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# ASSOCIATION BETWEEN SCREEN TIME AND BEHAVIOURAL HEALTH PROBLEMS AMONG TEENAGERS ATTENDING A TERTIARY CARE HOSPITAL IN LUCKNOW: A CROSS-SECTIONAL STUDY

*Mehak Singh[1], Saksham Srivastava[2], Kamran Ahmad[3], Dhananjay Kumar[4]*

[1]*Junior Resident, Department of Paediatrics, TS Misra University, Lucknow, Uttar Pradesh, India.*
[2]*Professor and Head, Department of Paediatrics, TS Misra University, Lucknow, Uttar Pradesh, India.*
[3]*Assistant Professor, Department of Paediatrics, TS Misra University, Lucknow, Uttar Pradesh, India.*
[4]*Professor, Department of Paediatrics, TS Misra University, Lucknow, Uttar Pradesh, India.*

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**Corresponding Author:**
**Dr. Kamran Ahmad,**
Assistant Professor, Department of Paediatrics, TS Misra University, Lucknow, Uttar Pradesh, India.
Email: drkamran5842@gmail.com

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ABSTRACT

**Background:** The increasing penetration of digital media has significantly altered the lifestyle of teenagers, raising concerns regarding its potential impact on behavioural health. This study was conducted to estimate screen time and assess its association with behavioural health problems among teenagers aged 11–16 years.

**Materials and Methods:** A hospital-based cross-sectional study was carried out from January to December 2024 in the pediatric outpatient department of a tertiary care hospital in Lucknow. A total of 159 teenagers were enrolled using convenience sampling. Screen time was assessed using a structured questionnaire and behavioural health was evaluated using the parent-reported Strengths and Difficulties Questionnaire (SDQ). Statistical analysis was performed using SPSS version 29, applying chi-square and independent t-tests, with a p-value <0.05 considered statistically significant.

**Results:** The mean age of participants was 13.3 ± 1.7 years, with males comprising 52.2%. Overall, 68.6% of teenagers reported screen time exceeding 2 hours per day. Higher screen time was significantly associated with increasing age and personal smartphone ownership (p<0.05). Teenagers with screen time greater than 2 hours per day had significantly higher SDQ total difficulty scores (16.5 ± 5.0 vs 11.2 ± 4.1; p<0.001). Emotional problems, conduct problems, hyperactivity/inattention, and peer problems were significantly more prevalent in the higher screen time group.

**Conclusion:** Excessive screen time is significantly associated with behavioural health problems among teenagers, highlighting the need for parental regulation and early intervention strategies.

**Keywords:** Screen time, teenagers, behavioural health, SDQ, smartphone use.

## INTRODUCTION

Digital technology has become an integral component of daily life among teenagers. Excessive screen time has been associated with adverse psychological outcomes.[1,2] Earlier American Academy of Pediatrics guidance recommended limiting entertainment screen time to less than 1–2 hours per day.[3] Indian Academy of Pediatrics guidelines also advise restricting excessive recreational screen use.[4] However, adherence to these guidelines is increasingly difficult. Teenagers are particularly vulnerable due to rapid developmental changes. Excessive screen exposure has been linked to emotional instability, attention deficits and behavioural disturbances.[1,5] Possible mechanisms include sleep disruption due to blue light exposure, reduced physical activity and decreased social interaction.[6-8] Given increasing smartphone use in India, this study was conducted to assess the association between screen time and behavioural health problems.

## MATERIALS AND METHODS

This cross-sectional study was conducted in the pediatric outpatient department of TS Misra University, Lucknow, from January to December 2024. Teenagers aged 11–16 years were included. Those with known psychiatric or neurological disorders were excluded.

**Ethical Approval**

The study was approved by the Institutional Ethics Committee of TS Misra University, Lucknow. Written informed consent was obtained from parents/guardians and assent from participants. Screen time was assessed using a structured questionnaire. Behavioural health was evaluated using the Strengths and Difficulties Questionnaire (SDQ).[9,10] Data were analyzed using SPSS version 29. Chi-square test and independent t-test were applied. A p-value <0.05 was considered statistically significant.

## RESULTS

**Table 1: Distribution of Screen Time among Study Participants (n=159)**

| Screen Time Category | Number (%) |
|---|---|
| <2 hours/day | 50 (31.4) |
| 2–4 hours/day | 72 (45.3) |
| >4 hours/day | 37 (23.3) |

Table 1 shows the distribution of screen time among the study participants. Out of 159 teenagers, 50 (31.4%) had screen time of less than 2 hours/day. The largest group was of 2–4 hours/day, seen in 72 (45.3%) participants. Screen time of more than 4 hours/day was present in 37 (23.3%) teenagers. Overall, most participants had screen exposure above the recommended 2 hours/day limit.

**Table 2: Association between Screen Time and Demographic Variables**

| Variable | <2h | 2–4h | >4h | p-value |
|---|---|---|---|---|
| Age 11–13 years | 36 | 42 | 17 | 0.047 |
| Age 14–16 years | 14 | 30 | 20 | |
| Male | 21 | 39 | 23 | 0.159 |
| Female | 29 | 33 | 14 | |
| Personal smartphone | 23 | 45 | 30 | 0.004 |
| Shared/no smartphone | 27 | 27 | 7 | |

Table 2 demonstrates the association between screen time and demographic variables. In the 11–13 years age group, most teenagers were in the 2–4 hours category, while in the 14–16 years group a relatively higher proportion had screen time of more than 4 hours/day. This association with age was statistically significant (p=0.047). Sex did not show significant association with screen time distribution (p=0.159), though males were somewhat more common in the >4 hours group. Personal smartphone ownership showed clear association with higher screen time. Among those having personal smartphone, 30 participants were in the >4 hours category, compared to only 7 among those with shared or no smartphone. This association was significant (p=0.004).

**Table 3: Association between Screen Time and Behavioural Problems (SDQ Domains)**

| Outcome | ≤2 hours (n=91) | >2 hours (n=68) | p-value |
|---|---|---|---|
| Any behavioural problem | 21 (23.1%) | 40 (58.8%) | <0.001 |
| Emotional problems | 24 (26.4%) | 29 (42.6%) | 0.031 |
| Conduct problems | 19 (20.9%) | 24 (35.3%) | 0.043 |
| Hyperactivity/inattention | 25 (27.5%) | 29 (42.6%) | 0.045 |
| Peer problems | 12 (13.2%) | 24 (35.3%) | <0.001 |

Behavioural problems as in Table 3 were more common in teenagers with higher screen time. Any behavioural problem was seen in 40 (58.8%) participants with screen time >2 hours/day, compared to 21 (23.1%) in those with screen time ≤2 hours/day and this difference was highly significant (p<0.001). Emotional problems were also higher in the more screen time group, 42.6% versus 26.4% (p=0.031). Conduct problems were found in 35.3% versus 20.9% (p=0.043). Hyperactivity/inattention was also significantly more frequent in the >2 hours group, 42.6% versus 27.5% (p=0.045). Peer problems were markedly higher in those with higher screen exposure, 35.3% versus 13.2% (p<0.001). Overall, increased screen time showed significant association with multiple behavioural problem domains.

## DISCUSSION

The present study demonstrates a significant association between excessive screen time and behavioural health problems among teenagers. A substantial proportion of participants reported screen

exposure exceeding the common two-hours-per-day threshold, reflecting the growing penetration of digital media in this age group. The findings of this study are consistent with those reported by Twenge and Campbell, who observed that increased screen time is associated with reduced psychological well-being and increased emotional distress among adolescents.[1] Similarly, Przybylski and Weinstein proposed a "Goldilocks hypothesis," suggesting that while moderate screen use may be relatively harmless, excessive exposure is associated with negative mental health outcomes.[2] The present study supports this concept, as behavioural problems were significantly higher among teenagers with screen time exceeding two hours per day.

Evidence from Indian studies also aligns with our findings. Garg et al. reported a high prevalence of excessive screen exposure among children, with a significant association with behavioural problems.[11] Kaur et al. similarly demonstrated that increased screen time is linked to emotional and behavioural disturbances.[12] Longitudinal evidence also suggests that these effects may begin early in life and continue over time.[13] The consistency of findings across both global and Indian studies strengthens the external validity of our results.

Several biological and psychosocial mechanisms may explain the observed association. Excessive screen exposure, particularly before bedtime, has been shown to suppress melatonin secretion due to blue light emission, leading to delayed sleep onset and poor sleep quality.[6] Sleep deprivation, in turn, is strongly associated with irritability, inattention and emotional dysregulation. Additionally, increased screen time often replaces physical activity and face-to-face social interactions, both of which are essential for healthy cognitive and emotional development. Systematic reviews by Tremblay et al. and Hoare et al. have highlighted the negative impact of sedentary behaviour on mental health outcomes in children and adolescents.[7,8] A recent review by Stiglic and Viner also supports adverse associations between higher screen exposure and mental health outcomes.[14]

An important observation in the present study was the significant association between personal smartphone ownership and higher screen exposure. Teenagers with personal devices had greater autonomy and less parental monitoring, which likely contributed to increased usage. Similar findings have been reported by Sampasa-Kanyinga et al. and Rosen et al., highlighting the relationship between frequent digital media use and poor psychological functioning.[15,16]

The behavioural domains affected in this study including emotional problems, conduct disturbances, hyperactivity/inattention and peer relationship difficulties are consistent with prior research. Hinkley et al. and Liu et al. have demonstrated similar associations between higher screen exposure and poorer emotional or behavioural outcomes.[13,17] Gentile et al. also reported behavioural and psychosocial difficulties in relation to problematic gaming behaviour,[18] while Anderson et al. reported links between media exposure and aggressive behaviour.[19]

However, the relationship is multifactorial. As suggested by Orben and Przybylski, the magnitude of association may be modest and should be interpreted cautiously in the context of other environmental influences.[20] Recent systematic review evidence also suggests that although excessive screen time is associated with mental health problems, the direction and size of effect vary across studies.[5]

From a public health perspective, these findings are particularly relevant in the Indian context, where screen exposure among children and adolescents has increased substantially. There is a need for parental education, school-based awareness programs and incorporation of digital hygiene counseling into routine pediatric care. Screening for excessive screen time should be integrated into adolescent health assessments.[4] Overall, the study highlights the need for longitudinal research to establish causality and explore moderating factors such as content type, sleep and parental supervision. The study utilized a validated tool (SDQ) and focused on a critical developmental group. Limitations include cross-sectional design, recall bias and limited generalizability.

## CONCLUSION

The present study showed that excessive screen time was common among teenagers attending the tertiary care hospital, with more than two-thirds reporting screen exposure beyond the recommended limit. Higher screen time was significantly associated with older age and personal smartphone ownership. Teenagers with higher screen exposure had significantly greater behavioural health problems, particularly emotional problems, conduct problems, hyperactivity/inattention and peer problems. These findings suggest that excessive screen time is an important modifiable risk factor for behavioural difficulties in adolescents. Early identification, parental supervision, screen-time regulation and digital hygiene counselling should be strengthened to promote healthier behavioural outcomes in this age group.

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