

Analysis of Smartphone Addiction Today: A Literature Review

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Abstract. Today, smartphone users are rapidly increasing all over the world. Smartphones bring lots of benefits to society. It enables people to connect with the whole world and spread the latest ideas to countries worldwide more efficiently and conveniently. This could never be done in the past when smartphones had not yet developed. However, the vast increase in smartphone usage has had significant negative consequences for society. The risk of anxiety and depression may rise with disorders that negatively impact people's daily lives such as social dysfunction, obesity, and sleeping disorders as a result of excessive smartphone use. These disorders led by smartphones differ for individuals based on their different personalities and experiences. The main causes of smartphone addiction can be divided into three factors: internal factors, emotional factors, and social factors. The purpose of this paper is to investigate smartphone addiction with an analysis of its causes, impacts, and therapies through a literature review.

Keywords: Smartphone addiction; Anxiety; Depression; Sleeping disorder.

1. Introduction

With the development of science and technology, smartphones are widely used by people of all ages. Smartphones have gradually become something a necessity in people's daily lives. People use smartphones to communicate, share ideas, and sometimes satisfy basic needs. Smartphones indeed have benefits to society, yet they are not always beneficial. There will be issues if individuals rely excessively on their smartphones and thus become an addiction. Smartphone addiction, known as nomophobia, is common among people of all ages across the globe. It is typically fueled by problems with excessive internet use or internet addiction disorders. Smartphone use is addictive because it triggers the release of dopamine in the brain, which produces a sense of happiness. And the tolerance of this excitatory neurotransmitter will result in excessive use of smartphones. As the number of smartphone addiction cases increases, people are paying more attention to the problem. There has been a dramatic increase in the number of researches that examines the effects of smartphone and internet addiction over the past few years. The researches focus on the reasons for smartphone addiction and attempt to develop treatments for this type of addiction. However, there are various causes of smartphone addiction which would vary among individuals. Some people may be addicted to their smartphones because they want to reduce stress. People use phones differently for different reasons. Addiction to smartphones might commonly and negatively affect people's well-being. The prevalence of social dysfunction and sleeping disorders has become two hot topics. The profound impact of smartphone addiction on our daily lives makes them worth studying. To gain a deeper understanding of the causes, impacts, and treatments for smartphone addiction, as well as the diseases associated with it, we conducted a literature review on the subject and found several relevant papers that fit our purpose. The study contains different age groups, genders, and cultural backgrounds aspects.

2. Causes of Smartphone Addiction

Addiction to smartphones has multiple causes, and this study mainly discusses the following three categories: internal factors, emotional factors, and social factors. Internal factors are based on an individual's own personality and characteristics. Emotional factors aim to use smartphones to improve one's mood and stress. Social factors are factors that are associated with communication and contact online.

2.1 Internal Factors

The internal factors focus on individuals and their characteristics. For example, people with boredom proneness are prime candidates for smartphone addiction. This type of person has difficulties controlling attention and impulse, which causes them to easily get bored. Thus, they seek to experience new things on a regular basis, and smartphones provide this kind of opportunity for them as there is always easily accessible fresh content being created on the internet. Easily experiencing boredom also frequently causes negative impacts. Boredom proneness correlates with anxiety and depression.

People who experience low self-esteem are also likely to develop smartphone addiction. Low self-esteem is typically accompanied by low self-confidence and low self-control. Individuals with these characteristics frequently act negatively and are anxious about themselves, which causes them to be afraid of engaging in daily interactions with others. Consequently, they may prefer online communication over in-person interaction. Their smartphone use often becomes excessive and problematic since they have a high dependency on smartphones which is caused by their difficulties maintaining relationships.

2.2 Emotional factors

Emotional factors are factors that consider smartphone use as a way to improve one's mood. Stress is a major contributor to this aspect. Multiple studies demonstrate an association between smartphone addiction and anxiety and other forms of stress. This association is particularly prominent among college students, the majority of whom have numerous concerns as young adults, including academic performance, social life, and jobs. It makes smartphone use become the best way for them to relieve their stress and tension. Therefore, people experiencing higher levels of stress might trigger higher smartphone use. Depression is another factor that has a strong association with smartphone addiction. Smartphones offer a variety of opportunities for people to find solace, like watching movies and listening to music, which can be helpful for those experiencing extreme emotional distress. All these techniques aid people in shifting their attention away from their sadness. People using smartphones as a way to relieve and avoid their depressive symptoms will lead to increased dependency on smartphones. Loneliness will also work as a factor in smartphone addiction. People will use their smartphones to alleviate their loneliness or to simply use smartphones as a company for themselves.

2.3 Social factors

Social factors aim to use smartphones to socially interact and maintain contact with people. These factors consisted of mandatory behavior and connected presence. People engage in mandatory behaviors in order to fulfill their fundamental social requirements. Every person has the desire to communicate, share, and express themselves. Smartphones, as the most prevalent and significant means of communication between individuals, play a significant role in socializing. By sending a text message or making a phone call, individuals might cultivate relationships through their smartphones. However, if people have a strong desire for social interaction, it is feasible for them to grow dependent on their smartphones. For example, people who have a bad relationship with their parents tend to seek company on the internet and immerse themselves in virtual relationships because they cannot get enough care and attention from their parents. In conclusion, all the factors can conclude to three major factors: internal factors, emotional factors, and social factors.

3. Impacts

Research shows that excessive usage of smartphones may cause a lot of problems. This part of the paper focuses on the negative effects of the overuse of mobile phones from both physical and mental aspects. First, the physical impact of the overuse of mobile phones is explored, including sleeping quality, obesity, and short eyesight.

3.1 Physical impact

3.1.1 The increase in obesity

Smartphone addiction may increase the sedentary time people spend in their daily life, reducing the time they do outdoor activity and thus increasing the rate of obesity among adolescents and adults. A sample of school-age children and adolescents in Shanghai used the ratio of students' weight and height to depend on their extent of obesity and also measure the extent of the problem of smartphone over usage. The research also measures the time students spend outdoors and the time they spend on screen. Shows a positive relationship between problematic smartphone usages for amusement was positively associated with obesity status for primary school, and also, they found that academic pressure grows as the educational stage goes up. They found that the relationship between smartphone addiction and obesity has a higher relationship in middle and high school students. This may be because the period of time children grow fastest is when they are in primary school. No matter how much time they spend sitting, they will not get fat. This does not mean smartphone addiction has no effect on obesity, as the increase of the age and educational level, the result starts to appear. The paper mentioned that the relationship between smartphone addiction and obesity may be caused by the reduction of outdoor activity which is caused by smartphone addiction.

However, the data of this research does not show a significant relationship between the amount of sedentary time and the extent of obesity, so there may be some other factors that cause the relationship between smartphone addiction and obesity. For example, maybe the people who spend more time outdoors are not actually doing activities, which makes no difference between the people who spend more time indoors or spend more time outdoors. Smartphone addiction leads to irregular sleep and rest and thus causes obesity. And also, probably students who get smartphone addiction tend to be less self-disciplined and thus easier to eat unhealthy food which causes obesity. In addition, the social environment might be an important element affecting smartphone addiction and obesity. For example, families that have less regulation for their kids tend to cause their kids to be addicted to the smartphone and have less care about whether their children eat healthily or not, so their children are easy to get obesity, so the research should consider this factor.

3.1.2 Sleeping disorder

Smartphone addiction seriously affects people's sleep time as well as their sleeping quality. Overuse of smartphones may delay the time people go to sleep. And thus shorten the time people spend sleeping. In addition, people's brains get more stimulation from the smartphone before sleeping, making it hard to fall asleep and have a good sleeping quality. The availability of smartphones also increases the time people use smartphones, which may increase the risk of people to be addicted to the smartphone. People who continue to use smartphones during sleep time are especially likely to increase the possibility of getting smartphone addiction. In a sample of 688 undergraduate students at Notre Dame University, students who excessively use smartphones at nighttime show significantly noticeable tiredness during the daytime, more reduced sleep duration as well as sleep quality. In a sample of 319 Turkish university students, the extent of overusing smartphones has a negative relationship with sleep quality, daytime function, and sleep duration. A sample of 1043 King's College students showed a positive relationship between smartphone addiction and sleep quality. They measured participants' extent of smartphone addiction and also the objective and subjective sleep quality. The results showed that participants who have smartphone addiction have a higher possibility to have low sleep quality. In addition, participants stop using smartphones for a period of time before they go to sleep, and have a longer sleep duration and better sleep quality.

The relationship between sleep quality and smartphone addiction may be caused by the overuse of the smartphone at night occupying the time that people use for sleep. And also, some of the research showed that blue light on the screen might affect the body's biological clock. In addition, some of the research showed that reading paper versions of books do not have a significant effect on sleep quality, which might indicate that electronic devices have more stimulus for people's brains, but now there are few studies about this area.

3.2 Social dysfunction

People feel anxiety and depression after using smartphones. Usually, they feel guilty about using their smartphone for a long time. Many people feel nervous when their smartphones are not with them. People check screens more frequently than they thought. Some research shows that females are easier to get addicted to smartphones because they usually use phones to build social relationships with others. People feel anxious without smartphones probably because they want to connect with other people. Males are more likely to use phones to make work more productive. Men are depressed without smartphones probably because they are worried about something they need to deal with using their phones. However, some of the research shows that there are no significant differences between the likelihood of gender that affect the possibility of getting addicted to smartphones. Because the stimulus of the smartphone is so intense, smartphone addicts have trouble concentrating on the things that are less stimulating, like studying and working. In addition, the change in people's brains cannot be ignored, people's brains will change physically when they get addicted to the smartphone.

3.2.1 Anxiety and depression

A sample of 688 students at Notre Dame University showed the relationship between smartphone addiction and depression. In this research, the participants were asked to report their basic information, the negative effect of smartphone addiction on them as well as their extent of anxiety. In this survey, depression and anxiety were found to have a significant connection with smartphone overuse, which resonates well with our summary about the relationship between smartphone overuse and depression. In a sample of 394 university students in China, mood regulation ability emerged as an independent predictor of smartphone addiction. In a sample of 319 Turkish university students, the extent of depression and anxiety was found higher among people who spend a long time on smartphones than the participants who do not spend so much time on smartphones [10]. The relationship between smartphone overuse and depression and anxiety may be caused by the feeling of guilt of spending too much time on electronic devices without doing anything meaningful and also people's inability to control the actual time they spend on the smartphone. In addition, smartphone addiction may cause a focus deficit, which may also hurt people's pleasure to do daily study and work. There is little research learning the relationship between smartphone addiction and focus deficit. The overuse of smartphones may affect people's relationships with people around them, which may also cause depression. The depression may also be caused by a decrease in academic performance due to smartphone addiction. A sample of 323 students in a public university in Sabah showed smartphone addiction had negative and positive effects on students' academic performance and depression [11].

4. Therapies

In general, there are several ways that people can control their addiction to smartphones, including setting rules for use, downloading time management applications, using other things to enrich daily lives, etc. However, getting regulation of smartphones is commonly a painful process. Some people might lose their self-efficacy to excessive smartphone use. The modification of habits people cannot allow them to disconnect from their mobile devices. Therefore, specialist therapies for people are necessary to help them disconnect with electronic devices. Cognitive-behavioral therapy (CBT), for instance, is a talking therapy that can help people manage their problems by changing their way of think and behaving [12]. It provides a gradational treat to stop uncontrollable behaviors and modify

the perceptions about the smartphone and the Internet [13]. This part of the essay will discuss the advantages of CBT in the treatment of smartphone addiction and diseases related to it.

4.1 Cognitive-behavioral therapy

Cognitive behavioral therapy (CBT) aims to transform people's nonadaptive thoughts, feelings, and behaviors into healthy and positive ones. CBT has previously been proven effective in the treatment of Internet addiction, which also has similar underlying properties and symptoms to smartphone overuse [13]. Music therapy refers to a clinical technique that uses music as a therapeutic medium to help improve and restore human mental, emotional, social, and physical health. The researchers collected 155 patients who have been diagnosed with smartphone addiction. They randomly allocated 67 and 71 participants to either the CBT-MT or CBT groups respectively. They combined MT and CBT in the experiment to treat smartphone and internet addiction in adolescents. The result shows that the symptoms of smartphone addiction could be effectively treated by combining CBT and MT [14]. This study investigated the effectiveness of the binary-level interposition combining MT and CBT in smartphone addiction as a pioneer of this research field. This finding revealed that Smartphone Addiction Proneness Scale (SAPS) was dramatically diminished in both groups, while the Young Internet Addiction Scale (YIAT) dropped more in the CBT-MT group than the CBT group. Thus, suggesting that CBT was effective for the treatment of smartphone addiction. This finding is consistent with other previous studies on this topic. Admittedly, CBT combined with MT may be more effective in treating Internet addiction [15, 16].

4.2 CBT and Pharmacotherapy

The effect of Pharmacotherapy was compared with CBT in several studies. The studies suggest that Comprehensive CBT (C-CBT) and medications have relative efficacy to treat moderate social anxiety disorder (SAD). Compared C-CBT with phenelzine, placebo, and educational support group therapy for SAD, research found that in all 133 participants, phenelzine therapy and C-CBT both achieved better results compared to the control condition. Pharmacotherapy has the same therapeutic effect as CBT. Nevertheless, the side effects of CBT were considered to be minimal compared to the side effects of medication. There were no actual differences between these treatments, but they all performed better than the placebo condition. This also means that all treatment methods have similar efficacy for being one treatment for social anxiety disorder. Taking the side effect of these medicine into consideration, however, CBT method would the first choice among all the treatments.

To sum up, studies have demonstrated that CBT is one of the most effective treatments for smartphone addiction and Internet addiction, which has no different from medication and is even better [17]. This suggests CBT is the best treatment method for smartphone addiction today. However, CBT has some limitations. For example, people need to commit themselves to the process and take advantage of it actively. Therapists can help the patients and give their advice, but the cooperation of patients is always essential for the effectiveness of the therapy. CBT also requires the patients to attend the session regularly in order to get the best performance and may carry out extra work between the sessions, which is time-consuming. Taking various factors into consideration, however, CBT would be more effective when it comes to behavioral addiction because it changes one's attitude and feeling towards the behavior itself. While Pharmacotherapy may do little to reverse the poor habits and behavioral patterns common to many mental illnesses that accumulate over time.

5. Conclusion

In conclusion, the causes of smartphone addiction are primarily consisting of three major factors: internal factors, emotional factors, and social factors. Internal factors can induce the excessive use of smartphones through boredom proneness and significant loss of people. Emotional factors might associate with smartphone addiction since it can be a strategy or method that people use to overcome mental stress and relieve pressures. Social factors are the most significant factors of smartphone

addiction as it directly related to the function of smartphones as a tool for people to maintain their social relationships. These factors result in different kinds of smartphone addiction with specific characteristics. Smartphone addiction is caused by internal factors that have a significant dependence on social media because of the loss of self-worth in their life. This makes them prone to overuse smartphones by providing easy access to fresh content for them. While the addiction caused by emotional and social factors were different. These people are usually addicted to smartphones due to external factors such as identity issues, discrimination, migration, etc. The impact of smartphone addiction can be simply divided into two parts, physical and psychological. The physical impacts of smartphone overuse are primarily the increased possibility of obesity and sleeping disorders. This can be caused by the time people spend on the use of smartphones, the content on the Internet or the light from the screen. The mental impacts of smartphone addiction are the anxiety and depression caused by the excessive use of smartphones and social relationships. Therefore, research on the treatment of smartphone addiction will be an essential topic. In general, CBT is the most effective treatment when it comes to behavioral addiction because it changes one's attitude and feeling toward the behavior itself. Compared to other therapies, pharmacotherapy has unpredictable side effects and may not reverse the bad habits and behavioral patterns that accumulate over time in many mental illnesses. Future research can further investigate more practical treatments or therapies for smartphone addiction based on this research.

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