# Gaming addiction and its impact on emotional intelligence among school students during COVID-19 pandemic.

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## Abstract

**Background:** Internet addiction has become a major issue all over the world. Internet addiction in adolescents could be a serious crisis comparable to drug addiction in terms of personal life, family relationships, social behavior and academic standing. According to scientific evidence, people with higher emotional intelligence are less addicted to the internet. However, the type and strength of this relationship are still up for debate. Our study aims to understand the level of emotional intelligence and online game use among adolescents and emotional intelligence based on gender with the level of gaming addiction.

**Materials and methods:** A cross-sectional study was conducted among 417 adolescent children of age 10-19 in the schools of Dharmapuri district from March 2021 to April 2021. Simple random sampling techquine is used to select the schools and students. Game addiction scale for adolescent and 30 item emotional intelligence scale (TEIQue-SF) was used as a standard tool.

**Results:** A total of 471 children between the ages of 10 and 19 were included in the study. Game addiction received the lowest possible score of 21 and the best possible score of 105. The lowest possible score for emotional intelligence was 30, and the best possible score was 150. Males and girls had no statistically significant differences in gaming addiction and emotional intelligence at (p>0.05). There was a statistically significant correlation (p<0.05) between tolerance and sociability, mood modification and self-control, relapse and sociability.

**Conclusion:** Excessive time spent in front of a computer and web overuse may be harmful to various aspects of their lives, including social, functional, physical and psychological aspects and may cause them to neglect other important priorities, putting them at risk for a variety of morbidities and in the worst-case scenario, mortality. Happiness includes a variety of positive emotional and cognitive states, as well as the absence of depression.

## Introduction

The World Health Organization (WHO) recognized gaming disorder in the eleventh revision of the International Classification of Diseases (ICD-11) as a disorder that threatens public health and well-being. The WHO described gaming disorder as manifesting impaired control over gaming, increasing priority given to gaming and continuation of gaming despite its negative consequences. Consequently, Internet Gaming Disorder (IGD) can have major detrimental effects on individuals, including depression, anxiety, stress, psychosocial problems and lower psychological well-being and consequently deserves recognition and further examination. The growth of the Internet has been explosive worldwide, while in the same way as other products of the new era, communications are also a concern, in other words, both destructive and straightforward. Online games are a popular form of entertainment for children, adolescents and young adults. China, the United States, Japan, South Korea, Germany, the United Kingdom, France, Spain, Canada and Italy are among the countries with the highest revenue growth rates, with an estimated global growth rate of 8.5 percent. Adolescence is often seen as a time in life when vulnerability to addiction is at its peak and game addiction is no exception. Online playing games bring forth adolescents to feel achievement from winning the games, making friends and interacting with them in virtual reality, experiencing a sense of belonging, living in the metastate and finding relief from stress. Excessive game users have been found to interfere with the healthy growth and development of adolescents, thus leading to behavioral and social maladjustment [1]. Emotional problems such as depression, loneliness, anxiety and aggression have also been identified as consequences of adolescent online game overuse. Emotions have a significant impact on our rational thoughts and behaviours. Emotional competence is defined as recognizing and expressing one's emotions based on emotional intelligence. As opposed to negative sentiment, positive emotion improves mental health and helps reduce the effects of negative emotions, resulting in psychological resilience.

People who have had positive emotional experiences are more likely to be socially integrated and healthy.

## Materials and Methods

This cross-sectional study was conducted among adolescents aged 10-19 in schools of Dharmapuri district, Tamilnadu, from March 2021 to April 2021. Six schools have been selected through simple random sampling. Each two schools have been chosen from government, private and government aided to avoid biases. The lottery method is used to recruit the samples from each schools [2]. Adolescents with an online gaming habit are included in the study. In contrast, those who do not have a gaming habit, have not played any games in the last month or are unwilling to participate in the study are excluded.

### Sample size calculation

Sample size was calculated using open-epi software version 3.01. with 80% Confidence Interval (CI), 90% power, considering 20%. The hypothesized % frequency of outcome factor in the population was kept at 50%. The absolute precision level was considered 4%. Thus total sample size was 417. The data obtained from the study was entered and coded in microsoft excel and exported to r studio. The data has been analyzed using r studio version 1.2.1093. Mann-Whitney U test and bivariate correlations were performed.

P-value<0.05 was considered statistically significant. Informed consent was obtained from each participant [3].

### Statistical analysis

Descriptive analysis was carried out by frequency and proportion for background characteristics of the study population. Percentiles ($3^{rd}$, $5^{th}$, $25^{th}$, $50^{th}$, $75^{th}$, $95^{th}$ and $97^{th}$) were presented for gaming addiction score and emotional intelligence score. As data were not normal, median and Interquartile Range (IQR) of gaming addiction score and emotional intelligence score were compared between male and female using Mann Whitney U test. Bivariate correlations between gaming addiction score and its dimensions with emotional intelligence score and its dimensions were presented. P value<0.05 was considered statistically significant. A regression tree was visualized to predict which dimension of emotional intelligence was more important in determining gaming addiction [4].

## Results

The study tool included 21 item game addiction scale for adolescents and 30 item emotional intelligence scale (TEIQue-SF) as a standardized questionnaire. The questionnaire was prepared in Tamil (Local language) (Table 1).

| Background characteristics | | Frequency | Percentage |
|---|---|---|---|
| Gender | Female | 439 | 0.932 |
| | Male | 32 | 0.068 |
| Age group | ≥ 15 | 207 | 0.439 |
| | >15 | 264 | 0.561 |
| Grade | 9 | 155 | 0.329 |
| | 10 | 47 | 0.1 |
| | 11 | 170 | 0.361 |
| | 12 | 99 | 0.21 |
| Favourite game | Free fire | 94 | 0.2 |
| | Temple run | 63 | 0.134 |
| | Candy crush | 45 | 0.096 |
| | Subway surf | 42 | 0.089 |
| | PUBG | 27 | 0.057 |
| | Carrom pool | 26 | 0.055 |
| | Others | 174 | 0.369 |

***Table 1.*** Background characteristics of the study population.

A total of 471 children aged 10 to 19 were included in the study. Table 1 displays the background characteristics of the studied children [5]. The mean age of children was 15.5 years (SD ± 1.3), of which the majority were females (93.2%), more than 15 years of age (56.1%) and grade 11 students (36.1%). The favorite game of the majority of the studied children was free fire (20%) (Table 2).

| Parameter | 0.03 | 0.05 | 0.25 | 0.5 | 0.75 | 0.95 | 0.97 |
|---|---|---|---|---|---|---|---|
| **Gaming addiction score** | 24 | 26.5 | 42 | 55 | 63 | 75 | 76 |
| **Emotional intelligence score** | 78 | 80 | 86 | 90 | 95 | 101.5 | 103 |

***Table 2.*** Percentile table of gaming addiction score and emotional intelligence score.

The lowest possible score for game addiction was 21, and the highest possible score was 105. For emotional intelligence, the lowest possible score was 30, and the highest possible score was 150.

Only 25% of children had a gaming addiction score of more than 63, whereas only 25% had an emotional intelligence score of more than 95 (Table 3).

| Parameter | Gender | | P value |
|---|---|---|---|
| | **Female (n=439)** | **Male (n=32)** | |
| | **Median (IQR)** | **Median (IQR)** | |
| Gaming addiction score | 55 (42, 63) | 56 (47, 66.25) | 0.217 |
| Emotional intelligence score | 90 (85, 95) | 91 (88, 94.25) | 0.4 |

***Table 3.*** Comparison of gaming addiction score and emotional intelligence score between males and females.

Both gaming addiction scores and emotional intelligence scores were not statistically different between males and females (p>0.05) (Table 4).

| Variables | Emotional intelligence | Emotionality | Self-control | Wellbeing | Sociability |
|---|---|---|---|---|---|
| Gaming addiction | -0.0313 | -0.0663 | -0.0722 | 0.041 | -0.0174 |
| Salience | 0.0125 | -0.0016 | -0.0665 | 0.0325 | 0.0329 |
| Tolerance | -0.0575 | -0.0116 | -0.0359 | -0.0048 | -0.0985* |
| Mood modification | -0.0515 | -0.058 | -0.0982* | 0.0558 | -0.0171 |
| Relapse | -0.0752 | -0.089 | -0.0275 | 0.0261 | -0.0976* |
| Withdrawal | -0.0133 | -0.0328 | -0.0692 | -0.0021 | 0.033 |
| Conflict | 0.0133 | -0.0794 | -0.0397 | 0.0457 | 0.0242 |
| Problems | 0.0174 | -0.0471 | -0.0191 | 0.0501 | 0.0341 |

***Table 4.*** Correlation of gaming addiction and its dimensions with emotional intelligence and its dimensions.

The correlation between tolerance and sociability, mood modification and self-control, relapse and sociability were statistically significant (p<0.05). However, all these three significant correlations were negative and very weak (Figure 1).

The regression model used for the decision tree is given as: Gaming addiction~emotionality+self-control+wellbeing +sociability

At the top, it is the average game addiction score, *i.e.*, about 53. The most important factor in predicting game addiction is self-control. Children whose self-control score is less than 17 tend to be more addicted to the game.
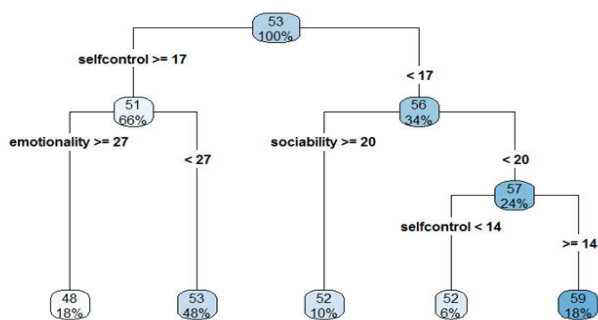


***Figure 1.*** Decision tree for predicting gaming addiction.

Among those whose self-control score is ≥ 17, emotionality plays a role in determining game addiction, *i.e.*, children with an emotionality score less than 27 tends to be more addicted to the game among those whose self-control score is ≥ 17.

Children with a sociability score of less than 20 tend to be more addicted to the game than those whose self-control scores are less than 17. Again, for those children whose self-control score is less than 17 and sociability score is less than 20, self-control plays the decisive role *i.e.* having a self-control score ≥ 14 tends to be more addicted to the game among those children whose self-control score is less than 17 and sociability score is less than 20 [5].

## Discussion

This is the first study to examine the emotional intelligence of adolescents with internet gaming disorder in Tamil Nadu. Based on the findings and results of this study, it is concluded that there seems to be no difference in emotional intelligence and gaming addiction between males and females and there exist a correlation between tolerance and sociability, mood modification and self-control, relapse and sociability with a value less than 0.05 showing that statistically significant [6,7]. A study done by Christakis and Flisher revealed that Internet Gaming Disorder (IGD) might lead to negative consequences of psychological, social and work functioning and has become the major source of adolescent crimes [8]. A study by Pontes, et al. demonstrated that the participants obtained uniform scores among IGD-20 subscales on salience, withdrawal, tolerance, relapse, mood modification which were similar to our study. According to Robert Kraut, et al., two components of stress tolerance and pulse control are included in emotional management. This means that a person with a little score cannot tolerate mental stress and control his shocks. In our study, 25% of children had a gaming addiction score of more than 63, whereas 25% of children had an emotional intelligence score of more than 95 [9]. Low emotional intelligence creates a barrier to good interpersonal relationship and everyday stress, without any escape and overuse of the internet by the individual. Based on the findings, the overuse of the Internet represents a risk to the health of a significant part of the adolescent and young adult population. According to the results, students with high Emotional Intelligence scores are less addicted to internet games. Online game addiction should be prevented for improving individual and social relationships [10].

## Conclusion

According to the findings of our study, adolescent online game use and emotional competence are closely related. Positive emotion, emotional expression and EI are all low in high-risk game users. As a result, anticipatory guidance should be provided to online game users and their parents to help them understand that excessive game use may negatively impact emotions. As a result, further experimentation with a more comprehensive level of analysis is necessary to examine the cause and effects of pathological internet use.

## Acknowledgement

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