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Effect of intervention for gaming addiction among adolescents: A systematic review

Ms. Sweta Kumari
Research Scholar, SOSSH, Department of Psychology, CMR University, Bengaluru, Karnataka, India

Dr. Dhiksha J.
Assistant Professor, SOSSH, Department of Psychology, CMR University, Bengaluru, Karnataka, India

***Abstract*---**The inclusion of Internet Gaming Disorder in the appendix of the updated version of the Diagnostic and Statistical Manual for Mental Disorders (DSM-5) encourages further research. According to the American Psychiatric Associations the criteria for diagnosis of gaming addiction is based on pathological gambling or the substance dependence. Research suggests that individuals with gaming addiction experience similar symptoms like a substance addict. Online games are more appealing to children and adolescents than the other age groups. The cause of gaming disorder is not yet fully identified. Most research indicates that the aspects that may be involved are the game's built-in reward system may be the cause of the gaming disorder. Covid 19 has had a major impact on adolescents and children mental health alongside with developmental stress due to lockdown. Studies reports there was an increase in gaming and internet use with Impact on psychosocial wellbeing among Adolescents. Very few studies are focusing on prevention of gaming addiction, therefore it is an urgent need to introduce preventive intervention and treatment for gaming addiction. The relationship with excessive playing of video games and psychological factors are motives to play and individual differences in self-control. Specific achievement, desire to gain power, progress rapidly, accumulating wealth, symbols and status are the major motives. Another psychological factor is uncontrolled drive to look for achievement or to kill boredom, anxiety, and dysphoria. Other potential psychological factor is individuals' self-esteem which is boosted in game in the form of rewards. Adolescents who are addicted to gaming are found to be irritable, feels nervous, feels exhausted, and mostly in bad mood. Some of the positive effects if gaming is in moderation are reduction in fatigue and stress, it also helps in increase self-confidence, and improves visual attention skills. Girls who reported into gaming are

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less likely to get into depression, less likely to be aggressive or getting into fights compare to boys due to externalizing behaviors. The program goal is to reduce the symptoms among adolescents for gaming addiction and improve mental health wellbeing.

***Keywords*---**addiction, adolescents, gaming, intervention.

Introduction

The inclusion of Internet Gaming Disorder in the appendix of the updated version of the Diagnostic and Statistical Manual for Mental Disorders (DSM-5) encourages further research. The diagnostic criteria of Internet Gaming Disorder place the behavior within the category of "non-substance addictions" and suggests that Internet addiction could, like Pathological Gambling, be one of the candidates in this category. Various diagnostic criteria for Internet addiction are of five subtypes– 1. Cybersexual addiction: People are engaged in viewing, trading, and downloading online pornography 2. Cyber-relational addiction: People become excessively involved in online relationships, which are perceived to be more important than real life ones giving rise to marital discord and family instability (chatrooms, social networks) 3. Net compulsions: Gambling, shopping, trading online 4. Information overload: Excessive web surfing, information, and database search 5. Computer addiction: People are overly engaged with pre-programmed games (Petry, Internet Gaming Disorder in the DSM-5, 2015).

Research suggests that individuals with gaming addiction experience similar symptoms like a substance addict. Online games are more appealing to children and adolescents than the other age groups (Griffiths1, 2012). It is a more of a behavioural addiction than a disorder of impulse control. According to the American Psychiatric Association's the criteria for diagnosis of gaming addiction is based on pathological gambling or the substance dependence (APA, 2000). The cause of gaming disorder is not yet fully identified. Most research indicates that the aspects that may be involved are the game's built-in reward system may be the cause of the gaming disorder. Many games rely on the activities that involve rewarding the player and driving them to continue through another cycle, retaining them in the game. Players continue to play and refuse to quit the game because they are rewarded in the game. This kind of reward can increase dopamine in the brain of the players, activate the reward system and, once the player is rewarded, individual can become addicted in the long run. This mechanism is similar to the neurobiological mechanism of gambling disorder. Moreover, in this virtual reward system by the game, the individual with gaming disorder can develop confidence and satisfaction that he is not able to obtain in the real world (Griffiths, 2012).

Covid 19 has had a major impact on adolescents and children mental health alongside with developmental stress due to lockdown. Studies reports there was an increase in gaming and internet use with Impact on psychosocial wellbeing among Adolescents. Individuals who were more involved with gaming and social media reported to be high on depression, loneliness, aversion, poor sleep, and pandemic related anxiety (Fernandes, Biswas, Mansukhani, Vallejo, & Essau,

2020). Very few studies are focusing on prevention of gaming addiction, therefore it is an urgent need to introduce preventive intervention and treatment for gaming addiction. These interventions should target peer groups, parents, teachers, and others who ever is a part of individuals environment (Vondráčková, 2016).

Figure 1 shows the incentives and pathological symptoms among adolescents due to gaming. Adolescents look for appreciation and rewards to gain their self-confidence and identify themselves with their peer groups. But excess of gaming will lead to pathological symptoms like withdrawal symptoms, depression, anxiety, and social aloofness.

Gaming Addiction

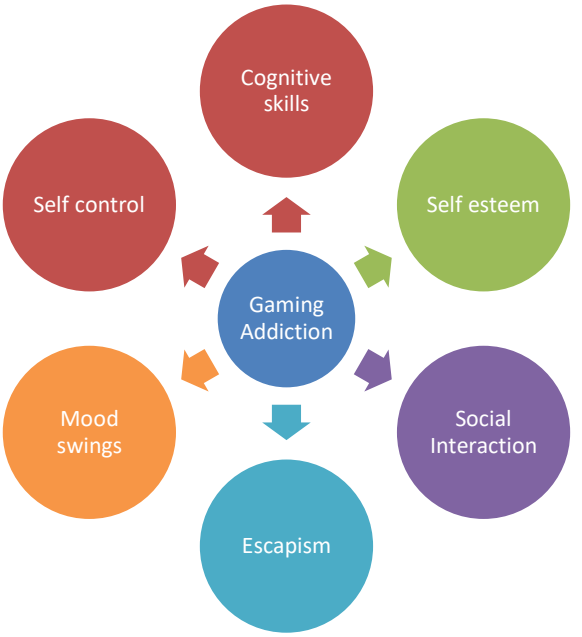
Excessive playing of online games has been associated with addictive behaviour. past research has been criticised due to sampling issues; therefore, this study aims to overcome these criticisms. In this study Germany is using already established instrument for problematic game use. A total of 4382 students aged between 14 to older adults were taken for study. Game use was measured with gaming addiction short scale which covers seven criteria. According to this research only seven respondents met all the criteria, high GAS scores are associated with aggressive, low sociability, lower satisfaction, and problematic social lives (Ruth Festl, 2013).

Massively multiplayer online role-playing games (MMORPG) is one of the recent and popular type of video game played worldwide. It is a type of game where large number of players interact with one another in the virtual world. Players assume the heroic characters and take control of that character's actions. Character creation involves various components such as a avatar, specific skills, and attributes that define the character like gender, race, profession, and physical

aspects. The advancement of character implies acquiring of new skills, power, and special weapons as rewards for succeeding in certain missions (Billieux, 2015). The relationship with excessive playing of video games and psychological factors are motives to play and individual differences in self-control. Specific achievement, desire to gain power, progress rapidly, accumulating wealth, symbols and status are the major motives. Another important motive is escapism-need to escape from real life problems. Another psychological factor is uncontrolled drive to look for achievement or to kill boredom, anxiety, and dysphoria. Other potential psychological factor is individuals' self-esteem which is boosted in game in the form of rewards (Billieux, 2015).

Another study on compulsive gaming and emerging mental health among children says that children are losing control on their lives by wasting their time in gaming. Players enjoy interacting with other players and build relationships online with other online characters, which give feeling of one-to-one social interactions and real-life bonding. This study also mentioned that players are preoccupied with games and display mood swings like irritability, restlessness, and aggressive behaviour when they are denied for playing (Singh, 2019). A systematic review on problematic gaming and cognitive skills studies that excessive gaming can have a detrimental effect on cognitive skills like perception, inhibition, and decision-making skills. Normal use of gaming may lead to improved performance without any negative impact (Filip Nuyens, 2017).

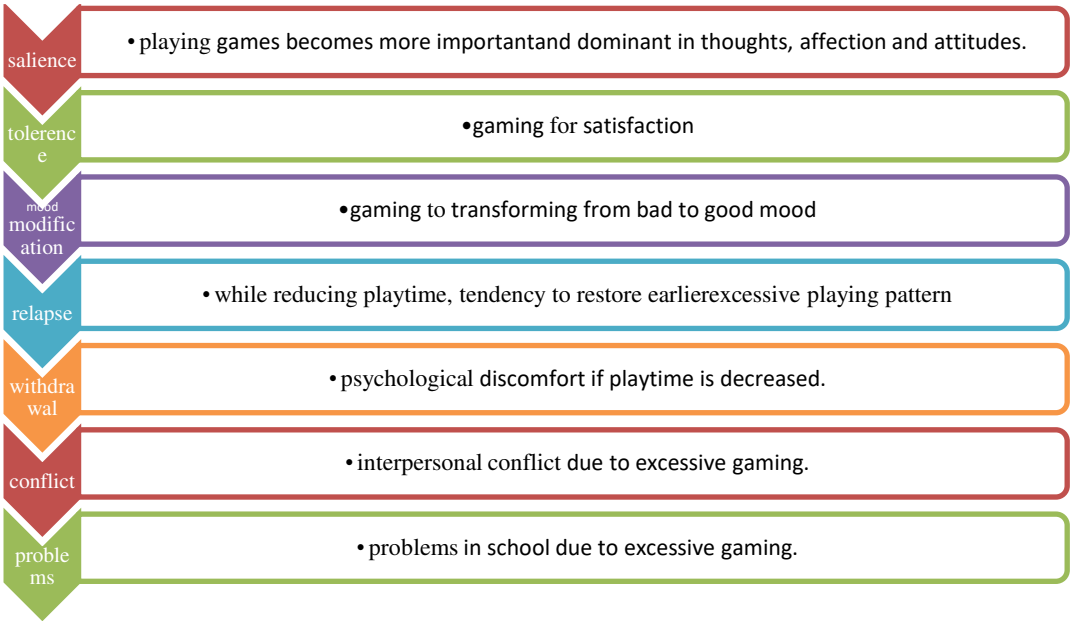
Figure 2: Figure shows that gaming addiction effects the individuals' cognitive skills, self-esteem, and social interactions. Individual will have mood swings and no self-control and also tries to escape.



Diagnosing Gaming Addiction

The meeting was organized within the framework of collaboration between the World Health Organization (WHO) headquarters' Department of Mental Health and Substance Abuse (Management of Substance Abuse unit). The scope for the meeting was health and social consequences due to excessive usage of smart phones, computers, or electronic devices for gaming. Meeting was concluded with governments to look for effective preventive policies and response strategies aimed at reducing the health risks and consequences associated with excessive use of electronics (WHO, 2022). The fifth revision of Diagnostic and Statistical Manual (DSM) of Mental Disorder includes potential new diagnosis- Internet Gaming Disorder. Chapter in DSM 5 section 3 describes the criteria which recommends the methods to assess Internet Gaming Disorder. DSM 5 lists nine criteria for Gaming Addiction which are drawn for substance use disorder and gambling addiction (Petry, Internet Gaming Disorder in the DSM-5, 2015). Eleventh Revision of International Classification of Diseases (ICD 11), which was released in November 2016 now include gaming disorder grouped with substance and gambling disorder. National Institutes of Health are highlight the importance of capturing the neurobiological phases of the addictive cycle in clinical diagnosis (Saunders, july 2017).

Figure 3: figure 3 shows the criteria for gaming addiction



Adolescents and Gaming Addiction

The present study has used the data from World Health Organisation survey, mental health in school aged Norwegian children. In this study researchers have researched about the differences between addicted adolescents and non-addicted

adolescents and its effects on mental health. Adolescents who are addicted to gaming are found to be irritable, feels nervous, feels exhausted, and mostly in bad mood (Geir Scott Brunborg, 2013). A pilot study among Hong Kong Adolescents investigated the prevalence and correlates of video and internet gaming addiction. A total of 503 students were selected from secondary school, assessed using a gaming addiction scale, out of which one in six were identified with gaming addiction. Results showed that overuse of gaming has shown problematic behaviours and family disharmony (Cecilia L. W. Chan, 2014).

An article on digital game addiction on among adolescents and young adults mentions, that the games people played in playgrounds are replaced with electronic games on internet. It focuses on the positive as well as negative effects of gaming. Some of the negative effects of excessive gaming are depression, anxiety, psychoticism, phobic anxiety, decreased positive social behaviour, increased hostile behaviour compared to normal gamers. Some of the positive effects if gaming is in moderation are reduction in fatigue and stress, it also helps in increase self-confidence, and improves visual attention skills. Some of the educational games can help in development of children and teens when they play in controlled way (Irmak, 2015).

Another study was conducted on social activities, self-efficacy, gaming attitudes and gaming addiction among Adolescents. This study examines whether there is an association between extent of gaming addiction and social activities with parents, online and offline social self- efficacy. 600 middle school and high school students of south Korea were part of this study, where ANOVA test was conducted to determine the differences among non addicts, addicts, and possible addicts. The results show that social self-efficacy in real world was positively correlated and in virtual world it was negatively correlated, there was a negative correlation between parenting and social activities (Kim, 2011). This study aims at investigating the interaction between personality traits and usage of particular internet applications. A total of 3105 students from Netherland were given a self-report questionnaire including the quick big five scale. Results indicate that there is a positive correlation between internet addiction and personality, therefore findings support the inclusion of internet gaming addiction in DSM-5 (Mheenbe, 2013).

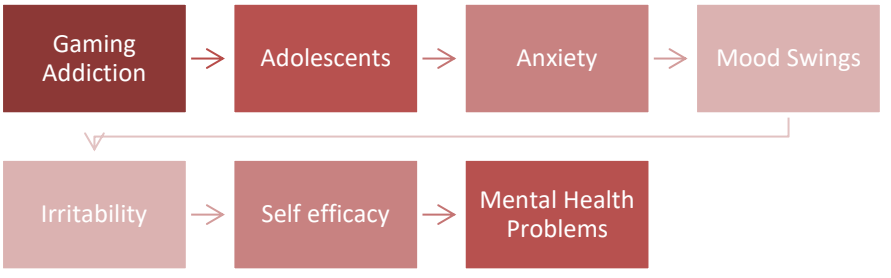


Figure 4. figure 4 shows the effects of gaming addiction on adolescents.

Gaming addiction and gender

In an article demographic factor and playing variables in online gaming survey was conducted for factors like gender, age, marital status, nationality, education, and occupation. The survey was also examined on playing history, playing frequency, and likes and dislikes in playing game. Results showed that 81% of males are int gaming than females, for the social aspects of the game (Mark D. Griffiths, 2004). In a journal American Academy of Paediatrics health correlates, problematic gaming and gender differences among high school students were surveyed. Results showed that among 4028 adolescents, 76.3% of boys and 29.2% of girls were reported health problems due to excessive gaming. Girls who reported into gaming are less likely to get into depression, less likely to be aggressive or getting into fights compare to boys due to externalizing behaviors (Rani A. Desai, Suchitra Krishnan-Sarin, Dana Cavallo, & Marc N. Potenza, 2010).

A study evaluated the gender differences and related factors affecting faming addiction among Taiwanese Adolescents. A total of 395 junior school students were evaluated for behavioural characteristics, stressors, severity of addiction and daily life satisfaction between girls and boys. Results showed that Lower self-esteem and low satisfaction with daily life were associated with boys with severe gaming addiction (Ko, Yen, Chen, Chen, & Yen, 2005). Gaming addiction among females has emerged despite gaming being traditionally popular among males. This study aims to review association between females and psychopathological symptoms among females in gaming. The results showed that playing games has benefits for females in terms of cognitive, social, and physical functions. As there is very few research on female gaming as its stereotyped as a male game, psychological disorders associated with females are getting unnoticed (Lopez Fernandez Olatz, 2019).

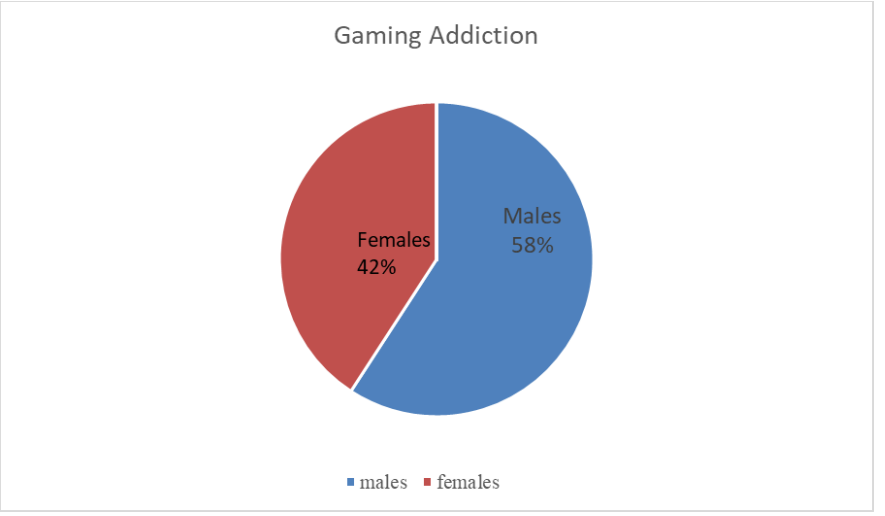


Figure 5. figure 5 shows the gender differences among adolescents for gaming addiction

Gaming Addiction and Intervention

There has been increase in gaming among adolescents because of which many parents are approaching mental health professionals. The present paper describes the design process of intervention for 12-18 years adolescents. The program goal is to reduce the symptoms among adolescents for gaming addiction and improve mental health wellbeing. Findings showed improved and encouraging effects of intervention (Alexandra Torres-Rodríguez, 2018). Gaming addiction is associated with adolescents' family environment and the parent-adolescent relationship. At present most of the interventions are based on cognitive behaviour therapy. The present article adapted multidimensional family therapy for internet gaming addiction. This paper aims at by addressing the question why and how parents should be involved, family involvement and parenting styles with adolescents for gaming addiction (Bonnaire, 2022).

This study systematically reviews the literature of last fifteen years focusing on gaming addiction and adolescents. This is a transitional period for self-identity related to low self-control and higher risk for behavioural addictions. The efficacy of treatments is effected due to lack of inappropriate control groups, small sample size, and non-random treatment conditions. Well-designed clinical trials and interventions needs to be designed for prevention in gaming addiction (Kristyn Zajac, 2019). Future work on gaming addiction needs to focus on clinical investigations of treatments and longitudinal studies of the disorder. Lower socioeconomic status including less maternal education and single parent children are high risk for gaming addiction. Parental monitoring of adolescents and parent child relationships are important in improving gaming addiction. Researchers have identified three treatment possibilities for gaming addiction are cognitive behavioural therapy, pharmacological, and group or family therapy (Bickham, 2021). This article reviews the current findings on the approaches to addiction and treatment and evaluates its effectiveness. The main focus of this article concentrates on cognitive behaviour therapy and pharmacotherapy. Among drugs for the management of addiction, antidepressants and psychostimulants are recommended, and some antiepileptics and valproate are potential drugs for addiction (Aneta Małgorzata Przepiorka, 2014).

Figure 6. figure 6 shows the treatments taken for gaming addiction

Conclusion

The diagnostic criteria of Internet Gaming Disorder place the behavior within the category of "non-substance addictions" and suggests that Internet addiction could, like Pathological Gambling, be one of the candidates in this category. Online games are more appealing to children and adolescents than the other age groups. Many games rely on the activities that involve rewarding the player and driving them to continue through another cycle, retaining them in the game. Players continue to play and refuse to quit the game because they are rewarded in the game. This kind of reward can increase dopamine in the brain of the players, activate the reward system and, once the player is rewarded, individual can become addicted in the long run. Players assume the heroic characters and take control of that character's actions. Character creation involves various components such as an avatar, specific skills, and attributes that define the character like gender, race, profession, and physical aspects. compulsive gaming and emerging mental health among children say that children are losing control on their lives by wasting their time in gaming. excessive gaming can have a detrimental effect on cognitive skills like perception, inhibition, and decision-making skills. Some of the positive effects if gaming is in moderation are reduction in fatigue and stress, it also helps in increase self-confidence, and improves visual attention skills. Some of the educational games can help in development of children and teens when they play in controlled way. The program goal is to reduce the symptoms among adolescents for gaming addiction and improve mental health wellbeing. Future work on gaming addiction needs to focus on clinical investigations of treatments and longitudinal studies of the disorder. Various diagnostic criteria for Internet addiction have been proposed. Very few studies are focusing on prevention of gaming addiction, therefore it is an urgent need to introduce preventive intervention and treatment for gaming addiction.

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