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Original Research Article

MENTAL HEALTH DISORDERS IN HIGH SCHOOL ADOLESCENTS WITH HIGH SCREEN TIME.

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Abstract

Background: Mental health disorders may be caused in adolescents due to many biophysical and social risk factors. Increased screen time is also an emerging factor. Various professional organizations, including the Indian Academy of Pediatrics have given recommendations for digital wellness, but there is no clarity over the permissible number of hours per day in the adolescent age group. This study screened adolescents for different mental health disorders and Speculated their association with increased screen time.

Methods: adolescent students from classes 8 to 10th standard were included After their verbal assent and obtaining permission from the school authorities.89 students were willing and answered the teen screening questionnaire -mental (TSQ-M) which is a validated screening questionnaire. The endorsement pattern for the TSQ-M was on a 3-point Likert scale of 'Never' (1), 'Sometimes' (2), and 'Often' (3). Based on the total score, the MHD was categorized into two namely, low MHD with a total score (<29) and high MHD (≥29). Additional data on demographic, epidemiological, total screentime on all gadgets, and substance abuse was collected through face-to-face interviews with the adolescents by trained auxiliary health professionals. Any child having screen time of more than 4 hours was considered to have High screen time (HST).

Results: Most of the students belonged to the age range of 14-15 years (55.1%). The percentage of males (62.9%) was higher compared to females (37.1%). Many of the participants had low MHD (78.7%) and the remaining (21.3%) had high MHD. Females had significant anxiety symptoms (p=0.006). females also had higher ADHD, depression, and Elimination Disorder symptoms compared to male participants but these were statistically insignificant. Most of the students (71.9%) reported screen time using gadgets for up to 1 hour per day. A smaller proportion (24.7%) used gadgets for more than 4 hours and only a few (3.4%) used them for up to 6 hours. There appears to be a statistically significant relationship between screen time and MHD scores (p = 0.026) indicating that the amount of screen time is associated with different levels of MHD scores. Substance abuse was found to be significantly associated with MHD.

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Conclusion: This study highlights a concerning prevalence of mental health issues, particularly anxiety among female students, and its association with screen time of students. while substance abuse is also on the increase. The findings suggest the need for further investigation into the factors influencing mental health in adolescents, particularly concerning screen time and substance use.

Keywords: Mental Health Disorder, Screen-time, Substance abuse, Adolescent

INTRODUCTION

Adolescence is an age group between 10-19 years. This age group accounts for 16/% of the global population and 20.9% of the Indian population belongs to the adolescent age group accounting for 253 million. (1). It is a sensitive age because the brain undergoes structural and functional changes. These are necessary to acquire cognitive and social resources for transforming into a healthy adult. (2,3). Health conditions commonly seen in adolescents include mental health, reproductive health problems, obesity, and chronic conditions like asthma, and type 1 diabetes. The prevalence of mental health disorders is reported to be more than 7.3 % in adolescents according to the Mental Health Survey of India (2015-2016). (4) Some mental health screening tools are available for adolescents but TSQ-M is a validated tool for screening and clinical use. (5) Adolescents have a complex biopsychological framework of risk factors for mental health disorders including self, school, peer pressure, home, and others. In India also many families are now nuclear with working couples. They are not able to spend time with their children. Hence, most children spend more time with television, mobiles, and laptops, either for learning or recreation. Some children and adolescents have become addicted to gaming or social media platforms, which has inadvertently increased their screen time. The American Academy of Pediatrics (AAP) recommends less than two hours/day of screen time for children above 5 years (6) Indian Academy of Pediatrics (IAP) has given clear recommendations for screen time of less than 30 minutes for less than 2 years of children and less than 2 hours/day for children till 10 years of age. In adolescents, IAP recommends balancing screen time with other activities that are required for overall development. These activities include at least one hour of outdoor physical activity (playtime), 8-9 hours of night-time sleep, and time for schoolwork, meals, hobbies, peer interaction, and family time. If any of the above activities is compromised due to screen time, then screen time must be appropriately reduced to accommodate the same. (7) However, there is no clarity regarding the specific number of hours/days permissible for the adolescent age group. This led us to speculate if there is an association between increasing screen time with mental health disorders.

Aim: screening for various mental health disorders (MHD) in the high school Adolescent.

Objectives:

1. To estimate the total number of students probably having mental health disorders.
2. To see a spectrum of various probable mental health disorders.
3. To correlate the screen time (significant if more than four hours/day) with a probability of having a mental health disorder (score 29 or more)
4. To correlate any substance abuse with MHD.

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Material and methods:

This cross-sectional study was conducted during a school visit in August 2024. Students from classes 8 to 10th standard above 12 years were included after their verbal assent. Permission to collect data was also taken from the school authorities. 89 students were willing and answered the teen screening questionnaire -mental (TSQ-M). The mental health section had 17 questions suggesting symptoms of various mental health disorders like attention deficit hyperactivity disorder (e.g., Do you have a problem in sitting still for long?), Conduct Disorders (e.g., Have you been involved in setting fires, stealing, lying or fist fights?), Elimination Disorder (e.g., Do you wet your bed?), Anxiety Disorders(e.g., Do you have any fears that are perceived by others as unreasonable?), Mood Disorders (e.g., Do you think that you are hopeless or guilty in any way?), Psychoses (e.g., Have you heard voices or seen people when there were none around?), substance use disorder (e.g., Do you smoke?), and Non-specific biological symptoms (e.g., Has there been any change in your sleep?). The endorsement pattern for the TSQ-M was on a 3-point Likert scale of 'Never', 'Sometimes', and 'Often'. Additional data on demographic, epidemiological, and social characteristics was collected through face-to-face interviews with the adolescents by trained auxiliary health professionals. This data included additional information including screen time in hours per day. Any substance abuse in the form of tobacco and alcohol use by them or in their family and friends was also elicited.

A total TSQ score of ≥29 had a sensitivity of 76%, a specificity of 68%, a positive likelihood ratio of 2.37, a negative likelihood ratio of 0.36, a positive predictive value of 70.9%, and a negative predictive value of 73.1% making it appropriate for screening in primary care. (5)
The totals of MHD scores for all 17 questions were taken, with a minimum Score of 17 and a maximum of 51(never =1, sometimes=2, often=3). Based on the total score, the MHD was categorized into two namely, low MHD with a total score (<29) and high MHD (≥29). Any child having screen time of more than 4 hours was considered to have High screen time (8,9). Frequency analysis was used to determine the demographic details, mental health disorder (MHD), screen time, and substance abuse of the respondents.
All descriptive statistics were included. Furthermore, an independent t-test was performed to evaluate categorical variables. The data was analysed using the Statistical Package for the Social Sciences (SPSS). Furthermore, a chi-square test was performed to evaluate the association between factors and the MHD scores.

Results:

Most of the students belonged to the age range of 14-15 years (55.1%).
The percentage of males (62.9%) was higher compared to females (37.1%).
Only 5.6% of participants were overweight (Table 1).

Table 1: Age, Gender, and BMI in the study group.

Parameter		Number	Percent
Age (years)	12-13	28	31.5
	14-15	49	55.1
	16-19	12	13.5
Sex	Male	56	62.9
	Female	33	37.1
Body mass index	Underweight	57	64.0
	Normal	27	30.3
	Overweight	5	5.6

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Many of the participants had low MHD (78.7%) and the remaining (21.3%) had high MHD (Table 2). Based on the analysis of different types of MHD, it was found that females had more MHD than males. female participants had higher ADHD, depression, Elimination Disorder, Anxiety, and Psychosis symptoms compared to male participants. Anxiety symptoms were significantly more in females (p=0.006)

Table 2: Distribution of Mental Health Disorder Scores (MHD scores)

	Number of students	Percent
Low MHD	**70**	**78.7**
High MHD	**19**	**21.3**
Total	**89**	**100.0**

Table 3: Distribution of symptoms of various MHDs.

Mental health disorder (MHD)	Symptoms	Never	Sometimes	Often
Attention deficit	Difficulty- Focus for long periods	49 (55.06%)	36 (40.45%)	4 (4.49%)
Hyperactive	Difficulty-Sit still for long periods	42 (47.19%)	37 (41.57%)	10 (11.24%)
Depression	Change in sleep pattern	60 (67.42%)	26 (29.21%)	3 (3.37%)
Depression	Changes in eating habits	52 (58.43%)	31 (34.83%)	6 (6.74%)
Depression	Changes in bowel habits	64 (71.91%)	17 (19.1%)	8 (8.99%)
Depression	Feelings of sadness or hopelessness	45 (50.56%)	38 (42.7%)	6 (6.74%)
Depression	Thoughts of suicide	85 (95.51%)	3 (3.37%)	1 (1.12%)
Autism	Difficulty talking to others	59 (66.29%)	27 (30.34%)	3 (3.37%)
Elimination	Bedwetting issues	44 (49.44%)	39 (43.82%)	6 (6.74%)
Anxiety	Unreasonable fears	46 (51.69%)	33 (37.08%)	10 (11.24%)
Anxiety	Worries about bad things happening	80 (89.89%)	8 (8.99%)	1 (1.12%)
Anxiety	Uncontrollable thoughts	54 (60.67%)	33 (37.08%)	2 (2.25%)
Conduct	Getting into trouble	63 (70.79%)	24 (26.97%)	2 (2.25%)
Conduct	Suspensions or legal issues	79 (88.76%)	9 (10.11%)	1 (1.12%)
OCD	Repetitive actions	52 (58.43%)	29 (32.58%)	8 (8.99%)
Psychosis	Experiencing things that aren't there (hallucinations)	55 (61.8%)	26 (29.21%)	8 (8.99%)
Psychosis	Feelings of being persecuted or that others are against you	57 (64.04%)	26 (29.21%)	6 (6.74%)

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As seen in the table above hyperactivity symptoms were seen sometimes in 37 (41.57%) and often in 10 (11.24%). Among depressive symptoms, the feeling of sadness or hopelessness was the most common symptom seen sometimes in 38(42.7%) and often in 6**(**6.74%). Elimination disorders like bedwetting were seen sometimes in 39 (43.82%) and often in 6 (6.74%). Among anxiety symptoms feeling unreasonable fears was sometimes seen in 3(37.08%) And often seen in10 (11.24%). conduct disorders symptom of getting into trouble was sometimes seen only in 24(26.97%) and seen often in only 2(2.25%). The autistic symptom was seen never in 59(66.29%). obsessive-compulsive disorder symptom was seen never in 52 (58.43%). Psychosis symptoms were seen never in 55- 57(61.4 –64.04%). Most of the students (71.9%) reported screentime using gadgets for up to 1 hour per day. A smaller proportion (24.7%) used gadgets for more than 4 hours and only a few (3.4%) used them for more than 6 hours.

Table 4: Association between screen time and MHD scores

Screen time	MHD low	MHD high	Chi-square value	P value
Up to 1 hour	55 (85.9%)	9 (14.1%)	7.293	0.026
More than 4 but less than 6 hours	13 (59.1%)	9 (40.9%)		
More than 6 hours	2 (66.7%)	1 (33.3%)		

As screen time increases, the percentage of individuals with high MHD scores appears to increase (14.1% for up to 1 hour, 40.9% for 4-6 hours, and 33.3% for above 6 hours). There appears to be a statistically significant relationship between screen time and MHD scores, with the result ($p = 0.026$) indicating that the amount of screen time is associated with different levels of MHD scores. Adolescents are also at high risk of addiction. The following table reveals the pattern we found among these adolescents.

Substance Abuse	No	Yes
Used tobacco often	83 (93.26%)	6 (6.74%)
Family use tobacco	69 (77.53%)	20 (22.47%)
Friends use tobacco	82 (92.13%)	7 (7.87%)
Used alcohol often	88 (98.88%)	1 (1.12%)
Family use alcohol	75 (84.27%)	14 (15.73%)
Friends use alcohol	85 (95.51%)	4 (4.49%)

	Frequency	Low MHD	High MHD	P-value
Substance abuse	Low (once/ month)	61 (82%)	13 (18%)	0.021
	Medium (once/week)	8 (73%)	3 (27%)	
	High (at least once/day)	1 (25%)	3 (75%)	

Substance abuse was found to be significantly associated with MHD. However, high substance abuse among the students was only 4 (4.4%), with low substance abuse (84%). Therefore, the effect of even distribution of the substance abuse could throw better insights ($P<0.05$)

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Discussion:

This study showed an increased probability of mental health disorders in adolescents and its association with increasing screen time. Out of the symptoms for eight mental health disorders screened, symptoms of Anxiety disorder were seen to be statistically significant. (10) Other common but insignificant symptoms were of depression, hyperactivity, and elimination disorders like bedwetting. (4) Most of the teens reported increasing screen time in terms of recreational Internet surfing and social media use. The time limit recommended for recreational screen time for adolescents was considered less than two hours according to the American Academy of Pediatrics. (9) Indian Academy of Pediatrics in its consensus statement has also issued guidelines on screen time in children till 10 years of age but in adolescents, there is no clarity on the exact permissible number of hours per day. No consensus is seen among the studies on permissive screen time for adolescents. (7) In this pilot study, we only estimated excess screen time. Longitudinal studies about the content, nature of the social media use, and types of video gaming played during this screen time may be needed to comment on the causation with the various or specific MHDs. AAP recommends the use of a family plan so that the content of the media can be scrutinized by the parents. (9). Excessive use of video games as recreation has been linked to anxiety symptoms. and excessive computer or laptop use has been associated with depression. (11, 12, 13) Violence on the screen is seen to be associated with attention deficit hyperactivity behaviour. (14) Dopamine-related pathways were seen as pathophysiologically involved in such cases. In other cases, structural changes were noted causing less emotional control on addictive screen time leading even to substance abuse.

In this study, younger individuals (12-13) were more likely to fall into the low MHD, while older individuals (14-15 and 16-19) were more likely to fall into the high MHD category but there was no statistically significant association between age and mental health disorders. This finding was similar to seen Mental Health Survey of India (2015–2016), in which the prevalence of psychiatric disorders among adolescents (13–17 years) was reported around 7.3%. (4,15) Gender was also not significantly associated with mental health disorders except For anxiety symptoms which were seen more in females. Another study reported Depression and stress were more prevalent among school-going adolescent girls. (4) Approximately 40%–90% of adolescents with depression have comorbid psychiatric disorders such as anxiety disorders, conduct disorders, substance abuse, and personality disorders in the case of adolescents. (16,17) In a study from Kohima assessing the mental health status of 702 school-going adolescents (13–19 years) reported emotional problems in17%, hyperactivity in 16%, and conduct problems in 15% (18). Children having mental health disorders are also prone to substance abuse. Community surveys have shown more use of tobacco and alcohol among

Adolescents because of the easy availability in India. (4) Another study of 474 adolescents (10–19 years) attending psychiatric services at a tertiary care centre in Manipur reported substance use disorders to be in 21%and was more common in boys. Other disorders were neurotic, stress-related, and somatoform disorders which were about 61% in girls. (19). In the present study 7.8% were having substance abuse. This was mainly in the form of tobacco chewing, smoking, and alcohol. Most of these students had family members using tobacco and alcohol at home but a minority of them started with their friends or due to the influence of movies. (20) The present study also revealed a significant association between substance abuse and high MHD scores. This study highlights a concerning prevalence of mental health issues, particularly anxiety among female students, and its association with high screen time. while substance abuse is also on the increase. The findings suggest the need for further investigation into the factors influencing mental health in adolescents, particularly concerning screen time and substance use.

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