

Digital Addiction and Its Impact on the Mental Wellbeing of Adolescents

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ABSTRACT

Digital addiction has become an intriguing concern over the recent years because of the rapid explosion of gadgets and other online platforms attracting youth to spend most of their time online. Excessive use of digital platforms has been associated with many psychological issues. The results revealed significant correlations among digital addiction, depression and stress among both males and females. Males were more likely to be digitally addicted than females were. In contrast there were females on the depression scale. The study emphasises the need to implement robust policies for schools and other educational institutes to make healthy practices for using digital media and to create alertness regarding the adverse effects of digital addiction over mental health.

Keywords: Depression, digital addiction, female adolescents, male adolescents, perceived stress

INTRODUCTION

The growth of technology has led to a remarkable revolution in almost every aspect of life. With the advancement of technology and the availability of gadgets on a larger scale, digital addiction has increased many folds over recent years. In the

present era of digital transformation, digital technologies have become inevitable in many domains of regular life, and have transformed the working of communities across the globe (Zhou et al., 2022). The average person with digital access spends 2.5 hours each day on social media, and there are now approximately 4.5 billion digital media users. This evolving technology has a strong impact on an individual's lifestyle especially that of adolescents as they are the most vulnerable. The continuous increase in the number of single-parent families and the increasing number of parents who work for most hours of the day may be partly responsible for children's unsupervised overuse of the internet. Many young people make excessive digital use due to factors related to following new trends (e.g., latest online games or applications) in their social environment (Kuss DJ et al.2013). China has the most internet users of all countries. There are an estimated 1 billion digital users in 2024. It is trailed by India, with over 750 million digital users in 2024.

Digital addiction increases depression and perceived stress and decreases academic performance (Coskun & Muslu, 2019). The term "digital addiction" refers to a pattern of compulsive behavior that is fostered and provoked by digital media and technologies. It has the potential to have both positive and the negative impacts on adolescents' social, physical, and mental health. Many people still place the blame for digital addiction on the users themselves, rather than on the programs themselves or their creators. As a result, discussions of digital addiction tend to be couched in terms of placing the onus for finding a solution squarely in the hands of psychologists, sociologists, and medical professionals. (Alrobai et al., 2014).

LITERATURE REVIEW

Online gaming addiction is the most common type of addiction among adolescents because of its popularity. Playing in excess leads to symptoms of anxiety. Virtual players become so indulgent or addicted in their virtual world that they overlook their real life and its challenges and responsibilities. This further develops isolation or anxiety among adolescents as they fail to maintain a balance between the virtual and real worlds. (Kaya, A.et al.,2023). Digital addiction becomes a behavioral addiction when the device controls the user rather than when the user controls the device. Addiction leads to uncontrolled behavior leading to mental frustration, anxiety and stress among adolescents (Orlowski, 2020; Callis, 2020). Loneliness and Anxiety are prominent psychological issues connected with digital addiction. The addicted individuals experienced anxiety when they were not able to access the internet for a long period of time. They crave for it and as a result mental well-being is affected. (Abu Khait, A. et al.,2022).

Insufficient sleep, late-night digital gadget usage, and overdependency on digital media are all linked to increased risk of depression and suicidal ideation.

Addiction to digital media has been associated with structural alterations in the parts of the brain that control emotions. (Lissak,2018). Ding, K., et, al., (2024) conducted a study to explore that digital addiction in children and adolescents leads to structural brain changes, including reduced gray and white matter volume in various regions involved in executive function, reward processing, and sensorimotor activities, impacting cognitive capabilities and contributing to problematic smartphone use, internet gaming disorder, and internet addiction. Aziz, M., et. al., (2024) explores the impact of digital addiction and essential and non-essential technology usage time on the physical and mental fatigue in Middle East over 477 adolescents. The findings indicate that digital addiction and non-essential usage time are positively associated with weariness among adolescents. On the contrary, essential usage time is negatively associated with mental weariness. These results highlight the value of distinguishing digital usage based on intent and necessity.

Family and friends play a vital role in enhancing interpersonal relationships. Interpersonal relationships are social connections with each other. This connection is very much necessary especially in adolescents to develop their sound physical and mental health leading to overall personality development. Today's youth are much occupied with digital engagement with no time to interact with family or friends. An enduring desire to be in the virtual world can lead to distress and anxiety among adolescents. Uncontrolled urges for the virtual world result in feelings of isolation and suspension from the physical world. Depression and stress are prominent psychological repercussions of digital addiction. (Ye, X. L. et al., 2023). Adolescents have formulated their own digital world with a lack of human connection. An increasing number of studies have shown that digital addiction is a fundamental social determinant of depression (Sayeed et al., 2020) with direct and indirect effects on mental stress further resulting in depression in adolescents (Karamitsa and Skordilis, 2015). Exorbitant engagement in digital activity can harm one's life and mental health through mental harassment, cyber intimidation and privacy infringement, which often results in decreased social participation (Singh, 2020).

While the internet can improve well-being and daily life, internet or digital addiction has become a rather serious mental health issue due to problematic internet usage (Anderson et al., 2017). Depression is one of the most frequently researched variables related to digital addiction in adolescents. Alhassan et al. (2018) reported that depression a mood disorder is strongly associated with excessive smartphone usage. Excessive usage also leads to irritable behaviours, frustration and stress among adolescents. Research by Horvath et al. (2020) is the first study using magnetic resonance imaging (MRI) technology for brain imaging to observe changes in brain gray matter activity between a group of individuals identified with uncontrolled digital addiction and a control group of less addicted adolescents. Individuals' mental health is among the most recognized

consequences of digital media addiction. Stress is elicited when digital media usage reaches addiction levels, which may affect mental health rather than be a healthy coping technique. Individuals experience depression following the onset of digital media fatigue after excessive digital media use (Haand & Shuwang, 2020). Wu, Y et. al (2024) unveils that the excess use of digital media among Chinese adolescents has increased anxiety by shaping aesthetic standards and creating a comparative field.

The excess digital usage especially in females experience more anxiety in relation to maintaining aesthetic standards and towards beautification. Digital media users utilize social media as a source of diversion to manage stress (Gizem et al., 2022, Orsolinni et al., 2022; Xiao et al., 2022). Nevertheless, social media addicts accord little importance to daily routines, hobbies, and intimate relationships (Xiao et al., 2022). These events culminate in problems with executing tasks, daily functioning, and maintaining relationships. As a result, such individuals are at a greater risk of experiencing negative psychological health, particularly depression (Gizem et al., 2022; Vidal et al., 2020). Furthermore, (Keles et al. 2020) reviewed relevant studies and reported that depression levels were significantly increased among digital media addicts. Zewude, G.T., et.al (2024) reveals that digital addiction had a significant and negative direct effect on mental health. The result indicates that higher levels of digital addiction among the students is associated with poor mental health. Therefore, there must be, interventions and preventive measures to reduce digital addiction in order to ensure mental wellbeing among adolescents.

RESEARCH METHOD

The aim of the present study was to identify the impact of digital addiction among high school students. This was a descriptive study. It involves collecting and analysing quantitative data collected through Internet Addiction Test, Centre for Epidemiologic Studies-Depression Scale (CES-D) and Perceived Stress Scale (PSS). The study was limited to 150 high school students of private school students from Hoshiarpur district of Punjab. (India). The scores for the means and standard deviations of the internet addiction scale, depression scale and perceived stress scale scores were calculated, and T-ratios were calculated to evaluate whether a significant difference in the mean scores was detected between adolescent males and females on the internet addiction scale in relation to depression and stress. Furthermore, a correlation test was carried out to assess the effects of internet addiction on depression and stress separately for males and females.

Participants

The population of the study included 150 male and female adolescents from class XI/XII from the Hoshiarpur district of Punjab. The total number of female adolescents were 86 comprising 57.33%. Meanwhile, the male adolescents

comprised 64 or 42.67%. The schools were selected randomly for data collection. Participants, in the study were in the age range of 16 to 19 years. The test was administered to the students during their regular school time in their respective classes in the presence of their teacher and researcher. The participants were informed properly before filling the responses. The demographic information of the sample is represented in the table, graph and a pie chart below.

Table 1: Demographic Information

Demographic Information	N = 150	Percentage	
Age Group (Years)	16 Years	42	28%
	17 Years	33	22%
	18 Years	40	26.67%
	19 Years	35	23.33%
Gender	Female	86	57.33%
	Male	64	42.67%
Class	10 ⁺¹	78	52%
	10 ⁺²	72	48%
Religion	Hindu	74	49.33%
	Sikh	62	41.33%
	Muslim	11	7.33%
	Others	3	2%

Table 1 represents the age group, gender, class, religion and total number of students. The number of female participants is more as compared to male participants where N=Number of total participants. Table 1 reveals that the total students from age group 16 were 42, 17 age group were 33, 18 age group were 40 and 19 age group were 35. In the total number of participants, females comprise 86 in total out of 150 that is 57.33% and males comprises 64 out of 150 that is 42.67%. The participation of females is more as compared to males. Beside age group, the total participants from class 11 were 78 and class 12 were 72. The participants were from different religion ethnicity. The maximum number of participants were from Hindu ethnicity.

Figure:01

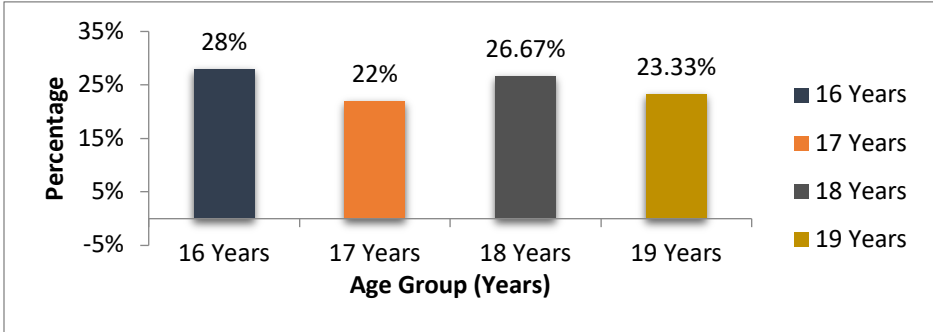


Figure 1 shows the number of participants in percentage as per their age. It shows that the maximum number of participants were from the age group 16 years whereas the age group 17 has less participation percentage.

Figure:02 Percentage of male and female participants

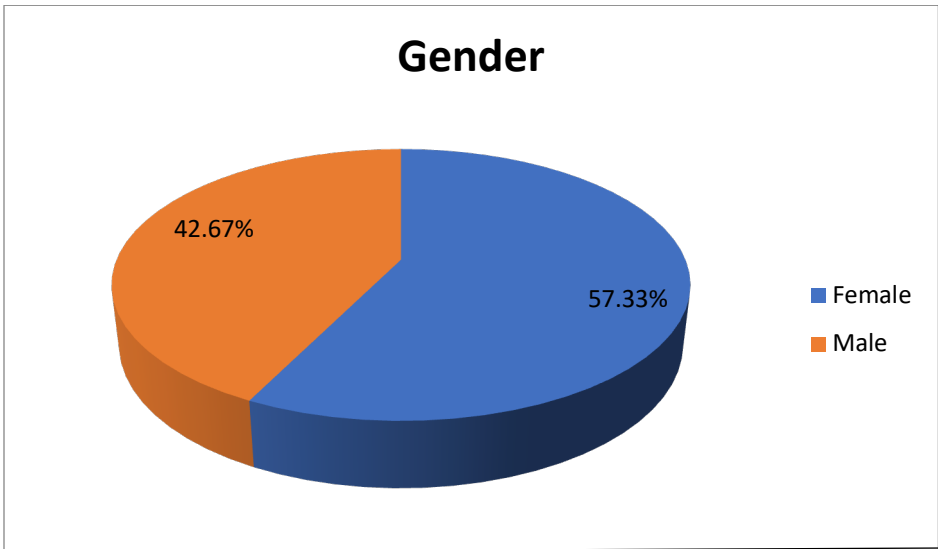


Figure 2 shows that female has more participation as compared to males. The total percentage of female participants is 57.33% whereas the male percentage is 42.67% only.

Figure:3 Class wise percentage of participants

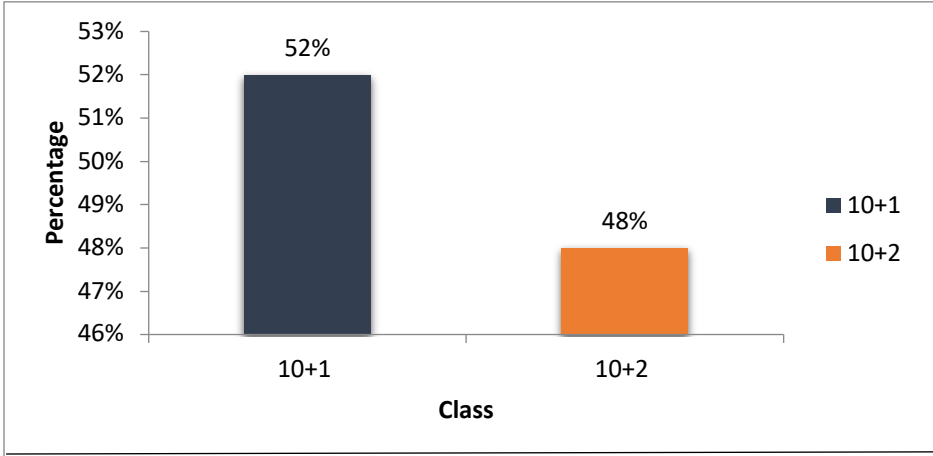


Figure 3 represents that class 11 has 52% of total participants whereas class 12 has only 48% of total participants.

Figure:04 Religious ethnicity in percentage

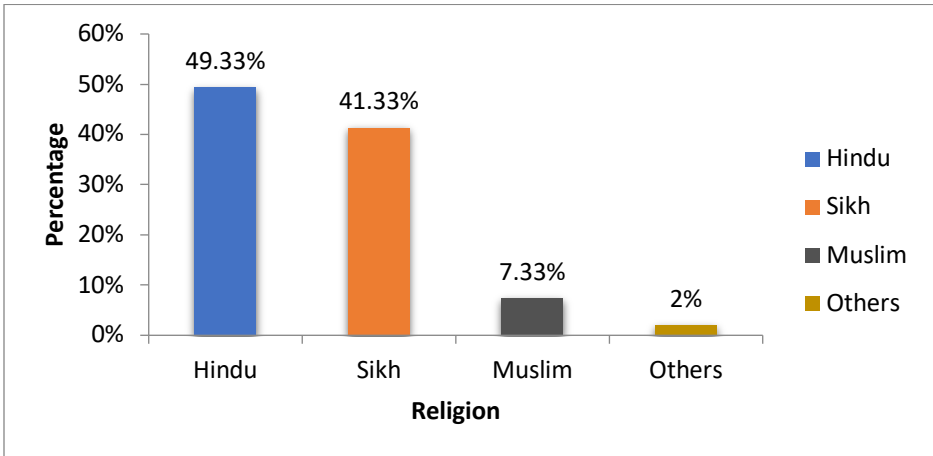


Figure 4 is showing the demographic details in relation to their religious ethnicity. The data is shown from the highest to the lowest ethnicity participation.

TOOLS

Internet Addiction Test: The Internet Addiction Test (IAT) developed by Kimberly Young (1996) is a reliable and valid measure of addictive use of internet. This test was used to measure internet addiction among adolescents. It is a 20-item scale covering the degree to which internet use disrupts everyday life (work, sleep, relationships, etc.). Each item is scored on a 5-point Likert scale. The score ranges from 20 -- 100. On the basis of the total score obtained on the test, the individual is placed into one of three categories: average online users (from 20 -- 39), moderate internet users (from 40 -- 69), and excessive internet users (from 70 -- 100). The higher the score is, the greater the level of addiction. The internal reliability of the scale is 0.93

The Centre for Epidemiologic Studies-Depression Scale (CES-D) is the Centre for Epidemiologic Studies-Depression Scale (CES-D), which measures depressive symptoms of individuals during the past week (Radloff, 1977). The CES-D has 20 statements rated on a Likert-type scale with a score range of 0--60 points. Higher scores indicate higher levels of depression among the students. A score of 16 points or higher was considered a risk for depression (Hann et al., 1999).

The Perceived Stress Scale (PSS) The Cohen's Perceived Stress Scale (1983) measures the degree to which situations in one's life are assessed as stressful to the individual. The PSS has 10 questions related to feelings and thoughts during the previous month and is rated on a five-point Likert-scale, with a total score ranging from 0--40. Higher scores indicate greater perceived stress. Scores ranging from 0--13 indicated low stress, scores ranging from 14--26 indicated moderate stress, and scores ranging from 27--40 indicated high stress (Cohen et al., 1983).

RESULTS AND INTERPRETATION

The current research has focused on investigating impact of digital addiction on adolescent males and females. The collected data was assessed through statistical analysis. A total of 150 (N=Number of participants) adolescents were there in the study. The total percentage of female participants is 57.33% whereas the male percentage is 42.67% only. Pearson correlations (r) were used to identify significant positive and negative relationships among the variables of the digital addiction, depression and perceived stress. In this study internet addiction was an independent variable whereas depression and perceived stress were independent variables. As indicated in Table 2, internet addiction was significantly positively correlated with depression ($r=0.43$, $p<0.01$) and stress ($r=0.49$, $p<0.01$) which means that a higher the level of internet addiction was associated with

greater depression and perceived stress. A p-value less than or equal to a predetermined significance level (often 0.05 or 0.01) indicates a statistically significant result, meaning the observed data provide strong evidence against the null hypothesis.

Table 2: Correlation of the measured variables

Variables	Internet Addiction Test
Depression Scale	0.43**
Perceived Stress Scale	0.49**

N=150 *p <0.05, **p<0.01

Table 3: Means, Standard Deviations and t-ratios of adolescent males and adolescent females on the Internet Addiction, Depression and Stress

Variables	Gender	Mean	Std. Deviation	Std. Error Mean	t test
Internet Addiction Scale	Male	58.240	16.786	3.357	2.335*
	Female	46.080	19.902	3.980	
Depression Scale	Male	49.600	13.611	2.722	2.752**
	Female	61.800	17.493	3.499	
Perceived Stress Scale	Male	43.800	16.284	3.257	1.013
	Female	48.000	12.829	2.566	

*p <0.05, **p<0.01 (df=148)

Table 3 presents the mean values and t-ratios for gender differences among the school students in the Hoshiarpur district of Punjab. As depicted in Table 3, adolescent males were found to have higher internet addiction scores (M = 58.240) than females were

($M = 46.080$), and the t-ratios ($t = 2.335$; $p > 0.05$), were statistically significant at the 0.05 level. Compared with female adolescents, male adolescents scored higher on the internet addiction scale indicating that male adolescents are more addicted than female adolescents.

Moreover, females were found to have greater scores on the Depression Scale ($M = 61.800$) than males were ($M = 49.600$), and computed t values were also found to be significant ($t = 2.752$; $p > 0.01$). On the other hand, the t-ratios for the Perceived Stress Scale ($t = 1.013$; $p < 0.05$) did not reach the level of significance. The obtained mean values show that females were found to be on higher scores as compared to males.

DISCUSSION AND CONCLUSIONS

The primary aim of this study was to determine the associations among internet addiction, depression and stress among male and female adolescents. In this study, all the participants had their own smartphone device and were using it freely without any interference from their family. This finding supports the findings of Anderson and Jiang (2018) and Vogels (2019), who reported that 95% of American teenagers incorporate the device into their daily life.

One of the major findings of the present study was that adolescent males had significantly greater internet addiction than their female counterparts. The internet is becoming increasingly influential for many people, especially adolescents. Some empirical studies have recognized gender as the most important factor influencing internet addiction. As expected, male adolescents were found to have higher levels of internet addiction than their female counterparts. These findings support researchers who in their respective studies reported that males were significantly higher on Internet addiction as compared to females. (Sharma, P. et al.2016) (Rehman, A. et al.2016) (Shao, YJ. et al.2018)

Researcher have considered various factors pertaining to internet addiction. It can vary by age, gender, demographic structure and the personality. Adolescents who are part of broken families or being taken care of by working parents form an emotional attachment with their online or virtual family. This gradually leads to digital addiction to stay connected to the virtual world. It is a kind of escapism for adolescents who are struggling emotionally. Moreover, today's youth feel that they are being given a chance to voice their opinions through digital platforms rather than being heard by their parents or family members. They enjoy the virtual world without knowing the consequences in the long run and unknowingly fall into the trap leading to miseries and poor mental conditions.

Male and females have different motivations and use the internet

differently. Males are more likely to use internet for entertainment purposes (Park, S.M.2013). Females tend to use the internet primarily for interpersonal communication (Aydm, B & San, SV.2011). Similar findings in Singapore and Hong Kong suggest that these gender differences prevail across different cultures. (Ho, RC. et. al 2014) Thus, the risk factors for internet addiction range from personal, social, and behavior-specific factors, highlighting the multifactorial model of the development of digital addiction.

In this study, digitally addicted adolescents especially females found themselves in a state of distress leading to stress and depression compared with males. The results revealed a significant positive relationship between digital addiction, depression and stress which is an alarming situation in a technology-driven world. Findings that depression is linked to excessive use of smartphones were also reported by Alhassan et al. (2018), Fisher-Grote et al. (2019), and Horvath et al. (2020). According the Global Peace Index (2016), approximately 2.8 million youth in the age group of 12-17 years have at least one major depressive episode. Internet addiction is associated with depression and adolescents' experience of depression when they are prohibited from playing online games. Similarly, depression has been found to increase among internet addicts.

The result of this study also revealed a significant association between digital addiction and stress among class XI and XII adolescents. There is no doubt that the adolescents are making effective use of the internet to explore academic content but they gradually deviate from it and direct towards unwanted surfing and exploration. This finding increases the urgency of educating adolescents with awareness of signs of depression. There is a dire need to prepare policies to check on the excess usage of the internet. This study revealed that female adolescents need intervention and support to reduce and overcome stress levels. It is important to communicate with adolescents at school to provide awareness regarding the impact of digital addiction on their mental health. In the 21st century, it is not possible to keep the children away from the digital media. Thus, the goal is to educate students, educators, district administrators, family and community stakeholders regarding the ill effects of excessive and wrong usage of technology. The study was limited to the Hoshiarpur district of Punjab only. It is further recommended that the researchers continue this evolving concern at different levels to prepare plans and policies for the betterment of the society.

IMPLICATIONS

The results of this study indicate a need for stakeholders, teachers, counsellors and policy makers to spread awareness and to work for intervention plans. Parents and other family members must be vigilant enough to monitor or track the activities of their children. They must build a healthy home environment where adolescents'

voices and opinions are heard properly. They must spend quality time to ensure children's social and emotional security. Other recommendations for implications include the following: (1) Digital Addiction is a worldwide issue; digital risk may be included in the school curriculum. (2) Teachers or school counsellors should focus on reducing adolescents' psychological behavior problems associated with digital addiction. (3) School management and administrators should develop counseling centers in schools, universities and at larger communities. (4) School counsellors or nurses must receive training about adolescents' mental health in school. (5) Meditation and yoga must hold as a mandatory lesson on the school time table. (6) Family counseling can be provided for a better family environment if, necessary. Therefore, governments in various countries have been actively seeking to reduce internet usage to reduce depressive symptoms and other mental health problems in adolescents (Chung et al., 2019). Mental health professionals are encouraged to promptly evaluate and develop preventive interventions for adolescents' depressive symptoms by monitoring and managing their online time in internet usage.(Wu et al., 2022). (7) Health department at both at the Centre and State levels must formulate effective policies and ensure their implication at the grass root level. (8) There must be healthy recreation clubs at the local level to attract adolescents to use their time wisely through other recreational activities. (9) School teachers or counsellors must conduct seminars, show some documentaries or reliable documentations to spread awareness about the ill effects of digital addiction. (10) Dieticians or health physicians must spread awareness about healthy eating habits and maintain a balanced life style to ensure adolescents' mental well-being.

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