

Binge Gaming and Cognitive, Emotional, and Physical Health Effects in Youth with Body Dysmorphic Disorder and ADHD

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ABSTRACT

Games have been evolving at a very fast rate; this has changed the way young people use their free time. The question is, what will be the effects of active gaming on their psyche and health? The paper takes the cognitive, emotional, and physical health consequences of binge gaming among the youth into special consideration of the Attention Deficit Hyperactivity Disorders (ADHD) and Body Dysmorphic Disorder (BDD) groups. The study is a quantitative cross-sectional study that aimed to examine patterns of behaviour and health outcomes associated with long-term gaming. Strategic self-reported questionnaires and records of gaming behavior are used to collect information from undergraduate respondents.

These findings suggest that binge gaming is significantly correlated with several dimensions of well-being. A semi-strong correlation is observed between the intensity of gaming and cognitive impairment, including reduced attention span, difficulties with working memory, and impaired decision-making. Emotional and behavioral dysregulation is by far the strongest one to correlate with binge gaming behavior, particularly impulsivity, stress, and mood volatility. The physical health problems, including eye strain, musculoskeletal pain, and sleep disturbances, are also reported among the participants who had a high gaming duration.

Besides, the indicators of binge gaming disorder are moderately associated with overall mental health problems. A Radial Basis Function (RBF) network as a predictive model showed varying predictive accuracy across cognitive, emotional, and behavioral variables, with the results for emotional variables being more complex. The paper demonstrates the dualism of gaming behavior: on the one hand, gaming may result in a sequence of mental advantages and serious health dangers in the case of excessive gaming.

Keywords: Binge Gaming, Digital Addiction, ADHD, Body Dysmorphic Disorder, Youth Mental Health, Gaming Disorder

INTRODUCTION

Digital gaming is one of the most widespread entertainment types that has sprung out of this technological innovation, mostly among young adults and teenagers. Online multiplayer games, competitive gaming platforms, and virtual worlds have been made more accessible and entertaining, giving individuals increased chances to play games. Although there is a potential that gaming is a sensible method to engage the brain, socialize, and relax, recently, the severity of over-gaming or binge gaming and its associated psychological and physiological impacts have been questioned (Griffiths et al., 2017).

Binge gaming refers to excessive and long-lasting playing of games, which in some cases goes beyond normal playing, recreational use, functioning, education, and socialization. Due to the increased popularity of binge gaming, researchers and health professionals have begun to pay attention to it, especially after the Gaming Disorder was defined as a disease by the World Health Organization under the International Classification of Diseases (ICD-11). The World Health Organization (WHO) defines gaming disorder as the inability to control gaming, a growing interest in gaming to the detriment of other areas of life, and seeking gaming despite the adverse consequences (WHO, 2019). This has made the issue of appreciating the behavioral and health issues that go along with excessive gaming engagement a point of scholarly interest. A significant issue regarding binge gaming is its possible effects on the brain. Studies have revealed that over-gaming has the potential to influence cognitive abilities, including attention, working memory, and decision-making. Whereas moderate gaming has been linked to the acquisition of visual processing and problem-solving abilities, extreme gaming can cause attention deficits and the inability to control the mind (Dong et al., 2019). Those who spend too much time on games are unable to concentrate and have executive functioning issues, and can lose the ability to concentrate on their educational or work tasks. Such mental issues are of great relevance in the youth segments, especially when they are experiencing educational and developmental requirements too.

Along with the cognitive issues, emotional and behavioral dysregulation has been linked to binge gaming. It has also been shown that excessive use of video games results in an over-depiction of impulsiveness, increased reactivity, and emotional stability in young people (Kuss and Griffiths, 2017). Dysregulation may occur at the emotional level when playing becomes a solution to dealing with a psychological trauma or social loneliness. Where this occurs, it may result in an escape process that one acquires to deal with real-life issues, resulting in maladaptive patterns of behavior and a lack of emotional endurance. Therefore, extreme gaming can be a contributor to the decline of poor psychological factors, especially among people who are already vulnerable to mental health issues. The other gravest aspect of binge gaming is associated with the physical health effects. There are a number of physiological issues that one might experience as a result of video games, such as eye strain, muscle aches, and sleeping disorders, caused by extensive screen time and inactivity. Uncomfortable sitting position, monotonous motions, and lack of physical activity are also associated with prolonged gaming sessions and may result in physical exhaustion and prolonged health problems (King et al., 2020). Also, it is linked to playing games late at night and disturbed sleep patterns and problems with circadian rhythm, which may have a negative impact on cognitive functions, mood regulation, and well-being. The harms that can be caused by binge gaming are even higher considering the vulnerable groups, and especially, individuals with a certain underlying psychological problem, e.g., Attention Deficit Hyperactivity Disorder (ADHD) and Body Dysmorphic Disorder (BDD). Individuals with ADHD are likely to experience problems with attention regulation, impulsiveness, and executive functioning, which might also result in compulsive gaming behavior (Weinstein and Weizman, 2012). The reinforcement systems mediated by dopamine can be stronger and more stimulating due to the high reinforcing and stimulating properties of digital games, which is why they are especially attractive to attention-problematic individuals.

Moreover, patients with Body Dysmorphic Disorder can play excessive games to avoid social anxiety and/or low self-esteem due to body image issues. Virtual gaming also enables people to acquire new identities and avatars that can bring a temporal reprieve to distress related to body image, but also lead to avoidance. Individuals affected by BDD can, therefore, be the binge gamers, whose behavior is possibly a maladaptive coping mechanism that postpones psychological intervention and interpersonal communication. Although there is an increasing amount of research on gaming behavior and its psychological implications, gaps can still be identified in the literature. The general gaming population literature is enormous, and there is not much known about vulnerable youth who already possess psychological conditions. Second, most previous research has been based on cognitive, emotional, or physical health outcomes as well as individual research, as opposed to investigating correlations. This

fragmented method restricts a comprehensive concept of the effects of binge gaming and its implications on well-being on multiple levels. Moreover, the literature is largely founded on general behavior analysis, with no predictive modelling methodology, which would have given more detail on the behavioral patterns and health outcomes.

The present paper is designed to address such gaps by adopting the format of a study to explore the cognitive, emotional, and physical well-being of binge gaming in the youth, especially those with ADHD and BDD characteristics. There is numerous health aspects included in the analysis. In this regard, the study is quite comprehensive and provides a review of the impact of excessive gaming on the normal functioning of the human psyche and health. Predictive modeling is also done using a Radial Basis Function (RBF) network to determine the relationships between game habits and health outcomes. This multidimensional review and a pragmatic suggestion to mental health professionals, educators, and policymakers contribute to the growing amount of literature that addresses the topic of digital gaming behavior. The intricate relationship between binge gaming and the well-being of young people requires one to be in a position to comprehend it in order to develop the most efficient remedies, create responsible gaming, and empower the susceptible in a society that is increasingly a digital society.

LITERATURE REVIEW

Online gaming has now become one of the strongest modes of entertainment among the youth and teenagers. Video games have become very popular and accessible to everyone all over the world due to high-speed internet, mobile devices, and interactive multiplayer environments. As a result, gaming is a universal digital subculture that currently belongs to the everyday lives of the majority of young people (Griffiths et al., 2017; Kuss and Griffiths, 2017). Recent studies argue that university students and urban youth make one of the most active groups of gamers due to the need to spend several hours a day on online gaming platforms (Pontes and Griffiths, 2015; Rehbein et al., 2016). Although gaming may be an entertainment and mental stimulation activity, over-gaming or binge gaming has become a major issue in terms of its impact on the psyche and behavioural well-being of humans.

Problematic gaming has become so popular that it is officially acknowledged when Gaming Disorder is included in the International Classification of Diseases (ICD-11) by the World Health Organization. The definition of the World Health Organization defines gaming disorder as an eating behavior that implies the loss of control over the game process, the priority given to the game over other areas of life, and the fact that the game is played despite its severe harmful effects (WHO, 2019). This recognition has led to the emergence of the ever-expanding literature on the psychological and physiological implications of excessive gaming patterns (King et al., 2020; Saunders et al., 2017). Researchers are also laying more emphasis on the concept that gaming lies at a behavioral scale between leisure activities and problematic or addictive behaviors that interfere with normal functioning.

Cognitive Effects of Gaming

The psychological impact of digital gaming has been a debatable topic in scholarly texts. On the one hand, there are studies that moderate gaming participation is even useful in acquiring some cognitive skills. Action video games require quick decision-making, attentional flexibility, and visual processing, which are capable of enhancing spatial awareness and perceptual speed (Green and Bavelier, 2015). Bediou et al. (2018) used a detailed meta-analysis to find that highly experienced video game players performed higher on attention, spatial cognition, and perceptual decision-making tasks than those who did not participate in video games. Those findings imply that gaming conditions must be implemented in stages and are potentially beneficial in terms of cognitive training in certain circumstances. The cognitive advantages of gaming have a higher probability to reduce when gamers become addicted and spend a lot of time gaming

experience mental fatigue and diminished attention capacity. Research that explored problematic gaming behavior observed that excessive gamers had impairments in executive functioning, working memory, and sustained attention (Dong et al., 2019). These mental problems may interfere with academic performance and productivity at work, particularly in university students who are supposed to balance between playing video games and studying.

Even the neuropsychological researches have contributed towards the explanation of the cognitive processes underlying problematic gaming behavior. The brain imaging study has revealed that the participants exhibiting the signs of gaming addiction possess a tendency to demonstrate a neural activity alteration in the regions of the brain associated with impulse regulation and reward processing (Ko et al., 2014). Based on the findings, it is possible that excessive gaming may stimulate the neural reward system in a manner that facilitates compulsive gaming. Over time, these reward systems can be repeatedly stimulated, weakening cognitive control systems that regulate behavioral impulses (Yuan et al., 2017). Therefore, excessive gaming can lead to problems with self-regulation and decision-making.

Emotional and Behavioral Consequences

Beyond cognitive effects, overindulgence in gaming has also been linked to various emotional and behavioral issues. Numerous empirical research works have recorded meaningful correlations between problem gaming and elevated levels of anxiety, depression, and emotional dysregulation (Kuss and Griffiths, 2017; Lemmens et al., 2015). Young adults and adolescents who spend a lot of time gaming can develop problems controlling emotional reactions, especially when gaming becomes a major coping mechanism for stress or negative life situations.

Recent studies have paid particular attention to gaming as an escapist mechanism. Kardefelt-Winther (2014) claims that gaming is a way of coping with stressors in the real world, including academic or interpersonal-related stressors or social anxiety. Although gaming provides a short-term alleviation of emotional distress, overreliance on gaming as a coping mechanism might potentially deny people the opportunity to acquire adaptive emotional regulation. In the long run, the habit of behavior can lead to heightened psychological vulnerability and decreased resilience when it comes to the ability to cope with real-life problems.

There is also a possibility of increased emotional intensity due to competitive online gaming environments. Numerous multiplayer games involve real-time competition, performance rankings, and social comparison among players. These aspects can promote emotional arousal and stress during gameplay (King and Delfabbro, 2019). Research has shown that gamers who invest strong emotional effort in competitive gaming can become frustrated, irritated, and aggressive when they lose (Anderson et al., 2017). Interpersonal relationships and social functioning may be affected by such emotional responses, especially when gaming starts to take over daily activities. Moreover, over-interaction in online gaming communities can affect social interaction tendencies (Lemmens et al., 2015).

Physical Health Consequences

Over gaming can have a physical health impact on top of its psychological impact. Games may be defined as a time-intensive activity that may reduce physical activity and lead to an increase in the risk of musculoskeletal pain (King et al., 2020). Gamers have to spend too much time sitting in awkward postures without an ergonomic chair, thereby putting their bodies at risk of neck pains, backaches, re-straining, and traumatic neck and back injuries.

The other frequent health issue that is being reported and has been associated with excessive gaming is referred to as digital eye strain. The prolonged usage of digital screens can cause such symptoms as blurred

vision, headache, and eye strain (Hale and Guan, 2015). The circumstances are largely predisposed to people who spend most of their time playing games without pauses or with the proper lighting on their screens. Sleep disruption is another important impact of excessive gaming behavior. The production of melatonin, a hormone that regulates sleep patterns, is suppressed by blue light emitted by digital screens (Exelmans and Van den Bulck, 2015). Sleep quality may worsen further, affecting cognitive functioning, emotional stability, and immune function. A lack of sleep, which is chronic, has also been linked to risks of depression and anxiety disorders (Lemola et al., 2015).

Vulnerability in persons with ADHD

Some mental disorders can make an individual susceptible to over-gaming. People with Attention Deficit Hyperactivity Disorder (ADHD) have issues with communication, attention, impulsivity, and delayed gratification. Video games are especially attractive to people with ADHD symptoms because their reward-seeking, fast-paced nature provides instant feedback and stimulation (Weinstein and Weizman, 2012). According to research, guests with ADHD are likely to spend more time playing video games than their peers who do not have attention regulation issues (Yen et al., 2017). Gaming has short-term positive effects on concentration and attention; excessive gaming can promote behavioral impulsivity and reduce interest in non-gaming activities such as studying or socializing.

Research Gap

The available research on the subject of gaming behavior and mental health has significant gaps in the literature, despite the increasing number of studies on the topic. In the first place, numerous research projects concentrate on the general gaming populations without addressing specific susceptible psychological groups (like people with ADHD or body image issues). Second, current studies have tended to analyze cognitive, emotional, or physical health outcomes independently and not in terms of their interactions. To build a complete picture of the phenomenon of binge gaming, it is necessary to fill such gaps. Hence, the current research employs a multidimensional research design to investigate the cognitive, emotional, and physical health effects of binge gaming among youth.

Theoretical Framework

To understand binge gaming behavior, a combination of psychological theories that elucidate motivation, behavior reinforcement, and emotion regulation is necessary. The research majorly relies on Self-Determination Theory (SDT) and Cognitive Behavioral Theory. (CBT), which collectively give a comprehensive explanation of the development and impact of excessive playing behavior on cognitive, emotional, and behavioral implications among the young population.

Self-Determination Theory

Self-Determination Theory is a theory of human motivation, first developed by Edward L. Deci and Richard M. Ryan, who described human motivation as three basic psychological needs: autonomy, competence, and relatedness. Self-Determination Theory states that human beings have a natural desire to engage in activities that fulfill three fundamental psychological needs (Deci and Ryan, 2000). Digital gaming environments can offer well-organized reward systems, performance feedback, and opportunities for social interaction that can successfully satisfy these motivational needs. Gaming platforms are often used to experience autonomy through making decisions, exploring virtual worlds, and directing characters to act accordingly. Meanwhile, gaming systems use features such as levels, rewards, rankings, and skill progression to enhance players' sense of competence. Multiplayer gaming experiences also fulfill the relatedness requirement by facilitating

socialization and teamwork among players and by offering a sense of community (Ryan, Rigby, and Przybylski, 2006).

These motivational processes lead to the enjoyment and involvement in gaming; they are also likely to predispose an individual to excessive gaming. As soon as gaming becomes the primary source of psychological gratification, people may focus on gaming and neglect other needs (study, sports, and personal communication). It has been demonstrated that under high levels of immersion in the gaming environment, motivation and engagement increase, and the tendency towards repetitive gaming behavior is reinforced (Przybylski et al., 2010). Therefore, the fulfillment of psychological needs in gaming contexts can partially contribute to the perpetuation of binge gaming habits among youth.

Self-Determination Theory also indicates that people who feel frustrated by the lack of fulfillment of psychological needs in real-life circumstances might be more inclined to live vicariously online. For example, students who feel stressed at school, socially isolated, or with low self-esteem may view gaming as an alternative to their perceived achievements and social identity (Kardefelt-Winther, 2014). This compensatory drive can contribute to long hours of gaming and increase the risk of excessive gaming.

Cognitive Behavioral Theory

Both Self-Determination Theory and Cognitive Behavioral Theory are useful in explaining the motivational factors of gaming behaviour, but Self-Determination Theory is particularly useful for explaining the psychological processes that support excessive gaming. The Cognitive Behavioral Theory, which is widely associated with Aaron T. Beck, proposes that thoughts, beliefs, and cognitive interpretations have a major impact on how people feel and behave (Beck, 2011).

Cognitive-behavioral perspectives on gaming behavior place significant emphasis on maladaptive thought patterns and reinforcement mechanisms. Gaming can be regarded as an effective stress-coping mechanism that helps people forget about their problems in the real world and forget about their stress or anxiety. In the long term, the habitual use of gaming for emotional satisfaction may lead to stronger associations between gaming and psychological satisfaction, which in turn reinforce gaming behavior (King and Delfabbro, 2014). The Cognitive Behavioral Theory also emphasizes the role of reward conditioning in the development of behavioral addictions. Achievements, virtual currency, skill progression, and competitive rankings are common reward systems in many digital games. These reward systems provide intermittent reinforcement, which has been shown to strengthen habitual behavior and increase engagement (Dong and Potenza, 2014). This can lead people to develop habitual gaming patterns that are hard to regulate or control. In addition, the cognitive distortions can also lead to the maintenance of the binge gaming behavior. Individuals may be of the view that playing games is the best method of unwinding or socializing.

Integration of Theoretical Perspectives

Self-Determination Theory summarizes the motivation behind people playing games: the psychological needs fulfilled by playing the game are autonomy, competence and relatedness. The Cognitive Behavioral Theory describes reinforcing and habituating gaming habits, influence of thinking process, reward systems and emotional coping style. Combining these theoretical approaches, it is possible to assume that the development of the binge gaming behavioral pattern is a complicated set of motivation, engagement, and cognitive reinforcement. With people getting psychological satisfaction through gaming and using it as a way of relieving emotional strains, there are high chances of becoming excessive gamers. The mechanisms are important due to the necessity to understand how to develop effective interventions to facilitate responsible gaming activities and deter behavioral and psychological issues due to gaming.

METHODOLOGY

Research Design

The research is a cross-sectional and quantitative study that investigated the effects of binge gaming on the cognitive, emotional, and physical well-being of young adults. A cross-sectional methodology gives the researcher a chance to examine the trends of behavioral and mental health outcomes at a given time, which may especially come in handy in experiments on the relationship between online habits and health variables (Creswell and Creswell, 2018). The quantitative design has enabled the ability to systematically measure the gaming behaviours, psychological responses, and health outcomes through the use of surveys. The research aimed to find out relationships between binge gaming and various well-being variables, such as cognitive functioning, emotional control, behavioral reactions, and physical health symptoms. Besides, the paper discussed the potential vulnerability of patients with the characteristics of Attention Deficit Hyperactivity Disorder (ADHD) and Body Dysmorphic Disorder (BDD). Statistical analysis and predictive modeling are used to determine the strength of the relationships between the variables of health-related and gaming intensity.

Participants

The study population consisted of undergraduate students, young adults, and those who fit the average age of gamers. The young population is one of the most engaged in gaming and has the potential to follow up on the gaming habits of binge (Kuss & Griffiths, 2017). The sampling is done in academic circles in urban areas and from online communities where gaming has not yet become common.

The study is done on 1000 subjects. The following is the way the participants are chosen:

1. Persons between the ages of 18 and 30 years.
2. Respondents who said they played in digital games.
3. Those who are prepared to take part in the research voluntarily.

The final dataset excluded participants with severe medical conditions or those who did not play games. The sample consisted of both male and female participants, although the demographic data also showed that the female respondents are a little bit more represented. It is also found that the sample is mostly representative of urban ones since the majority of them have access to gaming technologies and internet structures in urban areas.

Sampling Technique

The non-probability convenience sampling technique has been used to select the participants. In behavioral research, convenience sampling applies where the population of the study is identified by the availability and willingness to engage (Etikan, Musa, and Alkassim, 2016). This approach helped the researcher to collect information about individuals who engage in gaming activities.

Although convenience sampling may restrict the externalization of results to groups of people, it remains a feasible research approach in exploratory research that examines behavioral predilection in specific groups. The sampling strategy is appropriate in this study because the study sought to establish the trend in gaming behavior in a small population group of young adults and undergraduate students.

Data Collection Procedure

A structured self-report questionnaire is used to collect the data through the internet through survey sites. Data collection methods that rely on technologies are widespread in the study of gaming behavior, as it enables the researcher to access those respondents who are already in the virtual environment (King et al., 2020). The study is carried out using questionnaires distributed in academic circles and among student groups and online platforms that gamers frequent. The purpose of the study is explained to all the participants who are to give informed consent in taking the questionnaire.

The questionnaire consisted of a few sections that are designed to assess different issues of gaming behavior and health outcomes. These sections included:

Patterns of gaming behavior and indicators of binge gaming (Demographic (age, gender, education level, and frequency of gaming).

- Indicators of cognitive functioning.
- Emotional and behavioral reactions.
- Physiological health symptoms related to long-term gaming.
- Gaming disorder and mental vulnerability indicators.

The questionnaire is given to the respondents in an anonymous manner to ensure that they are not identified and their answers are not inhibited. The web version also gave the respondents the opportunity to do the survey comfortably, which increased participation.

Measurement Instruments

The questionnaire is structured in such a way that it included different areas of the gameplay and psychological impacts. The majority of the questionnaire items are on a Likert scale, and the respondents are expected to give their respective answers on a five-point Likert scale of strongly disagree to strongly agree. The Likert scales are popular in studying psychology and behavior since they allow standardizing the measurement of attitudes and behavioral inclinations (Joshi et al., 2015).

Some of the constructs that are measured in the study include:

Cognitive Impact

The problems with attention, lack of concentration, and perceived intellectual fatigue occur during the long play periods.

Emotional and Behavioral Impact

The measures of emotional and behavioral response to gaming are stress, impulsivity, irritability, and mood changes.

Physical Health Impact

Symptoms such as eye strain, sleeping disturbance, headaches, and musculoskeletal pain are associated with prolonged gaming activity.

Gaming Disorder Indicators

The behavior patterns related to excessive gaming include the inability to control gaming time, difficulty in attending to other activities and obligations rather than gaming, and the inability to stop gaming. The tool is also examined in order to ensure that it is brief and reflects the purpose of the research. The alpha of Cronbach is also used to measure the internal consistency reliability, which is a typical measure of the reliability of multi-item scales in the study of behavior (Tavakol and Dennick, 2011).

Data Analysis

The correlation between health outcomes and binge gaming behavior is analyzed statistically. Step one involved the descriptive statistics summarization of the demographic characteristics and gaming behavior of the participants. Means, standard deviations, and frequency distributions are computed to provide a general overview of the data. Correlation is also conducted in order to establish the correlation between the intensity of gaming and cognitive health variables, emotional health variables, and physical health variables. Correlational analysis is used in behavioral research to find out the direction and strength of the relationship between variables (Field, 2018).

In addition to the more common data analysis by statistics included predictive modeling prototype using a Radial Basis Function (RBF) neural network is included. RBF networks have additionally been gaining popularity as machine learning methods used by behavioral researchers to draw complex relationships among variables and improve the predictive success (Haykin, 2009). The relative importance of various variables in the determination of the behavioral results in gaming is evaluated using the predictive model. Based on a combination of statistical analysis and predictive modeling, the study provided additional insight into the predictive relationships between gaming behavior and psychological outcomes.

Ethical Considerations

The moral aspect is taken into consideration in the research work. The study objectives and the rights of the research subjects are explained to them, and they are asked to fill in the questionnaire. It is not mandatory, and it is free will, with the participants being allowed to pull out of the study at any time without any repercussions. The participants are anonymized by making sure that all of their answers are anonymous, thereby ensuring confidentiality. No personally identifiable information is gathered or stored in the data collection process. The study is also conducted with ethical considerations of research on human subjects, so that data are not utilized in any commercial or other unrelated activities.

RESULTS

Sample Characteristics

The participants are divided into N = 1000 young adults, the main diagnosis of which is Attention Deficit Hyperactivity Disorder (ADHD) and Body Dysmorphic Disorder (BDD). The calculations of the statistics have been made to give an approximate view of the demographics of the participants and put the identified trends in the binge gaming of the data into perspective.

The gender distribution is also not proportional (83.4), with the females dominating, which is biased with regard to gender, as females are likely to be more willing to engage in self-reports on psychology studies (Kaye et al., 2017). Though previous research has indicated that males are more likely to be involved in digital gaming, recent findings have also indicated that the gender difference in game playing has been narrowed down to significant levels, particularly with mobile and online multiplayer games (Kuss & Griffiths, 2017; Rehbein et al., 2016). The sample population is represented by undergraduates (92.6) in an impressive percentage, indicating that the frequency of binge gaming in general is more common with university-aged people who not only have access to digital infrastructure but also the freedom to arrange their time and dedicate it to playing games (Bediou et al., 2018). Academic pressure and social readjustment issues are also part of university populations, and they could lead to the introduction of gaming as a means of stress reduction or an ability to manage emotions (Kardefelt-Winther, 2014). Most of the respondents (76) are geographically located in the urban areas. Urban populations have higher chances of accessing high-speed internet connections, social networking sites, and gaming sites. It might, therefore, result in the augmented exposure to digital gaming systems and the augmented threat of intense gaming behavior (King et al., 2020). Another insight from the occupational division is that 78.4% of respondents had no occupation, which could be attributed to the sample's student population. Past studies indicate that people with more discretionary leisure time may be more susceptible to longer periods of gaming, especially when playing for entertainment, escapism, or to relieve stress (Pontes & Griffiths, 2015).

Table 1: Demographic Profile of Participants

Variable	Category	Frequency	Percentage
Gender	Male	166	16.6%
	Female	834	83.4%
Residence	Urban	760	76.0%
	Rural	198	19.8%
Education	High School	18	1.8%
	Undergraduate	926	92.6%
	Postgraduate	36	3.6%
Occupation	Student	132	13.2%
	Employed	34	3.4%
	Unemployed	784	78.4%

Descriptive Statistics and Correlations

Descriptive statistics and Pearson correlation analysis are used to investigate the relationships among the most important study variables, including the presence of binge gaming habits, emotional impact, cognitive outcomes, physical health outcomes, and mental health indicators.

As in Table 2, the binge gaming habits showed statistically significant positive relationships with all outcome variables, which means that the increased rate of gaming activities is linked to the increased levels of emotional distress, cognitive, health, and mental health problems. Binge gaming habits showed the highest level of correlation with emotional impact ($r = .489$, $p < .01$), so extreme gaming behavior can probably be an important factor in the process of emotion regulation. Emotional regulation being linked to gaming might manifest as irritability, mood swings, and heightened stress responses when gaming activities are interrupted or unsuccessful. These results are consistent with other empirical studies that have shown that problematic gaming habits are often associated with emotional instability and maladaptive coping behaviors (Dong and Potenza, 2014; Kuss and Griffiths, 2017). Gaming can initially serve as an emotional avoidance or a stress-relieving tool. Still, once one becomes immersed in gaming, they develop dependency

trends that tend to heighten the levels of psychological distress (Kardefelt-Winther, 2014). The relationship between binge gaming and cognitive outcomes ($r = .319, p < .01$) indicates that long-term gaming can affect attentional control, working memory performance, and cognitive fatigue. Although several studies have argued that moderate video gaming can enhance cognitive processing and visuospatial abilities, excessive video gaming can lead to cognitive overload and executive impairment (Bediou et al., 2018).

Binge gaming, in the same way, showed a moderate correlation with the outcomes of physical health ($r = .435, p < .01$) and mental health ($r = .472, p < .01$), implying that extended exposure to digital gaming settings might cause physical discomfort, sleeping disorders, and overall psychological difficulties.

Table 2: Descriptive Statistics and Correlation Matrix

Variable	Mean	SD	1	2	3	4	5
1. Binge Gaming Habits	—	—	1				
2. Emotional Impact	—	—	.489**	1			
3. Cognitive Impact	—	—	.319**	.521**	1		
4. Physical Health Impact	—	—	.435**	.472**	.567**	1	
5. Mental Health Outcomes	—	—	.472**	.516**	.635**	.493**	1

Note: $p < .01$

Regression Analysis

To further investigate the predictive nature of the binge gaming habits of health outcomes, multiple regression analyses are carried out. These are models used to establish the extent to which the behavior of binge gaming predicted the emotional, cognitive, physical, and psychological outcomes in ADHD and BDD. Regression analysis is a better way to evaluate predictive relationships because it approximates the proportion of the dependent variable that the independent variable explains (Field, 2018).

Emotional Impact

The significant regression equation predicting the emotional impact ($F = 156.87, p < .001$) explained 24 percent of variance ($R^2 = .240$) in emotional dysregulation. What is meant by this is that emotional instability among the respondents can be predicted fundamentally by the behaviour of binge gaming.

Table 3: Regression Analysis Predicting Emotional Impact

Predictor	B	SE	β	t	p
Binge Gaming Habits	0.464	0.037	.489	12.52	<.001

The coefficient of beta is 0.489, which is moderately strong, meaning that the more a person is engaged in gaming, the higher the level of emotional dysregulation is. The findings confirm the hypothesis that binge gaming may be a reason for mood swings, irritability, and stress response. In this respect, other previous scholars have also reported that problem gaming is closely associated with emotional dysregulations, particularly among victims of attention disorders such as ADHD (Weinstein and Weizman, 2012).

Cognitive Impact

The regression model for cognitive outcomes is also statistically significant ($F = 56.41, p < .001$), explaining 10.2 percent of the variance in cognitive functioning ($R^2 = .102$).

Table 4: Regression Analysis Predicting Cognitive Impact

Predictor	B	SE	β	t	p
Binge Gaming Habits	0.294	0.039	.319	7.51	<.001

The predictive effect is lower than the emotional effect, but the results still demonstrate a strong correlation between binge gaming and cognitive problems. Individuals who reported higher involvement in gaming also reported more serious problems with attention, working memory, and decision-making capacity. The conclusion can be related to neurocognitive research indicating that prolonged game play may be one reason for attentional fatigue and reduced executive functioning (Yuan et al., 2017).

Physical Health Outcomes

The regression model predicting physical health effects is significant ($F = 116.47$, $p < .001$) and accounted for 19 percent of the total variance in physical health complaints ($R^2 = 0.190$).

Table 5: Regression Analysis Predicting Physical Health Impact

Predictor	B	SE	β	t	p
Binge Gaming Habits	0.576	0.053	.435	10.79	<.001

The participants who had lengthy gaming time reported a large proportion of eye strain, headaches, musculoskeletal discomfort, and sleep disturbances. These are the symptoms associated with prior research that found a correlation between extended screen time and visual fatigue and sedentary health consequences (Hale & Guan, 2015). Sleep disturbance cannot be overlooked, as playing video games at night can disrupt circadian rhythms and reduce the quality of accumulated sleep.

Mental Health Outcomes

The regression model that analyzed the relationship between binge gaming and psychological distress identified a statistically significant predictive outcome between the two variables ($F = 142.61$, $p < .001$).

Table 6: Regression Analysis Predicting Mental Health Outcomes

Predictor	B	SE	β	t	p
Binge Gaming Habits	0.435	0.036	.472	11.94	<.001

The model accounted for 22.3 percent of the total variance in mental health results ($R^2 = .223$), which implies that over-gaming can be a major cause of psychological distress, such as stress, anxiety, and emotional instability. These results are in line with the World Health Organization's diagnostic models for Gaming Disorder, which identify an inability to control gaming responses and prioritizing gaming over other aspects of life as indicators of problematic gaming behavior.

HYPOTHESIS TESTING SUMMARY

Table 7: Summary of Hypothesis Testing

Hypothesis	Statement	Result
H1	Binge gaming negatively affects cognitive functioning	Supported
H2	Binge gaming increases emotional dysregulation	Supported

H3	Gaming decision mechanics influence impulsivity	Not Supported
H4	Prolonged gaming leads to physical health problems	Supported
H5	Socioeconomic status moderates gaming behavior	Not Supported
H6	Structured gaming interventions improve outcomes	Supported

DISCUSSION

This study is used to give a multidimensional account of the psychological and physiological effects of excessive gaming behavior by examining the behavioral pattern, cognitive effects, emotional coping, physical health indicators, and mental indicators. The results support the hypothesis that binge gaming is associated with numerous adverse health effects, especially among emotionally susceptible population groups. The findings show that binge gaming is influential in emotional control, brain performance, physical health, and mental well-being. These results are consistent with the increasing amount of literature that indicates that excessive exposure to digital gaming environments may result in loss of behavioral control and mental distress (Kuss and Griffiths, 2017; Pontes and Griffiths, 2015). The moderate gaming levels can prove beneficial to the user in terms of intellectual stimulation and entertainment; modern statistics reveal that gaming is destructive when carried out compulsively and out of control.

The other observable result of this research is the fact that emotional dysregulation is closely related to binge playing. Regression analysis showed that binge gaming significantly contributed to emotional impact, so its variance is about 24 percent. It implies that a vigorous gaming habit can result in mood swings and anger, as well as more common displays of the stress responses. In addition to this, emotional dysregulation may also arise when individuals become psychologically addicted to gaming as a primary coping mechanism with stress or negative emotions. It is possible to correlate these findings with the previous research that demonstrated that problematic gaming behavior is often connected with emotional instability and maladaptive coping strategies (Dong and Potenza, 2014). By playing a game when emotionally troubled, gamers can experience a sense of psychological relief or mood stabilization. This addiction, in the long term, can reinforce the obsessive nature of playing habits and reduce the intake of healthier coping mechanisms. This theory is the compensatory internet use theory developed by Kardefelt-Winther (2014), who argues that people may use the internet excessively to alleviate stressors, loneliness, or emotional problems in real life. The findings of the current research can be utilized to prove the relevance of this theoretical approach as they show that binge gaming patterns are closely associated with emotional distress in people with both ADHD and BDD. Another finding of the study is that cognitive outcomes are significantly related to binge video game play. The predictive power of the cognitive model is lower than that of the emotional outcomes, regression analysis still showed that binge gaming is a significant predictor of cognitive problems such as poor attention and lack of concentration. This observation is specifically pertinent to the nature of ADHD, which already implies difficulties with attentional control and executive functioning.

According to past studies on neurocognition, the problem of excessive gaming has been claimed to have an impact on attentional processing and the cognitive control process within the brain (Yuan et al., 2017). Certain games may positively affect the visuospatial processing and problem-solving, and too much gaming may also cause cognitive fatigue and decline in executive functioning (Bediou et al., 2018). In the context of ADHD populations, heavy gaming may be an addition to the already existing attentional problems by reinforcing quick circuits of rewards and continuous stimulation. The other useful finding of this study is the relationship between the habits of binge gaming and physical health. The results of the regression analysis indicated that binge gaming is a powerful predictor of physical health-related complaints, including eye strains, headaches, musculoskeletal aches, and sleeping disorders. These findings are in line with previous research on the medical effects of screen time and inactive digital usage (Hale & Guan, 2015). The duration of time playing is associated with excessive sitting, hand movements, and continuous eye

contact with the computer monitors. The tendencies can cause musculoskeletal stress, eyeglass eye strain, and sleeping disorders in the long-term. The problem with the sleep disturbance is also quite disturbing, as most gamers play games late at night, which alters circadian rhythms and lowers the quality of sleep. Many psychological and cognitive complications, including low levels of concentration, high levels of stress, and emotional instability, have been ascribed to the deficit of quality sleep. Another important finding in this study is the relationship between mental health outcomes and binge gaming habits. The regression analysis revealed that the binge gaming process had a likely 22 percent contribution to the psychological distress variance. Participants who said they are more engaged in gaming are also found to be more engaged in stress, anxiety, and emotional instability. These results confirm the increased awareness about problematic gaming behavior as a possible behavioral health issue. The World Health Organization has officially considered Gaming Disorder as a pattern of gaming behavior that is characterized by a loss of control over gaming activities, growing importance assigned to gaming over other areas of life, and the lack of stopping gaming even after it leads to negative consequences. The trends of the current research fit into this conceptualization, especially in terms of emotional suffering and behavioral addiction.

Another significant finding is the need to integrate personal psychological vulnerabilities into the analysis of gaming behaviors. Patients with ADHD can be especially vulnerable to over-gaming because of the tendency to become attracted to high-stimulation settings depicted by fast feedback and rewards. In the same way, patients of BDD can seek refuge in playing games as a way of avoiding body anxiety or social anxiety. Such psychological processes can lead one to play longer and fail to control gaming behavior. The results of the present study can be applied to the overall knowledge concerning the interaction between digital activities and mental health disorders, on top of determining possible risks related to excessive gaming.

To begin with, mental health experts who deal with people diagnosed with ADHD or BDD are supposed to consider testing the gaming habit as a regular psychological assessment. Knowledge about the interactions between gaming behaviors and emotional regulation and coping patterns can assist the clinician in developing more effective treatment plans. Second, schools and colleges should facilitate digital well-being programs that foster moderate technology use. Since most of the research participants in the current study are undergraduate students, universities can be considered a valuable setting for implementing programs that promote healthy gaming habits and prevent overuse of digital devices. Lastly, policymakers and creators of digital platforms might want to introduce functionalities that will encourage responsible gaming. They can include time-tracking software, screen-time prompts, and digital well-being notifications intended to help users control their gaming habits.

IMPLICATIONS

Theoretically, these findings support and broaden existing theories of behavioral addictions, specifically compensatory and reinforcement theories of digital gaming behavior (Kardefelt-Winther, 2014; Kuss and Griffiths, 2017). Particularly, the substantial correlation of binge gaming and emotional dysregulation points to the possibility of excessive gaming being a maladaptive emotion regulation tool, especially in groups with underlying psychological predisposition towards ADHD and BDD. This confirms the idea that gamification habits cannot be judged independently; they must be evaluated alongside prior knowledge of personal psychological characteristics, coping mechanisms, and stressors in the surrounding environment.

The research has clinical implications for early recognition and treatment of dysfunctional gaming. Gaming patterns ought to be evaluated by the mental health practitioner during routine diagnostic assessment, especially when dealing with the young adult population with ADHD and BDD. Excessive gaming screening may be added to the assessment of emotional dysregulation, cognitive complaints, and physical health complaints. Some interventions might include cognitive-behavioral approaches to improve self-

regulation, time management, and coping skills, which have been found to mitigate the adverse effects of compulsive gaming (King et al., 2020). Besides, psychoeducation grounded in the physiological effects of excessive doses of gaming, such as muscle strain related to muscles and sleep disorders, could impact adaptive behavioral change. In a practical and interpersonal scale, the findings indicate the influence of educational institutions, online platforms, and policymakers in improving digital well-being. Students of undergraduate level formed the research sample, which means that the universities are an extremely significant setting to conduct interventions. To decrease the compulsive behaviors, it is possible to introduce structured digital literacy trainings, sensitization of risks of screen time, and the source of healthy gaming. Similarly, digital platforms can have add-on features, including time management, cues, and breaks, which are effective in controlling excessive gaming (Pontes et al., 2018). Such initiatives may prevent the development of gaming as a leisure to a behavior disorder. Moreover, the findings contribute to the current literature regarding the embeddedness of digital practices, physical health, and mental health in the field of population health. The analysis supports the necessity to address gaming behaviors as part of a set of overall lifestyle and health promotion interventions by revealing that binge gaming is an indicator of musculoskeletal pain, sleep disorders, and cognitive exhaustion. A government-driven initiative can possibly encourage moderated digital use and physical exercise, sleep, and mental well-being, and lower the general expenses of non-activity among digitally literate societies. Finally, the paper concentrates on the value of contextualizing the gaming behavior as a part of personal vulnerability. The populations of ADHD and BDD may also be at risk of maladaptive gaming habits due to disregarded attentional and emotional regulation. Certain interventions, including personal psychoeducation, psycho-observation, and network support, in their turn, may prove to be more effective compared to generic gaming instructions. Such custom treatment is in line with the contemporary trends in mental health care and the necessity to integrate behavioral and psychological assessments in digital well-being programs.

LIMITATIONS

The cross-sectional design prevents making causal inferences. Although binge gaming is closely related to both emotional and cognitive, physical and psychological results, it is not clear whether excessive gaming can be causal of the outcomes or whether the pre-existing susceptibility motivates the gaming and the adverse health outcomes. The longitudinal studies are required to ensure clarity of time and causality. Second, the sample characteristics do not allow generalization. The sample of the research is on young adults with ADHD and underdiagnosed cases of BDD, where most of the respondents are females and undergraduates who are living in urban settings. This sampling technique is suitable for studying high-risk groups; it may not apply to older adults, rural populations, or individuals who have not been clinically diagnosed. Further research should use a greater variety of samples to enhance external validity. Third, the research is based on self-reported data, which are prone to response bias, social desirability, and false memory. Although self-reports are typically applied in behavior research, it is possible to consider the implementation of objective measures, including digital gameplay logs, neurocognitive assessments, and physiological measurements, to enhance the accuracy of the measurement and minimize bias. Fourth, the other moderating or intervening variables (e.g., social support, coping style, comorbid psychiatric conditions) are not examined other than simple demographics. These issues can affect the quality and direction of relationships between gaming and health outcomes. Such variables would provide additional detail for understanding the risk and resilience factors in future studies.

Finally, the research issue on the frequency of binge gaming does not provide a comprehensive view of psycho gaming behaviors. The genres of different games, social interaction during play, and the reward systems in the game may have varying effects. Sub-studies of context-dependent gaming behaviours would clarify more specific mechanisms linking gaming behaviour to cognitive, emotional, and physical health effects.

FUTURE RESEARCH DIRECTIONS

Based on the current results, several research directions can be suggested for future work. To begin with, longitudinal studies and experimental research must be conducted to establish causal relationships between binge gaming and negative outcomes. Research on how less frequent or structured gaming interventions can enhance emotional, cognitive, and physical health will be valuable for developing an intervention. Second, mediating and moderating mechanisms should be studied in research. As an illustration, emotional regulation, coping strategies, and social support can moderate the effects of gaming on mental health, and personal differences in the severity of symptoms in ADHD or anxiety in BDD may moderate its effects. Such mechanisms should be tested to explain why some people are adversely affected while others are not. Third, the researcher should focus on various gaming groups in the future, such as age groups, cultures, and individuals who are not clinically diagnosed. Such research would determine whether we have general or specific patterns of populations and inform culturally sensitive interventions. Fourth, physiological and objective behavioral measures are also to be included. On the one hand, the use of digital tracking software to trace the time, frequency, and type of games played and indicators of stress, sleep quality, and cognitive performance would contribute to the increased methodological rigor and allow for defining the risk levels more precisely.

Finally, maladaptive gaming prevention and treatment interventions ought to be evaluated by future researchers. Any formal intervention involving instruction in time management, cognitive-behavioral treatment, and psychoeducation can also reduce the negative consequences of binge gaming without the need to reduce the potential cognitive or social benefits of recreational gaming. A cross-study of the different models of interventions would prove beneficial in informing the best practices for clinicians, educators, and policymakers. The present study suggests the significance of multidisciplinary approaches involving both behavioral, cognitive, emotional, and physiological approaches to the study of the impact of digital gaming. As this multi-tiered approach will be developed, the study will make its contribution to evidence-based strategies to address the issue of supporting digital well-being and preventing the negative outcomes of excessive over-gaming.

CONCLUSION

This paper concludes that it has a severe implication on the issue of emotional, cognitive, physical, and mental health status among young adults who engage in binge gaming activities in the case of ADHD and Body Dysmorphic Disorder (BDD). The results show that excessive gaming is directly related to emotional dysregulation, cognitive disruptions, health-related complaints, and psychological discomfort. Emotional impact has always been found to be the most sensitive area that is impacted by regression and correlation studies; next in line are the mental and physical health outcomes. The results are also in line with the other studies that emphasize the complicated nature of problematic gaming and they supplement the current body of knowledge with the focus on clinically vulnerable populations. Practically, the study focuses on the fact that the level of need is so great that certain interventions are required to counteract maladaptive gambling habits. Structured psychoeducational classes, cognitive-behavioral therapy, school-based, and clinical-based digital well-being programs could be considered possible. The findings have shown that other personal weaknesses such as ADHD and BDD can mediate the gaming effects, and thus, individual strategies can also work better than general strategies.

Nevertheless, despite the deficiencies, e.g., cross-sectional study and self-report tools, the research would become a welcome addition to the researchers and practitioners. The second step in the literature will be to peace and interest in causal variables, inquire mediating and moderating variables, and argue objective behavioral and physiological results to formulate evidence-based suggestions. In conclusion, even though

digital gaming is among the most actively used leisure activities, it may have disastrous effects on emotional, cognitive, and physical well-being since it is overloaded.

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