Screen Time and Health Disturbances during the Covid-19 Pandemic: A Case of University Students in Zimbabwe

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Abstract: This study sought to establish health disturbances experienced by university students due to prolonged screen use during the covid-19 Pandemic in Zimbabwe. It employed the descriptive design under the quantitative approach. The study involved students from two universities in Zimbabwe, and it used a random sampling technique. A total of 128 students participated completing a survey. Data collection was conducted through a survey with a one closed-ended question seeking to identify health challenges experienced by students due to prolonged use of screens. Results were presented in percentages through graphs. The study concludes that headaches, tiredness and difficulties to sleep were experienced by students as a consequence of prolonged screen time. Furthermore, students experienced different psychological disturbances including stress and depression, inattention (difficulties to concentrate), anxiety and low self-esteem as a consequence of prolonged screen time. Finally, sight loss, tearing eyes, eye irritation, eye redness, eye swelling and dry eye disease were experienced by respondents. Based on the conclusions, the study recommends that students and all users of digital technologies for different purposes should control the time they spend on the screen and visit doctors whenever they have abnormal experience in their eyes for further guidance. The study further recommends that learning institution should come up with measures to reduce the time individuals spend on the screen by providing alternative study options that may reduce the time spent on screens for learning.

Keywords: University students; Covid-19; Online Learning; Screen time; Health issues.

Introduction

The outbreak of the Covid-19 pandemic has imposed significant changes in peoples' lives. Many countries adopted measures to control the spread of the coronavirus and minimize its consequences in different spheres of life. Some of the most common measures were the lockdown and physical distancing. Industries, schools, markets and other institutions were forced to close or change the normal operations (avoiding contacts and gathering of people). People were forced to stay at home and work online.

This situation meant the increase of inactivity of people. The use of technology, internet and digital platforms drastically increased. Alongside this, people spent most of their time starring at the screens of their mobile phones, tablets, computers and televisions. Consequently, people's screen time

significantly increased. Studies on the relationship between screen time and health issues have revealed that increased and uncontrolled screen time is associated with many ocular/visual and psychological/mental health problems (Tang, et al. 2021; Al-Mohtaseb, Schachter, Shen Lee, Garlich, & Trattler, 2021). This suggests that the Covid-19 pandemic, besides being a health problem by its own, it triggered development of diseases.

The area of education is one of the most affected by the consequences of different measures adopted to control the spread of the coronavirus. As learners and educators at different levels of education were forced to shift from traditional mechanisms and strategies of education to adopt new, innovative online teaching and learning approaches, majority of societies and key-players, especially in developing countries, were not morally, culturally and economically prepared to embark on the online education process (Nhatuve, 2021a).

This study aimed to address health disturbances experienced by students due to prolonged screen time during the Covid-19 pandemic in Zimbabwe. For this aim to be achieved, it was important to describe students' experiences in online learning and identify diseases related to the use of internet, computers, smartphones and tablets for learning purposes.

Research on health problems related to prolonged screen time is critical. It allows improvement of efficient strategies and material for a smooth online learning. It is also relevant to allow institutions (schools, universities, societies and governments) to decide on how to learn online, how long time to spend on the screen and what gadgets to prefer in favor of a smooth, effective and healthier online teaching and learning. It allows institutions to prepare teachers, learners and societies to adopt a positive attitude towards online teaching and learning (Nhatuve, 2020; 2021b).

Besides relevant and effective e-learning to be promoted, the corollary of all the measures suggested in this paper will be to minimize health issues related to digital technologies and online exposure. It will reduce probabilities of developing psychological and ocular/visual diseases associated with increased screen time during the online learning process, not only during the time of the pandemic, but also in any circumstances of e-learning (Nhatuve, 2021a).

This study involves two relevant spheres, namely, health sector on one side and education on the other. The combination of these two areas in a study, seeking to uncover health problems caused or increased by the use of digital technologies and the internet for and in education, compels the use of relevant theoretical principles from the two areas. It is pertinent to consider theories regarding the relationship between health and the use of technologies (Neuman, 1988; Etchells, Gage, Rutherford, & Munafò, 2016) as well as theories about education in digital age (Bates, 2017; Anderson, 2008).

It is worthy to consider the *displacement hypothesis,* which is basically concerned with the substitution of one activity by another (Neuman, 1998). In light of this hypothesis and for the scope of this study, it is imperative to consider the substitution of physical and social activities by digital and online activities. Most specifically, in the area of education, traditional face to face teaching and learning activities are replaced by e-activities (Meneses, Fernandez & Regana (2011; Anderson, 2008). Advocates of the *displacement hypothesis*, state that "the relationship between screen time and well-being is negative and monotonic, as each "dose" of screen time takes the place of alternative pursuits that might be more satisfying" (Przybylski & Weinstein, 2017). In line with this hypothesis, the more and/or the less screen time (exposure to digital and online activities and entertainments) replaces social and physical activities, the more/or the less is the harm in psychological, social and physical development of children and adolescents.

On the other hand, the goldilocks hypothesis posits that "moderate levels of digital screen time (1-2 hours a day) may be associated with slightly higher levels of key outcomes compared to engagement at either lower or higher levels" (Przybylski, Orben, Weinstein, 2020, p. 1080). This hypothesis is concerned with the use of digital technologies at work. It suggests that, at work, as well as at school, higher levels of outcomes are associated with moderate levels of digital screen time, suggesting that overuse of technology may jeopardize desirable results in certain social and professional spheres.

Both hypotheses (displacement and goldilocks hypotheses) suggest that uncontrolled and prolonged exposure to screen and internet can be hazardous to students' psychological and physical well-being. Consequently, students as well as any

individual subjected to such conditions are likely to develop health issues related to the increased screen and online time.

In the area of education, as mentioned above, the study is also enlightened by principles of online education (Andersons, 2008).

The online teaching and learning processes are beneficial for teachers, learners and societies at large. The learning process does not have barriers of time and space as students can learn anytime anywhere as long as relevant conditions are guaranteed. Additionally, the teaching and learning processes are based on genuine, relevant and updated audio pictographic material.

From Anderson (2008), it is important to highlight the fact that students are the main actors. They are called to develop relevant knowledge most of the time, in a context (home) where preconceptions and aversive worldviews regarding this modality of education prevail. E-learners are responsible for planning and executing e-activities. In developing countries, such as Zimbabwe and other Southern African countries, many societies are not culturally and economically ready to embrace online education. This reality has a negative impact on the implementation of online learning in those societies (Nhatuve, 2020, 2021a, 2021b; Nhatuve & Bwetenga, 2021).

The progress of science and technology is changing societies worldwide. Humans are no longer living, working, doing business, learning or entertaining the same way they used to do before the massification of digital and online technologies some years ago. Nowadays, technologies are requirements to run administration, education, economy as well as human and social communication. They play a significant role to promote the agenda and culture of the more and more globalized world (Meneses; Fernandez & Regana, 2011; Bates, 2017).

Although the use of technologies has its' disadvantages, especially in individual lives and promotion of social relationship and well-being, the proliferation and sophistication of digital and online services and products are irreversible because societies "adore digital and online gadgets, depend on them, support them and invest in them" (Nhatuve, 2021a, p. 300). The advantages include also the fact that technologies allow remote work and education anytime and anywhere convenient.

However, the most disquieting disadvantages involve health and social issues. Activities and entertainment using digital and online platforms are replacing vital activities in societies, such as physical exercises and socialization and they promote sedentary.

Although some researchers have revealed insignificant or even no harm to human well-being due to the use of technologies (Przybylski & Weinstein, 2017; Orben & Przybylski, 2019) those studies have been severely criticized in recent literature (Tang et al., 2021). In fact, recent literature has been systematically revealing the negative impact of uncontrolled use of digital and online gadgets. In the United States of America, for example, there is "33% increase in the number of adolescents exhibiting high levels of depressive symptoms and 31% increase in adolescent suicide deaths", related to the increased screen time (Tang et al., 2021).

In fact, the use of technologies by adolescents has been associated with the increase of various problems. Besides health issues that have been revealed, research conducted in developing countries, especially in Africa, indicates that the use of online platforms and gadgets in the area of education is not effective (Ali, 2020; Demuyakor, 2020; Neureiter, Jordan & Grollnek, 2020; Nhatuve, 2020). For example, many students reported that the online the process was frustrating (Nhatuve, 2020). Their frustration was due to poor equipment and services, lack of effective communication/interaction between students and instructors, lack of parental support, and the fact that students were overwhelmed with tasks and deadlines (Nhatuve, 2020; 2021a; 2021b; Nhatuve & Bwetenga, 2021).

Screen time and Health Issues
The progress of science and technology (in digital era) imposes changes in *modus vivendi* and *operandi* of Human beings. This reality has sparked/triggered several researches aiming to identify the impact of technologies on human lives and relationships. Most recently, studies are driven to understand how increased screen time is affecting individuals' health and social well-being. Findings regarding the relationship between the use of smartphones, computers, tablets and the internet are not consensual (Tang et al. 2021).

There are two positions regarding screen time and well-being. In one hand, some studies found no

significant link between screen time and health issues (Orben & Przybylski, 2019; Przybylski & Weinstein, 2017). In fact, the *displacement hypothesis* and the *goldilocks hypothesis* predict safer use of technologies, if used moderately. However, the increase of screen time in the last decades and the subsequent augment of psychological and visual problems among children and adolescents who spend many hours on the screen and internet expose some methodological weakness of these studies (Tang et al., 2021).

On the other hand, recent research has revealed that the increased screen time amongst children and adolescents is associated with mental and physical health issues (Mustafaoğlu, Zirek, Yasacı & Razak Özdinçler, 2018; Al-Mohtaseb, Schachter, Shen Lee, Garlich & Trattler, 2021). The *displacement hypothesis* "posits that the harms of technology are directly proportional to exposure. Effects are claimed to be negative because digital activities supplant alternate activities such as socializing with peers and family, reading books or exercising" (Przybylski & Weinstein, 2017, 205).

The amount of screen time among adolescents and adults has drastically increased in the last years. According to Przybylski and Weinstein (2017) the "time adolescents spend online has more than doubled from an average of 8 hours per week in 2005 to more than 18.9 hours per week today" (Przybylski & Weinstein, 2017, 205). This reality has been described as harmful, as the overuse of technologies is negatively associated with mental and social well-being.

Although online screens allow people to connect with others and share information and knowledge, the harm of overusing technologies needs to be controlled and screen use guidelines for young people need to be set and monitored. In the United States of America and other countries, increased depressive symptoms and adolescent suicide deaths have been reported and "the growing use of screen-based technology has been suggested to be a contributor to this increase" (Tang et al., 2021, p. 1; 13).

Computers, televisions, smartphones and the internet are part of indispensable elements in children and adolescents (Mustafaoğlu, Zirek, Yasacı & Razak Özdinçler, 2018). In fact, they are crucial for an effective, integrating and globalizing education (Nhatuve, 2021a; b). Nevertheless, "spending too much time on the computer […] can negatively

affect academic success due to the low concentration, lack of attention and disorganization, undeveloped language skills [and] creativity […], aggressive behaviors, physical inactivity, obesity and sleep problems" (Mustafaoğlu, Zirek, Yasacı & Razak Özdinçler, 2018, pp. 240-241).

Limone and Toto (2021) suggest that the increased use of technologies can negatively affect the brain functions and compromise sleep and cognitive abilities. According to these authors, young people overexposed to technologies and the internet are likely to develop psychological issues such as depression and anxiety. Besides mental illness, users of technology can develop eye diseases. Al-Mohtaseb, Schachter, Shen Lee, Garlich & Trattler (2021) found that "digital screen use is associated with dry the eye disease, that digital device use alters blinking dynamics and that dry eye affects mental health and work productivity in digital screen users" (p. 3811). In turn, studies carried out in the Southern African regions found that university students report cases of demotivation, difficulties to learn and frustration (Nhatuve, 2020).

Effectively, updated literature about the impact of uncontrolled and prolonged use of computers, smartphones and internet indicates negative impact of increased screen time on peoples' health and social well-being. Health issues associated with prolonged use of technologies, especially in the context of e-learning, include psychological/mental and visual issues. Therefore, this study sought answers to the following questions:

1. What common health conditions were associated with prolonged screen time amongst learners?
2. What psychological issues were associated with increased screen time use?
3. What were the experienced ocular/ visual issues associated with increased screen time use?

Methodology

Design
This study employed the descriptive design under the quantitative approach. Statistical information is presented in percentages through graphs.

Population and Sampling
The study used a random sampling technique to students from two universities in Zimbabwe. Out of the population of 500 students, a total of 128 individuals of both sexes participated through

completing a questionnaire on health issues that they experienced during the COVID-19 pandemic.

Instruments

Data collection was conducted through a closed-ended question seeking to identify health challenges experienced by students due to prolonged use of computers, smartphones, tablets, and phones during the e-learning process. Respondents were allowed to choose more than one option, depending on their experiences. Effectively, consistency of aspects covered by the survey, convergence of the instruments used by researchers in similar studies, and the equivalence of responses given by different groups were considered for sake of reliability and validity of instruments and methods.

Ethical Considerations

Informants were fully briefed about the purpose of this study and the nature of instruments used. Also, respondents were informed about their right to take the survey if they were willing to do so (each participant could decline to participate in the study, with no implications). Respondents were asked to

signify their consent to participate in this study by signing a consent form. They were assured that they would remain anonymous to safeguard respondents' faces and self-esteem. The information provided by students remained confidential.

Findings and Discussion

In this section, data is presented in graphs illustrating statistical percentages of the responses given by students who participated in the study.

Research Question 1: What common health conditions were associated with prolonged screen time amongst learners?

Graph 1 represents statistical information regarding common health issues amongst students during the COVID-19 period. The graph shows that 46% of students experienced headaches. Additionally, 34% of the students reported experiencing prolonged tiredness due to increased use of technologies while 20% reported difficulties in sleeping.

Graph 1: Common Health Issues that Increased with the Rise of Screen Time during the Covid-19 Pandemic
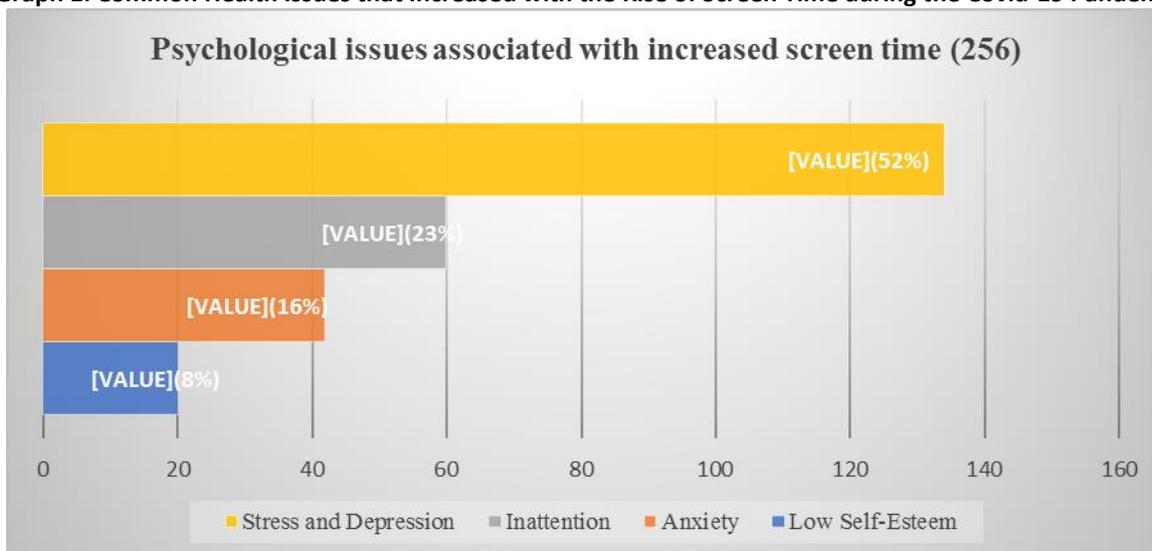
Headaches, tiredness and sleepless nights are well known disturbances associated with prolonged screen time even before the pandemic (Przybylski & Weinstein, 2017; Mustafaoğlu, Zirek, Yasacı & Razak Özdinçler, 2018). The lockdown measures and the online learning processes triggered increase in screen time and its consequences. Headaches, tiredness and difficulties to sleep were not only experienced by individuals involved in this study, but have been also reported in other studies such as Stiglic and Viner (2019), Toombs, Mushquash, Mah

et al. (2022), Abou Hashish, Baatiah, Bashaweeh & Kattan (2022) and Wehbe et al. (2022).

**Research Question 2:** What psychological issues were associated with increased screen time use?

Graph 2 reveals that 52% of respondents experience stress and depression during the lockdown period. Besides stress and depression, 23% revealed that they experienced inattention (difficulties to concentrate). Finally, 8% revealed that they

experienced low self-esteem during the time of lockdown.

Therefore, stress and depression are the most problematic psychological disturbances associated with the increased screen time use experienced during the time of lockdown. The findings are supported by Limone and Toto (2021, p. 1) who asserted that prolonged screen time use affects the "brain functioning and compromises sleep and cognitive abilities."

Graph 2: Psychological Issues Associated with Increased Screen Time during the Covid-19 pandemic
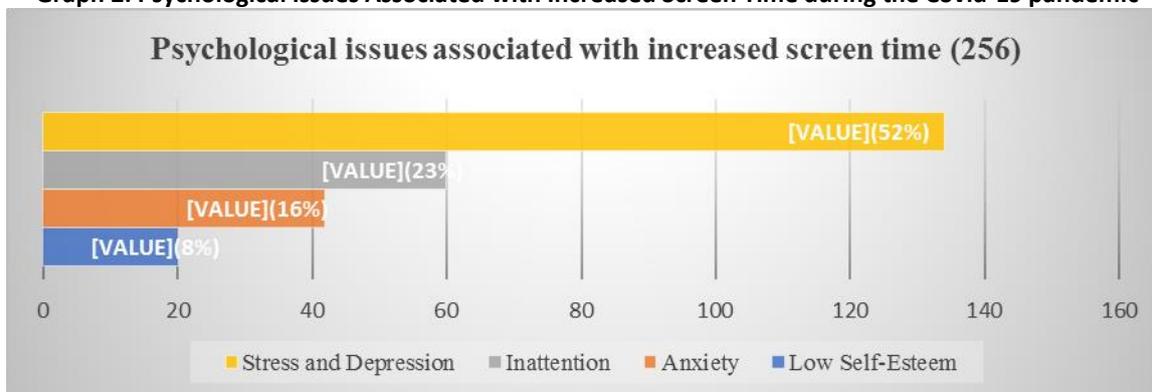
Graph 3: Ocular/visual Issues Associated with Increased Screen Time during the Covid-19 Pandemic
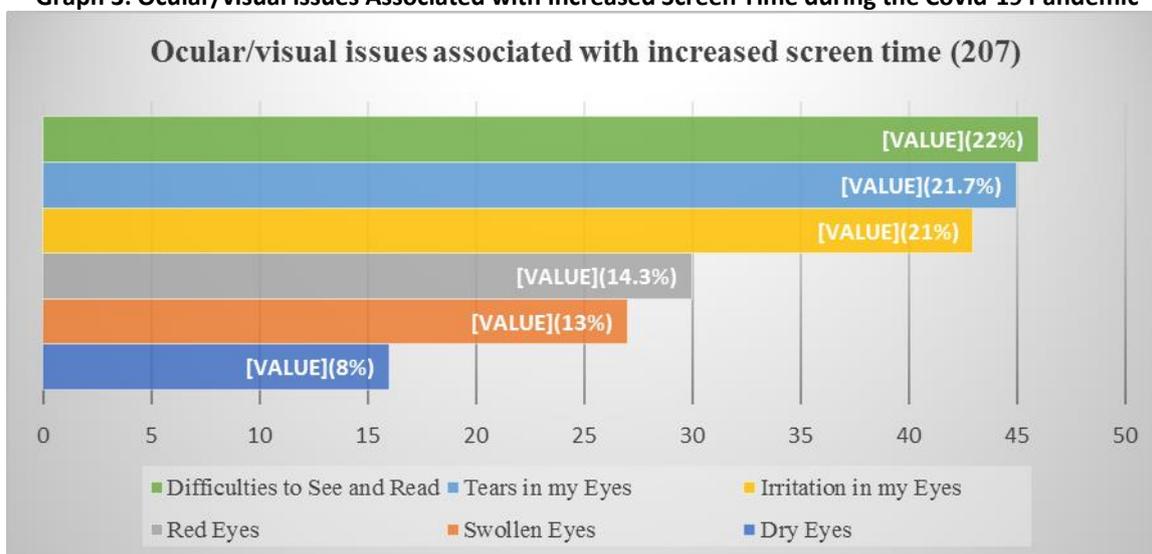
Research Question 3: What were the experienced ocular/ visual issues associated with increased screen time use?

Eye problems were experienced due to prolonged use of technologies. As indicated in the third graph, there is a range of six visual/eye challenges including difficulties to see and read, teary eyes, irritation, red eyes, swollen eyes and dry eyes. Difficulties to see and read constituted 22% while tears in eyes constituted 21.7% and irritation in eyes constituted 21%. Furthermore, red eyes constituted 14.3%, swollen eyes constituted 13% and dry eyes constituted 8%. Similarly, eye problems caused by the increased screen time use have been reported in literature (Agarwal, Tripathi, Khan & Agarwal, 2022; Al-Mohtaseb, Schachter, Shen Lee, Garlich & Trattler, 2021; Maroof, et al., 2019; Shantakumari, Eldeeb, Sreedharan & Gopal, 2014).

Conclusions and Recommendations

The study concludes that headaches, tiredness and difficulties to sleep were experienced by students as a consequence of prolonged screen time. Students experienced different psychological disturbances including stress and depression, inattention (difficulties to concentrate), anxiety and low self-esteem as a consequence of prolonged screen time. Finally, sight loss, tearing eyes, eye irritation, eye redness, eye swelling and dry eye disease were

experienced by respondents. The established tendencies are not peculiar to this study as previous studies had revealed similar results.

Based on the conclusions, the study recommends that students and all users of digital technologies for different purposes should control the time they spend on the screen and visit doctors whenever they have abnormal experience in their eyes for further guidance. The study further recommends that learning institution should come up with measures to reduce the time individuals spend on the screen by providing alternative study options that may reduce the time spent on screens for learning.

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