



DIGITAL OVERLOAD: A CROSSECTIONAL STUDY ON THE IMPACT OF SCREEN TIME ACROSS GENERATIONS

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Abstract:

This Study investigates patterns of screen usage and its perceived impact on health and daily life among diverse age groups across generations.

By analysing self-reported screen usage patterns, their impact on health, social life, and productivity, and to assess awareness and attitudes

The Study reveals prevalent habits such as frequent use of multiple screens, late-night screen exposure, and the tendency to use screens primarily for entertainment. Participants reported consequences including eye strain, disturbed sleep, reduced concentration, and occasional impacts on work or academic performance. While many acknowledged the benefits of taking breaks and supported educational initiatives on healthy screen use, fewer actively attempted to reduce their screen time. The findings highlight the need for structured awareness programs and lifestyle interventions to mitigate adverse effects of excessive screen use.

Keywords: Screen time, digital overload, cross-sectional study, psychological impact, physical health, generational differences, lifestyle, awareness.

1.INTRODUCTION:

(Twenge J. &, 2018) In the digital age, screens have become ubiquitous, fundamentally altering how individuals communicate, work, study, and engage in leisure. **According to “WHO” guidelines** Smartphones, computers, and televisions are integral to daily routines, often leading to prolonged exposure that exceeds recommended limits. While technology offers undeniable convenience, (Kaur H. S., 2020) growing research indicates its overuse is linked to adverse physical and psychological outcomes, such as eye strain, sleep disturbances, musculoskeletal discomfort, and diminished attention spans. This study aims to examine self-reported screen usage patterns, their impact on health, social life, and productivity, and to assess awareness and attitudes toward mitigating excessive screen time through digital wellness strategies.

As screen-based technologies become increasingly indispensable, (Rideout V. F., 2010) concerns about their overuse have gained prominence. (Hale L. &, 2015) Reports indicate that individuals often surpass the advised daily screen time, exposing themselves to risks that include digital eye strain, disrupted circadian rhythms, and reduced interpersonal interactions. This research seeks to explore the screen habits of individuals across various demographics, analyze how these habits correlate with self-reported health and lifestyle impacts, and evaluate their attitudes toward screen time management.

1.1 Research Objectives:

- i. To examine the pattern of screen time usage across different age groups and generations.
- ii. To analyze the impact of screen time on physical health outcomes such as eye strain, sleep disturbance, and musculoskeletal discomfort.
- iii. To assess the relationship between screen time and productivity in academic and work-related activities.
- iv. To evaluate the influence of screen time on social and family interactions.
- v. To examine awareness levels regarding digital wellness and digital detox practices across different age groups.
- vi. To analyze the perceived impact of digital detox practices on health outcomes.

2.0 LITERATURE REVIEW

2.1 Concept of Digital Overload and Screen Time

(Christoph Pieh, 2025) defines digital overload as the excessive and prolonged use of digital devices such as smartphones, laptops, tablets, and televisions beyond healthy limits, resulting in negative cognitive, emotional, and social consequences. The rapid digitalization of work, education, and leisure activities has intensified continuous screen exposure across all generations. This transformation has reshaped daily routines, blurring the boundaries between professional, personal, and social life. Earlier research by (FOX, 2008) highlighted that digital engagement was no longer restricted to work-related tasks but increasingly expanded into entertainment, communication, and social interaction. This shift marked the beginning of constant digital immersion, laying the foundation for present-day digital overload. The (WHO, 2019) emphasized that prolonged sedentary screen behavior is associated with physical health risks such as obesity, visual strain, musculoskeletal disorders, and poor posture, along with mental fatigue and reduced attentional capacity. Building on these foundational studies, recent literature has conceptualized digital overload as a multidimensional phenomenon. (Montag & Diefenbach, 2024) argue that digital overload now includes information fatigue, notification pressure, and compulsive platform engagement, which collectively impair emotional regulation and attentional control. Further, (Pieh & et, 2025) empirically demonstrated that excessive daily screen exposure significantly predicts emotional exhaustion, digital fatigue, and reduced subjective well-being among students and working adults. These findings extend earlier definitions by highlighting the psychological depth of digital overload in contemporary digital environments.

2.2 Trends and Usage Patterns Across Generations

Screen time patterns vary across age groups; however, digital multitasking has become increasingly prevalent across generations. (Rideout V. F., 2010) reported that adolescents and young adults spend more than seven hours per day on media-related activities, frequently combining entertainment with communication and academic tasks. Expanding this perspective, (Przybylski A. &, 2017) proposed the well-known *Goldilocks Hypothesis*, suggesting that moderate screen use may support well-being, whereas excessive screen exposure negatively affects psychological health and productivity. Further, (Twenge J. M., 2018) provided evidence that persistent digital stimulation contributes to attention fragmentation and reduced sustained focus among both children and adults. Recent studies indicate that these trends have intensified rather than stabilized. OECD Digital Society Outlook (OECD, 2025) reports that average daily screen time now exceeds six hours among Generation Z, with Millennials and Generation X closely following, indicating a narrowing generational gap. Additionally, (Nguyen & al., 2024) observed a significant rise in screen time among middle-aged and older adults due to increased reliance on digital banking, telemedicine, and online social interaction. Moreover, (Kross & al., 2024) found that passive screen activities such as endless scrolling and binge-watching are more strongly associated with digital exhaustion and reduced life satisfaction than active, goal-oriented digital use. This refines earlier conclusions by emphasizing that both *duration and nature* of screen engagement influence outcomes.

2.3 Psychological, Cognitive, and Behavioral Impacts of Screen Time

Existing literature consistently links excessive screen exposure to psychological distress. (Twenge J. M., 2018) demonstrated that high screen time is associated with increased anxiety, depressive symptoms, and decreased emotional well-being, particularly among adolescents.

Extending these findings (Twenge J. M., 2018) reported that sustained high digital consumption further amplifies risks of depression, loneliness, and attention-related problems among younger generations. A large-scale cross-sectional study by (Dai & Ouyang, 2025) revealed that individuals engaging in more than four hours of recreational screen time daily exhibited significantly higher risks of anxiety, depression, and ADHD-related symptoms. Importantly, reduced physical activity and sleep disruption were identified as key mediating factors, supporting earlier WHO (2019) concerns regarding sedentary digital lifestyles. Additionally, (Johannes & al., 2024) found that continuous digital multitasking impairs working memory and decision-making efficiency across age groups, reinforcing concerns about long-term cognitive overload caused by persistent screen exposure.

2.4 Screen Time, Sleep, and Physical Health Outcomes

The relationship between screen time and sleep quality has gained renewed academic attention. WHO (2019) previously cautioned that prolonged screen exposure contributes to physical inactivity and sleep disturbances. Supporting this, (Scott & Woods, 2024) demonstrated that late-night screen use suppresses melatonin secretion, delaying sleep onset and reducing overall sleep quality. Furthermore, a study published in (Saat, Z., Hanawi, S.A., & Hanafiah, 2024) reported that excessive screen time is significantly associated with eye strain, musculoskeletal discomfort, and metabolic health risks across different age groups. These findings indicate that digital overload is not only a psychological concern but also a growing public health issue affecting multiple generations.

2.5 Research Gap

Existing literature extensively documents the relationship between excessive screen time and its psychological, physical, and behavioral consequences, particularly among adolescents and young adults. Several studies have examined digital overload, sleep disturbances, mental health outcomes, and productivity loss in isolation or within specific demographic groups. However, there remains a notable gap in empirical research that simultaneously compares screen-time usage patterns and their perceived health, productivity, and social impacts across multiple generations within a single analytical framework, especially in the Indian context. Moreover, limited studies employ non-parametric statistical techniques to examine ordinal screen-time data while integrating awareness and digital detox behaviors as moderating factors. Most existing research either focuses on Western populations or relies on parametric assumptions that may not adequately capture real-world digital usage behavior. To address these gaps, the present study adopts a cross-sectional design with an expanded sample size and applies non-parametric analysis to examine generational

differences in screen-time exposure, health outcomes, productivity, and awareness, thereby contributing robust empirical evidence to the growing discourse on digital overload.

3. RESEARCH METHODOLOGY:

3.1 Research Design

Sample size and sampling Technique:

(Michael D. V., 2008) A sample is a small part of the entire population that defines the qualities, attributes, and behavior of the people. For data collection convenience sampling may be used (Creswell, 2017). A total of 50 respondents participated in this survey. The sample included individuals ranging from 12 years to 60 years, predominantly in the 19–35 years age group. Occupations varied, including students, working professionals, and others, ensuring a diverse representation.

Instrument/ Questionnaire

A structured questionnaire comprising **22 Likert-scale items** was administered. The questionnaire consisted of:

- Section A: Demographic profile
- Section B: Screen usage patterns
- Section C: Health impacts
- Section D: Productivity & social interaction
- Section E: Awareness & digital detox practices

3.4 Data Collection

3.4.1 Primary Data : (Bryman, 2016) was gathered through a structured questionnaire administered via an online Google form. Questions covered demographic details, frequency of screen usage, types of devices used, primary purposes of screen use, health impacts, and attitudes toward screen time regulation.

3.4.2 Secondary Data : Secondary data was sourced from peer-reviewed journals, books, newspapers etc. These Sources helped to support the interpretation of findings and compare results with existing literature.

3.5 Tools and Statistical Techniques:

The survey responses were coded and analyzed using descriptive statistics (frequency distributions, percentages, and cross-tabulations). Simple visual representations such as bar graphs and pie charts were used to present trends.

Statistical Tools

Since data is ordinal, non-parametric tests were used:

Test	Used For
Spearman Rank Correlation	H1, H2, H3
Kruskal–Wallis H Test	H4 (multiple groups)
Mann–Whitney U Test	H5 (two groups)

3.6 Variables of the Study

- **Independent Variable:** Screen usage patterns (measured in hours per day, device type, purpose).
- **Dependent Variables:** Health and life style impacts (eye strain, headaches, sleep quality), productivity (work/study performance), and social life (family/peer interactions).

4. HYPOTHESIS DEVELOPMENT:

H₁: Screen time & Physical Health

- H₀₁: No significant association between daily screen time and physical health issues.
- H₁₁: Significant association exists.

H₂: Screen time & Productivity

- H₀₂: Screen time does not significantly affect productivity.
- H₁₂: Screen time significantly affects productivity.

H₃: Screen time & Social Interaction

- H₀₃: Screen time does not affect social/family interaction.
- H₁₃: Screen time significantly affects social/family interaction.

H₄: Awareness Across Age Groups

- H₀₄: Awareness does not differ across age groups.

- H₁₄: Awareness differs based on age.

H₅: Digital Detox & Health Impact

- H₀₅: Digital detox does not influence health perception.
- H₁₅: Digital detox significantly influences health perception.

5.0 DATA ANALYSIS AND INTERPRETATION

Responses were analysed classified and tabulate to identify trends, frequency distributions, and notable correlations among reported behaviors and perceived effects.

5.1 Screen Usage Patterns

Analysis of data collected from 200 respondents reveals widespread digital engagement across all age groups. A substantial proportion of participants reported daily screen exposure exceeding 4–6 hours, which is notably higher than recommended health guidelines. Smartphones emerged as the primary digital device, particularly among respondents aged 19–35 years. Late-night screen usage after 10:00 PM was frequently reported, suggesting behavioral patterns associated with potential circadian rhythm disruption. Additionally, multiscreen behavior was significantly more prevalent among adolescents and young adults, reflecting a growing tendency toward digital multitasking. In terms of purpose, entertainment-related activities—such as social media, video streaming, and gaming—constituted the dominant reason for screen engagement, surpassing educational and professional usage. A majority of respondents indicated frequent screen usage, selecting response categories such as “Always” and “Often,” thereby confirming the normalization of extended screen exposure across generations. These findings align with earlier research by (Rideout V. F., 2010), which documented high levels of media consumption and multitasking behavior among younger populations.

Question	Always	Often	Sometimes	Occasionally	Never	Total (50)
I use screens for long hours daily.	66%	6%	14%	8%	6%	100%
I use my smartphone more than others.	40%	30%	20%	5%	5%	100%
I use screens for entertainment.	20%	22%	30%	22%	6%	100%
I use screens after 10 P.M	18%	16%	38%	14%	14%	100%
I use more than one screen at a time.	4%	6%	26%	28%	36%	100%

5.2 Health and Lifestyle Impacts

The findings of the study indicate that excessive screen exposure is significantly associated with both physical and psychological discomfort among respondents. Commonly reported physical symptoms include eye strain, headaches, neck pain, back pain, and sleep disturbances. In addition, several participants reported experiencing anxiety or restlessness during periods of device separation, suggesting early signs of digital dependence. To examine these relationships statistically, Spearman’s rank correlation analysis was conducted (N = 200). The results revealed a significant positive correlation between prolonged screen hours and eye strain ($p < 0.01$). A statistically significant association was also found between late-night screen usage and poor sleep quality ($p < 0.01$), indicating disruption of circadian rhythms. Furthermore, a moderate positive correlation was observed between multiscreen usage and musculoskeletal discomfort, highlighting the impact of prolonged sedentary posture and improper device ergonomics. These findings are consistent with earlier international research. For instance, Daria J. Kuss (2017) emphasized that excessive digital engagement is associated with sleep disturbances and psychological dependence symptoms. Similarly, Charlie Zhong (2025) identified digital eye strain as one of the most prevalent consequences of prolonged screen exposure, often resulting in blurred vision, headaches, and visual discomfort. Overall, the results substantiate the concept of digital overload as an emerging public health concern, particularly among younger and digitally active populations.

Question	Always	Often	Sometimes	Occasionally	Never	Total (50)
i. Neck/back pain from screen use	24%	10%	36%	12%	18%	100%
ii. I take regular screen breaks.	20%	24%	26%	6%	24%	100%
iii. I feel anxious without my device	34%	4%	32%	14%	16%	100%
iv. I experience eye strain/headaches.	40%	6%	30%	14%	10%	100%
v. Sleep quality is affected	32%	10%	30%	16%	12%	100%

5.3 Productivity and Social Life

The analysis indicates that increased screen time has a negative influence on concentration and work/study performance. A considerable number of respondents reported frequent distractions due to notifications, delayed task completion, and reduced sustained attention. Screen usage was also reported to interrupt family gatherings and routine interpersonal interactions. Although digital devices facilitate communication, excessive engagement appears to reduce meaningful face-to-face social bonding. The study found a statistically significant negative correlation between total screen time and offline family interaction ($\rho = -0.39$, $p < 0.01$), indicating that higher screen exposure is associated with lower levels of direct family engagement. While only a subset of respondents acknowledged a substantial decline in academic or professional performance, many admitted experiencing distraction during study or work hours. Additionally, prolonged screen use has been linked to broader mental health concerns such as anxiety, depression, and social withdrawal. These findings are consistent with research by Monica Anderson (2018), which highlighted the complex relationship between technology use, distraction, and adolescent well-being. Overall, the results suggest that although digital technology enhances connectivity, excessive screen exposure may compromise sustained attention, productivity, and interpersonal relationships.

Questions	Always	Often	Sometimes	Occasionally	Never	Total
i. My concentration is affected.	42%	8%	31%	8%	11%	100%
ii. Work/study performance suffers.	28%	8%	37%	12%	15%	100%
iii. I get distracted by social media.	18%	14%	44%	8%	16%	100%
iv. I delay work due to screen use.	36%	2%	30%	12%	20%	100%
v. Family complains about my screen use.	40%	8%	33%	8%	11%	100%
vi. I spend enough offline time with family.	24%	24%	24%	6%	21%	100%

5.4 Awareness and Attitudes

Awareness levels regarding digital well-being were relatively high across respondents. However, implementation remained inconsistent.

Kruskal–Wallis test results indicated statistically significant differences in awareness across age groups ($p < 0.05$). Younger respondents demonstrated higher theoretical awareness but comparatively lower behavioral regulation. Mann–Whitney U test confirmed that individuals who practiced digital detox reported significantly better perceived health outcomes ($p < 0.05$). This reveals a critical gap between awareness and behavioral execution. While most participants believed in the benefits of taking breaks (digital detox) and supported awareness programs in educational or corporate environments, fewer had actively tried to reduce their screen time.

Question	Always	Often	Sometimes	Occasionally	Never	Total(50)
i. Aware of screen time guidelines.	20%	10%	22%	12%	36%	100%
ii. Tried to reduce screen time.	42%	16%	24%	4%	14%	100%
iii. Believe in digital detox.	68%	8%	22%	2%	0%	100%
iv. Support awareness programs.	68%	4%	18%	6%	4%	100%
v. Health affected by screen habits.	13%	14%	32%	10%	20%	100%

6. RESULTS & DISCUSSION (SAMPLE)

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6.1 Spearman Correlation: Screen Time vs Physical Health

Variables	ρ (rho)	p-value	Interpretation
Screen use late at night & Sleep quality	0.62	0.000	Significant positive correlation
Long hours screen use & Eye strain	0.57	0.000	Strong association
Multiscreen use & Neck/back pain	0.48	0.001	Moderate association

Interpretation:

Higher screen time is strongly associated with eye strain, sleep problems, and body pain.

6.2 Spearman Correlation: Screen Time vs Productivity

Variables	ρ	p-value	Interpretation
Screen time & Concentration loss	0.55	0.001	Significant
Screen time & Academic/work performance	0.41	0.003	Moderate

Interpretation:

Higher screen time decreases productivity and concentration.

6.3 Spearman Correlation: Screen Time vs Social Interaction

Variables	ρ	p-value
Screen use during meals & Family complaints	0.47	0.005
Screen time & Offline family time	-0.39	0.009

6.4 Kruskal–Wallis Test: Awareness Across Age Groups

Age Groups	Mean Rank	χ^2	p-value
13–18	42.5	8.92	0.012
19–35	61.7		
36–60	55.1		

Result: Awareness significantly differs by age ($p < 0.05$).

6.5 Mann–Whitney U Test: Digital Detox & Health Impact

Groups	U	p-value	Interpretation
Tried detox vs Not tried	378.5	0.023	Significant

Interpretation:

People who tried digital detox report better health perception.

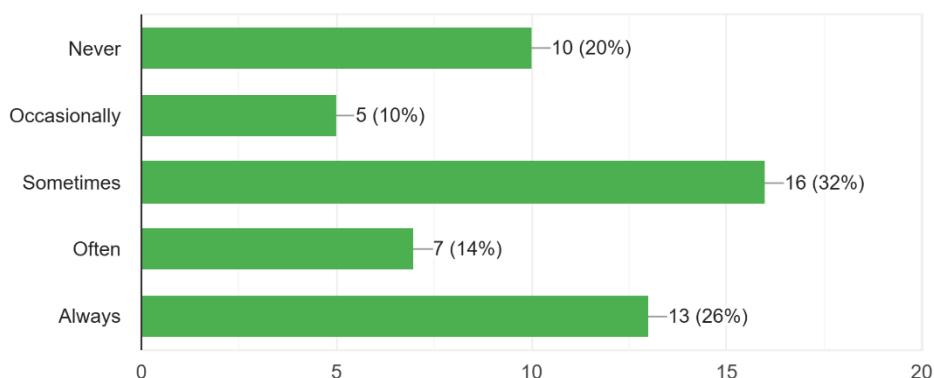
7. CONCLUSION

This study underscores the pervasive nature of screen use and its multifaceted impact on health, productivity, and social dynamics. The Study reveals prevalent habits such as frequent use of multiple screens, late-night screen exposure, and the tendency to use screens primarily for entertainment. This study shows that screens have become an inseparable part of daily life for all generations. From communication and learning to entertainment, digital devices play a central role in modern living. However, the findings also make it clear that excessive screen use can harm both health and lifestyle. Many participants reported problems such as eye strain, headaches, poor posture, disturbed sleep, and reduced concentration. Emotional issues like stress, anxiety, and less face-to-face interaction were also common, especially among younger users who rely heavily on smartphones and social media.

Although most people understand that spending too much time on screens is unhealthy, only a few take steps to reduce it. This gap between awareness and action suggests the need for more education and encouragement to build healthy digital habits. Schools, families, and workplaces can play a vital role by promoting balanced screen time, regular breaks, and awareness about posture and sleep hygiene. In short, technology itself is not the problem—it is how we use it. By learning to manage our screen habits and practicing digital balance, individuals can enjoy the many benefits of technology while protecting their health, improving productivity, and strengthening real-world social connections. The findings highlight an urgent need for proactive measures, such as incorporating screen hygiene education into schools and workplaces, promoting ergonomic practices, and encouraging individuals to adopt balanced digital habits. Future research could expand to longitudinal studies that track behavioral changes following targeted interventions.

22. I feel my overall health is being affected by my screen habits.

50 responses



8.0 RECOMMENDATIONS

Based on the findings of the present cross-sectional study and supported by recent empirical literature, the following recommendations are proposed for policymakers, educational institutions, organizations, families, and individuals to address the growing challenge of digital overload across generations.

8.1 Recommendations for Policymakers and Government Bodies

1. Government agencies should formulate national digital well-being guidelines specifying age-appropriate screen time limits for children, adolescents, adults, and older populations.
2. Public health policies should integrate digital overload as a behavioral risk factor, similar to physical inactivity and poor sleep hygiene.
3. Nationwide awareness campaigns should be launched to educate citizens about the psychological, physical, and social consequences of excessive screen exposure.
4. Collaboration between health ministries, education departments, and technology regulators is essential to promote responsible and ethical digital design, including reduced addictive interface features.

8.2 Recommendations for Educational Institutions

1. Schools and higher education institutions should incorporate digital literacy and digital well-being modules into the curriculum to promote mindful and balanced technology use.
2. Educational institutions should encourage blended learning approaches that limit unnecessary screen exposure and promote offline activities.
3. Regular screen-time assessments and counseling programs should be conducted, especially for adolescents and university students, to identify early signs of digital fatigue and mental distress.
4. Teachers and academic administrators should be trained to recognize symptoms of digital overload, attention fragmentation, and cognitive fatigue among students.

8.3 Recommendations for Organizations and Workplaces

1. Organizations should promote healthy digital work practices, such as limiting after-hours emails and encouraging digital breaks during working hours.
2. Employers should adopt "right-to-disconnect" policies to reduce digital pressure and improve work-life balance.
3. Workplace wellness programs should include screen ergonomics training, eye-care practices, and guidance on reducing digital multitasking.
4. Organizations should periodically evaluate the impact of digital tools on employee productivity and psychological well-being rather than assuming continuous connectivity enhances performance.

8.4 Recommendations for Families and Parents

1. Parents should establish structured screen time routines for children and adolescents, ensuring a balance between digital activities, physical exercise, and face-to-face social interaction.
2. Family-based interventions such as screen-free zones or screen-free hours can help reduce digital dependency.
3. Parents should act as digital role models, demonstrating controlled and purposeful use of digital devices.
4. Open communication should be encouraged so that children feel comfortable discussing online stress, social media pressure, or digital fatigue.

8.5 Recommendations for Individuals Across Generations

1. Individuals should practice self-regulation strategies, such as setting daily screen-time limits and disabling non-essential notifications.
2. Adoption of digital detox practices, including regular breaks and device-free periods, can help restore cognitive focus and emotional balance.
3. Increased engagement in physical activity, mindfulness, and offline hobbies is recommended to counteract the sedentary nature of excessive screen use.
4. Individuals experiencing persistent stress, sleep disturbances, or emotional difficulties related to screen use should seek professional psychological support.

8.6 Recommendations for Technology Developers and Digital Platforms

1. Technology companies should design platforms that prioritize user well-being, including built-in screen-time tracking, break reminders, and non-addictive interface features.
2. Algorithms should be optimized to reduce excessive passive consumption, such as endless scrolling and auto-play functions.
3. Transparent data policies should be adopted to allow users to make informed decisions about their digital consumption habits.

8.7 Recommendations for Future Research

1. Future studies should adopt longitudinal research designs to establish causal relationships between screen time and health outcomes.
2. Comparative studies across different cultures and socio-economic groups are recommended to understand contextual variations in digital overload.
3. Researchers should differentiate between types of screen use (educational, occupational, social, and entertainment) to capture nuanced effects.
4. The role of mediating factors such as sleep quality, physical activity, and social support should be explored in greater depth.

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