

**Internet Gaming Addiction among the Adolescents: A Study from Central India**Anushka Tiwari<sup>1</sup>, Smriti Pandey<sup>2</sup>, Jitendra Gupta<sup>3</sup>, Dhruvendra Pandey<sup>4</sup><sup>1</sup>MBBS Student, Government Medical College, Ratlam (MP)<sup>2</sup>Assistant Professor, Department of Pathology, Government Medical College, Ratlam (MP)<sup>3</sup>Dean & CEO, Government Medical College, Ratlam (MP)<sup>4</sup>Associate Professor, Department of Community Medicine, Government Medical College, Ratlam (MP)

Received: 30-04-2023 / Revised: 30-05-2023 / Accepted: 05-07-2023

Corresponding author: Dr. Dhruvendra Pandey

Conflict of interest: Nil

**Abstract:****Background:** Nowadays technology covers us all around it required for all works. But some also use this smart phone for their entertainment in gaming which ultimately leads to addiction.**Aims & Objective:** To estimate the internet gaming addiction among adolescents. To assess the perception of Non/Less users towards regular internet gaming users.**Material & Method:** A cross sectional study was conducted in 153 school students of class 11th and 12th. An adolescent having a smart phone and using it from the last 12 months were included. The semi structured questionnaire had 22 questions related to addiction according to different domains of DSM 5 criteria. The response was recorded on 5 point Likert's scale. The data was analyzed using appropriate Software and presented in the form of graphs and tables.**Result:** Prevalence of addicts among adolescents was 6.53%. The mean age of students was 16.32 years with standard deviation of 0.76. Male participants were 71.89%. As a student goes toward the addiction level his/her recharge was towards the higher side and he/she also needed extra data recharge.**Conclusion:** This study gave a wholesome idea about the gaming behaviors of students, their internet usage and perspective about the world of internet gaming.**Keywords:** Internet gaming disorders, Addiction, Adolescent, School students, Smart phone, DSM 5.

This is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.

**Introduction**

With the emerging era of technology, internet gaming became immensely popular and trending. It created its own world of virtual reality and delights. With the growing interest and engrossment towards this automated world of gaming, not only adolescents but many age groups get affected directly or indirectly. [1] Rather, being just a recreational activity, gaming is now growing as an addiction among young users.

They have a high propensity of spending hours, compromising with their health, social life and coming up with revolting behavior when withdrawn from playing the game. The conceptualization of gaming disorder shows relation to other addictive behavior such as substance use disorders or obsessive-compulsive disorder. [1-4] The adolescent age group is prone to develop addiction with these internet and online gaming. [5-6] With the growing awareness towards internet gaming being a disorder, in May 2013, internet gaming disorder was included in section 3 of DSM 5. [7] In 2018, these gaming disorders

were included in 11th Revision of the International Classification of Diseases (ICD-11) as code of 6C51. [8]

Gaming disorder is defined in the 11th Revision of the International Classification of Diseases (ICD-11) as a pattern of gaming behavior ("digital-gaming" or "video-gaming") characterized by impaired control over gaming, increasing priority given to gaming over other activities to the extent that gaming takes precedence over other interests and daily activities, and continuation or escalation of gaming despite the occurrence of negative consequences. [9] For gaming disorder to be diagnosed, the behavior pattern must be of sufficient severity to result in significant impairment in personal, family, social, educational, occupational or other important areas of functioning and would normally have been evident for at least 12 months. [9] Studies suggest that people who partake in the internet should be alert to the amount of time they spend on the internet and other online activities. [10]

Studies conducted in different parts of the world showed that the addiction prevalence ranges from 2% to 5% and this will later lead to dependence. [11-14] similar studies were conducted in India, showing the prevalence of internet addiction was little less as compared to the rest of the world but as the time passed this percentage gradually increased with time. [3,10] This addiction was related with all internet related activities.

A study on the prevalence of internet addiction and its association with psychopathology in Indian adolescents was conducted in 2017, by Piyush Upadhyay et al [4], 1150 adolescents took part in the study, 805 (70%) were male and 345 (30%) were females. The mean age of subjects was 15.46 years. Of the total, about 74.5% were potential addicts. According to Young's original criteria, 0.7% was found to be definite addicts.

Another recent study that was conducted in the year 2020, by Kerstin Paschke et al [15], on Assessing ICD-11 Gaming Disorder in Adolescent Gamers, considering ICD 11 criteria, 3.7% of the adolescent gamers were classified as gaming disordered. In the year 2020 itself another research over global prevalence of internet gaming disorders, conducted by Matthew WR Stevens et al [16]. The worldwide prevalence of gaming disorder was found to be 3.05%. With years passing as reviewed keenly, many studies have been conducted and the prevalence of gaming addiction is rising subsequently.

With the COVID time, as the lockdown prevailed, many adolescent users turned out to be engaged in gaming addiction related behaviors, and the study conducted on the impact of lockdown following COVID-19 on the gaming behavior of college students by Yatan Pal Singh et al [17] in year 2020, showed about half (50.8%) of the participants reported that their gaming behavior had increased. Online gaming addiction, its assessment and its impact hold vast latitude of research and studies into it. In today's time internet-based gaming or can say internet based mobile gaming reached even in remote places. Many new platforms, including apps containing many games are developing with lucrative advertisements to grow interest in internet gaming. Adolescents are the most vulnerable population. With this background this was planned with the aim to estimate the level of internet gaming addiction among adolescents and also to assess the perception of Non/Less users towards regular internet gaming users.

#### **Materials required and Method:-**

**Study Design:** Cross-sectional Study

**Study Area and target population:** This study was conducted in Two Private Schools. The

students of class 11th and 12th were made to participate in this study.

**Sample Size:** Sample size was calculated based on the primary objective of determining the prevalence of internet gaming addiction among adolescents studying in school. Sample size was calculated using formula  $n = Z^2 PQ/d^2$  with assumption that prevalence (P) of internet gaming addiction is likely to be approximately 10%,  $Q = 1 - p$ , with 95% confidence coefficient,  $\pm 5\%$  confidence interval, a total of 139 adolescents was required. We added 10% non-responders and rounded off to the next whole number, thus a total of 153 adolescents were required.

**Sampling Design:** The study was carried out in Schools situated in urban areas. A cross sectional survey with two stage sampling methods. In the first stage two private schools were selected randomly with the chit method and in the second stage based on inclusion criteria and availability, equal number students of class 11th and 12th were selected from both schools.

#### **Inclusion Criteria:**

1. Adolescents having android/ IOS smartphones with a valid internet plan.
2. Adolescent only study in class 11th or 12th was included.
3. Adolescents have been using his/her smartphones more than the last 12 months.

#### **Exclusion Criteria:**

1. Adolescent with their parents/Guardian not giving consent to study.
2. Adolescents having limited internet access or not having smart phones.

#### **Data Collection:**

**Tools used-** Semi structured questionnaire

**Techniques used-** Questionnaire was prepared in google forms with three sections. First section had basic information about participants without getting their names. Then the next section had 22 questions related to addiction according to different domains of DSM 5 criteria. The response was recorded on 5 points Likert's scale where 1- Rarely, 2- Occasionally, 3- frequently, 4- Often and 5- Always. Third section was for lower score participants to get their responses, having questions related to their perception toward internet gaming and their players. All students underwent this third section of questionnaire but responses were noted for only those who had lower scores.

**Pre testing of Questionnaire-** the Pretesting of questionnaire was done in undergraduate students of first and second Prof MBBS. Appropriate changes were done in the questionnaire based on responses of pretesting.

**Laboratory Procedures-** No Lab procedure was required.

**Ethical Issues:** Informed written Consent form was taken from each participant before interview and written assent form was taken from their parents or guardian. The consent form was mentioned in the questionnaire, if students tick on agree then only questions came otherwise directly move to the last part. The written assent form was obtained from the class teacher considering them as a guardian.

This is because covid-19 guideline did not allow students or their parents to come to school. The nature and purpose of the survey was explained to them. Confidentiality was maintained at each and every step. This study was approved by the Institutional Ethical committee.

**Data Analysis Plan:** In this questionnaire, score varies from 22 to 110. Higher the score, greater the addiction levels. The score value less than 22 was classified as non addicts, scores between 23 to 55 were possible addicts, 56 to 88 classified as Potential addicts and scores between 89 to 110 were classified as internet gaming addicts.[18-21]

**Data Scrutiny:** The excel sheet was imported directly from google forms. This excel sheet was checked for any duplication or incomplete information. This excel sheet was exported to SPSS (Software Package of Social Sciences) version 16. Data was be presented in the form of tables and graphs. Chi square test was applied for comparison of demographic variable with addiction level. P value less than 0.05 was considered as statistically significant.

#### **Observations and results:**

In this study, 153 school going students were observed. A questionnaire was circulated in Google form format and it was to study and estimate the level of internet gaming addiction among them and a general perspective of non-players towards the regularly playing ones. As the students filled the questionnaire, the conclusion was drawn out of it. Students were well informed about the study and were aware about the outcomes. Class 11th that is 76 students and class 12 that is 77 students were distributed according to their age and that came out to be 29 students of age 15 years, 47 students of age 16 years, 52 students of age 17 years and 25 students of age 18 years, thus 153 students overall. The mean age of students was 16.32 with standard deviation of 0.76.(Table 1) Among the 153 students, 110 were male and the rest 43 were female. As per the questionnaire and it's responses,

90.85 % of the students use android as their cell phone's operating system and only 9.15 of them used iOS. 60% of the students recharged there internet as 1.5GB per day, 28% recharged for 2GB per day, 6.53% of them recharged for 3GB per day and 5% students recharged for 5GB per day.

When questioned, students about the extra internet data pack recharge, 54% of them answered in favor. And 45.8% of students denied it. 79% of the students had played online internet games and 18% played the games sometimes. Non players who never played on the internet games were just 9.15% among them. (Table 2) It was eventually found that, out of 153 students participating in the study, 49.67% were non addicts and did not follow any addiction towards internet gaming.

24.84% students were possible addicts and 18.96% were potential addicts. 6.53% among the selected students showed internet gaming addiction. (Graph 1) When doing gender wise analysis of addicts, among male participants, 50.9% were not addicted, 20.9% were possible addicts, 20% were potential addicts and 8.2% were internet addicts. In female participants only 2.3% were internet addicts. In the class wise analysis, among 11<sup>th</sup> class students more percentage were towards possible and no addicts while in class 12<sup>th</sup> students 25.1% students in potential and internet addicts. (Table III)

In this study, 76 students came under non addicts whose responses towards regular players were recorded. The most common reason behind not to play internet games was that they think it was a waste of time 40.5% and second commonest reason that they think it distracts from regular studies. (37.8%). 10.8% of students were just not interested in playing. 40.5% think that gamers compromise with their food, sleep and social life. 58.3% of students did not think that playing games helped them to escape from emotional problems or solve their problems. 74.3% of students believed that playing games was affecting the mood of gamers. 37.8% non-addict students had ever suffered from conflicts with friends who were profound in gaming. 42 (56.7%) students thought that some violent game playing promoted them towards criminal activity. The main problems they observed among their friends where they developed aggressive behavior, easily agitated, were not able to concentrate, often used abusive language, had poor eyesight and enjoyed being lonely and not interacting with anyone.

**Table 1: Distribution of Adolescents according to Age**

Variables		Number of Adolescents	Percentage
Age	15 years	29	18.96
	16 years	47	30.72
	17 years	52	33.38
	18 years	25	16.34
Sex	Male	110	71.89
	Female	43	28.11
Class	11th	76	50.33
	12th	77	49.67

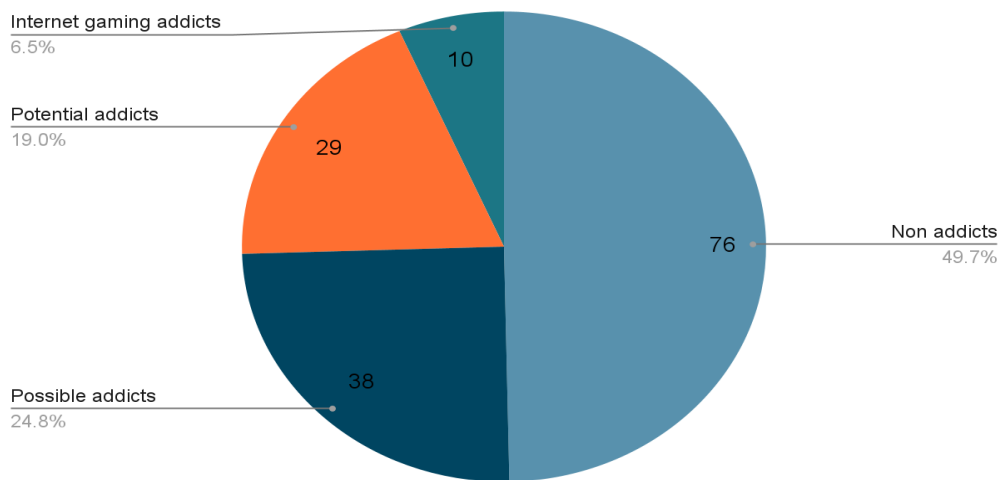
**Table 2: Distribution of Adolescents according to other important variables.**

Variables		Number of students	Percentage
Operating system of cell phone	Android	139	90.85
	IOS	14	9.15
Cell Phone internet Recharge Pattern	1.5 GB per day	92	60.13
	2 GB per day	43	28.10
	3 GB Per day	10	6.53
	5 GB Per day	8	5.22
Recharged for extra internet data in a month	Yes	83	54.25
	No	70	45.75
Ever played the internet or Mobile or PC Games	Yes	121	79.08
	No	14	9.15
	Sometimes	18	11.77
Do you regularly play internet video games	Yes	139	90.8
	No	14	9.2

**Table 3: Table showing age, gender and class wise comparison of different addiction levels**

		No addicts		Possible addicts		Potential addicts		Internet addicts		Total	P value
		No.	%	No.	%	No.	%	No.	%		
Sex	Male	56	50.9	23	20.9	22	20.0	9	8.2	110	0.22
	Female	20	46.5	15	34.9	7	16.3	1	2.3	43	
Age	15 years	20	69.0	8	27.6	1	3.4	0	0.0	29	0.001
	16 years	21	44.7	11	23.4	14	29.8	1	2.1	47	
	17 years	27	51.9	14	26.9	8	15.4	3	5.8	52	
	18 years	8	32.0	5	20.0	6	24.0	6	24.0	25	
Class	11th	40	52.6	24	31.6	9	11.8	3	3.9	76	0.033
	12th	36	46.8	14	18.2	20	26.0	7	9.1	77	

**Internet Gaming Addiction among adolescents**



**Graph 1: Showing distribution of Internet gaming addiction among adolescents**

## Discussion

As per the systematic review of literature and previous studies conducted, gaming addiction and gaming related disorders have gained attention over the years. Prevalence of gaming addiction and its pathophysiological effects have become an area of interest and indeed, need of the hour for awareness over excessive gaming patterns. The studies conducted internationally on the western population of adolescents, show addiction prevalence of 3% or approximate, these studies were conducted in the early to 2000's, and it came out to show a major prevalence percentage. [22-23] With years, as evolution and advancement of technological science is occurring, young brains are getting engrossed into it. And hence when the studies were conducted in subsequent years, it showed an increasing prevalence basis, as this study showed a higher prevalence of gaming addicts with advancement of technology. [3,4,6,10,18,24]

Many studies conducted across the globe showed the pathological effect of gaming on adolescents affecting their mental, social and behavioral health, whereas this study assessed the level of addiction and obtained the perspective of students who were not regularly engaged into internet gaming about the gaming addiction and addicts.[16,17] As this study shows a higher prevalence of addiction levels among selected ones, as collated with other studies conducted before lockdown period. [3,4,6,10,24] This could be a possible sequelae of increased exposure to gadgets during the lockdown period. With the ongoing COVID era, adolescents being more exposed to gadgets reports increased gaming behaviors and associated stress and psychological behavioral changes as mentioned in the studies conducted in 2020.[25]

This study obtained opinions of non-players about gaming addicts which reflected the pathological changes among their friends who are addicts and a common viewpoint towards awareness about Internet gaming disorders.

Certain drawbacks which this study holds can be, a limited sample size, assessing only a bunch of adolescents on the contrary, many of them are affected and need awareness.

Prevalence of internet gaming addicts was continuously increasing and affected the most productive part of our country. There is a need for certain guidelines for restricted use and awareness campaigns to overcome this problem. Limited availability of these violent gaming platforms is a necessity of society. Apart from this there is a need for close watch of parents on the children. Peer education and motivation can help adolescents to get out of this problem.

## Conclusion

The conclusion of the study conducted was based on the responses of the students. As per them, the majority of the adolescents filling up the form were 16-17 years of age, majority being males. Maximum used android based operating systems and were involved in internet gaming disorders. As the results came out, a very high percentage of them were potential addicts and about 6.53% of them were addicted to internet gaming. As the results of non-players were obtained, maximum of them concluded that excessive internet gaming affects social, mental and academic aspects a lot. Not only do they mention the academic loss but a basic extracurricular activities participation was hampered. Health related changes and behavioral decline was also one of the most presented perceptions.

## Reference

1. Year in review 2019, 5 reasons why this was the year of gaming in India. Sohini Mitter (2019) <https://yourstory.com/2019/11/online-gaming-2019-fantasy-sport-live-quiz-pubg-startups> Accessed on dated 24/01/2020.
2. Internet Gaming Disorder in DSM-5: A disorder for further study. Stephanie A Sarkis (2014). <https://www.psychologytoday.com/us/blog/her-e-there-and-everywhere/201407/internet-gaming-disorder-in-dsm-5> Accessed on 23/01/2020.
3. Goel D, Subramanyam A, Kamath R. A Study on the prevalence of internet addiction and its association with psychopathology in Indian adolescents. *Indian J Psychiatry*. 2013; 55(2): 140-143.
4. Upadhyay P, Jain R, Tripathi VN. A study on the prevalence of internet addiction and its association with psychopathology in Indian adolescents. *Indian J Neurosciences*. 2017; 3(2): 56-60.
5. Jang KS, Hwang SY, Choi JY. Internet addiction and Psychiatric symptoms among Korean adolescents. *J Sch health* 2008; 78: 165-171.
6. Sharma A, Sahu R, Kasar PK, Sharma R. Internet addiction among professional course students: A study from central India. *Ind J Med Sci Public Health* 2014; 3(9): 1069-1073.
7. Diagnostic and statistical manual of mental disorders. American psychiatric association. (2019).<https://www.psychiatry.org/psychiatrist/s/practice/dsm> Accessed on 19/01/2023.
8. Gaming Disorder, ICD 11 for Mortality and Morbidity Statistics (2019).
9. Gaming Disorder, World Health Organization (2018), [www.who.int/features/qa/gaming-disorder/en/](http://www.who.int/features/qa/gaming-disorder/en/) Accessed on dated 23/01/2023.

10. Raju Srijampana VG, Endreddy AR, Prabhath K, Rajana B. Prevalence and patterns of internet addiction among Medical Students. *Med J DY Patil Univ.* 2014; 7(6): 709-713.
11. Batthyány, D., Müller, K. W., Benker, F., & Wölfling, K. Computerspielverhalten: Klinische Merkmale von Abhängigkeit und Missbrauch bei Jugendlichen [Computer game playing: clinical characteristics of dependence and abuse among adolescents]. *Wien klin Wochenschrift* 2009; 121(15-16), 502–509.
12. Thomas, N.J.; Martin, F.H. Video-arcade game, computer game and Internet activities of Australian students: Participation habits and prevalence of addiction. *Aust. J. Psychol.* 2010; 62: 59–66.
13. van Rooij AJ, Schoenmakers TM, van de Eijnden RJ, van de Mheen D. Compulsive Internet use: the role of online gaming and other internet applications. *J Adolesc Health.* 2010 Jul; 47(1):51-7.
14. Van Rooij, A. J., Schoenmakers, T. M., Vermulst, A. A., Van den Eijnden, R. J., & Van de Mheen, D. Online video game addiction: identification of addicted adolescent gamers. *Addiction (Abingdon, England)*, 2011;106(1): 205–212.
15. Paschke K, Austermann MI, Thomasius R. Assessing ICD-11 Gaming Disorder in Adolescent Gamers: Development and Validation of the Gaming Disorder Scale for Adolescents (GADIS-A). *J Clin Med.* 2020;9(4):993. Published 2020 Apr 2.
16. Stevens MW, Dorstyn D, Delfabbro PH, King DL. Global prevalence of gaming disorder: A systematic review and meta-analysis. *Aust N Z J Psychiatry.* 2021; 55(6):553-568.
17. Balhara YP, Kattula D, Singh S, Chukkali S, Bhargava R. Impact of lockdown following COVID-19 on the gaming behavior of college students. *Indian J Public Health* 2020;64:S,172-6.
18. Choudhary B., Menon P. Internet addiction and its determinants among medical students. *Ind Psychiatry J.* 2015 Jul-Dec;24(2):158-162.
19. Goel D, Subramanyam A, Kamath R. A study on the prevalence of internet addiction and its association with psychopathology in Indian adolescents. *Indian J Psychiatry.* 2013; 55(2): 140-3.
20. Young KS. *Caught in the Net: How to Recognize the Signs of Internet Addiction – And a Winning Strategy for Recovery.* New York, United States: John Wiley & Sons. 1998.
21. Anand N, Jain PA, Prabhu S. Prevalence of excessive internet use and its association with psychological distress among university students in South India. *Ind Psychiatry J.* 2018;27(1):131-40.
22. Kuss DJ, Griffiths MD. Online gaming addiction in children and adolescents: A review of empirical research. *J Behav Addict.* 2012; 1(1):3-22.
23. King DL, Chamberlain SR, Carragher N, et al. Screening and assessment tools for gaming disorder: A comprehensive systematic review. *Clin Psychol Rev.* 2020; 77:101831.
24. Singh S, Dahiya N, Singh AB, Kumar R, Balhara YPS. Gaming disorder among medical college students from India: Exploring the pattern and correlates. *Ind Psychiatry J.* 2019; 28(1):107-114.
25. Amin, K.P., Griffiths, M.D. & Dsouza, D.D. Online Gaming During the COVID-19 Pandemic in India: Strategies for Work-Life Balance. *Int J Ment Health Addiction.* 2020.