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Impact of Technology Addiction among School Going Adolescents – An Observational Study

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Abstract

Adolescents have been labelled the "digital natives of the technology age", yet evaluating adolescents' understanding, attitudes, and behaviour with respect to technology addiction (TA) Internet use, instant messaging, online gaming, social networking, and computer use are all examples of problematic technological applications, particularly among high school kids. The present study aims to assess the impact of technology addiction among school going adolescents. A quantitative approach with non-experimental descriptive research design was adopted for the present study. A 50 school going adolescents were recruited as study participants by using Convenient Sampling Technique. A self-structured questionnaire was administered to collect the demographic information and "Technology Addiction Scale "was used in the research. The present study suggests that the level of technology addiction among school going adolescents, majority of them 27(54%) has mild addiction, 13(26%) has moderate addiction and 10(20%) has severe addiction. Technology addiction has emerged as a major public health issue among Indian youth. To promote healthy technological behaviours, an integrated socio-ecological framework with a multilevel approach that targets risk factors at various levels is required.

Keywords: *Addiction, Adolescents, Impact, Social Media, Technology.*

Introduction

Technology has the power to create several new issues, particularly among high school pupils. The ease with which technology may be used and accessed increases the risk of young students becoming addicted to it [1]. Various easy-to-carry digital gadgets (smart phones, tablets, laptops, etc.) have arisen fast since the beginning of the millennium, ushering humans into the "digital era". These digital gadgets have become everyday necessity for human learning and existence, impacting children's academics, entertainment, and social relationships [2]. The Internet has grown to become an integral part of our lives. For most people, the internet is a fantastic information engine and an undoubted possibility for social connectivity, self-education, economic advancement, and liberation from shyness and paralysing inhibitions. For them, the internet improves their well-being and standard of living. Others may utilise it to engage in pornography, excessive gaming, long-term discussion, or even gambling. There have been rising worries worldwide over what has been labelled as "internet addiction" [3].

Technology addiction (TA) is vital for designing balanced and effective measures to support their physical and psychological well-being. Smartphone's have made social networking, texting, gaming (both online and offline), entertainment, music listening, and

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movie viewing a daily activity. The average person checks their phone nearly 100 times per day; 12% of teenage boys are addicted to video games; teens spend an average of 7-9 hours per day on screens; the average gamer plays for at least eight hours per week; and young adult Face book and Instagram users have significantly higher rates of anxiety and depression. Adolescence (10-19 years old) marks the transition from childhood to adulthood; the expectations and decisions made during adolescence have a substantial influence not only on current health practices and well-being, but also, on their health as adults [4, 5]. Adolescents, like most addictive behaviours, are especially prone to technology addiction due to its ease of access, inadequate capacity for self-regulation, and higher danger of peer pressure and experimentation [6].

Technology addiction is characterised by excessive and obsessive use of digital technology, which severely impairs a person's social, psychological, and vocational functioning. Despite its exclusion from the DSM-5, many specialists support for its inclusion since it produces discomfort and impairment, like other addiction illnesses [7, 8]. According to studies, the prevalence of technology addiction is concerning, with estimates indicating that up to 38% of people in the United States and Europe exhibit symptoms of technology dependency. This high incidence indicates a significant influence on societal mental health, needing close monitoring and appropriate public health initiatives. Research highlights the issue of teenagers' uncontrollable access to technology and lack of control over its use. Over the last decade, visual issues associated with the usage of digital displays have progressed from a workplace health concern to a broader public health issue. In 2018, the World Health Organisation recognised IGD as an illness and included the "gaming disorder" diagnosis to the ICD-11. According to these criteria, more and more youngsters have developed digital addictions, particularly during the COVID-19 epidemic. As a result, DA has emerged as a significant public health concern on a worldwide scale, and several intervention initiatives have been designed and implemented to address this epidemic. However, no systematic reviews have been undertaken in the last five years to synthesise intervention research, identify beneficial programs, and guide policymakers and practices. This scoping study intends to address this gap by synthesising relevant initiatives and their impacts from 2018 to 2022[9, 10, 11].

"Digital eye strain-DES" is a recent phrase developed to encompass all elements of vision problems associated with extended hours of work in front of a digital screen. Addiction, as defined by the American Psychiatric Association (APA), involves making incompatible decisions despite a clear wish to change. Addiction leads to repetitive behaviours, loss of control, and significant issues in everyday life. Addiction is defined as a fixation with a certain activity that interferes with daily life. Addiction can limit time spent on other activities including eating, sleeping, learning, and socialising with family members [12, 13]. Sleep issues, lower academic performance, impaired social interactions, weight gain, malnutrition, and cardiovascular disease are among the numerous consequences of technology addiction [14].

Adolescents who are addicted to social media may experience depression, irritability, sleeplessness, frustration, anxiety, difficulty concentrating, restlessness, and withdrawal symptoms which are important risk factors for non-communicable diseases (NCDs) [15]. Thus, there is an urgent need to establish and enhance programmes promoting healthy technology and social media usage among teenagers; yet, they are currently impeded by a lack of research in this field, particularly in low- and middle-income countries, where 90% of worldwide adolescents reside [16, 17].

Promoting digital literacy and parental mediation are crucial preventive strategies. Research indicates that adolescents who are taught to understand and manage their online behaviour have lower risks of developing addictive patterns. A parental mediation such as discussing the content of games and setting limits on play time was associated with reduced gaming addiction symptoms BT is useful for treating drug addiction, gambling, emotional, and eating disorders [18, 22]. CBTs are based on the cognitive-behavioural paradigm, which claims that ideas cause feelings, and so altering one's thinking can aid in behavioural change. As a result, CBT is commonly utilised to treat problematic Internet usage, and cognitive-behavioural models for explaining the genesis and maintenance of IA have been presented. CBT is divided into three phases. The first step is behaviour modification, which gradually decreases people's time spent online and establishes a healthy Internet use routine. The therapist helps the client create a routine that includes non-Internet-related activities to prevent pathological usage. This phase attempts to teach students how to manage their time both online and offline. The second stage involves cognitive reconstruction and rationalisations for excessive Internet use. This step aims to identify and counteract the triggers for overuse, as well as rectify the cognitive training that motivates the individual to start using the Internet. The third stage focuses on people' functional concerns relating to their Internet usage, both individually and professionally, to identify and solve coexisting issues that may have led to the development of problematic Internet use. The aim of this phase to sustain healing and prevent relapse. Overall, by focussing on these three major goals reducing usage hours, enhancing functioning in important areas of life, and minimising exposure to material and harmful online operations CBT and other CBT-based psychological therapies may help diminish the severity of Internet addiction [19, 20]. Therefore, the current study was undertaken to provide a comprehensive assessment on impact of technology addiction among school going adolescents and to find association between the level of technology addiction among school going adolescents with the selected demographic variables.

Methods And Materials

Study Design: The quantitative approach with non-experimental, descriptive correlational research design was adopted for the current study to assess the impact of technology addiction among school going adolescents. **Study Setting:** The study was conducted for the duration of 6 month from February21th 2023 till 20thAugust 2023 from the school going adolescents of Government Higher Secondary School, Chembarambakkam Village. **Ethical Approval:** The study was carried out after getting approval from Institutional Scientific Review Board from Saveetha College of Nursing, SIMATS (Ref No -63/2023/ISRB/SCON) and formal consent from the designated headmaster of Government Higher Secondary School, Chembarambakkam and Village Officer. **Study Participants:** A total of 50 school going adolescents studying in Government Higher Secondary School, Chembarambakkam Village (n=130) and who met the inclusion criteria were recruited as study participants. The inclusion criteria for the study participants were age 10 - 19 years, both sexes, having a computer and smart phones, family socioeconomic status, using social networks, playing online games willing to participate and available during the study period, who can understand, speak, and write Tamil or English as study participants. Students who did not get/return a signed consent form and those older than 20 years and 365 days were excluded from the study. **Sampling Technique:** A total of 50 school going adolescents were recruited based on the

inclusion criteria using convenience sampling technique. **Informed Consent:** The purpose of the study was explained clearly in depth to each of the study participant and a written informed consent was obtained from their parents and school going adolescents. **Assessment:** The demographic data and clinical variables among school going adolescents was collected using self-structured questionnaire, Technology Addiction Scale, consists of four sub-dimensions and a total of 24 items [2]. The scale was used as a five-point Likert (1: strongly disagree; 5: strongly agree) and the collected data were tabulated and analysed using descriptive and inferential statistics.

Results

Section- A: Demographic Characteristics

With regards to the demographic characteristics the school going adolescents 26(52%) were aged between 10-15 years, 28(56%) were female, 21(42%) were studying 11– 12th std, 23(46%) were undergraduate parent, 26(52%) were living in nuclear family, 29(58%) were android phone users, 21(42%) were using less than 1 year, 20(40%) use less than 2 hours.

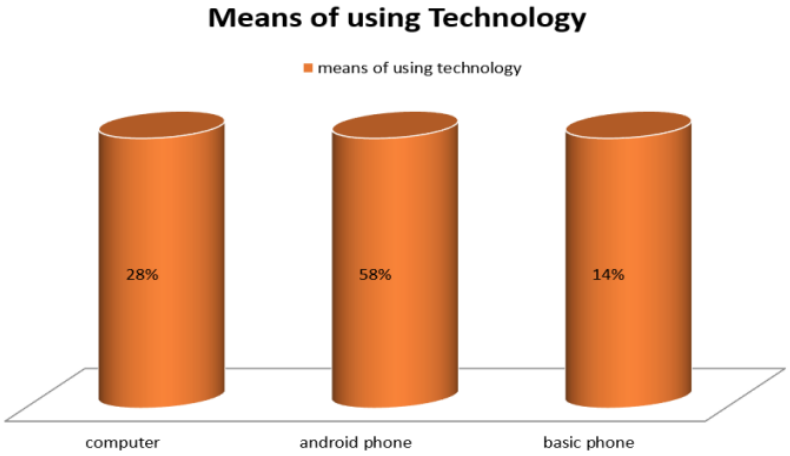

Figure 1. Percentage Distribution of Means of using Technology

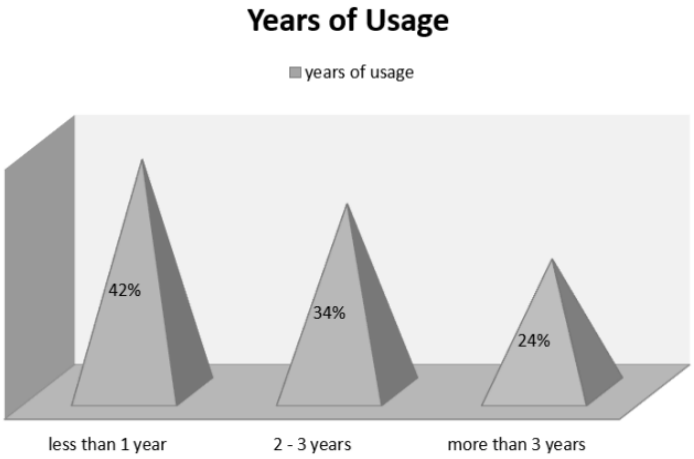

Figure 2. Percentage Distribution of Years of Usage of Technology

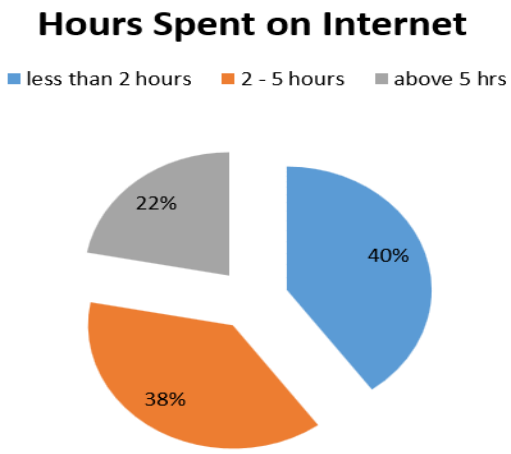

Figure 3. Percentage Distribution of Hours Spent on Internet

Section B: Assessment of Level of Technology Addiction among School Going Adolescents

The level of technology addiction among school going adolescents, majority of them 27(54%) has mild addiction, 13(26%) has moderate addiction and 10(20%) has severe addiction (as depicted in Table:1 and Figure:4)

Table 1. Percentage and Frequency Distribution of Level of Technology Addiction among School Going Adolescents N=50

Level of Technology Addiction	Frequency	Percentage (%)
Mild Addiction	27	54
Moderate Addiction	13	26
Severe Addiction	10	20

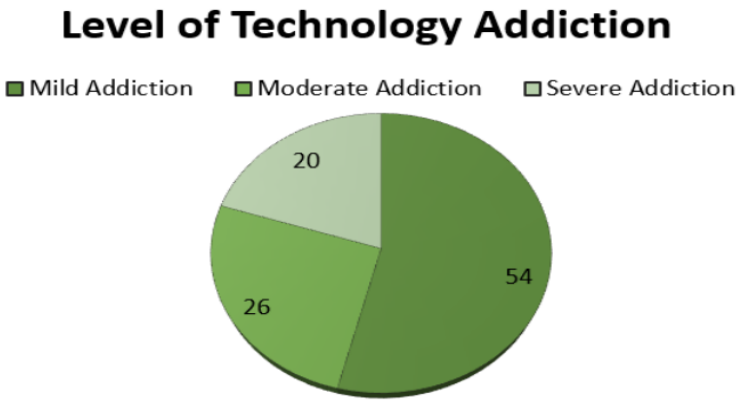

Figure 4. Percentage Distribution of Level of Technology Addiction among School Going Adolescents

Assessment of Social Media Platform among School Going Adolescents

Table 2. Frequency and Percentage distribution of Social Media Platform among School Going Adolescents N=50

Assessment o f Social Media Platform	Frequency(f)	Percentage (%)
Type of Media Usage		

WhatsApp	8	16
Facebook	6	12
YouTube	12	24
Instagram	7	14
Snapchat	5	10
Twitter	6	12
Telegram	6	12
Frequency of Phone Usage		
Lessthan2hours	5	10
Morethan2hours	45	90
How Often Log on to Social Network		
Everyday	38	76
Alternate days	10	20
Once in a week	6	12
Once in a month	6	12

The assessment of the social media platform 24% (12) students was used YouTube frequently, 90% (45) were more than 2 hours frequency of phone usage76% (38) of students log on to social networking sites every day (as depicted in Table:2).

Assessment of Impact of Social Media Platform on Mental Well Being among School Going Adolescents

Table 3. Frequency and Percentage Distribution of Impact of Social Media Platform on Mental Well Being among School Going Adolescents N=50

Impact of Social Media Plat form on Mental Well Being	**Yes**		**No**	
	F	**%**	**F**	**%**
Poor sleep	40	80	10	20
Eye fatigue	45	90	5	10
Anxiety	20	40	30	60
Cyber bulling	45	90	5	10
Depression	40	80	10	20
Loneliness	42	84	8	16
Self-harm	28	56	22	44
Suicidal thoughts	10	20	40	80
Self-esteem and body image issues	20	40	30	60
False sense of connection	30	60	20	40
Social media addiction	45	90	5	10
Lack of confidence	26	52	24	48

Table 3 shows that the assessment of the impact of social media platforms on mental well-being 80% (40) had poor sleep, 90% (45) had eye fatigue, and 60% (30) had no anxiety. 90% (173) had cyber bullying, 80% (40) had depression, and 84% (42) had loneliness. 56% (28) had Self- harm, 20% (10) had no Suicidal thoughts, and 80% (40) had no self- esteem or body image issues. 60% (30) had a false sense of connection, 90% (45) had social media addiction, and 52% (26) had a lack of confidence.

C: Association Between the Level of Technology Addiction among School Going Adolescents with the Selected Demographic Variables

The association of level of technology addiction among school going adolescents with demographic variables. In this the level of standard (X2= 5.0128), means of using technology (X2= 6.5747) and hours spent on internet (X2= 5.247) shows statistically significant P at the level of 0.05. The other demographic variables show statistically not significant P at the level of 0.05 (as depicted in Table: 4)

Table4. Association Between the Level of Technology Addiction among School Going Adolescents with the Selected Demographic Variables

Demographic Variables	**Frequency**	**Chi – Square Test & P - value**
Age in years		**X^2=0.6448** **P =0.72441** **N. S**
5-12 Years	26	
12 – 18 Years	24	
Gender		**X^2=1.2798** **P =0.527355** **N. S**
Male	22	
Female	28	
Level of Standard		**X^2= 5.0128** **P =0.543813** **S****
1^{st} to 4^{th} std	2	
5^{th} to 8^{th} std	11	
9^{th} – 10^{th} std	16	
11^{th} – 12^{th} std	21	
Parents Education		**X^2= 8.1996** **P =0.223845** **N. S**
Upto 10 th std	2	
10-12 th std	20	
Undergraduate	23	
Postgraduate	5	
Type of Family		**X^2=2.5** **P =0.644636** **N. S**
Nuclear Family	26	
Joint Family	21	
Single Parent	3	

Means of Using Technology		**X^2= 6.5747** **P =0.160146** **S****
Computer	14	
Android Phone	29	
Basic Phone	7	
How Long u Have Been Technology User		**X^2= 1.7609** **P =0.940323** **N. S**
Less than 1 Year	21	
2 – 3 Years	17	
More than 3 Years	12	
How Many Hours do u Spend on Internet		**X^2= 5.2476** **P =0.197152** **S****
Less than 2 hours	20	
2 – 5 hours	19	
Above 5 hours	11	

*p<0.05, S – Significant, N.S – Not Significant

Discussion

The present study findings are supported by a cross-sectional study conducted by Senthil **Amudhan etl., (2022)** among 1729 school-going teenagers using stratified cluster sampling. The results suggest that practically all the participants (99.59%; 95% confidence interval (CI): 99.28-99.91%) used technology in some way. The prevalence of technology addiction among users was 10.69% (95% confidence interval: 5.26–16.11). Phone addiction (8.91%; 95% CI: 3.31-14.52%) was the most prevalent form, followed by game addiction (2.55%; 95% CI: 1.16-3.95%) [1].

The present study findings is supported by a observational cross-sectional study to evaluate the prevalence of Technology Addiction among 1916 Portuguese adolescents and to assess how parental control affects conducted by **Miguel Vieira etl., (2022)** the results are with regards to age was 15 ± 1.8 years, with a small prevalence of female (53.3%). 16.5% were found to be addicted to the internet and had reduced parental supervision over their use (aOR 0.74, P <.05). Furthermore, 28% of Internet-addicted users lacked control over their online time (aOR 0.72, P <.05), and nearly half were unlikely to have online content limits (aOR 0.56, P <.01) [2].

Aslı Akdeniz Kudubes et.al (2023) conducted descriptive and cross-sectional study to explore the impact of gaming and social media addiction on the lifestyles of 1116 Turkish teenagers aged 13-18 enrolled in three high schools in Western Turkey. Game addiction and social media addiction were shown to account for 61.8% of teenagers' lives and have a substantial impact on them. Furthermore, social media use characteristics, gaming addiction, and social media addiction all explain and strongly predict teenagers' lifestyles at a rate of 62.8%. The study's findings show that gaming and social media addiction are key predictors of Turkish teenagers' lifestyles [12].

Hence, the present study findings and other above studies clearly depicts that adolescents are more susceptible to becoming addicted to technology through various systems, indicating a growing trend of technology addiction among adolescents. All healthcare professionals dealing with adolescents should be aware of the increasing online and social media platforms emerging today, as well as the risk of Technology Addiction.

Havva Serta et al. (2019) conducted a descriptive correlational study to investigate the influence of technology addiction levels on academic achievement and weariness among 743 Turkish university students. Data were gathered using a Student Identification Form, the Problematic Mobile Phone Use Scale, the Internet Addiction Scale, and the Piper Fatigue Scale. The results show that 9.8% of students were at danger of internet addiction, while 0.7% were already addicted. It was discovered that student smart phone addiction alone accounted 5.8% of the entire variance in fatigue levels, whereas student internet addiction alone explained 6.8% of the total variance in fatigue levels. Although online addiction was very low in this study, academic progress was severely impacted in students who were classified as internet addicted, and exhaustion increased alongside technology addiction, implying that internet addiction may be a risk factor for fatigue. Educational activities could serve to promote awareness about the harmful association between digital addiction and academic success, as well as the consequences for physical and mental health [17].

Upadhyaya, P et, al (2021) conducted a study to look at the frequency of techno stress among the younger population, ages 18 to 28. This study used a sample of 673 Indian private university students to cross-validate the techno stress instrument. The increased use of technology in higher education has required students to perform all of their academic work, including exams, using technology. Learning management systems, MOOCs, and digital exam devices are all examples of technology-enhanced learning applications that need students to build ICT skills. The study also looks at how techno stress affects students' academic output. The findings show that the techno stress instrument is suitable for use in the academic context, with minimal modifications, and that students experienced moderate levels of techno stress. It was also discovered that techno stress reduced students' academic production [18].

The findings of the study were consistent with the findings of the study conducted by **Mohd Tariq (2020)** to assess the Impacts of social media on Mental Health social media has become a vital part of modern society., This study aims to raise awareness among school going adolescents about the positive and negative impacts of social media on mental well-being, encouraging a balanced approach [21].

Limitations

The researcher was unable to generalise the study findings due to the small sample size of 50adolescents. The study only included adolescentswho are residing in Chembarambakkam Village area. Another constraint is the choice of Tiruvallur location for data collecting.

Conclusion

Rural India's increased cell phone access is leading to technological addiction among schoolchildren, potentially causing low academic performance and despair, necessitating larger-scale research and measures for responsible technology use. The smart phone and internet addiction rates of students at School were found to be relatively low and technology addiction was found not to be associated with academic success and fatigue levels. However, the academic success of students with smart phone and internet addiction was lower and their fatigue levels higher as compared to students with no few or addiction symptoms. Educational efforts via audio-visual media may help to raise awareness on the negative relationship between smart phone and internet addiction and academic success as well as physical and psychological health. Additionally, it is suggested that studies be conducted with more representative samples that have the power to

examine the effect of smart phone and internet addiction on academic success and fatigue.

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Authors Contribution

Sridevi. B developed the study concept and design, Rishi, Roja and Rokith collected the clinical data, statistical analysis and interpretation of data, Sridevi.B study supervision, critical revision of the manuscript for the intellectual content and drafting of the manuscript. All authors read and approved the final manuscript.

Conflict of Interest

Authors declare no conflict of interest.

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The authors for the current project have no financial investment and are not the investor in any of the health sectors related to the project and not received any consultation payments. They did not have any patents linked to the project.

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