PREVALENCE OF ONLINE GAMING

Esports and related Psychological Variables
Prevalence of Online Gaming

Esports, and related Psychological Variables

This study is a collaborative effort of CyberPeace (CPF) and National Institute of Mental Health and Neurosciences-Medical School (NIMHANS).

CyberPeace is an award-winning global civil society organisation, think tank of cybersecurity and policy experts with the vision of pioneering CyberPeace initiatives to build collective resiliency against CyberCrimes & global threats of cyber warfare. CyberPeace is involved in Policy Advocacy, Research and Training related to all aspects of CyberPeace and CyberSecurity. Key areas of CyberPeace’s work are in Technology Governance, Policy Review and Advocacy, Capacity and Capability creation and building through partnerships with various government organisations, academic institutions and civil society entities.

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# TABLE OF CONTENTS

- List of Tables 01
- List of Figures 02
- Acknowledgement 03
- Summary 04

## 01 Introduction 05
- 1.1 Scope and Purpose of the study
- 1.2 Research Design and Methodology
- 1.3 Ethical consideration

## 02 Review of Literature 09
- 2.1 Types of gamers
- 2.2 Risks related to online gaming and esports
- 2.3 Effect of online gaming and esports on physical wellbeing
- 2.4 Effect of online gaming and esports on mental wellbeing
- 2.5 Case studies on gaming addiction
- 2.6 How to identify gaming addiction?
- 2.7 How to cure gaming addiction?

## 03 Study Findings and Discussion 23
- 3.1 Profile of the respondents
- 3.2 Time spent on gaming
- 3.3 Type of games preferred
- 3.4 Online gamers and their engagement in esports competition
- 3.5 Gaming Behaviour
- 3.6 Gaming Motivation
- 3.7 Psychological distress due to online gaming
- 3.8 Internet Gaming Disorder (IGD)
- 3.9 Musculoskeletal Symptoms due to online gaming
- 3.10 Psychosomatic Symptoms due to online gaming
- 3.11 Healthy gaming practices
# TABLE OF CONTENTS

## Discussion

4.1 How to prevent gaming addiction?

4.1.1 Role of parents

4.1.2 Role of the gaming industry

References 41

Appendix 45
<table>
<thead>
<tr>
<th>TABLE NO.</th>
<th>HEADING</th>
<th>PAGE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Self-esteem and impulsivity level of different types of gamers</td>
<td>11</td>
</tr>
<tr>
<td>2</td>
<td>Age group of the respondents</td>
<td>23</td>
</tr>
<tr>
<td>3</td>
<td>Gender of the respondents</td>
<td>23</td>
</tr>
<tr>
<td>4</td>
<td>Education Qualification of the respondent</td>
<td>24</td>
</tr>
<tr>
<td>5</td>
<td>Type of online gamers</td>
<td>27</td>
</tr>
<tr>
<td>6</td>
<td>Frequency of participation in Esports competitions</td>
<td>27</td>
</tr>
<tr>
<td>7</td>
<td>Method used to train (or improve) online gameplay</td>
<td>28</td>
</tr>
<tr>
<td>8</td>
<td>Average time spent on a game</td>
<td>29</td>
</tr>
<tr>
<td>9</td>
<td>Motive for gaming</td>
<td>30</td>
</tr>
<tr>
<td>10</td>
<td>Kessler psychological distress scale</td>
<td>31</td>
</tr>
<tr>
<td>11</td>
<td>Internet Gaming Disorder Scale</td>
<td>32</td>
</tr>
<tr>
<td>12</td>
<td>Musculoskeletal Symptoms Scale</td>
<td>33</td>
</tr>
<tr>
<td>13</td>
<td>Psychosomatic Symptoms Scale</td>
<td>34</td>
</tr>
</tbody>
</table>
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>FIGURE NO.</th>
<th>HEADING</th>
<th>PAGE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Total global video games revenue</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>Average time spent on gaming during weekdays</td>
<td>24</td>
</tr>
<tr>
<td>3</td>
<td>Average time spent on gaming during weekends</td>
<td>25</td>
</tr>
<tr>
<td>4</td>
<td>Type of games preferred by adolescents and young adults</td>
<td>26</td>
</tr>
<tr>
<td>5</td>
<td>Recommended healthy online gaming practice</td>
<td>35</td>
</tr>
<tr>
<td>6</td>
<td>Adverse consequences of excessive online gaming</td>
<td>36</td>
</tr>
</tbody>
</table>
ACKNOWLEDGEMENT

This study is a collaborative effort of CyberPeace (CPF) and National Institute of Mental Health and Neurosciences-Medical School (NIMHANS). As an organisation working in the area of cyber safety CPF observed that there has been an increase in engagement of people in online gaming and esports, and with the increase, it has become essential to explore its harmful impact on adolescents and young adults. NIMHANS working as a center for mental health, neurosciences, and allied joined us and provided us with the support to conduct the study.

We thank all the schools and colleges who supported us in the data collection process. We want to thank the following individuals from CPF and NIMHANS for their contribution to the study. We thank Dr. Manoj Kumar Sharma, Professor of Clinical Psychology, SHUT clinic (Service for Healthy Use of Technology), NIMHANS, for guiding us throughout the study and helping us to create the survey questionnaire and finalising the report. Major Vineet Kumar, Founder and President, CPF, for proposing the study and for his constant support throughout the study. Mr. I.L. Narasimha Rao, Sr. Project Manager, CPF, to reach out to the schools and colleges for the data collection process. Finally, Ms. Bhawna Goswami, Assistant Trainer, CPF, for designing and executing the research study and drafting the research report.

*We once again thank each and every one for bringing this project to success.*
SUMMARY

Online gaming is becoming a big market, and it is going to keep on expanding. With this escalating consumption of online games, addiction has become an alarming concern. In this context, this study attempted to understand the prevalence of Online gaming, Esports, and its effect on the mental and physical health of adolescents and young adults. A total of 657 adolescents and young adults participated in the study from different states of India.

The study explored their gaming pattern and tried to understand the motivation behind engagement in online gaming and Esports. The study also examined various other factors like the psychological distress caused by online gaming, Internet gaming disorder, musculoskeletal symptoms, and psychosomatic symptoms due to online gaming.

KEY FINDINGS

- Adolescents and young adults spend more time on online gaming during weekends.
- Action-adventure games are the most popular games among adolescents and young adults.
- Not only professional players but casual players participate in esports competitions too.
- Some respondents were likely to have moderate to severe psychological distress.
- Majority of the respondents were found to be well on the Internet Gaming Disorder Scale, and Musculoskeletal and Psychosomatic symptoms scale.
- Majority of the respondents have knowledge about healthy gaming practices and the adverse effect of excessive gaming.
01 INTRODUCTION

Online gaming is becoming a big global market. According to PricewaterhouseCoopers (n.d.), the gaming industry is currently worth $236 billion, and it has been estimated that by 2026 it could be worth $321 billion.

1.1 Scope and Purpose of the study

Throughout FY21–FY25, the Indian online gaming market is anticipated to expand at a rate of 21%, reaching a size of 29,000 crores. Online gaming is particularly popular among children and teenagers, yet it is also enjoyed by adults (CyberPeace Foundation, n.d.).

A difference between Esports and online gaming has been established and the Government of India has officially recognised Esports as a part of “multi-sport” event (ANI, 2022). Gaming addiction has become an alarming concern due to excessive engagement. It has been found that Indian gamers spent 8 hours 36 minutes playing online games which are higher than the global average of 8 hours 27 minutes. gamers between the ages of 18-25 spend an average of 6 hours playing online games.

![Figure 1: Total global video games revenue](image-url)
World Health Organization (2020), has named this addiction a ‘Gaming Disorder’. Gaming disorder has been defined in the International Classification of Diseases 11th revision (ICD-11) as “a pattern of gaming behavior (‘digital-gaming’ or ‘video-gaming’) characterized by impaired control over gaming, increasing priority given to gaming over other activities to the extent that gaming takes precedence over other interests and daily activities, and continuation or escalation of gaming despite the occurrence of negative consequences”.

Although gaming disorder affects a small proportion of people, people who engage in online games should be alert and should keep a check on the amount of time they are spending on online gaming activities. Excessive involvement in online games can lead to mental and physical health issues (Singh et.al., 2021).

In this context, this study attempts to understand the prevalence of Online gaming, esports, and its effect on mental and physical health. The study does not aim to generalize the findings but intends to understand the impact caused by engaging in online gaming. The objectives of the study are:

- To know the prevalence of online gaming, Esports, and psychological variables among adolescents and young adults.

- To understand the physical and psychological impact of online gaming and Esports among adolescents and young adults.
1.2 Research design and methodology

For the research study a descriptive research design was used to know the prevalence of online gaming, esports, and its physical and psychological impact on adolescents and young adults. According to WHO (2019), children between the age of 10-19 are considered adolescents, and people between the ages of 19-24 are considered young adults.

The Snowball sampling method was used for data collection. A google form link was shared with the Head of Departments of various schools and colleges from different states of India. They shared the link further with their students. We received most of the responses from students between the ages of 10-18 and 19-24. We also received a few responses from nine years old children. Earlier we planned a sample size of 600, as we started the data collection process we received a good number of responses and collected data from 657 individuals.

The inclusion criteria were the adolescents and young adults who engage in online gaming from a PC, Mobile, Laptop, Tablet, or console, and either were casual, hardcore, or professional players. People who do not engage in any form of online gaming were in the exclusion criteria.

A structured questionnaire was used to collect information on the amount of time spent on online gaming, the type of gamer they are, the type of game they prefer to play, their motivation for gaming, and the psychological and physical impact caused by online gaming. The following scales were used to assess different aspects of online gaming.

**Motives for Gaming:** To assess the motivation for gaming a tool developed by Zsolt et al. (2011) was adopted and modified. Originally it was a 56 items scale but for this study, we selected 12 items and assessed it on a five-point Likert scale.

**Psychological Distress:** The Kessler Psychological Distress Scale (K10) was used to measure psychological distress (Overview of the Kessler Psychological Distress Scale (K10), n.d.). The K10 scale involved 10 questions about emotional states each with a five-level response scale. The measures were used as a brief screen to identify levels of distress.
**Internet Gaming Disorder (IGD):** Internet Gaming Disorder Scale – Short Form (IGDS9-SF; Pontes & Griffiths, 2015) was adopted to assess the IGD. The items of this psychometric scale were developed based on the nine proposed criteria from the DSM-5 for the diagnosis of the disorder. This scale was constructed to assess the severity and harmful effects of IGD. Online or/and offline gaming activity over the course of the last 12 months was evaluated.

**Musculoskeletal Symptoms and Psychosomatic Symptoms (Hellstrom et al., 2015):** The musculoskeletal symptoms scale consists of three items whereas the psychosomatic symptoms scale consists of five items (ranging from “never” to “always”) was used.

The test-retest method was used to pre-test the questionnaire. Pre-testing was done on 17 individuals, 6 of them were adolescents and the remaining 11 were young adults. Pre-testing helped us to know whether the respondents are able to understand the questions or not. It also helped us to understand whether the responses are giving us data according to the objectives. After pre-testing it was found that some modifications were required in the questionnaire so that respondents can better understand the questions. After the modification, the questionnaire was shared.

For the analysis of the data google sheets was used. A code sheet of the responses was created and all the responses were coded. Some questions also required scoring. After the data analysis, an interpretation of the findings was done.

### 1.3 Ethical Consideration

- Informed consent was taken from the respondents.
- No one was forced to participate in the study.
02 REVIEW OF LITERATURE

Internet penetration rate is increasing day by day in both urban as well as rural parts of the country. Internet and Mobile Association of India (IAMAI) reported that currently, India has 692 million active internet users (Bureau, 2022).

It has been estimated that by 2025 this number will reach 900 million. With this increasing internet usage, more and more people are engaging in online gaming and Esports. India recorded nearly 390 million online gamers in 2021 and will reach 450 million by 2023 (Basuroy, n.d.). India is a vast market for online gaming as almost 41% of India’s population is below the age of 20 years (IANS, 2022). According to the Internet and Mobile Association of India (IAMAI), India’s Esports industry currently has 430 million mobile gamers and is expected to grow to 650 million by 2025. Esports is a popular culture among adolescents and young adults (Thakur et al., 2021).

Gaming is becoming a new behavioral addiction, especially among adolescents, about 3.5% of Indian adolescents suffer from Internet Gaming Disorder (IGD) which is 1.5% higher than the global average. Studies have shown that 3% of girls and 8% of boys suffer from IGD. The main reason for this disorder is extended screen time because of smartphones. Everything is now available on a small screen which is very addictive. World Health Organization (WHO) has reported that addiction to online gaming is like any other addiction. The gamers get trapped in a situation called the ‘Passivity Phenomena’. They get so involved in the game that it controls them, and if someone stops them from playing, they become aggressive and violent. Online gaming has become an activity that occurs on a spectrum of healthy to harmful (Adair, n.d.). On this spectrum, there are four different types of gaming behavior.

1. Recreational gaming

Gaming is a regular part of life, it is a positive habit. People manage to prioritize their responsibilities while taking out time to play games.

2. At-risk gaming

When gaming starts causing issues in day-to-day life. If gaming is continued it may result in many problems and will reach the level of disordered gaming.
3. Problematic gaming

When gaming begins to replace daily tasks and commitments it becomes problematic. It may start affecting the player’s mental and physical health and may cause issues in family relationships and dynamics.

4. Disordered gaming

This type of gaming is the stage of addiction. The player is not able to control themselves. This stage is the stage of ‘Gaming disorder’

All types of gaming activities fall under this spectrum.

2.1 Types of gamers

In a study conducted by Joel Billeux and his team in 2015, it was found that there are different types of gamers. They identified nine types of gamers.

- Casual gamers
- Social gamers
- Mobile gamers
- The achiever
- The escapers
- Hardcore gamers
- Heavy (at-risk) gamers
- Problematic gamers
- Disordered gamers
<table>
<thead>
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<th>Type of Gamers</th>
<th>Self-esteem level</th>
<th>Impulsivity level</th>
</tr>
</thead>
<tbody>
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<td>Casual</td>
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<td>Low</td>
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<tr>
<td>Social</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Achiever</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Escaper</td>
<td>Low</td>
<td>Avoid difficult emotions</td>
</tr>
<tr>
<td>Hardcore</td>
<td>High</td>
<td>High</td>
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</tbody>
</table>

*Table 1: Self-esteem and impulsivity level of different types of gamers*

2.1 Types of gamers

1. Casual gamers

Casual gamers are also called recreational gamers. Gaming is one of their hobbies. For casual gamers, gaming is not a basic necessity, they do not play games to escape or to feel a sense of achievement.

2. Social gamers

Social gamers have relatively low self-esteem than casual gamers. They play games for the social experience and relish making virtual characters and the role-playing opportunities this brings. They do not attempt to interchange their real-life identity.

3. Mobile gamers

Mobile gamers play games on their smartphone. Everyone does not have a PC or a console; in that case, gamers enjoy smartphones. Smartphones give them the flexibility of engaging in games anywhere, anytime. Games can be accessed anywhere 24/7 which can lead to problematic play.
4. The achiever

Achiever plays games to excel and become a master in the game. They are not interested in socializing, role-playing, or escaping from real life. They lack self-control and cannot resist the immediate gratification received by playing games. They like to engage in competitive games.

5. The escapers

For escapers, gaming is a coping mechanism. It helps them to deal with negative moods and helps them to escape real-life difficulties.

6. Hardcore gamers

Hardcore gamers are a mix of achievers and escapers. Escapism and achievement motivate them and gaming defines their sense of self. Role-playing is an important part of their game.

7. Heavy (at-risk) gamers

Heavy gamers spend most of their leisure time playing games yet it does not interrupt their daily life. They can manage all other responsibilities and do not feel irritated or moody due to games. They are at risk as their gaming can overpower other leisure activities.

8. Problematic gamers

Problematic gamers are at-risk gamers experiencing the negative consequences of gaming. This type of gaming is more severe than heavy gaming.

9. Disordered gamers

Disordered gamers are addicted to gaming. They feel all the negative consequences yet cannot stop playing. They need the help of a qualified professional as they suffer from gaming disorder.
2.2 Risks related to online gaming and Esports

Without the right guidance adolescents and young adults can get exposed to many risks like in-game cyberbullying, sexual grooming, gaming addiction, etc. Some of the potential risks are

**Gaming addiction**

01 Excess gaming can lead to gaming disorder. There is a pattern of chronic or recurrent gaming behavior that helps to determine whether a person is suffering from gaming disorder or not (Adair, n.d.). These are-

02 A decline in control over gaming (e.g., initiation, duration, frequency, intensity, context, termination).

03 A rise in the importance of gaming to the point where it trumps other life interests and everyday activities.

Gaming is continued or intensified even after the development of detrimental effects. The behavior pattern is severe enough to significantly affect one's ability to operate in one's personal, familial, educational, social, occupational, or other areas.

The Diagnostic and Statistical Manual of Mental Disorders (DSM-5) published by the American Psychiatric Association, which is used by mental health professionals to diagnose mental disorders, includes a section on gaming addiction (Parekh, 2018). According to the DSM-5, gaming must "significantly impair or distress" a person in a number of areas of their life. Internet gaming disorder has several potential symptoms, including-

- Obsession with gaming.
- Signs of withdrawal like sadness, irritability, and anxiety when gaming is prohibited or impossible.
- The desire to play video games more frequently to slake an urge.
- Inability to cut back on playing and failed attempts to stop gaming.
- Abandoning other activities and losing interest in previously favored hobbies due to gaming.
Keeping playing despite issues

Lying to loved ones or others about how much time is spent playing video games

**Sexual Grooming**

Sexual grooming is another risk, children get exposed to a lot of strangers via online games and one never knows who is real and who is fake. Sexual predators are now targeting children through games. They interact with children, create a bond, and talk to them in chat rooms and game lobbies. They manipulate the child and isolate them, once the child believes them, they sexualize the relationship and control the child (Megan, 2019).

**In-game Cyberbullying**

Verbal abuses inside game lobbies and chat rooms are becoming common. The perpetrators who bully others and show such negative behavior is called “Griefer” (Whittaker, 2020). Griefers interfere in the games of others, they deliberately abuse others and irritate them.

**In-app purchases**

There are many games that are free of cost, but once downloaded they ask for money to unlock characters and other things. In a shocking case, a man lost Rs. 39 lakhs because of his son. When he went to the bank he came to know that the amount had been transferred to a bank account in Singapore (HT Tech, 2022). The bank account belonged to the Krafton Company which runs several games including Battlegrounds Mobile India (BGMI).

**Risk of downloading malware**

Cybercriminals know that people look for free versions. They attach malware to the free versions of the games and get inside the systems very easily.

Along with these risks, gaming also impacts physical and mental well-being.
2.3 Effect of online gaming and Esports on physical well-being

Online gaming requires continuous use of hands and arms. “Overuse injuries”, also known as “repetitive stress injuries”, can occur due to repeated use of muscles and tendons to the point where discomfort and inflammation are produced (Grinspoon, 2020). Gamers frequently sustain overuse injuries to their hands and arms.

Online gamers are also susceptible to the condition known as "Gamer's thumb", formerly "PlayStation thumb". This condition develops when the tendons that allow the thumb to move become inflamed, it can cause swelling and restricted movement. Gaming can also cause a condition called “trigger finger”, also known as “stenosing tenosynovitis”, which occurs when persistent inflammation causes a finger to become stuck in the bent position. “Tennis elbow”, a painful inflammation of the area where the tendon penetrates into the bone on the outside of the elbow, can also affect gamers.

A study by Claire M. Lawley found that some children with arrhythmic diseases may be in serious danger from playing video games; they may be fatal in patients with previously undetected arrhythmic conditions (ANI,2022). Researchers studied 22 children and teens who suffered heart rhythm disturbances while playing video games. They observed that the children suddenly blacked out, and some died due to cardiac arrest. At the time of the cardiac arrest, many patients were excited, had just won or lost matches, or had conflicts with their companions.

Gaming is also associated with obesity as a person sits for long hours in front of the screen while playing. Also, the food intake increases due to mental stress during the game. Gamers have also reported problems with vision.

Eye Strain

is the most common problem which leads to poor concentration and headache.
2.4 Effect of online gaming and Esports on mental well-being

Playing online games in moderation may not have negative effects on mental health but excessive gaming can affect mental well-being (Adair, n.d.). The more you start engaging in online games the more you neglect other activities. Some common effects on mental well-being are:

**Depression**

Gamers who already have online game addiction, are more susceptible to depression. A study by Gonzalez-Bueso et.al. found that “up to 89% of problem gamers are also diagnosed with depression in addition to video game addiction”.

Some gaming enthusiasts have suffered from depression due to their negative gaming habits. This happened because they started ignoring other aspects of life, which are physical activity, special relationships, and a healthy diet (Forbes, 2022).
Social Anxiety

Social anxiety is another common problem among video gaming addicts (Adair, n.d.). The more a person engages in games, the more they experience social anxiety because they lose contact with real-life friends.

Many people start gaming due to the fact that they have social anxiety and games help them to escape from real life. For these people, gaming is a way to connect with others online. And once they do that, they begin neglecting their real-life relationships, worsening their current social anxiety. Once people start relying on online platforms and video games for socializing, they lose interest in having friends in real life.

Anxiety

Anxiety is a sense of fear and unease one gets due to their inability to predict the future. We all get anxious for different reasons like exams, interviews, meeting new people, or maybe public speaking. Till now no relationship between anxiety and gaming has been observed. But, gaming is used to escape from the real world to avoid all the problems and this escapism can become a problem.

If real-life problems are neglected for too long the anxiety worsens as it becomes difficult to catch what’s happening. Everything starts accumulating and it becomes difficult to manage them successfully, which will result in anxiety. Therefore, gaming may not cause anxiety, but it can worsen the existing one.
Lack of motivation

Excessive gaming also reduces motivation. Just like other hobbies gaming satisfy all of the needs, which are to socialize, be creative, and get immersed. But when involvement in gaming increases there is no motivation left to do other things as all the needs have been satisfied.

To deal with this issue it is important to try other hobbies so that it becomes easier to reduce gaming. A digital detox can be done to refocus on priorities and engage in healthy activities that will address the same needs as gaming.

Poor emotional regulation

Games can hamper your ability to deal with your emotions properly. It has been seen in the studies that people who are diagnosed with IGD are more likely to be depressed, anxious, and aggressive. Games are often seen as one of the ways to escape from emotions and this can cause the inability to control and regulate emotions. Games temporarily numb all negative emotions and when played excessively emotions become more intense.

Interpersonal conflict

Gaming can also create conflicts in interpersonal relationships. Violent games can have a more pronounced negative effect on gamers than non-violent ones. Online communities can be toxic due to which a person can feel anger and frustration which comes out on other people. Games do provide opportunities to socialize with others but sometimes these opportunities can worsen relationships with family, and close friends. All this can cause other mental health issues as well.

Suicidal thoughts

In extreme cases the addiction can get out of hand and suicidal thoughts may arise in some individuals. Gaming can make one lose track of other activities before you even know it. Focusing on important things becomes difficult and in no time gaming becomes the only priority. At this point, treatment is required.
2.5 Case studies on gaming addiction

Case Study 1

A 16-year-old boy from Lucknow killed his mother for not letting him play the online game PUBG (Rehman, 2022). The boy was addicted to the game and when his mother stopped him from playing he decided to kill her using his father’s licensed pistol. He shot her dead at around 3 am while she was sleeping and threatened his 10-year-old sister saying if she tells anyone he will kill her too. He hid her body inside the house for 2 days and used room freshener to mask the smell of the body. When the incident happened his father was out of the station and came to know about the murder when he called the mother. The boy narrated a false story that an electrician killed her, an FIR was lodged and the truth came out during the investigation.

Case Study 2

A class 9th student from Prayagraj hanged himself to death after his father scolded him for playing mobile games (Srivastava, 2022). Father observed that the boy is spending more time on devices which are affecting his studies. The boy went inside his room and locked the door after the father scolded him. The next morning the family found the boy’s body hanging from the fan.

Case Study 3

A 16-year-old boy from Madhya Pradesh died from cardiac arrest while playing PUBG (Ganjoo, 2019). He was playing the game and suddenly started shouting “carry out the blast……carry out the blast”. After losing the game, he removed his headphones and started shouting at his friend. After this, he collapsed on the ground, and his family members took him to the hospital where he was declared dead.

All these case studies show how online gaming affects a child mentally. Gaming addiction is making children violent and impatient, leading them to take extreme steps. There are cases where gaming addiction has caused parents to lose a huge amount of money.
2.5 Case studies on gaming addiction

Case Study 4

A woman from Hyderabad lost Rs.36 lakhs due to his son's gaming addiction (The Tribune India, 2022). Her 16-year-old boy downloaded the FreeFire app on his grandfather's phone. To play the game he initially spent 1,500 Rupees and later 10,000 Rupees from his mother’s bank account. He became addicted to the game and started making huge payments ranging from Rs. 1.45 lakhs to Rs. 2 lakhs. The mother came to know about it when she went to the bank to withdraw money, she found out that there was no money left in the bank account.

Many people take extreme steps after losing money in online games. In one of the cases, a 23-year-old man ended his life after losing Rs. 17,000 in an online ludo game (Sharma, 2022). Police recovered a suicide note in which he mentioned why is he taking this extreme step.
2.6 How to identify gaming addiction?

Like any addiction, gaming addiction has warning signs (Psychguide, 2019). Knowing how to recognize these signs is important. These symptoms can be emotional and physical, according to the Illinois Institute for Addiction Recovery.

Some of the emotional symptoms are

- Feeling irritated and/or restless when not able to play.
- Preoccupied with previous gaming experiences or planning for the next gaming experience.
- Lying to family and friends about the amount of time spent gaming.
- Isolating from others to give more time to gaming.

Some of the physical symptoms are

- Migraine due to eye strain
- Fatigue
- Symptoms of Carpel tunnel syndrome, which is, numbness, tingling, pain, and loose grip caused by overuse of mouse or controllers.
- Poor personal hygiene

Some other warning signs include

- Escaping difficult life situations with the help of gaming.
- Playing for long hours.
- Skipping meals to play.
- Poor performance at school or work.
2.7 How to cure gaming addiction?

- Treatment for video game addiction is similar to other addictions. Counseling and behavior modification are the primary tools for treating gaming addicts.

- Individual and family counseling together is an effective therapeutic tool. Some treatment centers include medication in their programs.

- Technology is a key part of life, hence some treatment centers suggest controlled use rather than abstinence.

**There is no universal cure for video game addiction.**

As with alcoholism and drug addiction, it's important to seek treatment and stay aware of your triggers.
03 STUDY FINDINGS

This section of the report examines the results of the online survey shared with the children with the help of the Head of the Department.

3.1 Profile of the respondents

The sample comprised adolescents and young adults. A few responses were from 9 years old children. A total of 657 responses were received.

<table>
<thead>
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<th>Age</th>
<th>Frequency</th>
<th>Percentage</th>
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<td>19-24</td>
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<td>Total</td>
<td>657</td>
<td>100%</td>
</tr>
</tbody>
</table>

*Table 2: Age group of the respondents*

Among these 657 responses, 465 responses (71%) were from children between the age of 9-18 years. The remaining 192 responses (29% of the responses) were from individuals between the age of 19-24 years.

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>280</td>
<td>43%</td>
</tr>
<tr>
<td>Female</td>
<td>372</td>
<td>57%</td>
</tr>
<tr>
<td>Other</td>
<td>5</td>
<td>1%</td>
</tr>
<tr>
<td>Total</td>
<td>657</td>
<td>100%</td>
</tr>
</tbody>
</table>

*Table 3: Gender of the respondents*

57% of the responses (372 responses) were from females, and 43% of the responses (280 responses) were from males. 1% (5 responses) were from the other gender.
<table>
<thead>
<tr>
<th>Education</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Currently in school</td>
<td>281</td>
<td>43%</td>
</tr>
<tr>
<td>Currently in college</td>
<td>376</td>
<td>57%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>657</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

*Table 4: Education Qualification of the respondent*

All the respondents were students studying in either school or college. 281 respondents (43%) were school students, and 376 (57%) were college students.

3.2 Time spent on gaming

When asked about the average time spent on gaming during weekdays and weekends it was found that 6% of the study respondents spent more time on gaming during weekends as compared to weekdays.

![Average time spent on gaming during weekdays](image)

*Figure 2: Average time spent on gaming during weekdays*
During weekdays, 93% of the respondents (611 respondents) spent less than 10 hours playing online games. 4% of respondents (29 respondents) spent 10-20 hours, 1% (5 respondents) spent 20-30 hours, and 2% (12 respondents) of the respondents spent more than 30 hours playing online games.

![Average time spent on gaming during weekends](image)

*Figure 3: Average time spent on gaming during weekends*

During weekends, 87% of the respondents (571 respondents) spent less than 10 hours playing online games. 10% of respondents (65 respondents) spent 10-20 hours, 1% (8 respondents) spent 20-30 hours, and 2% (13 respondents) of the respondents spent more than 30 hours playing online games.

The study also attempted to find out the devices being used by the respondents to get an idea about what device they must be used to play online games. The options provided to them were mobile, laptop, PC, console (Xbox/Play-station/Switch), and tablet. There was a choice to select multiple options as nowadays having multiple devices is very common. It was found that 93% (609 respondents) of the respondents use mobile, 40% (262 respondents) use a laptop, 14% (93 respondents) use PC, 10% (79 respondents) use Tabley, and only 5% (30 respondents) use the console (Xbox/Play-station/Switch). This gave us the idea that mobiles are the most used device when it comes to online gaming.
3.3 Type of games preferred

Respondents were asked about the online games they preferred. They had the option to write the names of more than one online game. A total of 746 names were received. Similar items were counted and a list of 157 online games was created. After this, the games were divided genre-wise. The genres were action-adventure, arcade, board games, casual games, puzzles, racing, role-playing, simulation, sports, strategy, and others (card, casino, educational, music, and word games).

![Type of games preferred](image)

**Figure 4: Type of games preferred by adolescents and young adults**

Action-adventure games were the most popular genre among adolescents and young adults. Within this genre games like Garena Free Fire MAX, Battlegrounds Mobile India (BGMI), PUBG, and Call of Duty were the most played games. After action-adventure, simulation games were the next most popular genre. Games like Minecraft, Valorant, and Roblox were the most popular simulation games.

Arcade games like Subway Surfer and Temple Run, and board games like Ludo King and Chess were the next preferred genre. The next famous genre was puzzle games (like Candy Crush, Sudoku, etc) and these were followed by sports games (like Fifa, Cricket, etc), racing games (like Asphalt, etc), casual games (like Brain games, Mind games, etc), strategy games (like, Clash of Clans, Clash Royale, etc), other games (Like, Magic Tiles, Duo Lingo, Solitaire, etc), and role-playing games (like Assassin’s Creed, Genshine Impact, etc).
3.4 Online gamers and their engagement in esports competition

Different individuals engage in gaming for different reasons. Some engage in gaming during their leisure time, some engage to escape reality, and some engage to an extent that they become a professional player.

<table>
<thead>
<tr>
<th>Type of online gamers</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Casual player</td>
<td>560</td>
<td>85%</td>
</tr>
<tr>
<td>Hardcore player</td>
<td>68</td>
<td>10%</td>
</tr>
<tr>
<td>Professional player</td>
<td>29</td>
<td>4%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>657</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

*Table 5 : Type of online gamers*

When asked about what type of online gamer respondents were, it was found that the majority of the respondents play games casually. 85% of the respondents (560 respondents) were casual players. 10 % (68 respondents) were hardcore players, and only 4% (29) were professional players.

Further questions related to esports competitions were asked by professional players thinking that only professional players participate in esports competitions. The attempt was to understand the frequency of participation in esports competitions and the reason behind their engagement. It was found that not only professional players but casual and hardcore players also participate in esports competitions.

<table>
<thead>
<tr>
<th>Frequency of participation in Esports competitions</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>I did not compete in the last year</td>
<td>77</td>
<td>53%</td>
</tr>
<tr>
<td>1–2 times in the last year</td>
<td>42</td>
<td>29%</td>
</tr>
<tr>
<td>3–5 times in the last year</td>
<td>6</td>
<td>4%</td>
</tr>
<tr>
<td>Several times in a month</td>
<td>19</td>
<td>13%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>144</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

*Table 6 : Frequency of participation in Esports competitions*
A total of 144 respondents were participating in esports competition. Out of these 144 respondents, 77 respondents said that they did not compete in the competition last year, 42 respondents participated 1-2 times in the last year, 6 respondents participate 3-5 times in the last year, and 19 respondents participated several times in a month.

There were different reasons why they were engaging in competitive esports. Many of them found it interesting and fun and they were engaging during their free time. Some found it to be a new experience where they can communicate with their friends. Esports competition also helped to improve their gaming skills and it helped them to relax and acted as a stress buster. Many see it as a good future and said that the esports certificates will be helpful for them in future job opportunities. Esports competition helped them to neglect negative thoughts, and to improve their knowledge and skills and some found it beneficial from a health perspective. Competitions also helped them to improve their brain level.

15 respondents said that someone in their family engages in esports competitions. Mostly it was their sibling or a cousin.

<table>
<thead>
<tr>
<th>Training method</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coach</td>
<td>5</td>
<td>2%</td>
</tr>
<tr>
<td>Youtube (educational videos)</td>
<td>107</td>
<td>53%</td>
</tr>
<tr>
<td>Online courses</td>
<td>8</td>
<td>4%</td>
</tr>
<tr>
<td>Self-review</td>
<td>58</td>
<td>29%</td>
</tr>
<tr>
<td>Others</td>
<td>23</td>
<td>11%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>201</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

*Table 7: Method used to train (or improve) online gameplay*

Even though the majority of the adolescents and young adults were casual players they were still interested in improving their gameplay using different training methods. A total of 201 respondents were using training methods to improve their game-playing skills. Out of these 201 respondents, 5 respondents improve their gameplay with the help of a coach, and as many as 107 respondents take help from Youtube. 8 respondents take online courses, and 58 respondents do self-review. The remaining 23 respondents use other methods to improve their gameplay.

As there are many esports clubs we asked respondents if they are part of any club or not. 27 respondents said that they are a part of an online gaming club, and 31 respondents said that they have been a part of an online gaming club in the past.
3.5 Gaming Behaviour

There are many performance-enhancing substances available that increases the gaming performance of a person. 5% of the respondents (31 respondents) said that they use performance-enhancing substances while playing online games. Energy drinks like Redbull and Monster were used by a few respondents as they contain caffeine which helps to increase performance.

When asked about the average time spent on a game it was found that the majority of the respondents do not spend much time playing games as most of the respondents were casual players.

<table>
<thead>
<tr>
<th>Average time of a game</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 10 minutes</td>
<td>308</td>
<td>47%</td>
</tr>
<tr>
<td>10-20 minutes</td>
<td>153</td>
<td>23%</td>
</tr>
<tr>
<td>20-30 minutes</td>
<td>88</td>
<td>13%</td>
</tr>
<tr>
<td>&gt;30 minutes</td>
<td>108</td>
<td>16%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>657</td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

*Table 8: Average time spent on a game*

On an average 47% of the respondents spend equal to/less than 10 minutes on a game, 23% of the respondents spend 10-20 minutes, 13% spend 20-30 minutes, and 16% spend more than 30 minutes on a game.

The time interval between the two games varies from equal to/less than 10 minutes to more than 30 minutes. 588 people responded to the question and it was found that the interval time between two games 338 respondents was only equal to/less than 10 minutes, 82 respondents take a break of 10-20 minutes before starting another game, 47 respondents take 20-30 minutes and 121 respondents take a break of more than 30 minutes.

During the interval time, 52% of people relax, 9% of people make game strategies, 12% talk to their teammates, 18% use their mobile, and 10% engage in other activities like listening to music, talking to friends, reading books, playing offline games, spending time with family, studying, sleeping, etc.

Apart from the performance-enhancing substances and time spent on gaming another aspect of online gaming is gambling. It was found that 8% of the respondents (54 respondents) gamble while playing and out of these, 14 respondents had lost money.
3.6 Gaming Motivation

The motivation for gaming was assessed on twelve parameters and a 5-point Likert scale. A score of 1 was given for the option almost never/never, 2 for the option some of the time, 3 for the option half of the time, 4 for the option most of the time, and 5 for almost always/always. Scoring was done on all the parameters and at the end, the total was done to get the final score. Respondents could get a maximum score of 60 and a minimum score of 12. Four ranges were made to assess the motive for gaming. A score between 12-22 meant that respondents had very weak motivation for gaming, a score of 23-33 meant weak motive, a score of 34-44 meant a strong motive for gaming, and a score of 45-60 meant a very strong motive for gaming.

<table>
<thead>
<tr>
<th>Score</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-22</td>
<td>288</td>
<td>44%</td>
</tr>
<tr>
<td>23-33</td>
<td>189</td>
<td>29%</td>
</tr>
<tr>
<td>34-44</td>
<td>118</td>
<td>18%</td>
</tr>
<tr>
<td>45-60</td>
<td>62</td>
<td>9%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>657</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

*Table 9: Motive for gaming*

44% of the respondents had a very weak motive to play games which means they scored between 12-22, 29% had a weak motive to play game which means they scored between 23-33, 18% had a strong motive to play game which means they scored between 34-44, and only 9% scored had a very strong motive to play games which means they scored between 45-60.
3.7 Psychological distress due to online gaming

The psychological distress was assessed with the help of the Kessler psychological distress scale. There were 10 parameters and a 5-point Likert scale. A score of 1 was given for option one of the time, 2 for the option a little of the time, 3 for the option some of the time, 4 for the option most of the time, and 5 for all of the time. Scoring was done on all the parameters and at the end, the total was done to get the final score. Respondents could get a maximum score of 50 and a minimum score of 10. Four ranges were made to assess the motive for gaming. A score between 10-19 meant that respondents were likely to be well, a score of 20-24 meant that respondents were likely to have mild disorder, a score of 25-29 meant that respondents were likely to have moderate disorder, and a score of 30-50 meant that respondents are likely to have severe disorder.

<table>
<thead>
<tr>
<th>Score</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-19</td>
<td>398</td>
<td>61%</td>
</tr>
<tr>
<td>20-24</td>
<td>109</td>
<td>17%</td>
</tr>
<tr>
<td>25-29</td>
<td>57</td>
<td>9%</td>
</tr>
<tr>
<td>30-50</td>
<td>93</td>
<td>14%</td>
</tr>
<tr>
<td>Total</td>
<td>657</td>
<td>100%</td>
</tr>
</tbody>
</table>

*Table 10: Kessler psychological distress scale*

61% of the respondents were likely to be well as their score was between 10-19, 17% of the respondents were likely to have a mild disorder as they scored between 20-24, 9% of the respondents were likely to have a moderate disorder as they scored between 25-29 and 14% of the respondents were likely to have a severe disorder as they scored between 30-50.
3.8 Internet Gaming Disorder (IGD)

Internet gaming disorder was assessed on nine parameters and a 2-point Likert scale. The respondents had to answer yes or no for each statement. A score of 1 was given for a yes, and 0 was given for a no. Scoring was done on all the parameters and at the end, the total was done to get the final score. Respondents could get a maximum score of 9 and a minimum score of 0. Three ranges were made, a score between 0-3 meant that they were likely to be well, a score of 4-6 meant they were likely to have mild to moderate disorder, and a score of 7-9 meant they were likely to have severe disorder.

<table>
<thead>
<tr>
<th>Score</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-3</td>
<td>441</td>
<td>67%</td>
</tr>
<tr>
<td>4-6</td>
<td>166</td>
<td>25%</td>
</tr>
<tr>
<td>7-9</td>
<td>50</td>
<td>8%</td>
</tr>
<tr>
<td>Total</td>
<td>657</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 11: Internet Gaming Disorder Scale

67% of the respondents were likely to be well as they scored between 0-3, 25% of the respondents were likely to have mild to moderate disorder as they score between 4-6, and 8% of the respondents were likely to have severe disorder as they scored between 7-9.
Musculoskeletal symptoms caused by online gaming were assessed on three parameters and a 5-point Likert scale. The three parameters were pain in the shoulder/neck, pain in the back/hips, and pain in the hands/knees/legs/feet. A score of 1 was given for option never, 2 for the option seldom, 3 for the option occasionally, 4 for the option often, and 5 for always. Scoring was done on all the parameters and at the end, the total was done to get the final score. Respondents could get a maximum score of 15 and a minimum score of 3. Three ranges were made, a score between 3-6 meant that they were likely to be well, a score of 7-10 meant they were likely to have mild to moderate disorder, and a score of 11-15 meant they were likely to have severe disorder.

<table>
<thead>
<tr>
<th>Score</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-6</td>
<td>454</td>
<td>69%</td>
</tr>
<tr>
<td>7-10</td>
<td>145</td>
<td>22%</td>
</tr>
<tr>
<td>11-15</td>
<td>58</td>
<td>9%</td>
</tr>
<tr>
<td>Total</td>
<td>657</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 12: Musculoskeletal Symptoms Scale

69% of the respondents were likely to be well as they scored between 3-6, 22% of the respondents were likely to have mild to moderate disorder as they score between 7-10, and 9% of the respondents were likely to have severe disorder as they scored between 11-15.
3.10 Psychosomatic Symptoms due to online gaming

Psychosomatic symptoms caused by online gaming were assessed on five parameters and a 5-point Likert scale. The five parameters were headache, stomachache, feeling of nervousness, feelings of irritation, and sleep problems. A score of 1 was given for option never, 2 for the option seldom, 3 for the option occasionally, 4 for the option often, and 5 for always. Scoring was done on all the parameters and at the end, the total was done to get the final score. Respondents could get a maximum score of 25 and a minimum score of 5. Three ranges were made, a score between 5-11 meant that they were likely to be well, a score of 12-18 meant they were likely to have mild to moderate disorder, and a score of 18-25 meant they were likely to have severe disorder.

<table>
<thead>
<tr>
<th>Score</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-11</td>
<td>488</td>
<td>74%</td>
</tr>
<tr>
<td>12-18</td>
<td>134</td>
<td>20%</td>
</tr>
<tr>
<td>18-25</td>
<td>35</td>
<td>5%</td>
</tr>
<tr>
<td>Total</td>
<td>657</td>
<td>100%</td>
</tr>
</tbody>
</table>

*Table 13: Psychosomatic Symptoms Scale*

74% of the respondents were likely to be well as they scored between 5-11, 20% of the respondents were likely to have mild to moderate disorder as they score between 12-18, and 5% of the respondents were likely to have severe disorder as they scored between 18-25.
3.11 Healthy gaming practices

Knowledge of the respondents was assessed to understand what they understand about healthy gaming practices. It was found that the majority of the respondents do have knowledge about the recommendations for healthy gaming practices and the adverse consequences of excessive gaming.

![Recommended healthy online gaming practices](image)

**Figure 5: Recommended healthy online gaming practice**

It is recommended to play age-appropriate games and avoid playing during late hours. Also, gaming should not become a substitute for other activities. 13% of the respondents only knew about playing age-appropriate games, 18% of the respondents only knew that they should not play for late hours, 7% only knew that gaming should not hamper other activities, and the majority which is 62% of the respondents knew about all of the mentioned recommendations.
Figure 6: Adverse consequences of excessive online gaming

Excessive online gaming not only affects physical and mental health, but it also affects academics. 7% of the respondents thought that excessive gaming affects only physical health, 11% thought it only affects mental health, and 7% thought it only affects academics. The majority of the respondents, that is 75% knew of all the adverse consequences of excessive online gaming.
04 DISCUSSION

The study was conducted to know the prevalence of online gaming, esports, and psychological variables among adolescents and young adults. The study also attempted to understand the physical and psychological impact caused by online gaming and Esports.

A total of 657 individuals between the ages of 9 to 24 participated in the study. More responses were received from adolescents and more than 50% of respondents were female. All the respondents were either school or college students. It was found that there is a slight difference in the time spent on gaming during weekdays and weekends. Adolescents and young adults spend more time on gaming during weekends, the reason can be the fact that during weekends they do not have to go to schools and colleges and therefore they get more leisure time.

There are a variety of games that belong to different genres, among these genres action-adventure games are the most loved games. Games like Garena Free Fire MAX, Battlegrounds Mobile India (BGMI), PUBG, and Call of Duty were some of the most popular games among adolescents and young adults. The majority of the respondents were casual players, an interesting finding was that not only professional players but casual players participate in esports competitions to have fun and pass their time. Many players see online gaming as a potential carrier. Various training methods were used by all kinds of players. The majority of the respondents do not use any performance-enhancing substances and a few use energy drinks like Redbull and Monster.

The majority of the respondents spend an average of fewer than 20 minutes on a game and the interval time between gaming varies from less than 10 minutes to more than 30 minutes. During the interval time almost half of the respondents relax, some make game strategies, some talk to their teammates and some engage in using the phone, listening to music, reading books, and other such activities. When motivation for gaming was analyzed it was found that the majority of the respondents had a very weak or weak motivation to play games as the majority were playing games during their leisure time only. The majority of the respondents were found to be well on the Kessler Psychological Distress Scale (K-10). Some respondents were found to likely have moderate to severe disorders.
When Internet Gaming Disorder was assessed it was found that the majority of the respondents were likely to be well, some had mild to moderate disorder, and a few were likely to have severe disorder. Musculoskeletal and psychosomatic symptoms were also analyzed and it was found that the majority of the respondents were likely to be well, some showed mild to moderate symptoms, and a few had a severe disorder. According to Yee (2002), there are three main attraction factors of online gaming addiction. These are “Reward, Relationship, and Immersive nature of virtual environment”. The first attraction reward is achieved with the help of group collaboration. There are a lot of rewards given in the game. A reward can be in multiple forms like a level-up, some reward points, or maybe some coins. All these rewards make the player happy and motivate them to engage in the game.

The second attraction relationship is the network a player forms with new people. Online games give an opportunity to connect to new people anonymously. It is easier to talk to strangers without revealing their identity and hence it is liked by many players. Games like Battleground creates an environment where people players start to create a bond with others, and many even form a group for future games. The network of gamers friend encourage each other to play more matches and in this way engagement in games increases.

The third attraction is the immersive nature of the virtual environment these games provide. Nowadays, mostly all games require the player to create a character. They create a character and own virtual items, players get attached to those characters and through the character, they live in that virtual environment.

Different individuals get attracted to different aspects and therefore we cannot say that everyone gets attracted due to the same factor. Some individuals use games to escape reality while some may use them to make new friends. Although excessive gaming can have a negative impact on mental as well as physical health in previous studies, it has been found that not all excessive gaming activities can lead to addiction (Stavropoulos et al., 2019).

Compared to online games Esports is a well-organized competitive sport where professional players spend time improving their skills to participate in national and international tournaments. Becoming a professional player requires a strong commitment (The Curious Case of Esports: Passion or Addiction?, 2022). Many players aiming to become professional esports players can show more than five symptoms of IGD. The dedication of the players can be misunderstood as an addiction. Now with the Government of India recognizing Esports as a multi-sport, it is important to clearly distinguish between addictive and healthy gaming practices so as to prevent any misdiagnosis.
4.1 How to prevent Gaming Addiction?

This is an era of the internet and digital technologies and we cannot avoid them completely, therefore the best solution for gaming addiction is prevention.

4.1.1 Role of parents

In the process of prevention parents can play a major role (Zygouris et al., 2014).

- Parents can set a time limit and can provide some alternative activities to ensure that children are not devoting their major time to gaming.
- Setting up a relaxation period between the usage like a short break after every 30 minutes of usage can be helpful.
- Keeping a check on the kind of content a child is consuming while gaming. For example, many games are highly violent, and parents should discourage their children from playing such games.
- Parents should make sure that the child is playing age-appropriate games.
- Parents should encourage their children to engage in their hobbies and should spend time with them.
- Parents should create an environment where the child can openly discuss everything. This will help to ensure a child’s safety in the online world.
4.1.2 Role of the gaming industry

Gaming industry must also take some steps to prevent gaming addiction (Sousa, 2021).

- The gaming industry must be willing to collaborate with mental health professionals when it comes to creating games that are frequently addicting in nature and contain some components that may be criminally or morally incorrect even in fantasy and in the virtual world, and accept their viewpoint.

- When launching a new game gaming industry should do research to check how the game is performing among people. The research should be unbiased and the findings must be used to decide whether a game should be eventually removed from the market or not.

- The gaming industry invests a lot of money in marketing and promoting the games they are trying to sell. Any inaccurate information must be avoided. The gaming industry must understand that different consumers have different likes and dislikes and potential for addiction.

- Gaming industry must develop several tools that might be used to reduce excessive gaming.

**Self-awareness is very important**

Recognising the signs of addiction at an early stage can help a person seek guidance before it becomes problematic and starts impacting other aspects of life.
REFERENCES


REFERENCES


REFERENCES


REFERENCES


APPENDIX

Consent

This survey aims to understand how individuals are engaging in online gaming. Your participation in this study is voluntary. All the responses given by you will be kept confidential and no personal information would be released. It will be used only to increase scientific understanding of gaming.

✓ I agree
✗ I disagree
Questionnaire

1. Gender
   A. Male
   B. Female
   C. Other

2. Age

3. Occupation
   A. Student
   B. Employed
   C. Unemployed

4. Education
   A. Currently in school
   B. 10th pass
   C. 12th pass
   D. Currently in college
   E. Graduate
   F. Post-graduate
   G. Other

5. Devices you use (Multiple choice)
   A. PC
   B. Mobile
   C. Laptop
   D. Tablet
   E. Console(Xbox/Play-station/Switch)

6. Average time spent on gaming during weekdays
   A. <10 hrs
   B. 10-20hrs
   C. 20-30hrs
   D. >30 hrs
15. Do you use any performance-enhancing substances while playing? (if yes, please specify)

16. Average time of a game
   A. \( \leq 10 \text{ mins} \)
   B. 10-20 mins
   C. 20-30 mins
   D. \( >30 \text{ mins} \)

17. How long is the interval between the two games?
   A. \( \leq 10 \text{ mins} \)
   B. 10-20 mins
   C. 20-30 mins
   D. \( >30 \text{ mins} \)

18. How do you spend your interval time?
   A. Relax
   B. Make game strategies
   C. Talk to my teammates
   D. Use mobile phone
   E. Other

19. Do you gamble while playing online games?
   A. Yes
   B. No

   (If no, Skip question no. 20)

20. Have you ever lost money due to gambling?
   A. Yes
   B. No

**Continued on next page**
### Motives for Gaming

21. I play online games...

1. Almost never /never  
2. Some of the time  
3. Half of the time  
4. Most of the time  
5. Almost always/always

<table>
<thead>
<tr>
<th></th>
<th>Motive</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>... because I can get to know new people</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>... because I enjoy competing with others</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>... because it makes me forget real life</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>... because it helps me get rid of stress</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>... to feel as if I was somebody else</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>... because it is entertaining</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7</td>
<td>... because gaming helps me escape reality</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8</td>
<td>... because it is good to feel that I am better than others</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9</td>
<td>... because it helps me channel my aggression</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10</td>
<td>... because it improves my concentration</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>11</td>
<td>... because gaming gives me company</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>12</td>
<td>... to forget about unpleasant things or offenses</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

### Kessler Psychological Distress Scale (K10)

22. Please tick the correct answer for you:

1. None of the time  
2. A little of the time  
3. Some of the time  
4. Most of the time  
5. All of the time

<table>
<thead>
<tr>
<th></th>
<th>Question</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>In the past 4 weeks, about how often did you feel tired out for no good reason?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>In the past 4 weeks, about how often did you feel nervous?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>In the past 4 weeks, about how often did you feel so nervous that nothing could calm you down?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>In the past 4 weeks, about how often did you feel hopeless?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Internet Gaming Disorder Scale

23. Read each statement and share your response that best applies to you. There is no right or wrong answer.

During the past year, have you ...

<table>
<thead>
<tr>
<th>S.NO</th>
<th>Items</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>... regularly found that you can’t think of anything else but the moment that you will be able to use internet gaming again?</td>
<td>Yes / No</td>
</tr>
<tr>
<td>2.</td>
<td>... regularly felt dissatisfied because you wanted to spend more time on internet gaming?</td>
<td>Yes / No</td>
</tr>
<tr>
<td>3.</td>
<td>... often felt bad when you could not use internet gaming?</td>
<td>Yes / No</td>
</tr>
<tr>
<td>4.</td>
<td>... tried to spend less time on the internet gaming, but failed to control its use?</td>
<td>Yes / No</td>
</tr>
<tr>
<td>5.</td>
<td>... regularly neglected other activities (e.g. hobbies, sport) because you wanted to use internet gaming?</td>
<td>Yes / No</td>
</tr>
<tr>
<td>6.</td>
<td>... regularly had arguments with others because of your internet gaming use?</td>
<td>Yes / No</td>
</tr>
<tr>
<td>7.</td>
<td>... regularly lied to your parents or friends about the amount of time you spend on internet gaming?</td>
<td>Yes / No</td>
</tr>
<tr>
<td>8.</td>
<td>... often used internet gaming to escape from negative feelings?</td>
<td>Yes / No</td>
</tr>
<tr>
<td>9.</td>
<td>... had a serious conflict with your parents, brother(s), or sister(s) because of your internet gaming use?</td>
<td>Yes / No</td>
</tr>
</tbody>
</table>
**Musculoskeletal Symptoms Scale**

24. How often do you experience the following symptoms?

<table>
<thead>
<tr>
<th>S.No</th>
<th>Items</th>
<th>Never</th>
<th>Seldom</th>
<th>Occasionally</th>
<th>Often</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Pain in the shoulders/neck</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Pain in the back/hips</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Pain in the hands/knees/legs/feet</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Psychosomatic Symptoms Scale**

25. How often do you experience the following symptoms?

<table>
<thead>
<tr>
<th>S.No</th>
<th>Items</th>
<th>Never</th>
<th>Seldom</th>
<th>Occasionally</th>
<th>Often</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Headache</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Stomach-ache</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Feeling of nervousness</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Feelings of irritation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Sleep Problems</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

26. Which of the following is/are recommended for healthy gaming practice?

A. Playing age-appropriate games  
B. Not playing during late hours  
C. Not using games as a substitute for other activities  
D. All of the above

27. Excessive gaming can lead to which of the following types of adverse consequences?

A. Physical health-related  
B. Mental health-related  
C. Academics  
D. All of the above