Effects of Excessive Use of Technology on Physical Health

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Abstract

Excessive use of technology can be linked to an array of negative health effects. This article aims to outline some of the key effects experienced, as well as looking into how people feel about technology and how they deal with any health effects they experience. To gather information regarding the issue, a survey was conducted among 30 participants where they were asked a variety of questions regarding their technology use habits, opinions on the matter and how they deal with health issues. The results show that technology use is placed at a high importance when it comes to daily life, however participants still acknowledged that they feel they spend too much time using technology and do experience negative health effects (primarily headaches, eye strain and neck/shoulder pain). Interestingly, it was also found that treatment for these health effects is not always sought, and that participants don't always proactively try to mitigate or treat said effects.

The results made it clear that while there is an awareness of the negative health effects that are linked to technology use, due to the importance of the role that technology plays in society and how common it is, these effects are sometimes just dealt with as opposed to proactively finding proper treatments or solutions. Institutions offer generally little support in these matters, and while participants largely did not have a strong opinion on the matter, offering support for something that is so prevalent in the lives of everyone would be a great start.

Key words:

Introduction

It is no secret that technology is evolving every year. Technology has transformed civilization and accelerated progress in many aspects of human activity. Consequently, the usage of technology today is larger than it has ever been, and the latest types of technology are attracting an increasing number of people, especially children. With the recent popularity of smartphones and tablets, their use has become unavoidable and is now regarded as an essential component of daily life (Alotaibi, Almuhanna, Alhassan, Alqadhib, Mortada, Alwhaibi, 2020). As technology use is such a prevalent aspect of our lives, we set out to identify what kind of negative effects it may have on our physical health, in order to find a way to mitigate these effects or at the very least bring more attention to the problem. In order to enrich and identify an appropriate direction for the research, it was needed to first conduct investigations into already existing materials regarding the topic. It is beneficial for gaining a deeper understanding of the matter itself, as well as having a foundation that can be used to analyse the findings later on in the research paper. The strategy involves reading through relevant articles and studies found using various online tools through key words that pertain to our topic.

State of the art

In one article, conducted by four different authors, it is concluded that technology negatively impacts the lives of children. Most notably, it impacts their weight, sleeping schedule, and willingness to participate in physical activities (Brown, 2011, cited in Mustafaoglu et al., 2018). As a basis for the research, a survey was conducted to understand the magnitude of the problem, as concerns regarding the future and long-term effects continue to arise. At the end of the survey, it was concluded that:

"In the United States, more than 1,000 parents reported in a nationwide telephone interview that their children under the age of 6 used digital technology an average of 1.58 hours a day, played outside an average of 2.01 hours, and spent 39 minutes reading. In the study, it was found that 36% of the children lived in a house where the television was constantly on, 45% of the parents used television as a means to keep their children occupied when they had important jobs to complete, and 27% of the children between 4 and 6 used a computer every day" (Rideout, Vandewater, & Wartella, 2003, cited in Mustafaoglu et al., 2018).

The research also states that some experience musculoskeletal problems as well as abdominal pain and headaches (Harris, Straker, Pollock, & Smith, 2015, cited in Mustafaoglu

et al., 2018). Physical inactivity is also linked to other health issues such as obesity, type 2 diabetes mellitus, all-cause mortality, metabolic syndrome, as well as a wide range of physical problems (Alotaibi et al., 2020). Moreover, it is said in the article that: "Excessive use of technology is linked to lifetime obesity and cardiovascular risk and this relationship is now observed starting from early childhood." (Bel-Serrat et al., 2013, cited in Mustafaoglu et al., 2018). In a different survey conducted by Alotaibi, Almuhanna, Alhassan, Alqadhib, Mortada, and Alwhaibi (2020), researchers used questions from a questionnaire created by Dr Jacqui Taylor. The questions were all related to the use of technology amongst children and how it relates to sleeping patterns, behaviour, and after-school activities. Overall, 458 parents of children between the ages of 4 and 12 were surveyed. The results showed that 376 out of 458 children have their own electronic devices in their possession, and children who spend six or more hours on their electronic devices tend to have significantly less physical activity (in comparison to those who spend five hours or less).

After looking into the impact that technology has on children, it is not hard to imagine that it could be even worse for students whose lives depend on electronic devices. In the study conducted by Erica L. Kenney and Steven L. Gortmaker, it was found that many adolescents were aware of their unhealthy habits of using technology and how it negatively affects their health. To better understand the destructive effects technology has on students, around 24 800 adolescents participated in a questionnaire where they were asked questions in regard to their habits of technology use. Most of the participants were between the ages of 15 and 17, with 15% being 18 or older. According to the study, 19.5% spend more than 5 hours a day on devices other than TV, while only 7.8% spend more than 5 hours a day watching TV. Two-thirds of boys and three-quarters of girls admitted not getting enough physical activity. Moreover, two-thirds of teens said they didn't get enough sleep during the night. In the end, it was discovered that around 13.6% of students involved struggled with obesity (Kenney & Gortmaker, 2017).

In addition to other studies, professor Semseddin Gunduz, in his research, discovered that 94% of 710 students reported having neck pain and vision problems, while 77% had headaches. And people whose job includes working long hours on their computers experienced muscle pain and sleeping problems. The sleep-related health effects that come with screen usage can cause negative long-term effects and put young people especially at risk. Researching it helps to identify the main problems which can then be used to figure out

what measures need to be implemented to minimise these health risks. In his work, among other discussed issues, Gunduz talks about bad sleeping patterns saying: "Sleeping Disorders and Decrease in Productivity: Overuse of Computer Technologies is also likely to cause sleeping disorders" (Semseddin Gunduz, 2007).

As concluded in the article laying out the study conducted by Hysing, Pallesen, Stormark, Jakobsen, Lundervold and Sivertsen titled "Sleep and use of electronic devices in adolescence: results from a large population-based study", there is a correlation between the frequent use of electronic devices and low quality of sleep. More specifically, it was concluded that both daytime and bedtime use played a role in increasing the risks of sleep-related effects such as shorter sleep times and longer sleep latency. While the use of electronic devices was frequent for both girls and boys, it was found that during the last hour before bedtime in particular, around 85% of both boys and girls used their PC and around 90% and 80% of girls and boys respectively used their cell phone.

In the article provided by professors of De La Salle University it is showcased exactly how many students experience different physical disturbances and what physical problems they endure while using technology. The results show that around 5% of students experience daily headaches while 20% get them frequently. 35% often feel pain in their wrists and arms, while 10% suffer from constant eye strain. Some consistently experience back pain, and many complain of neck pain (Billones et al., 2018). Furthermore, pharmacists encounter more and more patients with digital eye strain and headaches linked to the growth of using digital devices. Many people are unaware that these symptoms are frequently caused by excessive or incorrect usage of electronic gadgets. People might blame these symptoms on stress or overwork. Digital eyestrain and headaches are becoming increasingly widespread: for example, vision issues and headaches are reported by 70% to 75% of computer users (Yvette C. Terrie, 2016).

Dr Shanti, on his website, specifies the causes of muscle pain caused by excessive technology use. He states that, when you're constantly hunched over while using digital devices, all of your muscles are in an unnatural position. As a result of the persistent stress imposed on the muscles, adhesions, or "knots," develop over time. These adhesions are unpleasant, but they serve to toughen the muscles by causing micro-tears as a result of the

extended stretching. These adhesions produce pain around the base of the neck, inside each shoulder blade, and along both sides of the upper spine. While dealing with it can be difficult at first, there are some adjustments that can be done to assist lessen the pain (Nael Shanti, 2019). Another issue related to muscle pain is carpal tunnel syndrome, which is caused by a blocked nerve in the hand. The symptoms include numbness and tingling, especially at night, and pain. It is most likely caused by using keyboards on our phones and computers, as our fingers do repetitive motions. Moreover, carpal tunnel syndrome can spread to other parts of the arm, such as the elbow and shoulder (*Carpal Tunnel Syndrome and Technology*, 2014).

It is also worth mentioning that digital devices emit radioactive materials. In comparison to other issues, radiation is not as popular as other worries among people; however, the impact it leaves on our bodies is concerning. In this time of living, using blue-tooth and wi-fi is inevitable; therefore, we are constantly surrounded by small portions of radiation. In his article, writer Mark Fischetti admits that ionising radiation, which can tear molecules apart and therefore potentially damage DNA, is a great worry (Fischetti, 2011).

Results

To gather information regarding the effects of technology on one's physical health, we conducted a survey in which we asked participants about key factors relating to our topic. We were able to gather 30 responses, with the largest section of participants (43.3%) being between the ages of 21–25. The other sections and their sizes are as follows: 10–15 years old (10%), 16–20 years old (13.3%), 26–30 years old (20%) and 30+ years old (13.3%).

When asked what technological devices they use the most, 29 out of 30 participants said that they use their mobile phone, with 20 out of 30 participants also choosing their portable computer. Less than half of the participants identified with frequent usage of television (12 of 30), tablets (7 of 30) and desktop computers (6 of 30). We found that the majority of mobile phone users tend to mostly use their phones for either 3–5 or 6–8 hours, with 11 and 13 participants respectively. This is also the case among portable computer users, with 10 and 11 participants for each category.

We found that participants use technological devices for a variety of reasons, including leisure, work, self-growth, and school. When asked to rate the importance of technology nowadays on a scale of 1–10, each participant provided an answer of 7 or higher, with the distribution as follows: 7 (1 participant), 8 (6 participants), 9 (9 participants) and 10 (14 participants).

Among the participants, 73.3% (22 participants) admitted to noticing changes in their physical health that could be linked to their use of technology. The most common health issues experienced according to the survey is headaches (19 participants), followed by eyestrain and neck/shoulder pain (16 participants each). Precisely 10 people experienced back pain, 8 felt wrist pain and 4 people experienced tingling in specific body parts, 2 had poor sleeping patterns in combination with other problems as seen in the Figure 1. When asked about seeking treatment for these issues, the most common treatment chosen by participants was painkillers, with 12 votes.

Figure 1

Question about health issues experienced while using technology
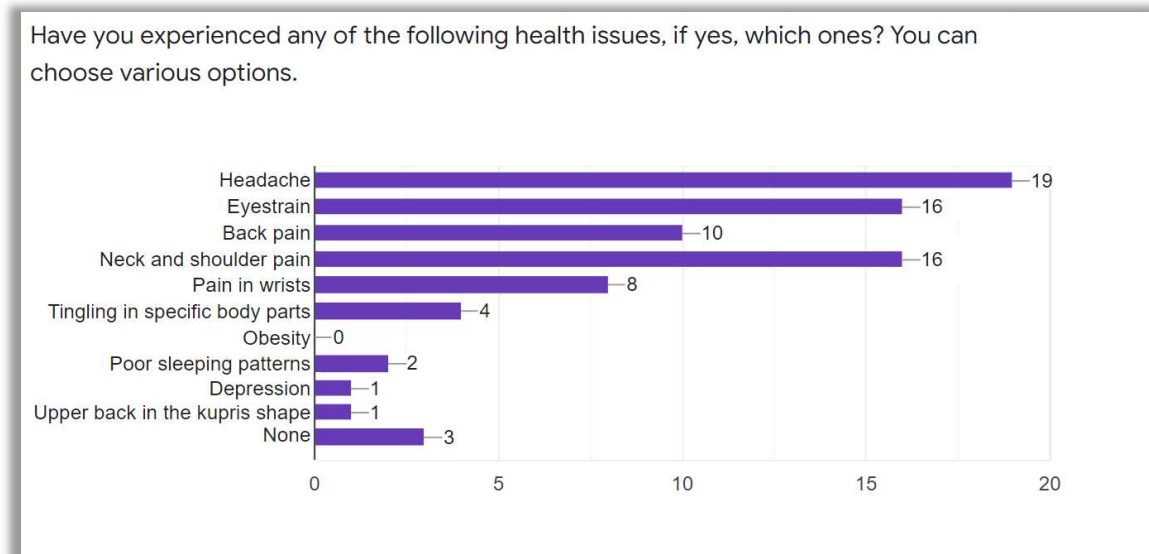
Participants were asked in the survey if they agree that they personally spend too much time using technology. The majority of participants either agreed or strongly agreed, with 13 (43.3%) and 6 (20%) respectively. Out of the participants, 3 (10%) were neutral, while 6 (20%) disagreed and 2 (6.7%) strongly agreed. In the survey, participants were also asked if and how they have tried to reduce their screen time. Most participants mentioned making an effort to cut out non-essential usage (or some of it), others detailed trying to balance the screen time by going outside and planning their time spent using technology, and some simply admitted knowing that they should cut down their screen time but haven't made an effort to.

The majority of participants stated that their institutions do not offer proper help regarding negative health effects from technology use, though a few cited the provision of more ergonomic equipment, or some form of offered healthcare. Participants were also, for the most part, neutral regarding the question of whether or not their institution should have an obligation to assist with the aforementioned health effects. Precisely 10 participants were neutral (33.3%), 8 (26.7%) agreed, and 7 (23.3%) disagreed. Only 1 (3.3%) strongly disagreed and 4 (13.3) strongly agreed.

Conclusion

Looking at the results of the survey, it can be seen that the participants have all placed technology use at a relatively or very high importance when it comes to daily life, as well as citing multiple reasons for technology use. However, it was found that a large portion do believe that their screen time is too high. In answering those questions as well as giving information regarding what kind of health effects they have experienced linked to technology use, it shows that participants themselves are aware that it can be unhealthy, despite placing technology use at a high importance. This perfectly illustrates the core of what we are trying to find a solution to. Nowadays, using technology is unavoidable, which unfortunately means that so are the negative health effects. While it can be seen in the results that a majority of the participants have experienced one or more health issues, quite a few less have sought treatment for these issues. It may be so that due to how common it is to use technology, people become used to these health effects and out of convenience choose to just ignore these health effects instead of seeking some form of treatment. This would at least be in line with the participants who admitted to feeling that they should reduce their screen time but not actually doing anything about it.

One of the main issues people are faced with here is that while there is awareness regarding the health effects, there is not a corresponding amount of response in terms of seeking or demanding treatment. In this case, it becomes hard to determine whether the more effective solution would be to tackle the approach to technology, or the use of the technology itself.

With technology becoming more and more prevalent in all facets of our lives, it is important to make sure we are able to find a balance and work in harmony with the technology, instead of letting it negatively affect things such as our health. This can be done

by promoting healthier habits outside of as well as during technology usage, as well as providing more easily accessible and convenient tools for people to use in treating health effects in addition to trying to prevent them.

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