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A CROSS-SECTIONAL STUDY TO DETERMINE THE IMPACT OF SCREEN DEPENDENCY UPON MENTAL HEALTH, SLEEP PATTERN, SOCIAL CONNECTEDNESS AND EATING BEHAVIOUR AMONG SCHOOL GOING CHILDREN

Divya R Kammath[1*], Dr. Starmine C [2], Prof. Dr. Namitha Subrahmanyam[3], Prof. Dr. Preethy Jawahar[4]

[1]Department of Mental Health Nursing, M.O.S.C. College of Nursing, Kolenchery P O, Ernakulam - 682311, Kerala, India.
[2]Associate Professor & HOD, Department of Mental Health Nursing, M.O.S.C. College of Nursing, Kolenchery P O, Ernakulam - 682311, Kerala, India.
[3]Principal, M.O.S.C. College of Nursing, Kolenchery P O, Ernakulam - 682311, Kerala, India.
[4]Vice Principal, M.O.S.C. College of Nursing, Kolenchery P O, Ernakulam - 682311, Kerala, India.

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Corresponding Author

Divya R Kammath

Email: divyakammath1983@gmail.com

ABSTRACT

An excessive screen time increasingly emerges as a critical threat to child development. Understanding its effects on mental health, sleep patterns, social connectedness, and eating behaviors is imperative. The research question of this study was, how does screen dependency affects mental health, sleep pattern, social connectedness and eating behavior among school going children. The objectives were to estimate the magnitude of screen dependency, mental health, sleep pattern, social connectedness and eating behavior. Also, to determine the relationship and to identify association of screen dependency with mental health, sleep pattern, social connectedness and eating behavior with the selected socio demographic variables. The data was collected from a sample of 203 school going children selected by non-probability convenient sampling technique. A socio demographic questionnaire, Multiple screen addiction scale, WEMWB scale, PSQ index, revised social connectedness scale and Johnson AFH checklist were used to collect data. The study concluded that, screen dependency had a weak negative correlation (ρ =-0.124) with mental health, a weak positive correlation (ρ = 0.108) with sleep pattern, a weak negative correlation (ρ = -0.08) with social connectedness and a weak negative correlation (ρ = -0.054) with eating behaviour. Also, there was a significant association of screen dependency with type of screen used (p=0.007) and education of father (p= 0.047). The study also found a significant association of mental health with gender (p=0.046), self-reported academic performance (p=0.001) and education of father (p = 0.087). In addition to this, there was a significant association found in sleep pattern with birth order of the child (p=0.005) and social connectedness with gender (p= 0.008). To conclude, screen dependency is preventable by establishing clear screen time limits. Minimising screen time to a reasonable duration that gives direct impact on mental health, sleep pattern, social connectedness, and eating behaviour.

Keywords: Screen addiction; Mental disorders; Sleep quality; Social isolation; eating disorders; Screen time; Socialization; Stress

INTRODUCTION

Screen-based communication and entertainment have increased rapidly among adolescents due to widespread access to smartphones, social media, and online streaming platforms. Globally, internet use has risen sharply, and in India and Kerala this surge has been linked to rising cyber-related issues and serious concerns such as online gaming–related harm.

Screen dependency refers to the negative consequences of prolonged digital device use, including loss of control, emotional instability, and anxiety. Studies show that excessive screen use is

highly prevalent among school children in Kerala and is increasingly viewed as a condition requiring early identification and intervention.

Excessive screen exposure can adversely affect mental health by altering socio-affective brain circuits and dopamine pathways during adolescence. Child mental health professionals report a growing number of young people seeking help for problems associated with digital addiction.

Sleep is also affected, with prolonged screen use causing delayed sleep onset, poor sleep quality, daytime fatigue, and disruption of melatonin levels. Research consistently links high screen time with sleep disturbances, mood changes, and cognitive impairment.

Screen use during meals contributes to unhealthy eating habits, reduced satiety awareness, and increased consumption of high-fat and high-sugar foods. Digital influence, including advertising and celebrity endorsements, can further shape unhealthy food choices among adolescents.

Social connectedness, essential for emotional support and healthy development, is increasingly compromised by excessive screen use. Overreliance on digital engagement can weaken face-to-face interactions, reduce empathy, and affect overall social wellbeing.

Statement of the Problem

A cross-sectional study to determine the impact of screen dependency upon mental health, sleep pattern, social connectedness, and eating behavior among school-going children in Ernakulam district, Kerala.

Objectives

1. To estimate the magnitude of screen dependency among school-going children.
2. To assess mental health, sleep pattern, social connectedness, and eating behavior among school-going children.
3. To determine the relationship between screen dependency and the above variables.

Hypotheses

H_1: There is a significant relationship between screen dependency and mental health, sleep pattern, social connectedness, and eating behavior.

H_2: There is a significant association between selected sociodemographic variables and mental health, sleep pattern, social connectedness, and eating behavior among school-going children.

MATERIALS AND METHODS

This cross-sectional study was conducted among school-going children of High School, Ramamangalam, Ernakulam district, Kerala, after obtaining Institutional Ethics Committee approval and written informed consent and assent from participants. The outcome variables included screen dependency, mental health, sleep pattern, social connectedness, and eating behavior, along with sociodemographic factors such as age, gender, family characteristics, parental education and occupation, economic status, possession of electronic gadgets, and daily screen duration. A total of 203 students aged 13–18 years who met the inclusion criteria and could read Malayalam or English were selected. The study setting was chosen from among ten enlisted schools within a 6 km radius of Kolenchery using non-probability convenience sampling. Children diagnosed with learning disabilities, autism spectrum disorders, neurological disorders, or other significant developmental conditions were excluded from participation.

A structured sociodemographic proforma and five standardized tools were used to assess key variables of the study. These included the Multiple Screen Addiction Scale (Saritepeci, 2021), Warwick–Edinburgh Mental Wellbeing Scale (Tennant et al., 2005), Pittsburgh Sleep Quality Index (Buysse et al., 1989), Revised Social Connectedness Scale (Lee & Robbins, 2001), and the Adolescent Food Habits Checklist (Johnson et al., 2002), all of which have established reliability and validity. Higher scores on the respective tools reflected greater levels of screen addiction, mental wellbeing, social connectedness, sleep disturbance, and healthier food habits as per the scoring guidelines.

Ethical approval for the study was obtained from the Institutional Ethics Committee of M.O.S.C. Medical Mission Hospital, Kolenchery (Certificate No: MOSC/IEC/138/2024), and written informed consent and assent were secured from all participants. A pilot study was conducted among 30 students from St. Peter's Higher Secondary School, Kolenchery, using the validated study tools, and the process was found feasible in terms of time, resources, and methodology. For the main study, formal permission was obtained from the school authorities, and 203 students from High School, Ramamangalam were selected through non-probability convenience sampling based on eligibility criteria. Participants were provided with an information sheet, their doubts were clarified, and data were collected from 20–30 March 2025 using standardized tools assessing screen dependency, mental wellbeing, sleep quality, social connectedness, and food habits. All data were coded in MS Excel and analysed using R software, employing descriptive statistics, normality tests, and appropriate inferential tests. Confidentiality and anonymity were maintained throughout the study

RESULT

Description of socio demographic variables among school going children

Table 1: Frequency and percentage distribution of subjects based on gender, religion, residence and type of family (n=203)

SI No.	Socio demographic variables	Frequency (f)	Percentage (%)
1.	**Age**		
	13-15	203	**100%**
	16-18	0	0%
2.	**Gender**		
	Male	48	23.6%
	Female	155	**76.4%**
3.	**Religion**		
	Christian	79	38.9%
	Hindu	124	**61.1%**
	Islam	0	0%
	Others	0	0%
4.	**Residence**		
	Rural	202	**99.5%**
	Urban	1	0.5%
	Semi urban	0	0%
5.	**Type of family**		
	Joint family	25	12.3%
	Nuclear family	171	**84.2%**
	Extended family	**7**	3.40%

The data in table 1 reveals that all study subjects fell within the younger adolescent age group of 13-15 years. Females dominate the sample, that was 76.4%. The study sample included Christians and Hindus, with Hindus forming the majority (61.1%). The 99.5% of the participants were from rural area. Most of them were from nuclear family, that was 84.2%.

Table 2: Frequency and percentage distribution of subjects based on birth order of the child, number of siblings and educational status (n=203)

SI No.	Socio demographic variables	Frequency (f)	Percentage (%)
1.	**Birth order of the child**		
	1st	129	**63.5%**
	2nd	72	35.5%
	3rd	2	1.0%
2.	**Number of siblings**		
	0	28	13.8%
	1	161	**79.3%**
	2	14	6.9%
3.	**Educational status**		
	8th	118	**58.1%**
	9th	85	41.9%

The data in table 2 shows that over 63.5% of respondents were firstborn children. Nearly 80% had one sibling. The majority of the participants were from 8th grade, about 58.1%.

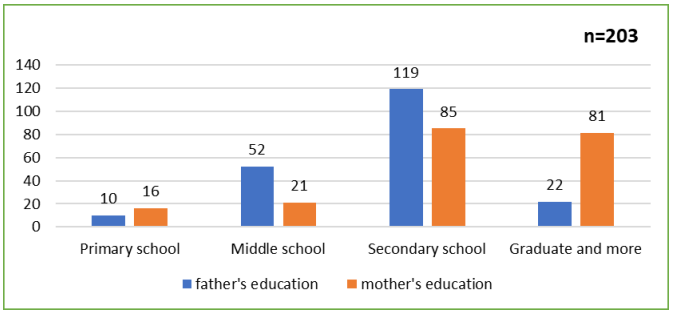

Figure 1: Bar diagram depicting the frequency distribution of subjects based on education of father and mother (n=203)

The data from figure 4 shows out of 203 subjects' majority had father's education (119) and mother's education (85) as secondary school level.

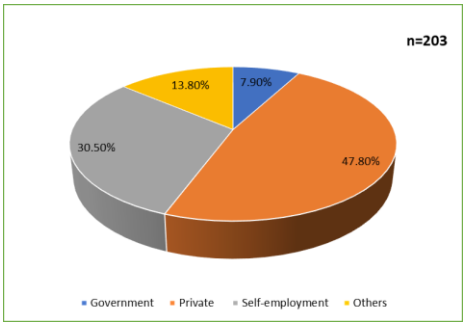

Figure 2: Pie diagram depicting the percentage distribution of subjects based on occupation of father

The data from figure 5 reveals that regarding father's occupation 47.8% were employed in private sector.

Table 3: Frequency and percentage distribution of subjects based on self-reported academic performance, duration of screen use per day, type of screen used and possession of electronic gadgets (n = 203)

SI No.	Socio demographic variables	Frequency (f)	Percentage (%)
1.	**Self-reported academic performance**		
	Poor	4	2.0%
	Average	89	**43.8%**
	Good	44	21.7%
	Very good	57	28.1%
	Excellent	9	4.4%
2.	**Duration of screen use per day**		
	0-1 hour	44	21.7%
	1-2 hours	100	**49.3%**
	2-3 hours	13	6.4%
	3-4 hours	42	20.7%
	>4 hours	4	2.0%
3.	**Type of screen used**		
	Mobile	58	28.6%
	Computer	0	0%
	Television	16	7.9%
	Mobile and computer	1	0.5%
	Mobile and television	127	**62.6%**
	Computer and television	1	0.5%
4.	**Possession of electronic gadgets**		
	Yes	43	21.2
	No	160	**78.8%**

The data in table 3 shows that over 70% fell into moderate academic achievement. Half the students (49.3%) had used screens for 1-2 hours daily. Mobile phones were the primary device, used alone or with television by 91.2% of students. Most students (78.8%) had lack of personal electronic gadgets.

Magnitude of screen dependency, mental health, sleep pattern, social connectedness and eating behaviour among school going children

Table 4: Magnitude of screen dependency, mental health, social connectedness and eating behaviour among school going children (n =203)

Variables	Median	Interquartile range	Range
Screen dependency	36	(23,40)	15 – 65
Mental health	50	(41, 51)	35 – 62
Social connectedness	92	(86, 103)	60 – 116
Eating behaviour	12	(11, 14)	5 – 19

The data in table 4 depicts the median and IQR of the variables screen dependency, mental health, social connectedness and eating behaviour.

Table 5: Magnitude of sleep pattern among school going children (n = 203)

Variable	Frequency	Percentage (%)
Sleep pattern scores/interpretation		
Good (≤5)	185	91.13%
Poor (≥5)	18	8.87%

The data from the table 5 shows that majority of the subjects, 91.13% had good sleep pattern.

Relationship of screen dependency with mental health, sleep pattern, social connectedness and eating behaviour among school going children

Table 6: Relationship of screen dependency with mental health, sleep pattern, social connectedness and eating behaviour (n=203)

Variables	Correlation coefficient (ρ)	p value
Screen dependency Mental health	-0.124	0.077
Screen dependency Sleep pattern	0.108	0.126
Screen dependency social connectedness	-0.08	0.256
Screen dependency Eating behavior	-0.054	0.442

***Significant at p ≤ 0.05**

The data in table 6 shows that the variable screen dependency had a weak negative correlation (ρ =-0.124) with mental health, a weak positive correlation (ρ = 0.108) with sleep pattern and a weak negative correlation (ρ = -0.08) with social connectedness and a weak negative correlation(ρ = -0.054) with eating behaviour. None of them were statistically significant as p value was not ≤ 0.05.

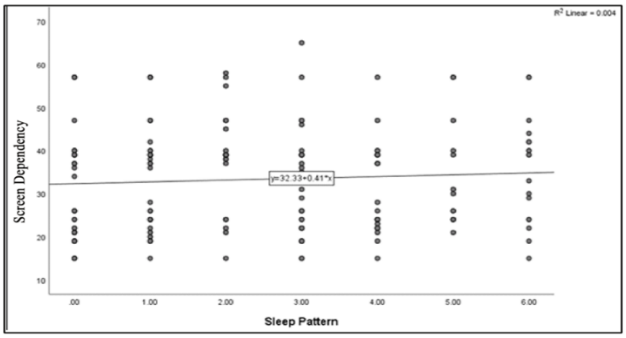

Figure 3: Scatter plot diagram depicting the relationship of multiple screen dependency with sleep pattern among school going children (n=203)

Figure 8 indicate that the variable screen dependency had a weak positive correlation (ρ = 0.108) with sleep pattern. There was no statistically significant relationship, as p value was not ≤ 0.05. This suggests that as screen dependency increases, there was a slight disturbance in sleep pattern.

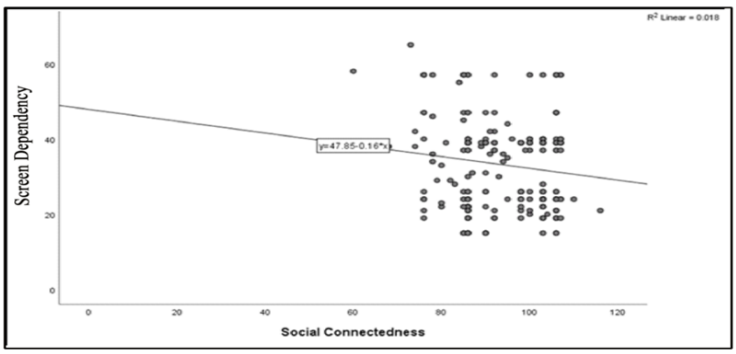

Figure 4: Scatter plot diagram depicting the relationship of multiple screen dependency with social connectedness among school going children (n=203)

Figure 9 indicates that the variable screen dependency has a weak negative correlation (ρ = -0.08) with social connectedness. There was no statistically significant relationship, as p value was not ≤ 0.05. This suggests that as screen dependency increases, social connectedness decrease very slightly.

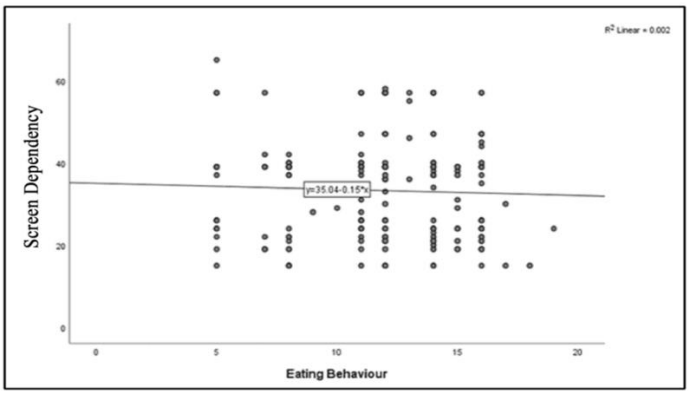

Figure 5: Scatter plot diagram depicting the relationship of multiple screen dependency with eating behaviour among school going children. (n=203)

Figure 10 indicates that the variable screen dependency has a weak negative correlation (ρ = -0.054) with eating behaviour. There was no statistically significant relationship, as p value was not ≤ 0.05. It was concluded that, as screen dependency increases, eating behaviour deteriorate.

DISCUSSION

The study found that school-going children showed a moderate level of screen dependency, with a median score of 36. This aligns with findings from Nair et al., who reported that 87.7% of adolescents used screen-based media for more than two hours daily, although contrary evidence from Thompson and Gillis showed that only a small proportion of children met recommended sleep duration despite screen exposure.

Screen dependency showed a weak negative correlation with mental health, indicating a slight decline in wellbeing as screen use increased, though the relationship was not statistically significant. This finding is consistent with studies reporting inconsistent associations between screen time and psychological wellbeing, while other researchers such as Li et al. reported a clearer positive association between higher screen time and depression risk.

A weak positive correlation was observed between screen dependency and sleep pattern, suggesting minor disturbances in sleep with increased screen use, though not statistically significant. This aligns with evidence showing negative effects of bedtime screen use on sleep outcomes, while contrasting studies reported stronger associations, including reduced sleep efficiency and increased daytime sleepiness.

The study also identified a weak negative correlation between screen dependency and social connectedness, suggesting a slight decline in social interactions as screen use increased, yet without statistical significance. Supporting studies have shown reduced social connectedness with higher smartphone use, though other researchers argue that the effect varies depending on the type of digital communication.

Finally, screen dependency demonstrated a weak negative correlation with eating behaviour, indicating a minor decline in healthy eating patterns as screen use increased. This supports earlier findings that excessive screen time is linked to unhealthy dietary behaviours among school-going children, reinforcing concerns about its broader impact on child health and wellbeing.

The findings of this study have important implications for nursing, emphasizing the need for policies, educational strategies, and preventive measures to address screen dependency among school children. Nurse administrators can support policy development, promote digital wellbeing programs, and advocate for safe screen practices in school and home environments. Nurse educators can design targeted teaching programs for students, parents, and teachers to enhance awareness on healthy screen use and early identification of screen-related problems. School health nurses can play a key role in screening, counselling, and implementing health promotion activities to reduce excessive screen use and improve overall wellbeing. The study also highlights the need for further nursing research, including interventional and qualitative studies, to evaluate effective strategies and strengthen evidence for managing screen dependency in children.

CONCLUSION

To conclude, screen dependency is preventable, when we establish clear screentime limits by providing alternative tech free activities.

Minimise screen time to a reasonable duration, especially to a school going children, thereby reduce its direct impact on mental health, sleep pattern, social connectedness, and eating behaviour. However, certain socio demographic variables do play a significant role in influencing these outcomes. These findings establish clear boundaries for screen use, to promote face to face interactions and to reduce the temptations of using online devices constantly. When screen time unavoidable, prioritize high quality educational and interactive entertainments to protect biopsychosocial wellbeing of school going children.

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