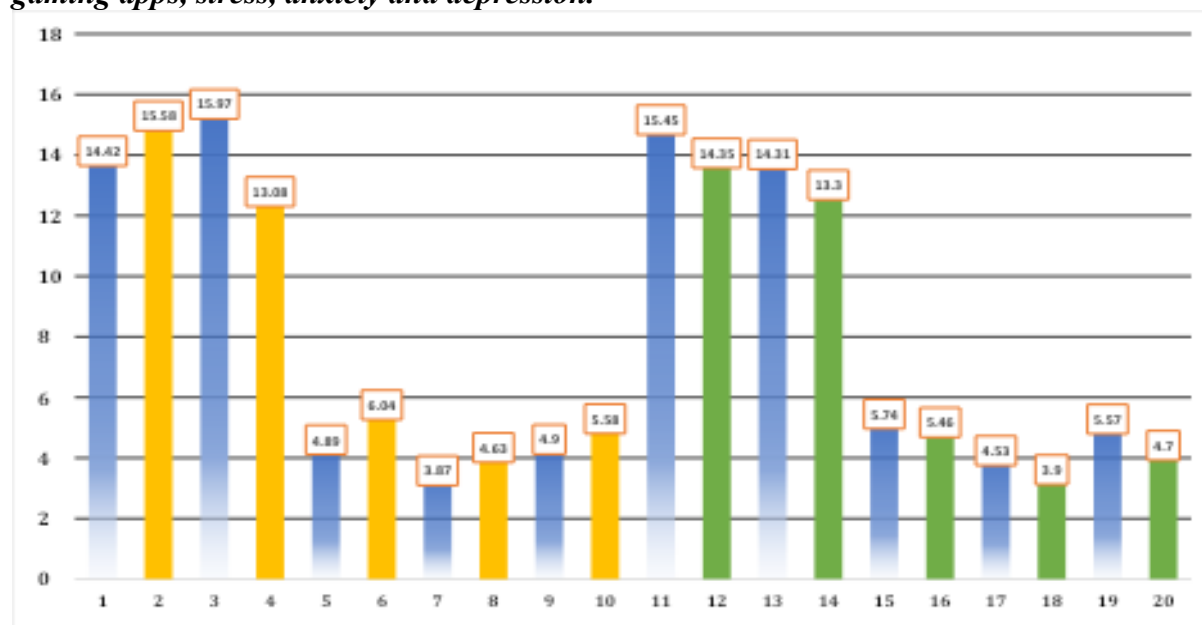


Table 1.1 and Figure 1.1 display the mean scores of independent variables, i.e., gender and habitation, concerning dimensions of social media addiction, gaming app addiction, stress, anxiety, and depression. The calculated mean score of male students is 14.42, 15.97, 4.89, 3.87, and 4.90, respectively, while the mean score of female students is 15.58, 13.08, 6.04, 4.63, and 5.58, respectively, on these dimensions. Here, it is evident that male students have higher gaming app addiction, whereas female students exhibit greater social media addiction, stress, anxiety, and depression. On the other hand, rural students show higher mean scores in social media addiction (15.45), gaming app addiction (14.31), stress (5.74), anxiety (4.53), and depression (5.57) compared to urban students, whose mean scores are

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14.35, 13.30, 5.46, 3.90, and 4.70, respectively. This indicates that rural students are more susceptible to social media addiction and associated psychological distress than their urban counterparts.

Hypotheses Testing

Table 1.2 Showing Independent sample t-test based on H₀₁ to H₀₅.

Independent sample t-test							
Independent Variable	Dependent Variable	Category	Mean	t	df	p	Remarks
Gender	Total social media Addiction	Male	14.42	-2.313	329	.022	*S P<0.05
		Female	15.58				
	Total Gaming Apps Addiction	Male	15.97	3.892	329	.000	*S P<0.05
		Female	13.08				
	Total Stress	Male	4.89	-2.197	329	.029	*S P<0.05
		Female	6.04				
	Total Anxiety	Male	3.87	-1.614	329	.108	*NS P>0.05
		Female	4.63				
	Total Depression	Male	4.90	-1.259	329	.209	*NS P>0.05
		Female	5.58				

*S= Significant, NS= Not Significant

Table 1.2 shows that the independent sample t-test based on gender by Total social media Addiction, Gaming Apps Addiction, Stress, Anxiety and Depression among secondary school students. Total social media Addiction was found to be statistically significant [t (329) = -2.313, p<0.05], Total Gaming Apps Addiction was found to be statistically significant [t (329) = 3.892, p<0.05], Total Stress was found to be statistically significant [t (329) = -2.197, p<0.05], Total Anxiety was found to be statistically not significant [t (329) = -1.614, p>0.05] and Total Depression was found to be statistically not significant [t (329) = -1.259, p>0.05].

Hypotheses Testing

Table 1.3 Showing Independent sample t-test based on H₀₆ to H₀₁₀.

Independent sample t-test							
Independent Variable	Dependent Variable	Category	Mean	t	df	p	Remarks
Habitat	Total social media Addiction	Rural	15.45	1.931	330	.054	*NS P>0.05
		Urban	14.35				
	Total Gaming Apps Addiction	Rural	14.31	1.152	330	.250	*NS P>0.05
		Urban	13.30				
	Total Stress	Rural	5.74	.458	330	.648	*NS P>0.05
		Urban	5.46				
	Total Anxiety	Rural	4.53	1.154	330	.249	*NS P>0.05
		Urban	3.90				
	Total Depression	Rural	5.57	1.386	330	.167	*NS P>0.05
		Urban	4.70				

*S= Significant, NS= Not Significant

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Table 1.3 presents the results of the independent sample t-test examining the influence of habitat (rural and urban) on various dependent variables, including social media addiction, gaming app addiction, stress, anxiety, and depression. The analysis revealed that none of the variables showed statistically significant differences between rural and urban participants, as all p-values were greater than 0.05 level. Specifically, total social media addiction [$t(330) = 1.931, p > 0.05$], total gaming apps addiction [$t(330) = 1.152, p > 0.05$], total stress [$t(330) = 0.458, p > 0.05$], total anxiety [$t(330) = 1.154, p > 0.05$], and total depression [$t(330) = 1.386, p > 0.05$] were all found to be not significant. This indicates that habitat does not significantly impact these variables within the study population.

Findings based on Gender

1. Female students are more addicted to social media than male students, and the difference was statistically significant.
2. Male students are more addicted to gaming apps than female students, and the difference was statistically significant.
3. Female students have more stress than male students, and the difference was statistically significant.
4. Female students showed higher anxiety than male students, but the difference was found to be statistically not significant.
5. Female students showed higher depression than male students, and the difference was found to be statistically not significant.

Findings based on Habitat

1. Rural students are more addicted to social media than urban students, but the difference was statistically not significant.
2. Rural students are more addicted to gaming apps than urban students, and the difference was statistically not significant.
3. Rural students have more stress than urban students, but the difference was statistically not significant.
4. Rural students showed higher anxiety than urban students, but the difference was statistically insignificant.
5. Rural students showed higher depression than urban students, and the difference was found to be statistically not significant.

DISCUSSION AND CONCLUSION

This study investigates the impact of social media and gaming app usage on stress, anxiety, and depression among secondary school students in the Paschim Medinipur and Kolkata districts of West Bengal, with a particular emphasis on gender and habitat-based differences. The findings reveal that female students are significantly more addicted to social media than their male counterparts, a trend observed in previous studies (Ciacchini et al., 2023; Masya et al., 2022; Zivdir & Karakul, 2022). Conversely, male students exhibit a higher addiction to gaming apps, aligning with results from other research (Müezzini, 2015; Stelmakh & Kerimova, 2024; Niazi et al., 2024). Additionally, female students experience higher stress levels compared to males, a pattern consistent with findings from different studies (Oyinbo et al., 2024; Aryal & Rajbhandari, 2024). However, differences in anxiety and depression between genders were not statistically significant. Regarding habitat-based variations, rural students demonstrated higher levels of social media and gaming app addiction, along with greater stress, anxiety, and depression, compared to their urban counterparts. Various studies have reported similar results (Genobiagon, 2024; Youngson et al., 2025; Li & Sun, 2023;

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She et al., 2022). Nonetheless, these differences were not statistically significant, indicating that the psychological effects of excessive digital engagement are widespread across different geographical locations. These findings highlight the growing need for targeted interventions to address the mental health risks associated with prolonged digital exposure.

To mitigate these concerns, students should be encouraged to adopt healthier lifestyle practices, such as self-care, maintaining a balanced diet, engaging in physical activities, reducing screen time, and fostering meaningful social interactions with family and friends. Activities like yoga, mindfulness, outdoor exercises such as cycling and swimming, and creative hobbies like gardening, cooking, reading, and arts and crafts can improve mental well-being. Implementing these strategies can help students achieve a more balanced and healthier lifestyle, reducing the adverse effects of excessive social media and gaming app usage. Educational policymakers, teachers, and parents play a crucial role in promoting responsible technology use and ensuring digital well-being among students. Schools should integrate digital literacy programs, mental health awareness initiatives, and structured guidelines for healthy online behaviour.

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Conflict of Interest

The author(s) declared no conflict of interest.

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