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Online Gaming Engagement and Its Link to Depression Among College Students

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Abstract—**The rapid growth of online gaming has led to increased participation among college students, raising concerns about its potential impact on mental health. The present study aimed to examine the relationship between the duration of online gaming and depression among college students. A normative survey method was employed for the investigation. The sample consisted of 300 college students from Kerala, selected using a stratified random sampling technique. Depression was assessed using the Centre for Epidemiological Studies Depression (CES-D) Scale developed by Radloff (1977). One-way Analysis of Variance (ANOVA) was used to analyze differences in depression levels based on the duration of online gaming.**

The results revealed a statistically significant difference in depression among students categorized by their duration of online gaming ($F = 6.06$, $p < 0.01$). Further analysis using Duncan's Multiple Range Test indicated that students who engaged in online gaming for more than six hours per day reported the highest levels of depression, followed by those gaming for three to six hours, while students gaming for one to three hours exhibited the lowest levels of depressive symptoms. These findings suggest a positive association between prolonged online gaming and increased depression.

The study concludes that excessive online gaming poses a significant risk to the mental well-being of college students. While moderate gaming may have recreational benefits, prolonged engagement can contribute to psychological distress. The findings highlight the need for awareness, early intervention, and the promotion of balanced gaming habits to safeguard students' mental health.

I. INTRODUCTION

Online gaming refers to playing video games over the internet using devices such as gaming consoles (PlayStation, Xbox, Nintendo Switch), computers, or mobile phones. These games provide interactive virtual environments in which players can collaborate, communicate, form social connections, and work together to complete tasks or missions. For many individuals, online gaming serves as a source of entertainment, teamwork, social interaction, and a sense of accomplishment.

The development of video games can be traced back to the 1950s and 1960s, when early experiments were conducted on large computer systems. One of the earliest and most influential video games, *Spacewar!*, was developed at the Massachusetts Institute of Technology (MIT) in 1962. The gaming industry began to expand commercially during the 1970s; however, it experienced a major setback in 1983 due to market saturation, poor-quality games, and growing competition from personal computers. The industry recovered with the introduction of the Nintendo Entertainment System in 1985, which revitalized consumer interest in video gaming.

The late 1980s and 1990s marked a period of rapid technological advancement, characterized by intense competition between major console manufacturers such as Nintendo and Sega, the emergence of handheld gaming devices like the Game Boy, the adoption of CD-ROM technology, and the development of real-time 3D graphics. After 2000, the rise of mobile devices and casual gaming significantly broadened the gaming audience. In recent years, advancements in graphics technology by companies such as Nvidia and AMD, including real-time ray tracing, have further enhanced gaming experiences and influenced modern consoles like the PlayStation 5 and Xbox Series.

Today, online games attract millions of users worldwide and encompass a wide range of genres. These include First-Person Shooter (FPS) games, which emphasize weapon-based combat from a first-person perspective; Massively Multiplayer Online (MMO) games, which offer expansive virtual worlds involving large numbers of players; Battle Royale games, where players compete in survival-based scenarios until only one remains; and Online Casino games, which simulate traditional gambling activities such as roulette and blackjack through digital platforms.

Despite its popularity, internet gaming has increasingly been associated with various physical and psychological challenges. A key area of debate concerns whether excessive gaming should be considered a distinct clinical condition. Video game addiction, often referred to as Internet Gaming Disorder (IGD), has been recognized by the American Psychiatric Association as a condition requiring further research. According to the APA, IGD is characterized by the presence of five or more symptoms over a 12-month period. These symptoms include increased tolerance, excessive preoccupation with gaming, withdrawal symptoms when gaming is reduced, repeated unsuccessful attempts to control gaming behavior, loss of interest in other activities, continued gaming despite psychosocial difficulties, minimizing the extent of gaming, using gaming as a means of escaping negative emotions, and experiencing disruptions in personal, academic, or occupational functioning.

In 2018, the World Health Organization formally classified Gaming Disorder as a medical condition, highlighting growing global concern about excessive gaming behavior. Prolonged engagement in online gaming has been linked to several health-related issues, including sleep deprivation, insomnia, and disturbances in circadian rhythms. These physical effects can negatively influence emotional regulation and overall mental well-being. Additionally, excessive gaming has been associated with increased levels of depression, anxiety, and aggression, although further empirical research is needed to establish the strength and consistency of these relationships.

Another important concern relates to repeated exposure to violent content in many video games. Continuous exposure to such material may lead to desensitization toward violence, particularly among adolescents and young adults. This desensitization can contribute to emotional dysregulation, reduced empathy, and, in some cases, increased aggressive behavior, thereby intensifying psychological distress.

Depression is a serious mental health disorder that affects an individual's emotions, thought processes, and behavior. It is characterized by persistent feelings of sadness, loss of interest or pleasure in daily activities, disturbances in sleep and appetite, fatigue, difficulty concentrating, and, in severe cases, suicidal thoughts. For a clinical diagnosis, these symptoms must persist for at least two weeks and significantly impair daily functioning.

According to the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5), depressive disorders include several subtypes. Major Depressive Disorder is marked by severe and persistent symptoms that interfere with normal functioning, while Persistent Depressive Disorder (dysthymia) involves long-term but less intense symptoms lasting for at least two years. Other forms include Disruptive Mood Dysregulation Disorder, Premenstrual Dysphoric Disorder, Seasonal Affective Disorder, Peripartum Depression, depression due to medical conditions, and Atypical Depression, which is characterized by mood reactivity and heightened sensitivity to rejection.

The relationship between internet gaming and depression is increasingly being examined, as excessive gaming may both contribute to and result from depressive symptoms. Individuals experiencing depression may use online gaming as a coping strategy to escape negative emotions or social challenges. However, prolonged gaming can lead to increased isolation, disrupted sleep, and reduced participation in real-life activities, thereby increasing vulnerability to depression. Understanding this bidirectional relationship is essential for developing effective prevention and intervention strategies, particularly among young adults and college students.

Psychological Explanations of Depression

From a behavioral perspective, Lewinsohn's (1974) theory suggests that depression arises from a reduction in positive reinforcement. When individuals experience fewer rewarding events in their lives, they may withdraw socially, lose motivation, and develop depressive symptoms. While this theory highlights the role of environmental factors, it does not adequately explain depression in the absence of clear external triggers and gives limited attention to cognitive processes.

The psychodynamic perspective, proposed by Freud (1917), views depression as anger turned inward, often resulting from unresolved childhood loss or rejection. Individuals who depend heavily on others for validation may become particularly vulnerable to depression when they experience perceived rejection or loss. According to this view, unresolved grief and early relational disturbances increase susceptibility to depression later in life.

Cognitive theories, most notably proposed by Aaron Beck, emphasize the role of maladaptive thought patterns in the development of depression. Beck's model includes the cognitive triad, which involves negative views of the self, the world, and the future; negative self-schemas formed through early adverse experiences; and cognitive distortions, or biased ways of thinking. These factors interact to maintain a cycle of hopelessness and low mood. However, it remains unclear whether negative thoughts cause depression or develop as a consequence of depressive states.

Finally, Seligman's theory of learned helplessness suggests that repeated exposure to uncontrollable negative events can lead individuals to believe that they have little or no control over outcomes. This belief fosters passivity, low motivation, and emotional distress, thereby increasing vulnerability to depression.

II. REVIEW OF RELATED STUDIES

A considerable body of empirical research has explored online gaming addiction, Internet Gaming Disorder (IGD), and their relationship with depressive symptoms among adolescents and young adults. With rapid advancements in technology and information systems, online gaming has emerged as a dominant recreational activity worldwide, including in developing countries. Online games are typically defined as games played by multiple users through internet connectivity; however, certain games that do not require continuous online access during gameplay are also classified within this category (Adams, 2009). Common platforms for online gaming include computers, handheld devices, and gaming consoles (Jap, Tiatri, Jaya, & Suteja, 2013).

Recent evidence strongly supports the clinical relevance of problematic gaming behavior. Edoardo et al. (2021), in a systematic review and meta-analysis, reported that nearly one-third of individuals diagnosed with Internet Gaming Disorder also experienced clinical depression. Even among gamers without a formal IGD diagnosis, depressive symptoms were significantly higher than in the general population. These findings reinforce the American Psychiatric Association's classification of IGD as a condition characterized by persistent and recurrent engagement in online gaming that leads to significant psychological distress or functional impairment.

Focusing on adolescent populations, Nikson, Priska, and Indri (2020) conducted a study among 746 high school students and found that 12% of participants exhibited depressive symptoms, while 10.3% met the criteria for online gaming addiction. Their analysis identified gaming addiction, academic difficulties, female gender, and early adolescence as significant predictors of depression. These results emphasize the heightened psychological vulnerability associated with excessive gaming during critical developmental periods.

Gender-related differences in gaming behavior and its psychological outcomes have also been documented. Partha, Anuja, and Debasish (2019) reported that excessive internet gaming among college students was significantly associated with increased anxiety and depression. Notably, female students demonstrated greater susceptibility to depressive symptoms compared to their male counterparts, despite typically spending less time gaming.

Supporting these findings, Yeong-Mi and Won Ju Hwang (2014) observed that approximately 71% of adolescents engaged in online gaming on a daily or near-daily basis, with males participating more frequently than females. However, while males generally reported longer gaming durations, females appeared to experience greater psychological distress related to gaming behavior.

Earlier research by Han-Ting et al. (2012) further highlighted gender-specific outcomes, showing that although female gamers spent fewer hours gaming, they reported more severe somatic complaints and higher levels of social phobia. These factors were found to be significant predictors of depression, suggesting that psychological impact may differ by gender even when gaming exposure is lower.

The role of game genre and immersion was examined by Birgit, Mario, and Ilse (2011) in their study *Beyond the Fascination of Online Games*. Their findings indicated that players of Massively Multiplayer Online Role-Playing Games (MMORPGs) exhibited higher levels of problematic gaming behavior, increased depressive symptoms, and lower self-esteem compared to players of other genres such as Online

Ego Shooters and Real-Time Strategy games. This suggests that highly immersive and socially interactive gaming environments may pose a greater risk for psychological difficulties, a conclusion consistent with the present study's focus on prolonged gaming duration.

From a motivational perspective, Wan and Chiou (2006) identified four key factors that sustain engagement in online gaming: appealing game design, reward systems and role-playing achievements, opportunities for social interaction and virtual relationships, and the fulfillment of unmet psychological needs. These reinforcing mechanisms may contribute to extended gaming sessions and increase the likelihood of maladaptive use, thereby elevating the risk of depressive symptoms.

STATEMENT OF THE PROBLEM

The problem under investigation is stated as follows:

"Online Gaming Engagement and Its Link to Depression Among College Students

DEFINITION OF THE KEY TERMS

The definition of key terms is given below:

Online Gaming Engagement: Online gaming refers to engagement in any type of game that someone can play through the Internet or over a computer network.

Depression: Depression (major depressive disorder) is a common and serious medical illness that negatively affects how you feel, think, and act.

HYPOTHESES

The duration of online gaming engagement has a significant effect on depression.

III. NEED AND SIGNIFICANCE OF THE STUDY

With rapid technological advancements, online gaming has witnessed substantial growth in recent years, leading to increased participation among students. This rising engagement has raised concerns among parents and educators regarding its potential negative impact on students' well-being. Excessive involvement in online gaming has been associated with several adverse outcomes, including reduced motivation, sleep disturbances, dehydration, and mental health issues such as depression. In light of these concerns, the present study aims to examine the relationship between online gaming and depression among students, thereby highlighting the psychological implications of gaming behaviour and emphasizing the need for awareness and intervention.

IV. METHODOLOGY

In the present study, the investigator adopted the normative survey method. This method is used to describe and interpret existing conditions as they occur in real-life settings. It focuses on understanding current relationships, prevailing practices, commonly held beliefs, attitudes, and viewpoints, as well as ongoing processes, influences, and emerging trends. Accordingly, the methodology was carefully designed to examine the variables under study and to test the hypotheses formulated for the present investigation.

SAMPLE

Sample size of the present study is 300. The participants were college students from Kerala. The sample was taken by using the characteristic of stratified random sampling technique.

VARIABLES

The main variables in this study are Online gaming Depression

TOOL

The Centre for Epidemiological Studies Depression (CES-D) Scale, developed by Radloff (1977), is a widely used 20-item self-report measure designed to assess depressive symptoms experienced during the past week. It includes items related to mood, somatic complaints, and interpersonal difficulties. Responses are recorded on a four-point scale ranging from *Rarely* to *Most of the time*. The total score ranges from 0 to 60, with higher scores indicating greater depressive symptomatology. A cut-off score of 16 or above suggests risk for clinical depression.

The CES-D demonstrates strong psychometric properties, with high internal consistency (Cronbach's α ranging from 0.85 to 0.90) and acceptable test–retest reliability (0.45–0.70). Its validity is supported by moderate correlations with established clinician-rated measures of depression, such as the Hamilton Rating Scale and the Raskin Rating Scale.

V. STATISTICAL TECHNIQUE

One way analysis of Variance (ANOVA)
One way analysis of variance was used to compare the means of two or more samples. It may be mentioned that the ANOVA furnishes an over all test of significance of the difference among means of the three groups of subjects, for a variable. Analysis of Variance as explained by Garrett (2007) was carried out for calculating the F ratios. If the result of Anova showed significant F ratio, it meant that at least in one comparison there would be significant difference. The F- ratio 3.03 (df=2, 297) was considered to be significant at 0.05 level and the F- ratio 4.68(df=2, 297) was considered to be significant at 0.01 level. To identify the groups, which showed significant difference, Duncan test was done

VI. RESULTS AND DISCUSSION

The following section presents the detailed analysis, interpretation, and discussion of the results.
Comparison of the College Students Categorized on the Basis on Duration o Online Gaming for the variable Depression
The analysis of variance was done, for comparing the college students on the basis of their duration of online gaming The details of the results of ANOVA are given in Table 1

TABLE 1 Anova Results: Comparison of College Students Categorized on the Basis of Duration of Online Gaming for the Variable Depression (df = 2, 297)

++Variable	Sum of Squares		Mean Square (Variance)		F
	Between groups	Within groups	Between groups	Within groups	
Depression	242.27	5936.39	121.14	19.98	6.06**

Note: ** indicate that F is significant at 0.01 level

The findings of the present study are consistent with much of the existing literature. The ANOVA results revealed a statistically significant difference in depression levels among college students categorized based on the duration of online gaming (F = 6.06, $p < 0.01$). This indicates that the amount of time spent gaming has a meaningful impact on depressive symptoms.

TABLE 2 Duncan Procedure: Comparison of College students Categorized on the Duration of Online Gaming for the Variable Depression

Duration of Online Gaming		N	Mean	Level of Significance		
				1	2	3
1	Above 6 hours	117(N1)	36.96	( )	*	*
2	3-6 hours	79(N2)	33.04	_	( )	*
3	1-3 hours	104(N3)	31.79	_	_	( )

Note: * indicates significant difference.

Table 2 indicated that the mean value for the variable depression obtained by the college students who engages in online gaming for more than 6 hours a day (N1=117) was 36.96, for those whose average gaming time were between 3-6 hours (N2=79) it was 33.04, and for those whose average gaming time was only between 1-3 hours (N3=104) the score was 31.79. The table also indicated that there existed significant differences among the three groups in the variable depression This means that depression experienced by these three categories of college students were different.
Further analysis using Duncan’s Multiple Range Test showed that students who engaged in online gaming for more than six hours per day reported the highest mean depression score (M = 36.96), followed by those gaming for three to six hours (M = 33.04), while students gaming for one to three hours exhibited the lowest levels of depression (M = 31.79). These results suggest a clear dose–response relationship, where

increased gaming duration is associated with higher levels of depression.

These findings closely parallel the results of Han-Ting et al. (2012) and Partha et al. (2019), both of whom reported that longer gaming duration predicted higher depressive symptoms. The present study also aligns with Edoardo et al. (2021), emphasizing that prolonged engagement in online gaming—even in the absence of a formal IGD diagnosis—can significantly elevate depressive symptomatology.

However, some contrasting evidence exists in the literature, where moderate gaming has been associated with stress relief, social connection, and improved mood. Such findings suggest that gaming itself is not inherently harmful; rather, it is excessive and prolonged engagement that poses psychological risks. The present study supports this distinction by showing that students who limited gaming to one to three hours per day reported comparatively lower levels of depression.

Overall, the results indicate that excessive online gaming is a significant risk factor for depression among college students. Prolonged gaming may contribute to social isolation, disrupted sleep patterns, academic difficulties, and reduced real-life social engagement, all of which can exacerbate depressive symptoms. These findings highlight the importance of promoting balanced gaming habits and increasing awareness of the potential mental health consequences associated with excessive online gaming.

VII. MAJOR FINDINGS AND CONCLUSION

The findings of the present study clearly indicate that excessive online gaming is a significant risk factor for depression among college students. The results demonstrate a consistent increase in depressive symptoms with longer durations of online gaming, highlighting a dose–response relationship between gaming time and mental health outcomes. Students who engaged in online gaming for more than six hours per day exhibited the highest levels of depression, while those who limited gaming to one to three hours reported comparatively lower depressive symptoms.

These findings are in line with previous research (Han-Ting et al., 2012; Partha et al., 2019; Edoardo et al., 2021), which emphasizes that prolonged gaming duration is associated with heightened psychological distress. While moderate gaming may offer benefits such as relaxation, enjoyment, and social interaction, excessive and uncontrolled engagement appears to disrupt sleep patterns, reduce real-life social involvement, and interfere with academic functioning—factors that can intensify depressive symptoms.

VIII. IMPLICATIONS OF THE STUDY

The present study underscores the importance of promoting balanced and responsible gaming practices among college students. Studying the effect of online gaming on individuals becomes important as it has been found to have many adverse effects on people such as lack of motivation, poor sleep, dehydration, depression etc. Excessive gaming creates an environment where individuals are often isolated in the physical world, such as in their room and they may have withdrawn from friends and family, and often, exercise is sparse. This environment and lifestyle can lead to feelings of depression. The findings of this study contribute to further clarity on these issues of online gaming.

Awareness programs, parental and institutional guidance, and mental health interventions should focus on encouraging healthy gaming habits while addressing underlying emotional needs that may drive excessive gaming. Early identification of problematic gaming behavior can play a crucial role in preventing the progression of depression and improving overall psychological well-being among young adults.

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