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Prevalence Of Technology Addiction Among School Going Adolescents In An Urban Area Of Chengalpattu District

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Abstract:

Background: *There has been a massive growth in the technological world within some decades. Technology has given various opportunities to the community to learn and connect with people better by making use of smartphones and the internet. However it has disadvantages that should be considered during chronic usage. Adolescent children nowadays use online study videos and materials rather than using hand-printed books like the olden days.This can lead to addiction to usage of smartphones, gaming and internet as they are investing more time in it. The adolescent age group is getting more and more prone for severe health problems which affects the overall environment around them.*

Methods: *A cross sectional study among the school going adolescent children of standard 7th to 12th was conducted among the 275 study participants. Data was collected using pre tested validated questionnaires.The Data was collected,entered and analyzed using Microsoft Excel 2019 (Microsoft Corporation, Redmond, USA) and IBM SPSS v21 (IBM Corp., Armonk, New York, USA).Descriptive statistics were presented using numbers and percentages.*

Results: *Among the 275 participants, 206(74.9%) were between the ages of 10 and 14, with gender distribution 141(51.3%) male and 134(48.7%) female. Most of them were Hindu 182(66.2%) and studied 11th-12th standard 67(24.4%). Largely the participants' parents 262(95.3%) were married and they had one sibling 178(64.7%). Fathers were mostly skilled workers/shopkeepers 92(33.5%), with the majority having earned secondary school or diplomas 123(44.7%). The common income ranged between ₹10,703-31,977 with 131(47.6%). Most of them resided in pucca houses 182(66.2%) and urban areas 235(85.5%), with 191(69.5%) consuming non-vegetarian food.The prevalence of mild addiction to internet was found to be 129(46.9%)and the prevalence of gaming addiction was 64(23.3%) which contributed to mild technology addiction.*

Conclusion: *To conclude that nearly half of the participants have been affected by technology addiction. This has to be identified early in the students and henceforth plan better interventional strategies and policies in the educational system. Further prevention measures has to be done by the teachers, parents, educators in giving the adolescent students a better lifestyle and a better environment.*

Keywords: *Adolescent,Technology, Technology addiction, Internet addiction disorder, Urban health, Smartphone*

INTRODUCTION :

Technology has advanced greatly during the past few years, which has altered perceptions of teenage life. Modern technology has grown at an accelerated rate, bringing with it both new and exciting difficulties as well as significant advantages. Improved access to more information, educational resources, and several new social media platforms for connectivity are all made possible by technology. The immense growth of technology has tremendously impacted children in enhancing their communication skills, social interactions as well as developing their cognitive skills(1).Nowadays, adolescent children resort to online study materials and e-books on their smartphones rather than using printed handbooks due to the ease of access, this has indeed increased the average amount of screen-time for each child which can lead to

overuse and addiction in the process(2).Technology addiction is a phenomenon that is more concerning as a result of this blooming expansion. Addictions due to technology have become an alarming public health concern in many modern societies. In a research technology addiction has been described as Technology addiction is a recurrent need to engage in a certain activity, despite potential negative effects that the user perceives as being destructive to their own health, mental state, or social life. It is sometimes referred to as process addiction or "non-substance-related addiction"(3)

Further technology addiction has been characterised by increased use of devices in a compulsive manner in adolescent life and has drawn more and more attention from researchers, educators, and medical experts because of its possible negative impacts on the development of adulthood life. This addiction behaviour has found to be negatively impacting mental health, physical health and other relational bondings between family members and their personal and academic life. Technology addiction is a complex term as it has many dimensions ranging from social media addiction, gaming addiction, internet addiction and also physical and mental dimensions of well being. It also affects the academic performance, self esteem,quality of life and other bio psychological and psycho-social parameters. The users of internet has tremendously grown globally which reaches 4.9 billion in 2021 which covers over 2/3rd population globally(4,5)

Excessive amount of screen time on mobile devices and computers is linked to health problems such as depression, anxiety, and other mood disorders. It has an adverse impact on one's mental and physical health, general well-being, social interactions, cognitive development, and quality of sleep in both children and adults. (6-8)

Adolescence is a crucial stage of development in the child marked by both significant emotional well being,social changes and cognitive improvements in brain functions making this through vulnerable to the impacts due to overuse of technology. According to World Health Organisation (WHO), Adolescence is the phase of life between childhood and adulthood, from ages 10 to 19. It is an important phase in human development and a crucial moment to establish the groundwork for long-term health(9)

Further literature have described adolescence as a stage of physical and psychological transformation that usually takes place between puberty and maturity, or what is popularly known as the age of majority (10,11)

OBJECTIVES:

To estimate the prevalence of technology addiction among school going adolescents (12-18 years) in an urban area of Chengalpattu district

MATERIALS AND METHODS:

Study design:

Cross sectional study.

Study place and population:

The study was conducted in schools of Chengalpattu district, Tamil Nadu. The total study population was comprised of students from 7th to 12th std .

Sampling method:

Multistage sampling was done. The first stage of sampling included only schools where permission was obtained. Out of those, two schools were selected using simple random sampling. In the second stage, the list of all students enrolled in the schools was obtained and study participants was chosen based on simple random sampling. List of students from 7th to 12th standard was collected and the student's names was numbered accordingly which included all the section of each standard. This was the sampling frame from which required sample was selected using computer generated random numbers.

Study period:

The study conducted over a period of 18 months from July 2023 to January 2025.

Inclusion criteria:

All children from the age of 12 years to 18 years was chosen for this study.

Exclusion criteria:

All children who have cognitive disorder, all children who were diagnosed with mental disorders. Students who were absent on the day of data collection.

Sample size and Calculation:
Based on the study done by Amudhan S, Prakasha H et al (12) the prevalence was 10.69 for technology addiction and with absolute precision of 4 %
P= 10.69
q=100-10.69 =89.31
$N= z^2pq / L^2$
z = 1.96, L= 4
$N= \frac{1.96x1.96x10.69x89.31}{4x4}$
$N= \frac{3667.67}{16} = 229$
Non-responsive rate = 20 % = 46
So sample size = 229+46 = 275

Data Collection:
Pre tested validated questionnaires were used,
1.Young's Internet addiction test questionnaire (13)
2.Gaming addiction scale (14)

Operational Definition:
In this study, the combined prevalence of internet addiction and gaming addiction were collectively given under a term as "Technology Addiction".

Statistical analysis:
The Data was collected,entered and analyzed using Microsoft Excel 2019 (Microsoft Corporation, Redmond, USA) and IBM SPSS v21 (IBM Corp., Armonk, New York, USA).Descriptive statistics were presented using numbers and percentages.

Ethical Considerations:
Approval was obtained from the Institutional Human Ethics Committee of Sree Balaji Medical College & Hospital-002/SBMCH/IHEC/2023/2032 was obtained. Written informed consent was obtained from all the study participant. Confidentiality of participants information was ensure throughout the study. Data collection was started after obtaining ethical approval.

RESULTS:

Table 1: Socio demographic factors of the study participants (n=275)

S.No	Variables		Frequency ((n=275)	Percentage (%)
1	Age			
		10-14 years	206	74.9
		15-17 years	69	25.1
2	Gender			
		Male	141	51.3
		Female	134	48.7
3	Religion			
		Hindu	182	66.2
		Muslim	42	15.3
		Christian	51	18.5
4	Standard			

		7 th standard	54	19.6
		8 th standard	48	17.5
		9 th standard	54	19.6
		10 th standard	52	18.9
		11 th and 12th standard	67	24.4
5	**Marital status of parents**			
		Single	5	1.8
		Married	262	95.3
		Separated/Divorced	8	2.9
6	**No.of. siblings**			
		None	23	8.4
		One	178	64.7
		Two	67	24.4
		Three	7	2.5
7	**Father's occupation**			
		Elementary occupation (2 points)	34	12.4
		Machine operators/assemblers (3 points)	35	12.7
		Craftsman or related trade workers (4 points)	30	10.9
		Skilled agriculture/ fishery (5 points)	10	3.6
		Skilled workers/shop & sales worker (6 points)	92	33.5
		Clerks (7 points)	20	7.3
		Technicians/ Associate professional(8 points)	14	5.1
		Professionals (9 points)	20	7.3
		Senior officials / managers (10 points)	20	7.3

8	**Father's education**			
		Literate, no formal education (2 points)	14	5.1
		1 to 5 standard (3 points)	40	14.5
		6 to 8 standard (4 points)	41	14.9
		9 to 12 standard/ Diploma (post class X) (5 points)	123	44.7
		Graduates/ Diploma (post class XII) and above (6 points)	43	15.6
		Post graduate /professional degree (7 points)	14	5.1
10	**Father's income**			
		1,06,850-2,13,813(10 points)	10	3.6
		80,110-1,06,849 (6 points)	20	7.3
		53,361-80,109 (4 points)	25	9.1
		31,987-53,360(3 points)	45	16.4
		10,703-31,977(2 points)	131	47.6
		≤10,702 (1 point)	44	16
11	**Type of house**			
		Pucca	182	66.2
		Semi pucca	83	30.2
		Kutcha	10	3.6
12	**House**			
		Own	142	51.6
		Rental	133	48.4
13	**Place of living**			
		Urban	235	85.5
		rural	40	14.5
14	**Diet**			
		Vegetarian	84	30.5
		Non-vegetarian	191	69.5

Table 1 shows the socio-demographic characteristics of the 275 study participants. The majority 206(74.9%) were between the ages of 10 and 14, with an almost equal gender distribution 141(51.3%) male and 134(48.7%) female. Most of them were Hindu 182(66.2%) and studied 11th-12th standard 67(24.4%). Most of the participants' parents 262(95.3%) were married.Also mostly they had one sibling 178(64.7%). Fathers were largely skilled workers/shopkeepers 92(33.5%), with the majority having earned secondary school or diplomas 123(44.7%). The most common range of income was ₹10,703-31,977 with 131(47.6%). Most resided in pucca houses 182(66.2%) and urban areas 235(85.5%), with 191(69.5%) consuming non-vegetarian food.

Fig.1: Gender of the study participants (n=275)

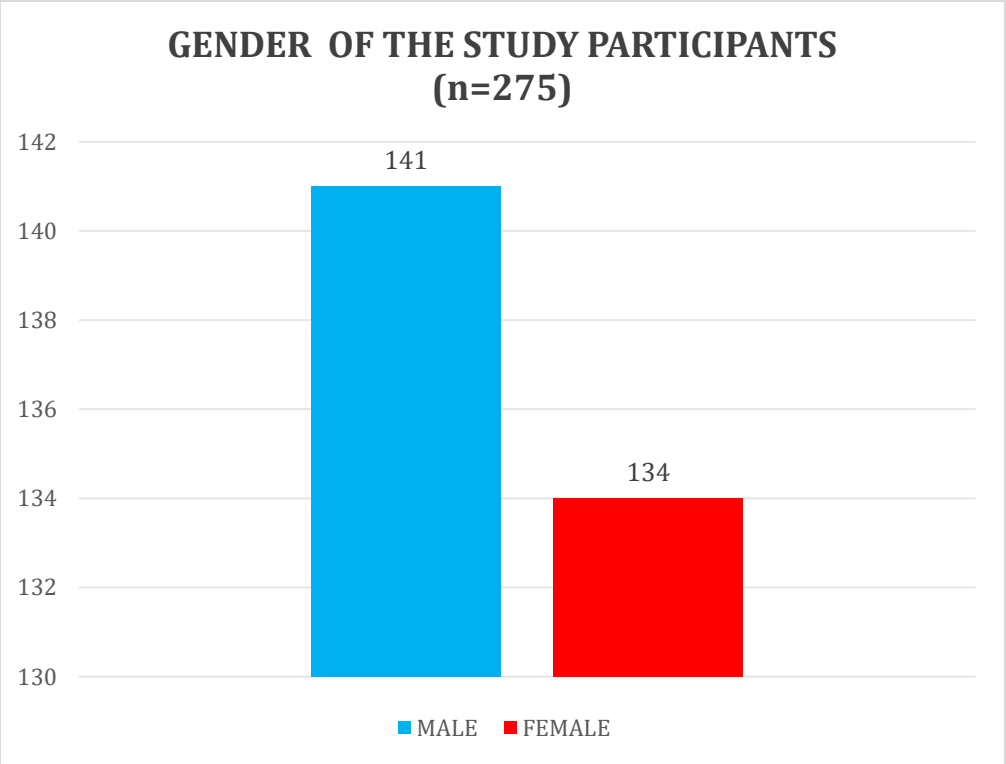


Figure 1 shows about the gender of the study participants. In that the majority of the study participants were males 141 (51.3%) than females 134 (48.7%).

Fig.2: Socio-Economic Classification of the study participants (n=275)

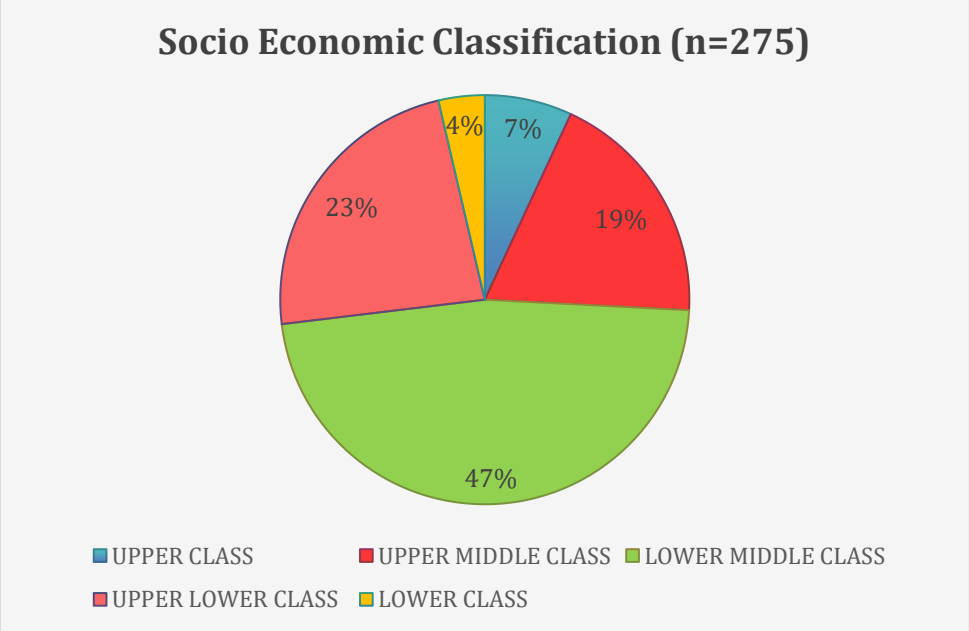


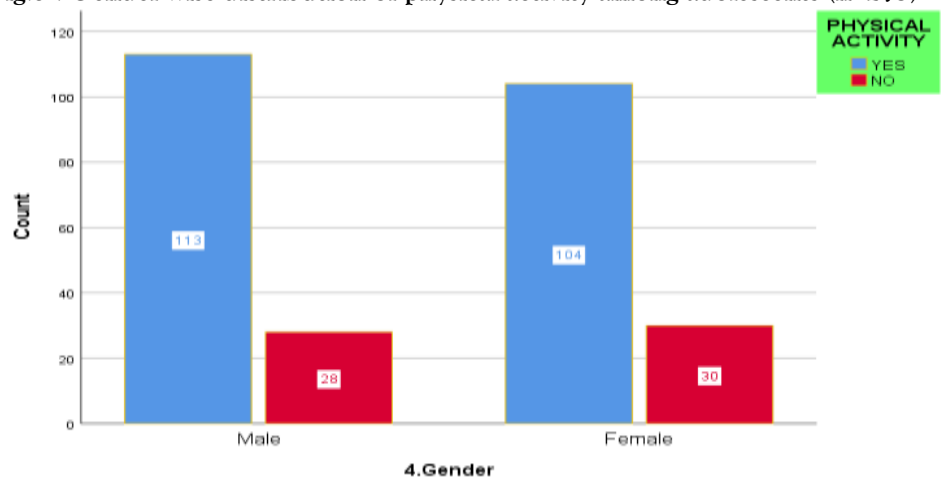
Figure 2 illustrates about the socioeconomic class of the study participants (15). It shows that most of the students belong to the lower middle class (47%) followed by upper lower class (23%).

Table 2: Technology addiction pattern behaviour among students (n=275)

S.no	Variables	Frequency (n=275)	Percentage(%)
1	***Physical activity***		
	Yes	217	78.9
	No	58	21.1
2	***Having mobile phone for personal use***		
	Yes	178	64.7
	No	97	35.3
3	***Hours of usage of phone per day***		
	Half an hour	45	16.3
	1 hour	128	46
	2 hours	102	37.3
4	***Is using phones affecting academic performance***		
	Yes	76	27.6
	No	199	72.3

Table 2 shows about the technology addiction behaviour pattern among students. It shows that most of the students did physical activity 217 (78.9%). About 178 (64.7%) had a mobile phone for personal usage and many of the students 128 (46%) have been found out using mobile phone for 1 hour per day. Most of the students 199 (72.3%) have told that using mobile phones have affected their academic performance.

Fig.3 : Gender-wise distribution of physical activity among adolescents (n=275)



The bar chart illustrates the engagement in physical activity among male and female adolescents. Among males, 113 reported participating in physical activity, while 28 did not. For females, 104 were physically

active, and 30 were not. This shows that a high proportion of both genders are engaged in physical activity, males exhibit slightly higher participation.

Table 3: Prevalence of internet addiction among study participants

S.no	Internet addiction score	Frequency (n=275)	Percentage(%)
1	Mild level of addiction score	129	46.9
2	Moderate level of addiction score	70	25.5
3	Severe dependence up on the internet	76	27.6

Table 3 shows the prevalence of internet addiction among the study participants.It shows that about 76(27.6%) had severe dependence/addiction to internet while 70(25.5%) had moderate addiction levels.A majority of the participants 129(46.9%) were only mildly addicted to internet.

Table 4: Prevalence of gaming addiction among study participants

S.no	Gaming addiction score	Frequency (n=275)	Percentage(%)
1	Addiction present	64	23.3
2	No addiction	211	76.7

Table 4 shows the prevalence of gaming addiction among the study participants.It showed that about 64(23.3%) were addicted to gaming and 211(76.7%)had no addiction.

Prevalence of technology addiction:
The majority of the study participants had a prevalence of mild internet addiction 129(46.9%) and gaming addiction 64(23.3%).Thereby participants of this study showed **Mild technology addiction.**

DISCUSSION:
Adolescents' lifestyles have changed tremendously as a result of the rapid advancement and widespread availability of digital technology, especially in urban areas. Even though technology has many positive social and educational outcomes, excessive or uncontrolled use of it has led to increased worries about school-age children being addicted to it. This study looked at the prevalence of technology addiction among adolescents in the Chengalpattu district's urban region. These results add to the increasing amount of evidence showing that excessive use of digital devices and the importance of it to the community.
In a study done by Al-Mamun it showed internet addiction prevalence to be 33.1%(16). Another study done by Xu et al stated the prevalence of internet addiction to be 23.7%(17) .In a study done in India showed that 35.6% of the school going adolescents had internet addiction(18).In this study, the prevalence of severe internet addiction was 27.6% which was found similar to these previous studies. It maybe due to the higher level of internet addiction maybe due to various reasons like depression, loneliness, poor family relationships, lack of interest in studies/work, lack of screen time management by the parents and keeping themselves updated in social media platforms. The most important reason could be the ease of availability of smartphones and a high speed internet nowadays which may affect the internet usage immensely.
Conversely in a study done by Narayanappa et al it shows a severe internet addiction of about 3% (19). Another study done in Ahmedabad has shown a 5.5% for severe addiction(20). A study done by Tao et al shows a prevalence of internet addiction to be 12.4% (21).A study done in China has shown internet addiction in secondary school students to be 14.4% (22) . In a study done in Europe the internet addiction was found to be 1.2%(23).In this study, the prevalence of severe internet addiction was 27.6% The reduced usage of internet has been attributed to several factors like balanced screen time managed by family members, self control,those having a strong positive mental health,limited internet or smartphone access and also having a good digital awareness about the harms of internet usage.In terms of school

children the internet usage would be reduced mostly because they would have been indulged in various sports,hobbies or studies.
A study done in Tunisian adolescents has shown that there was 21.7% video game addiction among them (24). Another study done in Sri Lanka shows 28.43% were video game addiction (25).In this study, the prevalence of gaming addiction was 23.3% which was similar to the other studies.This is due to adolescents resorting to gaming due to its highly engaging and addictive design which has real time leader-boards and rewards making them sit and play for hours together.Also parents who are working buy smartphones or gaming consoles for their children to keep them engaged for long hours.
Conversely in a study done in Saudi adolescents it was found that 8.3% were addicted gamers (26).A study done by Milani et al has showed that 2.1% of the study participants had gaming addiction (27).In this study, the prevalence of gaming addiction was 23.3%. Adolescents who are having good sleep hygiene and physical activity mostly don't get involved in excessive gaming.Also those who are having better academic goals,parental control,good family time have lesser addiction to gaming than their peers.

LIMITATION:

There maybe social desirability bias because of the self reported questionnaire which may show over-reporting or under-reporting.
Since the study was done in a school setting, other adolescents who are not in schools were not taken into consideration.

CONCLUSION:

Technology addiction is a raising concern among the adolescent age group as it may have profound impact on their academics,social interactions and mental well being.Technology use has several positives and as well as negatives which has to monitored and used in the possible right way .This study highlights that nearly half of the participants have been affected by mild technology addiction.There was also about one third of the participants suffering from possible depression and also half of the students were found to have below average social skills among those who are having technology addiction. There was also significant association which was found between technology addiction like internet and gaming addiction with mental health and social skills. Academic performance was not found to be associated with technology addiction.
Internet addiction was found to be associated with sociodemographic factors like socioeconomic class, physical activity and those that think their academic performance is affected by social media/phone usage. Also gaming addiction was associated with sociodemographic factors like standard and those that think their academic performance is affected by social media/phone usage. These sociodemographic factors also have a significant influence on technology addiction.
In conclusion, this increasing prevalence emphasizes the growing concern due to excessive use of technology which has to be identified and intervened at the earliest in the school settings itself to reduce long term complications on the adolescent's health. Further support has to be given by the parents, teachers and the healthcare professionals to educate them about safe technology usage practices, promoting their social life skills and helping them out to have a better mental health.

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