

A Study of Physical Health Among High School Students Based on their Levels of Digital Gaming Addiction

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Abstract

The objective of this study was to assess the impact of digital gaming addiction on the physical health of high school students. For the present study, a total of 1000 high school students were selected from the Durg district of Chhattisgarh. The sample included 500 male and 500 female students, representing both government and private schools of the district. A stratified random sampling technique was adopted to ensure proper representation of the population. To assess digital gaming addiction among high school students, the DGAS-SSKP prepared by Saini and Kaur was used while physical health was assessed through a pre validated questionnaire. The result reveals that students with high digital gaming addiction reported significantly more physical health related issues than both low and average addiction groups. Hence it was concluded that controlling digital gaming addiction among high school students is need of the hour so that countries future human resource become physically strong.

Keywords: Digital gaming addiction, physical health, high school

INTRODUCTION

Physical health refers to the overall condition of the body and its ability to perform everyday tasks and bodily functions effectively and without discomfort. It encompasses a wide range of factors, including the proper functioning of physiological systems (such as cardiovascular, muscular, skeletal, and respiratory systems), physical fitness, the absence of illness or injury, and the capacity to recover from physical stress or trauma.

A physically healthy individual is able to lead an active lifestyle, maintain bodily strength and stamina, and sustain overall well-being across the lifespan. Physical health is not limited to the absence of disease or physical defects. Rather, it involves a positive state of functioning that supports daily life activities and long-term health.

Key components of physical health include regular physical activity, balanced nutrition, adequate sleep, proper hygiene, and the maintenance of a healthy body weight. These elements contribute to improved immunity, stronger bones and muscles, enhanced energy levels, and reduced risk of chronic illnesses such as diabetes, cardiovascular disease, hypertension, and obesity. One of the most important pillars of physical health is regular exercise.

Physical activity strengthens the heart, lungs, and muscles, improves flexibility and coordination, and boosts metabolic health. It also plays a crucial role in mental well-being, as it helps to reduce stress, anxiety, and symptoms of depression by releasing endorphins which is a natural mood-enhancing chemicals in the brain. Nutrition is another vital aspect of physical health. A balanced diet provides the body with essential nutrients, carbohydrates, proteins, fats, vitamins, and minerals. All these support growth, repair, and energy production.

Healthy eating habits help maintain optimal body weight and reduce the risk of developing nutrition-related diseases.

Sleep is equally important. Quality sleep allows the body to rest, regenerate, and repair tissues. Chronic sleep deprivation can impair cognitive function, weaken the immune system, and increase the risk of various physical and mental health conditions. Personal hygiene and preventive health care (such as regular medical check-ups, vaccinations, and screenings) are also key to maintaining physical health.

These practices help to prevent infections, detect illnesses early, and promote long-term wellness. Physical health is closely interlinked with mental and emotional health. Poor physical health can lead to reduced self-esteem, social isolation, and emotional distress, while mental health issues can negatively affect physical activity, eating habits, and sleep.

Therefore, a holistic approach that integrates physical, mental, and social well-being is essential for a truly healthy life. Hence, physical health is a dynamic and multifaceted concept that extends beyond the mere

absence of disease. It is about nurturing the body through healthy behaviours, maintaining functional abilities, and adopting a lifestyle that promotes longevity and vitality.

A physically healthy individual not only has the capacity to carry out daily tasks efficiently but also enjoys a higher quality of life and greater independence throughout different stages of life.

A growing body of research has consistently shown that prolonged gaming is associated with several negative outcomes. Digital gaming is a broad term that encompasses any type of game played using electronic devices such as computers, gaming consoles, smartphones, or tablets.

Within this category, digital games can be further classified based on how they are accessed and played, particularly in terms of internet connectivity. The three major forms are internet gaming, online gaming, and offline gaming. Physically, it may contribute to a sedentary lifestyle, resulting in musculoskeletal issues and disturbed sleep patterns.

This study offers a vital perspective on how excessive gaming impacts the physical health of adolescents. It aids in detecting early indicators of a decline in physical activity issues that may go unnoticed by parents, teachers, and caregivers.

OBJECTIVES

1. To assess the impact of digital gaming addiction on physical health of high school students.

HYPOTHESIS

H_{01} Digital gaming has no significant impact on physical health of high school students.

REVIEW OF LITERATURE:

Undavalli et al. (2020) conducted a cross-sectional study to find out how common Internet Gaming Disorder (IGD) is among adolescents and what factors contribute to it. It was observed that factors like age, gender, class level, and access to smartphones with internet were linked to a higher risk of IGD.

Prasad and Krupanidhi (2020) calculated the association between IGA termed as internet gaming addiction and physical health problems in high school students. Severe internet gaming addiction was significantly linked to physical functioning of adolescents, but no link was found between physical functioning with low and moderate IGA.

Aswathy, Devika, and Girish (2019) studied youth in Kerala and found that although some reported no health issues from gaming, many experienced problems like severe headaches from extended screen time.

METHODOLOGY

Sample

For the present study, a total of 1000 high school students were selected from the Durg district of Chhattisgarh. The sample included 500 male and 500 female students, representing both government and private schools of the district. A stratified random sampling technique was adopted to ensure proper representation of the population.

Tools:

Digital Gaming Addiction Scale :

To assess digital gaming addiction among high school students, the DGAS-SSKP prepared by Saini and Kaur was used. The construction of the scale was based on parameters such as impaired control over gaming, increasing priority given to gaming ..., continuation and escalation of gaming ... and behaviour pattern of sufficient severity to negatively affect certain areas of functioning. The scale consists of 20 items, and the students' responses can be recorded with 5-point Rating Scale. The range of scores is between 20 to 100. This scale is highly reliable and valid with higher score indicate greater gaming addiction. Norms - Scores of 54 or below are considered a low level of digital gaming, scores in the range of 55-69 denote an average level of digital gaming addiction, and scores equal to or above 70 denote a high level of digital gaming addiction.

Physical Health Questionnaire :

A pre-validated self-constructed questionnaire was used to assess the physical health of the high school students. This questionnaire has 20 statements based on Ocular and neurological strain (gaming related eye, head and hand fatigue), musculoskeletal and postural issues (pain and weakness in body posture and energy), sleep and rest disturbances (sleep loss and poor recovery), dietary and digestive habits (eating, hydration and digestion patterns) and physical activity and lifestyle (reduction in movement and fitness) respectively.

Procedure:

1000 high school students (500 male and 500 female students) from Durg district of Chhattisgarh were selected. The digital gaming addiction scale and physical health questionnaire were administered. The responses were numerically coded, and scores on physical health were arranged according to level of digital gaming addiction and analysed using Python open source code.

RESULTS

Table 1 One-Way ANOVA: Effect of Digital Gaming Addiction on Physical Health of High School Students

Level of Digital Gaming Addiction	N	Physical Health	
		Mean	S.D.
Low	516	28.84	3.54
Average	318	29.10	3.61
High	166	30.32	4.49

Table 1 (a) ANOVA Summary

Source	df	Sum of Squares (SS)	Mean Squares (MS)	F	p value
Between Groups	02	276.016	138.008	9.86	0.05
Within Groups	997	13955.008	13.997		
Total	999	14231.024			

As per entries in table 1, the mean score of physical health of students with low digital gaming addiction was 28.84, those with average digital gaming addiction had slightly higher mean (29.10) and students with high digital gaming addiction had the highest mean (30.32). **Here, higher scores indicate more issues related to physical health.** The ANOVA summary in Table 1a had an F value of 9.86, suggesting the significant impact of digital gaming addiction on the physical health of students ($p < 0.05$).

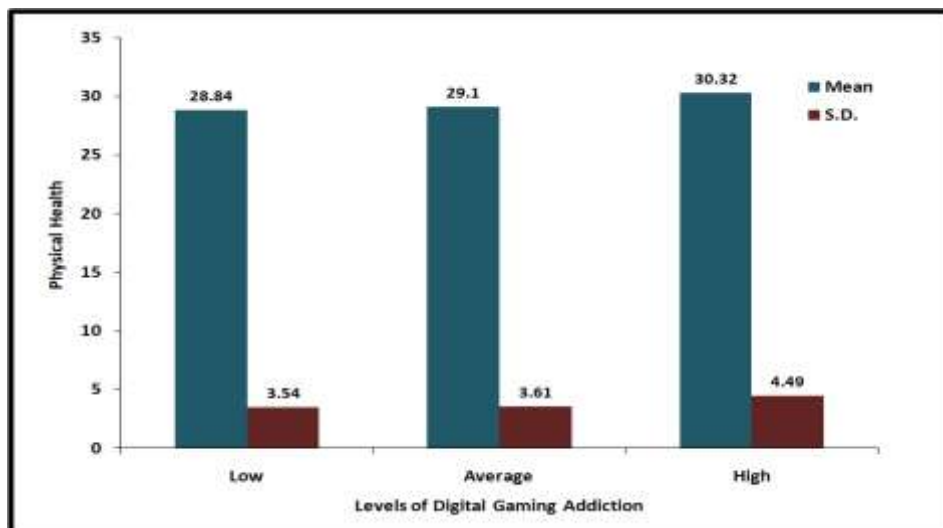
To further examine the nature of these differences, the Least Significant Difference (LSD) post-hoc test was conducted, as shown in Table 1(b).

Table 1 (b) Least Significant Difference Test: Comparing Physical Health Based on Categories of Digital Gaming Addiction in High School Students

Mean (I)	Mean (J)	Mean Difference (I-J)
Low Digital Gaming Addiction	Average Digital Gaming Addiction	-0.25
	High Digital Gaming Addiction	-1.47*
Average Digital Gaming Addiction	High Digital Gaming Addiction	-1.21*

* Significant at .05 level

Figure 1 Bar Chart Showing Physical Health of High School Students based on Levels of Digital Gaming Addiction



The LSD post-hoc test (Table 1b) highlights the specific group differences. The difference between low and average addiction groups was negligible and not statistically significant (Mean Diff. = -0.25). However, significant differences were found between low and high addiction groups (Mean Diff. = -1.47, $p < 0.05$) and between average and high addiction groups (Mean Diff. = -1.21, $p < 0.05$). These results suggest that students with high digital gaming addiction reported significantly more physical health related issues than both low and average addiction groups.

DISCUSSION:

The finding reveal a detrimental impact of digital gaming addiction on physical health of high school students. The findings further indicate that digital gaming addiction has a detrimental impact on the physical health of high school students, as excessive screen time and prolonged sedentary behavior often lead to issues such as eye strain, headaches, irregular sleep patterns, obesity, and reduced physical fitness, thereby compromising their overall well-being. This result is supported by studies conducted previously. Cankurtaran et al. (2022) a dignificant correlations between device use (computer/phone) and neck pain, and between game addiction and pain in the wrist, back, and lower back.

Karthikeyan et al. (2021) reported a significant correlation between IGD and insomnia, indicating that higher gaming issues were linked to more sleep problems.

Tandon (2020) highlights the effects of excessive PUBG use include eye strain, fatigue, headaches, obesity and sleep problems. Hence the results of the present study are in expected direction.

CONCLUSION

In conclusion, the findings of the study clearly indicate that digital gaming addiction has a significant and detrimental impact on the physical health of high school students. Excessive engagement in digital games is associated with reduced levels of physical activity, increased sedentary behavior, irregular sleep patterns, eye strain, musculoskeletal discomfort, and general fatigue, all of which negatively affect the overall physical well-being of adolescents. The results emphasize that uncontrolled gaming habits can disrupt the balance between academic responsibilities, physical activity, and healthy daily routines among high school students.

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