

Project Report

On

“A Study On Screen Time and Its Impact On Health”



Submitted By

Name: Ahsanul Kabir

Batch – 66

Instructed By

Name: Dr. Tania Islam

Assistant Professor

Department of Computer Science and Engineering

University of Barishal.

EDGE: BU-CSE Digital Skills Training

Computer Fundamentals & Office Application

Table of Contents

| | |
|---|----|
| Chapter 1: Introduction | 3 |
| 1.1 Introduction..... | 3 |
| 1.2 Background | 3 |
| 1.3 Objectives | 4 |
| Chapter 2: Data Representation | 4 |
| 2.1 Dataset..... | 4 |
| 2.2 Images Related to My Topic | 6 |
| Chapter 3: Data Analysis | 7 |
| 3.1 Demographic Data: | 7 |
| 3.2 Data Visualization | 7 |
| 3.3 Correlation | 9 |
| 3.4 Trends..... | 10 |
| Screen Time and Sleep Hours | 10 |
| Screen Time & Health..... | 11 |
| Chapter 4: Result & Conclusion | 11 |
| 4.1 Result | 11 |
| 4.2 Conclusion | 12 |
| References | 12 |
| Figure 1: Kid's Screentime | 6 |
| Figure 2: Adult's Screen Time | 6 |
| Figure 3: Age Group Vs Sum of Smartphone Screen Time | 7 |
| Figure 4: Age Group Vs Sum of Tablet Screen Time | 8 |
| Figure 5: Age Group Vs Sum of TV Screen Time | 8 |
| Figure 6: Age Group Vs Sum of PC Screen Time | 9 |
| Figure 7: Relationship Between Sum of Sleep Hours & Sum of Total Screen Time | 10 |
| Figure 8: Relation Between Screen Time & Health | 11 |
| Table 1: Dataset..... | 4 |
| Table 2: Dataset..... | 5 |

“Screen time and its impact on health”

Chapter 1: Introduction

1.1 Introduction

Screen time is the amount of time spent using a device with a screen such as a smartphone, computer, television, video game console, or a tablet. (time.", n.d.)

The concept is under significant research with related concepts in digital media use and mental health. Screen time is correlated with mental and physical harm in child development. (Stiglic & Viner, 3 January 2019)

With the advent of the digital era, paper has been replaced by the screen. Screen time is the amount of time spent using a device with a screen. The screen, whether it be a computer, smartphone, television, or video game console has been a symbol of modernization. With this modernization, health regarding screen time has taken a back step. Easy smartphone access, cheap internet availability, and free content have greatly contributed to the increase in screen time. Evidence suggests that adults spend as much as 11 hours in front of a screen.

Studies have shown that screen time affects our physical health, mental health and directly impacts child development. Excessive screen time results in a sedentary lifestyle with little to no physical activity. Artificial light emitting from screens affects our eyes, brain, and sleep. Because of these concerns, experts have suggested controlling screen time.

1.2 Background

Early Screen Time: The first electronic screen was the cathode ray tube (CRT), which was invented in 1897 and commercialized in 1922. ((3794), 74. July 1942). Initially, screen time was limited to television viewing. The introduction of personal computers in the late 20th century expanded screen-based activities.

Digital Revolution: The proliferation of smartphones, tablets, and high-speed internet in the 21st century has significantly increased screen time. Social media, streaming services, and online gaming have become major contributors.

Pandemic Impact: The COVID-19 pandemic in 2020 increased screen time as people stayed indoors, adding to concerns about the effects of excessive screen

time. Specialists called for limiting screen time and for living a more active lifestyle. (Shin & Al-Habaibeh, 03 June 2020); (Andrews, 24 March 2020).

1.3 Objectives

- Analyse the time spent in front of a screen with respect to various factors.
- Studying the relationship between excessive screen time and physical health problems.
- Studying the relationship between excessive screen time and mental health problems.

Chapter 2: Data Representation

2.1 Dataset

Table 1: Dataset

| Age | Age Group | Smartphone (hrs/day) | Tablet (hrs/day) | TV (hrs/day) | PC (hrs/day) | Total Screen Time(H/D) | Sleep Hours (hrs/day) | Health Condition |
|-----|------------|----------------------|------------------|--------------|--------------|------------------------|-----------------------|------------------|
| 2 | 2-5 Years | 0.3 | 0.8 | 0.4 | 0 | 1.5 | 11.5 | Good |
| 3 | 2-5 Years | 0.4 | 1 | 0.4 | 0 | 1.8 | 11.3 | Good |
| 4 | 2-5 Years | 0.4 | 1.1 | 0.5 | 0 | 2 | 11 | Good |
| 5 | 2-5 Years | 0.5 | 1.3 | 0.7 | 0 | 2.5 | 10.8 | Good |
| 6 | 6-12 Years | 0.5 | 1.2 | 0.5 | 0 | 2.2 | 10.6 | Good |
| 7 | 6-12 Years | 0.6 | 0.8 | 0.6 | 0 | 2 | 10.4 | Good |
| 8 | 6-12 Years | 0.8 | 0.7 | 1 | 0 | 2.5 | 10.2 | Good |
| 9 | 6-12 Years | 1 | 0.6 | 1.4 | 0 | 3 | 9.8 | Moderate |
| 10 | 6-12 Years | 1.2 | 0.5 | 1.8 | 0 | 3.5 | 9.5 | Moderate |
| 11 | 6-12 Years | 1.5 | 0.5 | 2 | 0.5 | 4.5 | 9.3 | Moderate |
| 12 | 6-12 Years | 1.8 | 0.5 | 1.9 | 0.6 | 4.8 | 9 | Moderate |

| | | | | | | | | |
|----|----------------|-----|-----|-----|-----|------|-----|----------|
| 13 | 13-20 Years | 2 | 0.4 | 2.1 | 0.8 | 5.3 | 8.8 | Moderate |
| 14 | 13-18 Years | 2.5 | 0.3 | 1.7 | 0.6 | 5.1 | 8.5 | Moderate |
| 15 | 13-18 Years | 3 | 0.2 | 1.8 | 0.5 | 5.5 | 8 | Moderate |
| 16 | 13-18 Years | 3.5 | 0.2 | 2 | 1 | 6.7 | 7.8 | Moderate |
| 17 | 13-18 Years | 3.8 | 0.1 | 2.1 | 1 | 7 | 7.5 | Poor |
| 18 | 13-18 Years | 4 | 0.1 | 2.3 | 1.2 | 7.6 | 7.3 | Poor |
| 19 | 19-24 Years | 4.2 | 0.1 | 2.5 | 1 | 7.8 | 7 | Poor |
| 20 | 19-24 Years | 5 | 0 | 2 | 1 | 8 | 6.8 | Poor |
| 21 | 19-24 Years | 5.2 | 0 | 2 | 1.4 | 8.6 | 6.5 | Poor |
| 22 | 19-24 Years | 5.5 | 0 | 2 | 1.6 | 9.1 | 6.3 | Poor |
| 23 | 19-24 Years | 5.8 | 0 | 1.8 | 1.5 | 9.1 | 6 | Poor |
| 24 | 19-24 Years | 6 | 0 | 1.6 | 1.8 | 9.4 | 5.8 | Poor |
| 25 | 25-30 Years | 6.5 | 0 | 1.5 | 2 | 10 | 5.5 | Poor |
| 26 | 25-30 Years | 7 | 0 | 1.2 | 2.2 | 10.4 | 5.3 | Poor |
| 27 | 25-30 Years | 7.2 | 0 | 1 | 2.5 | 10.7 | 5 | Poor |
| 28 | 25-30 Years | 8 | 0 | 0.8 | 2.8 | 11.6 | 4.8 | Poor |
| 29 | 25-30 Years | 8.5 | 0 | 0.6 | 3 | 12.1 | 4.5 | Poor |
| 30 | 25-30 Years | 9 | 0 | 0.5 | 3 | 12.5 | 4.3 | Poor |

Table 2: Dataset

2.2 Images Related to My Topic



Figure 1: Kid's Screentime



Figure 2: Adult's Screen Time

Chapter 3: Data Analysis

3.1 Demographic Data:

The dataset Comprises 29 individuals among whom there are 14 males and 15 females, with details about their age and screen time of different devices such as smartphone, TV, PC and Table. From the dataset we can see, smartphones are being used mostly by teens and adults whereas tablet are being used mostly by the younger children aged 2-12. TV is popular across all ages for entertainment but declines as smartphone usage increases. PC usage increases in older teens and young adults for educational and work-related purposes.

3.2 Data Visualization

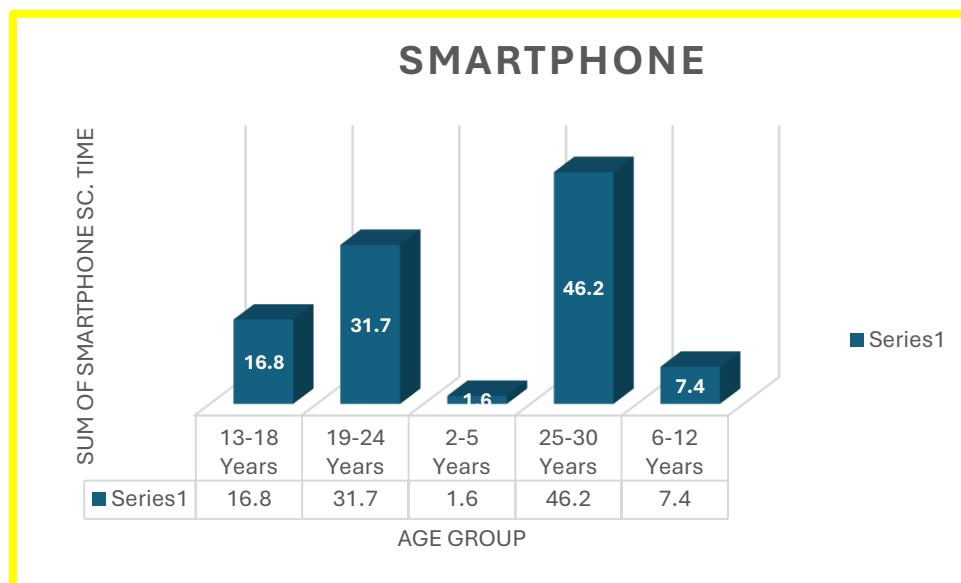


Figure 3: Age Group Vs Sum of Smartphone Screen Time

This is the demographic data of age group versus the sum of smartphone screen time.

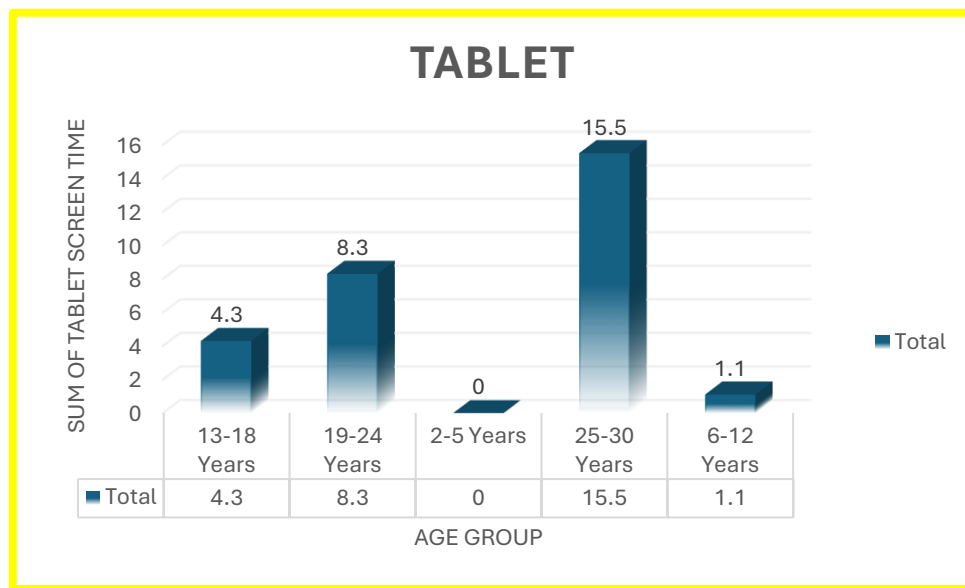


Figure 4: Age Group Vs Sum of Tablet Screen Time

This is the demographic data of age group versus sum of tablet screen time.

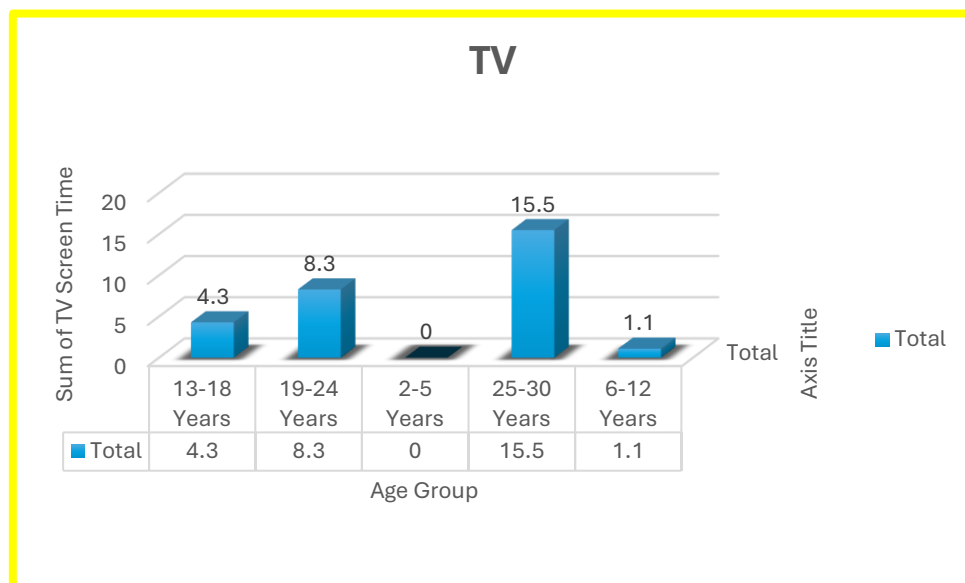


Figure 5: Age Group Vs Sum of TV Screen Time

This is the demographic data of age group versus sum of TV screen time.

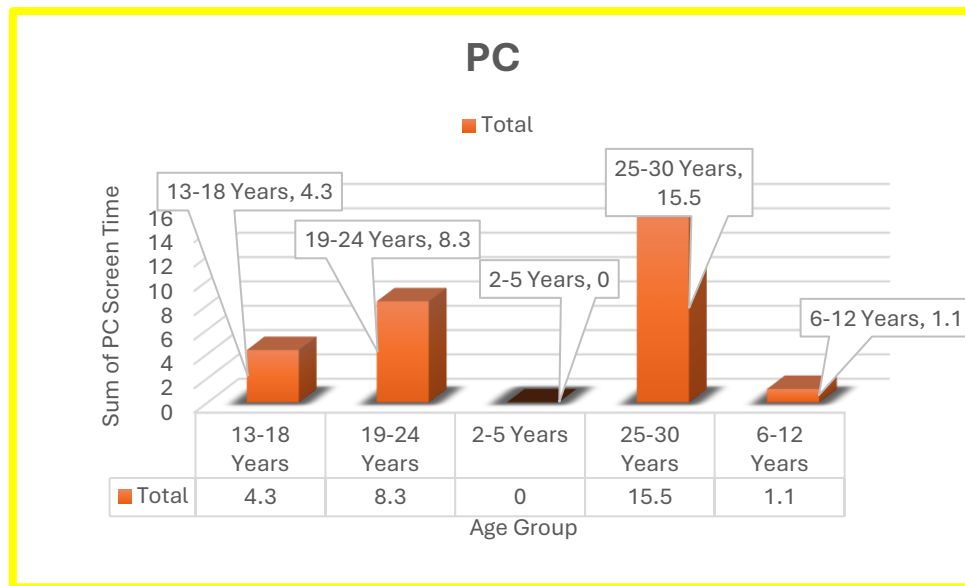


Figure 6: Age Group Vs Sum of PC Screen Time

This is the demographic data of age group versus sum of pc screen time.

3.3 Correlation

The correlation coefficient between screen time and sleep duration is -0.996, indicating a very strong negative correlation. As screen time increases, sleep duration decreases significantly. Children (ages 2-10) with low screen time (1.5 - 4 hours/day) get more sleep (~9-11 hours). Teenagers (ages 11-18) with moderate screen time (4-7.5 hours/day) experience reduced sleep (~7-9 hours). Young adults (ages 19-30) with high screen time (8-12 hours/day) suffer from severe sleep deprivation (~4-7 hours/night).

3.4 Trends

Screen Time and Sleep Hours

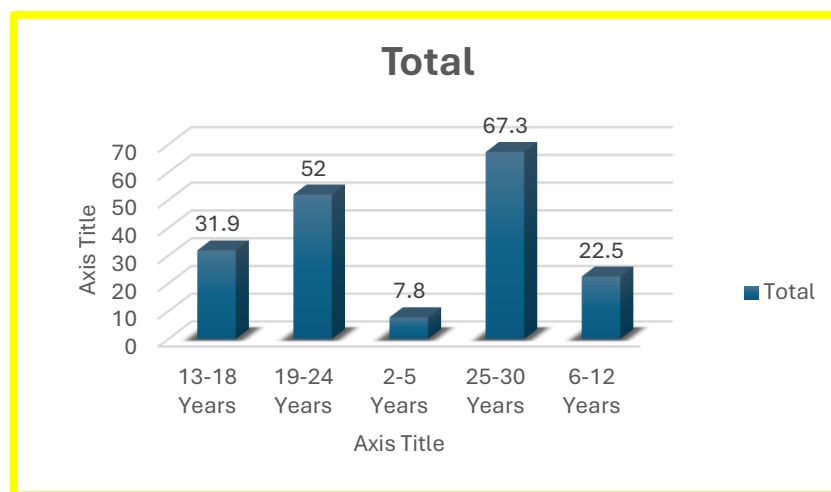


Figure 7: Relationship Between Sum of Sleep Hours & Sum of Total Screen Time

The chart shows there is an adverse relationship between screen time and sleep. The less the screen time, the greater the sleeping time gets.

Screen Time & Health

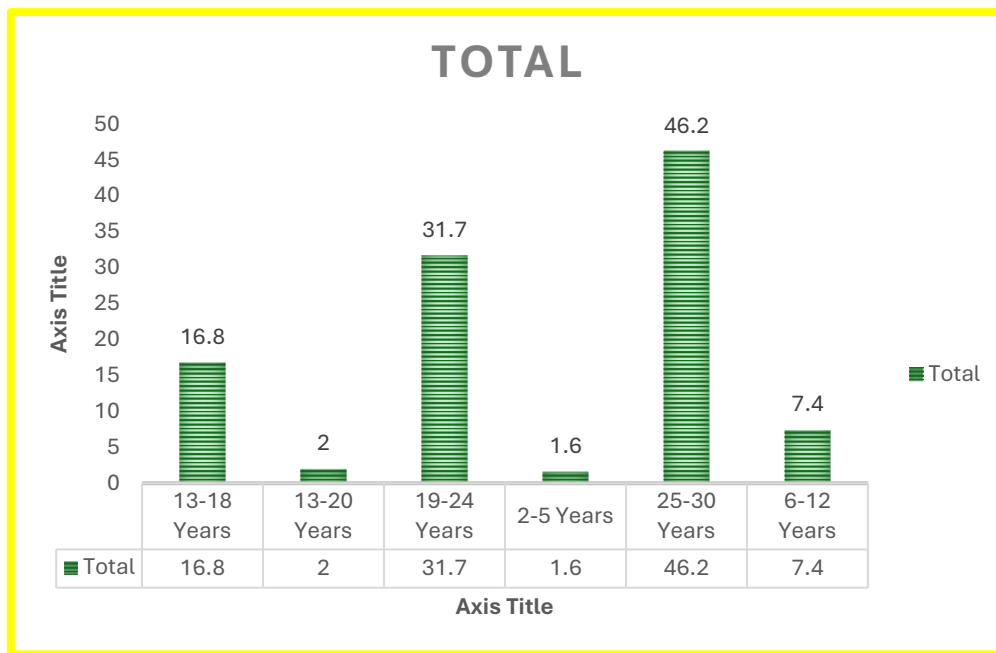


Figure 8: Relation Between Screen Time & Health

They have negative relationship between them. Excessive screen time brings poor health. The more the screen time, the poorer the health condition gets.

Chapter 4: Result & Conclusion

4.1 Result

Excessive screen time has a significant negative impact on overall health. Our analysis shows a strong negative correlation (-0.896) between screen time and health condition, meaning that as screen usage increases, health deteriorates. Individuals with low screen time (1.5-3 hours/day) tend to have good health, while those with moderate screen time (3.5-5.5 hours/day) experience some health issues like mild sleep disturbances and weight gain. However, those with high screen time (6+ hours/day) often face poor health, including obesity, chronic sleep deprivation, eye strain, and mental health problems. This highlights the importance of limiting screen exposure to maintain a healthy lifestyle.

4.2 Conclusion

Our analysis clearly demonstrates the strong negative impact of excessive screen time on health, particularly on sleep duration, weight management, and overall well-being. The data reveals that as screen time increases, sleep duration decreases significantly, with a strong negative correlation (-0.996). This means individuals who spend more time on screens, especially before bedtime, experience severe sleep deprivation, which can lead to fatigue, reduced cognitive function, and long-term health risks.

Additionally, we found a negative correlation (-0.896) between screen time and overall health, indicating that higher screen exposure contributes to deteriorating physical and mental health. Individuals with low to moderate screen time (under 4 hours/day) tend to have better health, whereas those exceeding 6+ hours/day often suffer from obesity, eye strain, mental health issues (stress, anxiety), and poor sleep quality.

The findings highlight the importance of balancing screen usage with healthy lifestyle habits. Implementing strategies like limiting screen exposure, avoiding screens before sleep, engaging in regular physical activity, and following proper ergonomic practices can help mitigate these negative effects. By maintaining a healthy relationship with technology, individuals can enjoy its benefits without compromising their well-being.

References

- (3794), N. 1., 74. July 1942. *"The Cathode Ray Tube and its Applications"*, s.l.: s.n.
- Andrews, T. M., 24 March 2020. *"Our iPhone weekly screen time reports are through the roof, and people are 'horrified'"*, s.l.: s.n.
- Shin, H. D. & Al-Habaibeh, A., 03 June 2020. *"Coronavirus: how to reduce your children's screen time – and make them more active"*, s.l.: s.n.
- Stiglic, N. & Viner, R. M., 3 January 2019. *"Effects of screen time on the health and well-being of children and adolescents: a systematic review of reviews"*, s.l.: s.n.
- time.", “., n.d. *"Screen time."*, s.l.: s.n.