# Exposure to Electronic Device Screen and Its Health Implications Among Undergraduate Students in Ogun State, Nigeria

**Timothy Olatunji Oladosu**
Department of Nursing Science,Bowen University, Iwo Osun State, Nigeria

**Christopher Oluwatosin Omokanye**
Department of Community Medicine,
Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife, Osun State, Nigeria

**Aderonke Bosede Awoseemo**
Department of Nursing Education,
Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife, Osun State, Nigeria

**Oluwaseyi Isaiah Olabisi**
Department of Nursing Science,Bowen University, Iwo ,Osun State, Nigeria

**Peter Oluyemi Adedeji**
Department of Nursing Science, Bowen University, Iwo, Osun State, Nigeria

**ABSTRACT:** *The study examined the effects of electronic device screen exposure on undergraduate students' health. The goal of this study is to determine the level of screen exposure, the consequences on overall health, and the level of screen addiction among undergraduate students of Babcock University. Primary data was gathered, the study used a descriptive cross-sectional design. The Taro Yamane sampling formula was used to calculate a sample size of 379. The study utilized standardized questionnaires (QueST, PSQI, and Multiple Screen Addiction Scale). The study found a high level of screen exposure among Babcock University undergraduate students on weekdays 8.38(SD=2.89) and a higher level of exposure on weekends 11.50 (SD=1.65). The data also demonstrate that screen exposure has a negative impact on sleep, as the PSQI Component/Domain indicated a sleep disturbance of 0.47(SD=0.40). The study also discovered that Babcock University students are addicted to screens, with an average screen time of 10.83 hours (SD=3.61). Health educators should focus on encouraging undergraduate students to prioritize their sleep hours and assisting them in overcoming barriers to adequate sleep, such as excessive screen time. Students should be provided with and encouraged to use anti-glare or anti-blue ray protectors as part of routine eye examinations.*
**KEYWORDS:** Electronic device, screen time, undergraduate students, addiction, sleep disturbance

## INTRODUCTION

Electronic media has now become an integral part of the lives of the younger generation, with a wide range of electronic digital gadgets being used for study and entertainment by teenagers and children. The rapid

59

advancement in technological advancements, as evidenced by sophisticated features and improved user experience, has consistently pushed users into an addictive use of electronic devices, primarily mobile devices, resulting in youths spending more than the recommended 2 hours per day in front of a screen.[1]
It is believed that over 60% of inner-city teens have one or more screen goods in their beds. High screen time (ST) or screen exposure among adolescents is increasingly becoming recognized as a severe public health hazard, and this trend extends into early adulthood.[2] Previous research has linked high ST to chronic diseases (such as obesity and metabolic syndrome) as well as teenagers' psychological wellbeing.[3]
One study indicated that spending more than 3 hours a day watching TV or using a computer was linked to health concerns (such as headaches, low mood, irritation, and anxiety) and that these correlations were not mediated by a lack of physical activity.[4] Kosticova et al., did another European investigation and discovered a link between high ST and school issues (e.g., truancy and poor academic performance).[5]

To date, most of the evidence on sociodemographic and lifestyle correlates of high ST has come from Western countries, with little known about these correlations among Nigerian postsecondary institution students. Furthermore, there is no evidence of a causal relationship between screen exposure and teenage health. As a result, it is logical to argue that there is a research gap in the domain of screen exposure, particularly among academic institutions. Babcock University, as a private institution, undoubtedly has more students from affluent families, as well as more students who use numerous digital devices, predisposing many of these students to screen exposure. Hence the need for the study.

The main objective of this study was to analyze electronic screen exposure and its health implications among Babcock University undergraduate students.

This study intends to answer the following questions;
1. What is the level of screen exposure among Babcock University students?
2. What are the consequences of screen time on the health of Babcock University students?
3. To what extent are Babcock University undergraduate students addicted to digital screens?

## MATERIAL AND METHODS

A descriptive non-experimental cross-sectional design was used for this research. The study was conducted among undergraduate students of Babcock university. The sample size for this study was calculated using the Taro Yamane (1973) formula, and a sampled population of 379 undergraduate students participated in the study. The participants were chosen using a multistage sampling process. Babcock University has nine faculties, and four were selected for the study through simple random sampling technique. Three departments were chosen at random from each of the four faculties chosen in the initial step. Students at the 300 and 400 level in each of the three departments from the four faculties were selected through convenience sampling technique. The data for the study was collected using standardized questionnaires. It consists of 33 questions divided into four sections:

Section A: Sociodemographic Characteristics
Section B: The amount of time spent in front of the screen (Questionnaire for Screen Time of Adolescents - QueST)
Section C: Health Effects of Screen Exposure (Pittsburg Sleep Quality Index - PSQI)
Section D: Addiction to screens on a scale of one to ten (Multiple Screen Addiction Scale)

60

After receiving ethical clearance from the school's research and ethical committee (NHREC/24/01/2020), the questionnaires were administered to the respondents during working days and their free periods. The Statistical Package for Social Sciences (SPSS) version 24 was used to analyse the data.

## RESULTS

The demographic characteristics of respondents are shown in Table 1. The majority (62.0%) of respondents were between the ages of 20 and 24; 15.8% were between the ages of 15 and 19, and 22.2% were between the ages of 25 and 29. Almost all (92.1%) of those polled were single, with only 7.9% married. Only 5.3% were traditional worshippers, while 66.8% practiced Christianity and 28.0% practiced Islam. According to the tribal breakdown of the respondents, 33.5% were Yoruba, 10.6% were Hausa, 25.9% were Igbo, and 30.1% were from other tribes.

Table 2 showed that most respondents (80.7% during the week and 82.6% during the weekend) spent between 10 and 20 hours studying on electronic devices, 82.1% during the week and 77.8% during the weekend spent between 10 - 20 hours doing job or internship-related work, and 71.8% during the week and 28.2% during the weekend spent between 10 - 20 hours watching entertainment programs
.
The Pittsburg Sleep Quality Index was used to assess the impact of screen exposure on respondents' health in Table 3 revealed that less than a third (29.8%) normally go to bed between 10:00PM and 10:59PM, while 64.1% require more than 60 minutes to fall asleep each night. 39.3% wake up between 5:00 and 5:59am, whereas 35.9% sleep for 6-7 hours. 63.6% of respondents had not had any sleep therapy in the previous month, and 80.5% reported no difficulty staying awake when driving, eating meals, or engaging in social engagement in the previous month.

Table 4 displayed the respondents' level of screen addiction as measured by the multiple screen addiction scale. It revealed that 54.1% of respondents frequently have a busy mind while using one or more displays. 47.5% occasionally spend more time with any screen than planned, 62.8% frequently cannot control the time spent in front of any screen, 78.1% frequently cannot tolerate not having access to screen, and 61.2% frequently check the screens even when no work or purpose is available. The most common activity 62.0% do during the day is look at or check any screen, while 45.9% sometimes feel that the time spent on screen reduces their negative emotions. Finally, the table showed that 76.8% frequently attempted to control, limit, or reduce the amount of time spent with any screen but were unable to do so, 40.6% rarely lie to relatives (family members, friends, etc.) about the amount of time spent with any screen, and 62.0% always jeopardize various opportunities for their education (inability to prepare for the exam, etc.) or career due to screen time.

**Question One:** What is the level of exposure to screen among students at Babcock University, Ilishan?
The Questionnaire for Screen Time of Adolescents assesses the level of screen exposure among Babcock University students. The average screen time of students during the week was 4.61 (SD=2.04) and 6.23 (SD=1.57) on weekends. This demonstrates a high level of screen time among Babcock University undergraduate students.

**Question Two:** What are the effects of screen exposure on the health of the students at Babcock University, Ilishan?

61

The average (mean) PSQI score for Babcock University undergraduate students was 8.73 (SD = 6.21). Sleep quality is estimated to be 1.47 (SD=0.92), Sleep latency is 1.89 (SD=0.92), Sleep duration is 1.74 (SD=1.00), Sleep efficiency is 1.52 (SD=1.03), Sleep disturbance is 0.47 (SD=0.40), Use of sleep medication is 0.65 (SD=1.02), and Daytime dysfunction is 0.99 (SD=0.93). Because the overall PSQI score of 8.73 is greater than 5, there is an indication of some amount of sleep problems in the study population across all components. As a result, screen exposure has a negative impact on the health of Babcock University, Ilishan students.

**Question Three:** To what extent are undergraduate students at Babcock University, Ilishan addicted to screen?

The Multiple Screen Addiction Scale assesses the degree to which Babcock University undergraduate students are addicted to screens. Excessive Screen Time has a mean score of 10.83 (SD=3.61) from 0-16, Compulsive Behaviour has a mean score of 21.12 (SD=7.20) from 0-32, and Loss of Control has a score of 8.14 (SD=2.53) from 0-12. This indicates excessive screen usage with related obsessive behaviour, which has resulted in a lack of control on the pupils' route. As a result, Babcock University's undergraduate students are highly addicted to screens.

**DISCUSSION**

The study was conducted among 300 - 400 level student as such most of the respondent fell within the age group of 20-24 years. The school being a Christian school has majority of her student population being Christians and single.

More students spent time on their electronic device during the weekend than weekday as there are no classes during the former. Thus, students are at greater risk of prolonged screen ill-effect such as poor sleep during weekends. A good number of students sleep late and have difficulty initiating sleep, as they spend up to an hour after getting to bed before they could fall asleep. Some students required some form of help to fall asleep. Majority do not have difficulty while carrying out routine activities which is usually a symptom of poor sleep. This however indicate a poor screen timing on the path of the students and possible negative impact on student's health and wellbeing. This corroborates with the study of Wang et al., which found out that high screen time is prevalent among students and associated with a cluster of unhealthy behavioural risk factors.[6]

Approximately half the respondents had a hard time controlling the amount of view time they have on their mobile device; use multiple tasks at once, thus they have their mind clogged at most times. Most find it challenging not to have access to the screen, as most of their days is usually spent viewing screens. This is however in consonance with the study of Brindova et al., which found out that screen usage and possible addiction to screen is common among adolescents.[4] Screen time also jeopardises the educational attainment of students in the school

**CONCLUSION**

Babcock University undergraduate students have excessive and atypical screen time. Screen exposure has a significant impact on the health of the students and they are excessively addicted to screens.

**Recommendations**

• Given the low end of participants' average hours of sleep, health educators should focus on making undergraduate students more aware of their hours of sleep and assisting them in building skills to overcome barriers to good sleep, one of which is minimizing screen time. Undergraduate students can improve their sleeping habits and make sleep a top priority each night.

• Since screen use is unavoidable, particularly for academic purposes, students should be provided with and encouraged to utilize anti-glare or anti-blue ray protectors to improve screen visibility by reducing reflections and glare from intense light. This will allow them to use their devices more comfortably by relieving eye strain.

• Routine medical examinations (particularly eye tests) should be performed on undergraduate students on a regular basis to monitor the impact of screen usage on them as well as their well-being. This is crucial so that appropriate actions can be implemented as needed.

• Proper screen lighting, which can be accomplished by closing drapes, shades, or blinds, using fewer light bulbs or fluorescent tubes, or utilizing lower intensity bulbs and tubes, should be taught to, and used by students.

• School administrators should include eye screening and screen usage training for newly admitted students in their curriculum. This might be included into the health university's standard clearance/registration process for admitted students.

**References**

1. Henderson M, Benedetti A, Barnett TA, Mathieu ME, Deladoëy J, & Gray-Donald K. Influence of adiposity, physical activity, fitness, and screen time on insulin dynamics over 2 years in children. Jamanetwork.Com 2016;170(3): 227–235. https://doi.org/10.1001/jamapediatrics.2015.3909

2. Cauwenberg JV, Maes L, Damme JV, Hublet A, Bourdeaudhuij ID, Coker KD. Tracking and predictors of screen time from early adolescence to early adulthood: a 10-year follow-up study. Journal of Adolescent 2015;56(4): 440-448. https://doi.org/10.1016/j.jadohealth.2014.11.016

3. Robinson T, Banda J, & Hale L. Screen media exposure and obesity in children and adolescents. Pediatrics 2017;140(2): s97-s101.

4. Brindova D, Dankulincova-Veselska Z, Klein D, et al. Is the association between screen-based behaviour and health complaints among adolescents moderated by physical activity? Springer 2015;60(2): 139–145. https://doi.org/10.1007/s00038-014-0627-x

5. Kosticova M, Husarova D, & Dankulincova Z. Difficulties in Getting to Sleep and their Association with Emotional and Behavioural Problems in Adolescents: Does the Sleeping Duration Influence this Association? International Journal of Environmental Research and Public Health Article 2020. https://doi.org/10.3390/ijerph17051691

6. Wang H, Zhong J, & Hu R. Prevalence of high screen time and associated factors among students: A cross-sectional study in Zhejiang, China. Trends Cardiovascular Medicine 2018;30(5): 232-240

**LIST OF TABLES**

**Table 1: Socio-demographic distribution of respondents**

| VARIABLES | | n(%) |
|---|---|---|
| Age | 15-19 | 60(15.8) |
| | 20-24 | 235(62.0) |
| | 25-29 | 84(22.2) |
| Marital Status | Single | 349(92.1) |
| | Married | 30(7.9) |
| Religion | Christianity | 253(66.8) |
| | Islam | 106(28.0) |
| | Traditional religion | 20(5.3) |
| Tribe | Yoruba | 127(33.5) |
| | Hausa | 40(10.6) |
| | Igbo | 98(25.9) |
| | Others | 114(30.1) |
| Faculty | Computing and Engineering Sciences | 97(25.6) |
| | Management Sciences | 104(27.4) |
| | School of Nursing Sciences | 52(13.7) |
| | Education and Humanities | 126(33.2) |
| Level of Study | 300 Level | 159(42.0) |
| | 400 Level | 220(58.0) |

**Table 2: Level of exposure to screen (Questionnaire for Screen Time of Adolescents - QueST)**

| Questionnaire for Screen Time of Adolescents | | Weekdays | | |
|---|---|---|---|---|
| | | n(%) | Mean | S.D |
| How much time do you spend studying, watching video classes, reading, doing research, or school work on a computer, television, tablet, smartphone, or other electronic devices? | < 10hrs | 0(0) | 1.19 | 0.39 |
| | 10hrs - 20hrs | 306(80.7) | | |
| | >20hrs | 73(19.3) | | |
| How much time do you spend doing job or internship-related work on a computer, television, tablet, smartphone, or other electronic devices? | < 10hrs | 0(0) | 1.18 | 0.38 |
| | 10hrs - 20hrs | 311(82.1) | | |
| | >20hrs | 68(17.9) | | |
| How much time do you spend watching TV shows, movies, soap operas, news, sports, programs, or other videos on a computer, television, tablet, smartphone, or other electronic devices? | < 10hrs | 99(26.1) | 0.76 | 0.47 |
| | 10hrs - 20hrs | 272(71.8) | | |
| | >20hrs | 8(2.1) | | |
| How much time do you spend playing video games on a games console, computer, television, tablet, smartphone, or other electronic devices? | < 10hrs | 334(88.1) | 0.12 | 0.32 |
| | 10hrs - 20hrs | 45(11.9) | | |
| | >20hrs | 0(0) | | |
| How much time do you spend using social media like Facebook, Instagram, Twitter, Snapchat, or chat applications like WhatsApp, Telegram, Messenger on a computer, television, tablet, smartphone, or other electronic devices? | < 10hrs | 0(0) | 1.36 | 0.48 |
| | 10hrs - 20hrs | 244(64.4) | | |
| | >20hrs | 135(35.6) | | |
| | Weekends | | | |
| | | n(%) | Mean | S.D |

64

| | | | | |
|---|---|---|---|---|
| How much time do you spend studying, watching video classes, reading, doing research, or school work on a computer, television, tablet, smartphone, or other electronic devices? | < 10hrs | 0(0) | 1.17 | 0.38 |
| | 10hrs - 20hrs | 313(82.6) | | |
| | >20hrs | 66(17.4) | | |
| How much time do you spend doing job or internship-related work on a computer, television, tablet, smartphone, or other electronic devices? | < 10hrs | 0(0) | 1.22 | 0.42 |
| | 10hrs - 20hrs | 295(77.8) | | |
| | >20hrs | 84(22.2) | | |
| How much time do you spend watching TV shows, movies, soap operas, news, sports, programs, or other videos on a computer, television, tablet, smartphone, or other electronic devices? | < 10hrs | 0(0) | 1.72 | 0.45 |
| | 10hrs - 20hrs | 107(28.2) | | |
| | >20hrs | 272(71.8) | | |
| How much time do you spend playing video games on a games console, computer, television, tablet, smartphone, or other electronic devices? | < 10hrs | 0(0) | 1.12 | 0.32 |
| | 10hrs - 20hrs | 334(88.1) | | |
| | >20hrs | 45(11.9) | | |
| How much time do you spend using social media like Facebook, Instagram, Twitter, Snapchat, or chat applications like WhatsApp, Telegram, Messenger on a computer, television, tablet, smartphone, or other electronic devices? | < 10hrs | 0(0) | 1 | 0 |
| | 10hrs - 20hrs | 379(100) | | |
| | >20hrs | 0(0) | | |

**Table 3: Effects of screen exposure on health (Pittsburg Sleep Quality Index - PSQI)**

| During the past month, how often have you had trouble sleeping because you… | | n(%) | Mean | S.D |
|---|---|---|---|---|
| When have you usually gone to bed? | Before 10:00PM | 78(20.6) | 1.53 | 1.07 |
| | 10:00PM - 10:59PM | 113(29.8) | | |
| | 11:00PM - 11:59PM | 98(25.9) | | |
| | 12:00AM and after | 90(23.7) | | |
| How long (in minutes) has it taken you to fall asleep each night? | <15mins | 24(6.3) | 2.45 | 0.87 |
| | 16-30mins | 24(6.3) | | |
| | 31-60mins | 88(23.2) | | |
| | >60mins | 243(64.1) | | |
| What time have you usually gotten up in the morning? | 6:00AM and after | 91(24.0) | 1.30 | 1.01 |
| | 5:00AM - 5:59AM | 149(39.3) | | |
| | 4:00AM - 4:59AM | 75(19.8) | | |
| | Before 4:00am | 64(16.9) | | |
| How many hours of actual sleep did you get at night? | >7hrs | 39(10.3) | 1.74 | 1.00 |
| | 6-7hrs | 136(35.9) | | |
| | 5-6hrs | 90(23.7) | | |
| | <5hrs | 114(30.1) | | |
| Cannot get to sleep within 30 minutes | Not during the past month | 65(17.2) | 1.34 | 0.97 |
| | Less than once a week | 194(51.2) | | |
| | Once or twice a week | 48(12.7) | | |
| | Three or more times a week | 72(19.0) | | |
| Wake up in the middle of the night or early morning | Not during the past month | 0(0.0) | 1.21 | 0.41 |
| | Less than once a week | 299(78.9) | | |

| | | | | |
|---|---|---|---|---|
| | Once or twice a week | 80(21.1) | | |
| | Three or more times a week | 0(0.0) | | |
| Have to get up to use the bathroom | Not during the past month | 163(43.0) | | |
| | Less than once a week | 216(57.0) | | |
| | Once or twice a week | 0(0.0) | 0.57 | 0.50 |
| | Three or more times a week | 0(0.0) | | |
| Cannot breathe comfortably | Not during the past month | 363(95.8) | | |
| | Less than once a week | 16(4.2) | | |
| | Once or twice a week | 0(0.0) | 0.04 | 0.20 |
| | Three or more times a week | 0(0.0) | | |
| Cough or snore loudly | Not during the past month | 175(46.2) | | |
| | Less than once a week | 200(52.8) | | |
| | Once or twice a week | 4(1.1) | 0.55 | 0.52 |
| | Three or more times a week | 0(0.0) | | |
| Feel too cold | Not during the past month | 70(18.5) | | |
| | Less than once a week | 170(44.9) | | |
| | Once or twice a week | 139(36.7) | 1.18 | 0.72 |
| | Three or more times a week | 0(0.0) | | |
| Feel too hot | Not during the past month | 299(78.9) | | |
| | Less than once a week | 80(21.1) | | |
| | Once or twice a week | 0(0.0) | 0.21 | 0.41 |
| | Three or more times a week | 0(0.0) | | |
| Have bad dreams | Not during the past month | 275(72.6) | | |
| | Less than once a week | 96(25.3) | | |
| | Once or twice a week | 8(2.1) | 0.30 | 0.50 |
| | Three or more times a week | 0(0.0) | | |
| Have pain | Not during the past month | 327(86.3) | | |
| | Less than once a week | 52(13.7) | | |
| | Once or twice a week | 0(0.0) | 0.14 | 0.35 |
| | Three or more times a week | 0(0.0) | | |
| Other reasons, please describe, including how often | Not during the past month | 0(0.0) | | |
| | Less than once a week | 0(0.0) | | |
| | Once or twice a week | 0(0.0) | 0.00 | 0.00 |
| | Three or more times a week | 0(0.0) | | |
| | Not during the past month | 241(63.6) | 0.65 | 1.02 |

66

| During the past month, how often have you taken medication (prescribed or "over the counter") to help you sleep? | Less than once a week | 74(19.5) | | |
| | Once or twice a week | 20(5.3) | | |
| | Three or more times a week | 44(11.6) | | |
| During the past month, how often have you had trouble staying awake while driving, eating meals, or engaging in social activity? | Not during the past month | 305(80.5) | 0.39 | 0.79 |
| | Less than once a week | 0(0.0) | | |
| | Once or twice a week | 74(19.5) | | |
| | Three or more times a week | 0(0.0) | | |
| During the past month, how much of a problem has it been for you to keep up enthusiasm to get things done? | Not during the past month | 70(18.5) | 0.59 | 1.06 |
| | Less than once a week | 111(29.3) | | |
| | Once or twice a week | 102(26.9) | | |
| | Three or more times a week | 96(25.3) | | |
| During the past month, how would you rate your sleep quality overall? | Very good | 56(14.8) | 1.47 | 0.92 |
| | Fairly good | 143(37.7) | | |
| | Fairly bad | 124(32.7) | | |
| | Very bad | 56(14.8) | | |

**Table 4: Level of screen addiction (Multiple Screen Addiction Scale)**

| Excessive Screen Time | | n(%) | Mean | S.D |
|---|---|---|---|---|
| My mind is constantly busy with one or more screens of the television, phone, tablet, computer, etc. | Never | 4(1.1) | 2.75 | 0.82 |
| | Rarely | 24(6.3) | | |
| | Sometimes | 90(23.7) | | |
| | Often | 205(54.1) | | |
| | Always | 56(14.8) | | |
| I often spend more time with any screen (TV, computer, tablet, phone, etc.) than I planned | Never | 8(2.1) | 2.58 | 0.93 |
| | Rarely | 16(4.2) | | |
| | Sometimes | 180(47.5) | | |
| | Often | 98(25.9) | | |
| | Always | 77(20.3) | | |
| I cannot control the time I spend in front of any screen | Never | 21(5.5) | 2.80 | 0.90 |
| | Rarely | 4(1.1) | | |
| | Sometimes | 60(15.8) | | |
| | Often | 238(62.8) | | |
| | Always | 56(14.8) | | |
| I keep without sleep deprived because I control any screen or watch something on that screen | Never | 7(1.8) | 2.69 | 0.96 |
| | Rarely | 23(6.1) | | |
| | Sometimes | 139(36.7) | | |
| | Often | 120(31.7) | | |
| | Always | 90(23.7) | | |
| **Compulsive Behavior** | | | | |
| I cannot tolerate not having access to any screen | Never | 20(5.3) | 2.71 | 0.75 |
| | Rarely | 0(0.0) | | |

| | | | | |
|---|---|---|---|---|
| | Sometimes | 56(14.8) | | |
| | Often | 296(78.1) | | |
| | Always | 7(1.8) | | |
| I check the screens of the television, phone, tablet, etc. even though I do not have any work or purpose (such as watching a program on TV, writing a message on the phone) | Never | 0(0.0) | 2.94 | 0.62 |
| | Rarely | 0(0.0) | | |
| | Sometimes | 84(22.2) | | |
| | Often | 232(61.2) | | |
| | Always | 63(16.6) | | |
| Even though I don't get any notifications, I check the screen of my mobile devices (phone, tablet, PDA, etc.) | Never | 0(0.0) | 2.88 | 0.56 |
| | Rarely | 12(3.2) | | |
| | Sometimes | 48(12.7) | | |
| | Often | 291(76.8) | | |
| | Always | 28(7.4) | | |
| I feel the need to constantly interact with any screen | Never | 32(8.4) | 1.84 | 1.10 |
| | Rarely | 154(40.6) | | |
| | Sometimes | 48(12.7) | | |
| | Often | 131(34.6) | | |
| | Always | 14(3.7) | | |
| The most common thing I do during the day is looking at or checking any screen | Never | 0(0.0) | 3.41 | 0.87 |
| | Rarely | 16(4.2) | | |
| | Sometimes | 48(12.7) | | |
| | Often | 80(21.1) | | |
| | Always | 235(62.0) | | |
| I need to turn on the screen of a TV or phone-like device, even if there is no program I watch or an activity I need to do | Never | 74(19.5) | 2.27 | 1.34 |
| | Rarely | 16(4.2) | | |
| | Sometimes | 84(22.2) | | |
| | Often | 142(37.5) | | |
| | Always | 63(16.6) | | |
| Staying away from or not being able to access or screens of one or more my devices (mobile devices, computer, or TV etc.) during the day makes me feel uneasy | Never | 8(2.1) | 3.28 | 0.93 |
| | Rarely | 20(5.3) | | |
| | Sometimes | 16(4.2) | | |
| | Often | 148(39.1) | | |
| | Always | 187(49.3) | | |
| During the time I spend with the screens, I feel that the negative emotions I experience decrease | Never | 56(14.8) | 1.77 | 1.03 |
| | Rarely | 70(18.5) | | |
| | Sometimes | 174(45.9) | | |
| | Often | 63(16.6) | | |
| | Always | 16(4.2) | | |
| **Loss of Control** | | | | |
| Although I tried to control, limit, or reduce the amount of time I spent with any screen, I was unable to do so | Never | 0(0.0) | 2.88 | 0.56 |
| | Rarely | 12(3.2) | | |
| | Sometimes | 48(12.7) | | |
| | Often | 291(76.8) | | |
| | Always | 28(7.4) | | |

68

| I lie to my relatives (family members, friends, etc.) about the time I spend with any screen | Never | 32(8.4) | 1.84 | 1.10 |
|---|---|---|---|---|
| | Rarely | 154(40.6) | | |
| | Sometimes | 48(12.7) | | |
| | Often | 131(34.6) | | |
| | Always | 14(3.7) | | |
| I jeopardize various opportunities for my education (inability to prepare for the exam, etc.) or career because of the time I spend on any screen | Never | 0(0.0) | 3.41 | 0.87 |
| | Rarely | 16(4.2) | | |
| | Sometimes | 48(12.7) | | |
| | Often | 80(21.1) | | |
| | Always | 235(62.0) | | |

**Table 5: QueST Score**

| Descriptive Statistics | Weekdays | | Weekends | |
|---|---|---|---|---|
| | Mean | Std. Deviation | Mean | Std. Deviation |
| How much time do you spend studying, watching video classes, reading, doing research, or school work on a computer, television, tablet, smartphone, or other electronic devices? | 1.19 | 0.39 | 1.17 | 0.38 |
| How much time do you spend doing job or internship-related work on a computer, television, tablet, smartphone, or other electronic devices? | 1.18 | 0.38 | 1.22 | 0.42 |
| How much time do you spend watching TV shows, movies, soap operas, news, sports, programs, or other videos on a computer, television, tablet, smartphone, or other electronic devices? | 0.76 | 0.47 | 1.72 | 0.45 |
| How much time do you spend playing video games on a games console, computer, television, tablet, smartphone, or other electronic devices? | 0.12 | 0.32 | 1.12 | 0.32 |
| How much time do you spend using social media like Facebook, Instagram, Twitter, Snapchat, or chat applications like WhatsApp, Telegram, Messenger on a computer, television, tablet, smartphone, or other electronic devices? | 1.36 | 0.48 | 1 | 0 |
| **Total Score** | **4.61** | **2.04** | **6.23** | **1.57** |

69

**Table 6: PSQI Score**

| PSQI Component/Domain | | Mean | Std. Deviation |
|---|---|---|---|
| 1 | Sleep quality | 1.47 | 0.92 |
| 2 | Sleep latency | 1.89 | 0.92 |
| 3 | Sleep duration | 1.74 | 1.00 |
| 4 | Sleep efficiency | 1.52 | 1.03 |
| 5 | Sleep disturbance | 0.47 | 0.40 |
| 6 | Use of sleep medication | 0.65 | 1.02 |
| 7 | Daytime dysfunction | 0.99 | 0.93 |
| **Global PSQI Score** | | **8.73** | **6.21** |

**Table 7: Multiple Screen Addiction Score**

| Multiple Screen Addiction Scale | | | |
|---|---|---|---|
| **Excessive Screen Time** | | **Mean** | **Std. Deviation** |
| 1 | My mind is constantly busy with one or more screens of the television, phone, tablet, computer, etc | 2.75 | 0.821 |
| 2 | I often spend more time with any screen (TV, computer, tablet, phone, etc.) than I planned | 2.58 | 0.929 |
| 3 | I cannot control the time I spend in front of any screen | 2.80 | 0.900 |
| 4 | I keep without sleep deprived because I control any screen or watch something on that screen | 2.69 | 0.960 |
| | **Excessive Screen Time Score** | **10.83** | **3.61** |
| | | | |
| | **Compulsive Behavior** | **Mean** | **Std. Deviation** |
| 5 | I cannot tolerate not having access to any screen | 2.71 | 0.748 |
| 6 | I check the screens of the television, phone, tablet, etc. even though I do not have any work or purpose (such as watching a program on TV, writing a message on the phone) | 2.94 | 0.621 |
| 7 | Even though I don't get any notifications, I check the screen of my mobile devices (phone, tablet, PDA, etc.) | 2.88 | 0.561 |
| 8 | I feel the need to constantly interact with any screen | 1.84 | 1.103 |
| 9 | The most common thing I do during the day is looking at or checking any screen | 3.41 | 0.866 |
| 10 | I need to turn on the screen of a TV or phone-like device, even if there is no program I watch or an activity I need to do | 2.27 | 1.339 |
| 11 | Staying away from or not being able to access or screens of one or more my devices (mobile devices, computer, or TV etc.) during the day makes me feel uneasy | 3.28 | 0.927 |
| 12 | During the time I spend with the screens, I feel that the negative emotions I experience decrease | 1.77 | 1.030 |
| | **Compulsive Behavior Score** | **21.12** | **7.20** |
| | | | |

70

| | Loss of Control | Mean | Std. Deviation |
|---|---|---|---|
| 13 | Although I tried to control, limit, or reduce the amount of time I spent with any screen, I was unable to do so | 2.88 | 0.561 |
| 14 | I lie to my relatives (family members, friends, etc.) about the time I spend with any screen | 1.84 | 1.103 |
| 15 | I jeopardize various opportunities for my education (inability to prepare for the exam, etc.) or career because of the time I spend on any screen | 3.41 | 0.866 |
| | **Loss of Control Score** | **8.14** | **2.53** |