Original Article



Association Between Screen Time and Anxiety Among College Students

Anupsinh H Chhasatia *

Associate Professor, Department of Psychiatry, Dr Kiran C Patel Medical College and Research Institute, Bharuch, Gujarat, India.

*Corresponding author: Dr Anupsinh H Chhasatia; anup66tia@gmail.com

Abstract

An increase in screen time can increase the dependence over these devices and influence psychological wellness and result in anxiety. <u>Aim</u>: The aim of present study was to assess an association between screen time and anxiety among college students. <u>Materials and methods</u>: This was a questionnaire based quantitative, cross-sectional and observational study conducted on college students using STROBE guidelines. Total 500 college students studying in both public and private colleges were randomly selected. Students using screen-containing devices & willing to give consent to participate in the study were included. Chi-square test was used along with regression analysis to determine statistical significance and association between screen time spent and anxiety. <u>Results and Observations</u>: Students who were spending more than 7 hours/day on any form of screen had more cases of anxiety when compared with those spending 1 hour/day. Moderate usage was also found to exhibit higher risk of developing anxiety. Students spending less than 2 hours/day of screen time were found to have no risk of anxiety. <u>Conclusion</u>: Present study reported positive association between anxiety and increased screen time among college students.

Keywords: Screen time, college students, anxiety.

Introduction

At present, a large percentage of children as well as adolescents spend their leisure hours on a variety of device screens which include smart-phones, computer screens, tablets, television sets and game consoles ^[1].

This addictive behavior is a cause of rising concern amongst parents, health care professionals and teachers as it affects general well-being ^[2].

The American Academy of Pediatrics has recommended limitations to be exerted by parents on children's time spent on device screens by imposing specific time-limits for pre-school, older and adolescent children ^[3]. Additionally, W.H.O. has included gaming disorders in 11th edition of International Classification of Diseases (WHO, 2018). Several studies have established an association between screen-time and adverse health effects likeobesity due to no exercising ^[4-7].

There are conflicting observations on association between screen-time and psychological effects on children as well as adolescents. Few studies have reported significant association between screen-time and bad effects on general well-being ^[8-10]. On the other hand, few studies have reported no effect of increased screen time over one's well being ^[11-13].

Disrupted emotions lead to lowered self-control which affects inter-relationships which impact an individual's morbidity as well as mortality that may be due to disorderly moods, behavior leading to harming self and suicidal attempts ^[14-17]. Most of these mental disorders have variable backgrounds like- genetics, any trauma etc. which needs to be identified by a trained psychiatrist and treated accordingly. As the use of smartphones and relatable devices is increasing either due to academic or non-academic reasons,

development of addictive behavior is getting reported. Complete dependence on these devices leads to development of symptoms such as anxiety and depression which can be due to multiple reasons such as- social presence, mental dependence on internet-based content amongst others.

Hence, this study was designed to analyze the association between screen time and anxiety among college going students in India.

Materials and methods

a) Study design: This was a quantitative, cross-sectional and observational study conducted on college going students of both genders. STROBE (Strengthening the Reporting of Observational guidelines were followed for this study. Approval from the Institutional Ethics Committee was obtained before beginning this survey analysis. Informed consent in written format was obtained from all study participants and their identity was coded as per Helsinki Declaration.

b) Sample size selection: Target sample was college going students of both public as well as private co-education colleges. Inclusion criteria were- a) College students of both genders; b) Those who used screen-containing devices such as smartphones, laptops, desktops, tablets etc., c) those who had access to modern devices in day-to-day basis and d) those who gave consent for participation in the study. On the other hand, exclusion criteria were- a) those who did not use screen devices; b) those who had not given consent to participate in the study and c) those who did not answer the survey forms completely. Sample size calculation was done by using "Sample XS software at 95% confidence interval; maximum 5% error with estimated frequency of risk factors at prevalence rate of 50%. A total sample size of 500 was rounded off.

Measurement tools

Demographic data comprising socio-economic as well as sociodemographic variables Assessment of Sedentary type of behavior was done by analyzing weighted average of Question items such asa) how much time do you spend watching a screen on a day to day basis on weekdays? And b) how much screen time do you spend on weekends? The time of screen exposure was evaluated by the weighted average of watching screen for leisure; watching computer/laptop screen for academic work/studying/attending online classes or courses.

Anxiety related symptoms were measured by using the 'Hospital Anxiety and Depression Scale comprising 14 multiplechoice questions wherein even numbered questions assessed depression level while odd numbered question items were used for assessment of anxiety. A cut-off score \geq 9 was fixed, which categorized the study group in- a) without risk and b) at risk of developing anxiety ^[18].

Statistical analyses

Frequencies of distribution were entered for descriptive analysis. Pearson's chi-square tool and regression analysis were used for analyzing association between screen time and anxiety among college students. P value ≤ 0.05 was used as significant.

Results and Observations

a) Socio-demographic and socioeconomic profiles of studied subjects

Gender distribution demonstrated 65% male and 35% female college students as part of study group which had statistically significant difference (P=0.05). Age distribution analysis demonstrated that 55

Table 1: Table showing socio-demographic variables of college students

% students were in the age range of 18 to 25 years, 35 % were in the age group of 26 to 30 years while only 10% were aged above 30 years. This was found to be statistically significant. On analyzing place of residence, 48% belonged to urban areas, 31% had residence in semi-urban areas while 21% belonged to rural areas. However, this was found to have no statistical significance (P=0.07). Socioeconomic stratification demonstrated that 12.1% students belonged to upper class, 22.5% belonged to upper middle class, 35.4% were from lower middle class background while 30% were from socioeconomically lower class families. However, no statistically significant difference (P=0.06) was found. Majority of students (73%) had only one working parent while 27% students had both parents working. This was found to have no statistical significance (P=0.05) on comparing screen time spent, 35% were spending more than 7 hours/day, 55% were spending 2 to 5 hours/day while only 10% were spending < 2 hours per day (Table 1 and Graph 1).

b) Association between screen time and symptoms of anxiety

High screentime users were found to suffer from anxiety and/or depression. Students who were spending more than seven hours per day on any form of screen when compared with those spending one hour per day had more cases of anxiety. RR = 2.40, 95% CI=1.76)

High screentime users had sought help from a mental health doctor when compared to those spending less screen time (RR=2.84, 95% CI= 1.65) and were prescribed medications for treating a psychological problem (RR=2.79, 95% CI=1.62). Moderate (2 to 5 hours/day) usage was also found to exhibit higher risk of developing anxiety (RR= 1.69, 95% CI= 2.07). Those students who were spending < 2 hours/day of screen time were found to have no risk of anxiety.

Variables	Percentages	P values
Gender:		
a) Males:	65%	0.05
b) Females:	35%	
Age distribution (in years):		
a) 18 to 25 years	55%	
b) 26 to 30 years	35%	0.05
c) Above 30 years	10%	
Place of residence:		
a) Urban:	48%	
b) Semi-urban:	31%	0.07
c) Rural:	21%	
Socioeconomic status:		
a) Upper class:	12.1%	
b) Upper middle class:	22.5%	0.06
c) Lower middle class:	35.4%	
d) Lower class:	30.0%	
Working status of parents:		
a) Both parents working:	27%	0.05
b) one parent working:	73%	
Screen time spent:		
a) More than 7 hours/day:	35%	
b) 2 to 5 hours/day:	55%	0.05
c) Less than 2 hours/day:	10%	

Table 2: Table demonstrating association between anxiety and screen time among studied sample

Screen time	Relative risk of developing anxiety
7 hours	2.40
2 to 5 hours	1.69
< 2 hours	0



Graph 1: Graph showing P values of different socio-demographic variables



Graph 2: Graph showing relative risk of developing anxiety at different screen times

Discussion

Associations of excess screentime with mental health disorders specially, anxiety are explainable by means of direct and indirect pathways. Direct mechanism are observed by time spent by watching screens, disruptions in interpersonal relationships and effects on cognitive behaviour, emotional issues and impulsive behaviour ^[27]. Indirect mechanisms are observed as poor sleep quality, unhealthy eating habits and sometimes, body dysmorphia ^[28]. Excessive time spent on screen causes reduction in physical activities, thereby indirectly affecting mental health.

Individuals spending more time on screen have low psychological health when compared to those who spend less time. These mental issues are reflected by a variety of features like- Poor control of emotions as evident by inability to remain calm, argumentative behaviour, unable to get along with other people, cannot finish any task completely and low curiosity. Addiction to various social media sites, chatting apps and other sites lead to development of a negative personality ^[19].

Present study reported higher relative risk between heavy (> 7 hours per day) and moderate (2 to 5 hours per day) screen use and

development of anxiety symptoms among college students. However, pertaining to cross-sectional study design, it cannot be determined with certainty that increased screen time results in anxiety or vice versa.

In contrast, few longitudinal study observations have reported that an increased screen- time has been shown to precede down-regulation of psychological health specially affecting children, adolescents and among adults ^[20-23]. Smartphones lower social interactions, thus, making an individual lose sense of wellbeing. However, this effect is shown to reverse as one abstains for 1 week duration ^[24,25]. Although Gunnell et al (2016) in their study reported similar observations to that of present study ^[26]. Also, Francisquini et al (2023) reported positive association between screen time and symptoms of stress, anxiety and depression.29 Similarly, Saat et al (2024) found a positive association between screen time and anxiety ^[30].

Hence, it is important to assess screen time by heath-care providers to identify those at risk of developing mental healthrelated problems and suggest measures to overcome it. Limitation of this study is its small sample size. However, including a large sample population from different areas can provide more definitive results.

Conclusion

With modernization of our life-styles, smart screens have become an indispensable part of our day to day lives. In academics, most of the course content, teaching sessions, tutorials and information regarding conduct of college/school sessions is available through devices such as smartphones, tablets and laptops. Hence, use of these devices is a necessary requirement in our lives nowadays. However, an addiction to these devices can significantly increase the time spent online which can drastically impact one's mental well-being resulting in anxiety, stress and depression. Hence, a pathologic dependence on these devices can severely influence one's psychological well-being.

Declarations

Ethical Clearance

Institutional Ethics committee approval obtained before starting the study

Conflict of Interest

No conflict of interest

Funding/ Financial support

No

Data Availability

Available on corresponding author upon responsible request.

References

- Twenge JM, Martin GN, Campbell WK. Decreases in psychological wellbeing among American adolescents after 2012 and links to screen time during the rise of smartphone technology. Emotion 2018;18:765-80.
- [2] Kim HH. The impact of online social networking on adolescent psychological well-being (WB): a populationlevel analysis of Korean school-aged children. Int J Adolesc Youth 2017; 22:364-76.
- [3] Przybylski AK, Weinstein N. A large-scale test of the Goldilocks hypothesis: quantifying the relations between digital-screen use and the mental well-being of adolescents. Psychol Sci 2017;28:204-15.
- [4] Chiasson MA, Scheinmann R, Hartel D. Predictors of obesity in a cohort of children enrolled in WIC as infants and retained to 3 years of age. J. Community Health 2016; 41:127-33.
- [5] De Jong E, Visscher TLS, HiraSing RA, Heymans MW, Seidell JC, Renders CM. Association between TV viewing, computer use and overweight, determinants and competing activities of screen time in 4- to 13-year-old children. Int J Obes 2013; 37:47-53.
- [6] Dumuid D, Olds T, Lewis LK. Health-related quality of life and lifestyle behavior clusters in school-aged children from 12 countries. J Pediatr 2017;183:178-83.
- [7] Poitras VJ, Gray CE, Janssen X. Systematic review of the relationships between sedentary behaviour and health indicators in the early years (0-4 years).BMC Public Health 2017;17:868-72.
- [8] Babic MJ, Smith JJ, Morgan PJ, Eather N, Plotnikoff RC, Lubans DR. Longitudinal associations between changes in screen-time and mental health outcomes in adolescents. Ment Health Phys Act 2017;12:124-31.

- [9] Page AS, Cooper AR, Griew P, Jago RP. Children's screen viewing is related to physiological difficulties irrespective of physical activity. Pediatrics 2010;126:1011-7.
- [10] Romer D, Bagdasarov Z, More E. Older versus newer media and the well-being of United States youth: results from a national longitudinal panel. J. Adolesc. Health 2013;52: 613-9.
- [11] Granic I, Lobel A, Engels RE. The benefits of playing video games. Am Psychol 2014;69, 66-78.
- [12] Odgers C. Smartphones are bad for some teens, not all. Nature 2018;554:432-4.
- [13] Przybylski AK, Weinstein N. A large-scale test of the Goldilocks hypothesis: quantifying the relations between digital-screen use and the mental well-being of adolescents. Psychol Sci 2017;28:204-15.
- [14] Graham EK, Rutsohn JP, Turiano NA. Personality predicts mortality risk: an integrative data analysis of 15 international longitudinal studies. J. Res Pers 2017;70:174-86.
- [15] Shipley BA, Weiss A, Der G, Taylor MD, Deary IJ. Neuroticism, extraversion and mortality in the UK Health and Lifestyle Survey: a 21-year prospective cohort study. Psychosom Med 2007;69:923-31.
- [16] Shor E, Roelfs DJ, Yogev T. The strength of family ties: a meta-analysis and meta-regression of self-reported social support and mortality. Soc Networks 2013; 35:626-38.
- [17] Hawton K, Casanas I, Conabella C, Haw C, Saunders K. Risk factors for suicide in individuals with depression: a systematic review. J Affect Disord 2013;147:17-28.
- [18] Teychenne M, Hinkley T. Associations between Screen-Based Sedentary behaviour and Anxiety Symptoms in Mothers with Young Children. PLoS One 2016;11(5): e0155696-100.
- [19] Satici SA, Uysal R. Well-being and problematic Facebook use. Comput. Hum Behav 2015;49:185-90.
- [20] Hinkley T, Verbestel V, Ahrens W. Early childhood electronic media use as a predictor of poorer well-being: a prospective cohort study. JAMA Pediatr 2014; 168: 485-92.
- [21] Kim HH. The impact of online social networking on adolescent psychological well-being (WB): a populationlevel analysis of Korean school-aged children. Int J Adolesc Youth 2017; 22:364-76.
- [22] Kross E, Verduyn P, Demiralp E. Facebook use predicts declines in subjective well-being in young adults. PLoS One 2013;8:e69841-9.
- [23] Schmiedeberg C, Schröder J. Leisure activities and life satisfaction: an analysis with German panel data. Appl Res Qual Life 2017;12:137-51.
- [24] Dwyer R, Kushlev K, Dunn E. Smartphone use undermines enjoyment of face-to face social interactions. J Exp Soc Psychol 2018;78:233-9.
- [25] Tromholt M. The Facebook experiment: quitting Facebook leads to higher levels of well-being. Cyberpsychol Behav Soc Netw 2016;19:661-6.
- [26] Gunnell KE, Flament MF, Buchholz A. Examining the bidirectional relationship between physical activity, screen time, and symptoms of anxiety and depression over time during adolescence. Prev Med 2016; 88:147-52.
- [27] Suchert V, Hanewinkel R, Isensee B. Sedentary behavior and indicators of mental health in school-aged children and adolescents: a systematic review. Prev Med 2015;76:48-57.
- [28] Domingues-Montanari S. Clinical and psychological effects of excessive screen time on children. J Paediatr Child Health. 2017;53:333-8.

- [29] Francisquini MCJ, Silva TMS, Santos GC, Barbosa RO, Dias PHG, Ruiz AB et al. Associations of screen time with symptoms of stress, anxiety and depression in adolescents. Rev Paul Pediatr 2025;43:e2023250-6.
- [30] Saat M, Hanawi SA, Hanafiah H, Ahmad M, Farah NMF, Abdul Rahman NAA. Relationship of screen time with anxiety, depression, and sleep quality among adolescents: a cross-sectional study. Front Public Health 2024;12:1459952-8.

Published by AMMS Journal, this is an Open Access article distributed under the terms of the Creative Commons Attribution 4.0 International License. To view a copy of this license, visit http://creativecommons.org/licenses/by/4.0/.

© The Author(s) 2025