

Original Research Article

The prevalence of smartphone addiction and its correlation with depression among higher college of technology students, Oman

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ABSTRACT

Background: The aim of this study is to identify the prevalence of smartphone addiction and its correlation with depression among Higher College of Technology students in Oman.

Methods: A cross-sectional study was conducted in the Higher College of Technology, Oman. A self-reported questionnaire was distributed electronically to students between January and February 2017. The questionnaire contained a validated short version of the smartphone addiction scale (SAS-SV) and a validated Arabic version of the Patient Health Questionnaire-9 (PHQ-9), along with a single question to self-assess smartphone addiction.

Results: With a response rate of 86.2%, a total of 376 students were considered, of whom 34.6% were males and 65.4% were females, with an overall mean age of 20.9 years. This study showed that the prevalence of smartphone addiction in the study population using the SAS-SV was 63.8%; 88.3% of students were using their smartphones for four hours or more per day and 80% had been using smartphones for more than four years. The overall depression rate was 32.2%. As the total depression score increased by 1 point, the smartphone addiction score increased by 0.428 points ($p < 0.005$). The prevalence of smartphone addiction was 54.9% among those who had no depression, 80.3% among those who had mild depression, 75.9% among those who had moderate depression, and 96.2% among those who have severe depression ($p < 0.005$).

Conclusions: This study shows high smartphone addiction levels based on SAS-SV scores and found a significant positive correlation between smartphone addiction score and depression scores.

Keywords: College student, Depression, Smartphone addiction

INTRODUCTION

The usage of smartphones is increasing worldwide. With newer advances in smartphone technology, smartphones have occupied a major role in the daily lives of many people in the world. These devices essentially function like computers, enabling users to make phone calls, download applications, access the internet, watch movies, take photos, record videos and play games, among other functions.¹

Globally, the growth in mobile broadband subscriptions has increased by 20% annually within the last 5 years and reached 4.192 billion by the end of 2017 with total of 7.7 billion mobile phone subscriptions.² In Oman, there were 4.4 million mobile broadband subscriptions and 6.9 million mobile phone subscriptions by end of 2017.³ With such an increase in the number of smartphone users, there are global concerns about smartphone addiction and its negative consequences. In fact, smartphone addiction is

expected to become one of the most common types of addiction.⁴

Although there are no clinical criteria to diagnose smartphone addiction, many researchers have considered smartphone addiction as a type of behaviour addiction.^{5,6} The features shared between smartphone addiction and behaviour addiction include the following: Preoccupation, withdrawal symptoms, tolerance, loss interest in previous hobbies and entertainment, continued usage despite the potential harm, loss of control over usage and the presence of negative consequences.^{5,7}

Worldwide, the estimated rate of smartphone addiction ranges from 5.57% to 33%, based on data from different countries.⁸ Newer studies have shown higher ranges of smartphone addiction. For example, a study conducted in the Kingdom of Saudi Arabia (KSA) showed that smartphone addiction among university students is 48%.⁴ In Oman, a study among Sultan Qaboos University students found that 26.8% have moderate smartphone addiction levels and 30.8% have high smartphone addiction levels.⁹ Another study in the same population found that 61.8% have moderate smartphone addiction levels and 33.1% have high smartphone addiction levels.⁵ Thus, this high level of smartphone addiction among university students cannot be ignored, as university students are one of the target groups for smartphone makers. In fact, university students are one of the largest consumers of smartphones and are the largest users of the internet.^{10,11}

Many studies that have included students have linked smartphone addiction with low academic performance, poor sleep quality, anxiety, depression, low self-esteem, decreased communication competence, less exercise, neck pain, wrist pain and blurred vision.^{4,12-16}

Due to the increased number of smartphone users in Oman and the possible negative consequences that users can experience, this study aimed to identify the current prevalence of smartphone addiction among Omani university students (using the short version of the smartphone addiction scale (SAS-SV) developed by Kwon et al, in 2013), and the correlation between smartphone addiction and depression.¹⁷

METHODS

This cross-sectional study was conducted in the Higher College of Technology in the Sultanate of Oman. The Higher College of Technology is the second-largest higher education institution in Oman, with more than 12,000 students. It has 8 academic departments, including an English language centre, engineering, information technology, applied sciences, business studies, pharmacy, photography and fashion design.¹⁸

The sample size was calculated based on an anticipated prevalence of 33% (CI: 95%), which revealed a target of

336 participants. Participants were selected by stratified random sampling ensuring representation from all 8 departments proportionate to the number of students in that department. The study included both male and female students at the Higher College of Technology who were Omani, had smartphones, had no chronic medical diseases and were not using any long term medications.

After the approval of the study by the regional research and ethical committee of ministry of health (Oman) a self-reported questionnaire was distributed electronically to the students via Google Forms in January and February 2017. The investigators invited the students who were willing to participate and sent them the link to the form asked them to complete it. The questionnaire contained four main parts: written consent, general geographic information, a validated short version of the smartphone addiction scale (SAS-SV) and a validated Arabic version of the Patient Health Questionnaire-9 (PHQ-9), along with a single question to assess self-assessment of smartphone addiction.

The permission to use the SAS-SV was obtained from the original author. Then, the validated short version of smartphone addiction scale developed by Kwon et al, in 2013 was cross-translated into Arabic, with a back cross-translation into English. This scale has a cut point score for addiction, which is 31 for males and 33 for females. The scale contains ten items that assess daily life disturbances, withdrawal symptoms, cyberspace-oriented relationships, overuse and tolerance in relation to smartphone usage.¹⁷ This scale was validated in South Korea, Spain, France, Italy and Turkey and was found to be valid and reliable (Cronbach's alphas of 0.88 in Spain, 0.90 in France, 0.79 in Italy and between 0.5 to 0.80 in South Korea).^{17,19-21}

To assess depression, the validated Arabic version of PHQ-9 was used. This scale has nine questions: two serving as screening questions and rest assessing the severity of depression. In this study, respondents with depression were divided into the following categories based on their scores: normal (score of less than 10), mild (11 to 15), moderate (16 to 19) and severe (more than 20).^{22,23}

The results were downloaded from Google Forms as a Microsoft Excel spreadsheet. Then, the data were entered and analysed in SPSS program version 22. A descriptive analysis of the categorized variables was presented as proportions, and continuous variables as the mean and standard deviation. The chi-square test was used to study associations.

RESULTS

In total, 500 students were given the link and 431 completed the form, a response rate of 86.2%. Of these, 55 students were excluded, as they did not meet the inclusion criteria; 31 forms had missing data and 24 had

chronic medical diseases, including hypertension, diabetes mellitus, asthma, sickle cell disease, thyroid disorders, migraines and irritable bowel syndrome. The overall number of remaining participants was 376, 34.6% of whom were males and 65.4% of whom were females, with an overall mean age of 20.99 years. The alpha coefficients were calculated for the SAS-SV and the PHQ-9 and were found to be 0.854 and 0.851, consecutively.

More than 80% of the participants had been using smartphones for more than 4 years, and 30% of them had been using smartphones for more than 7 years. Almost half (55.2%) of the participants used smartphones for more than 7 hours per day as shown in figure 1 below.

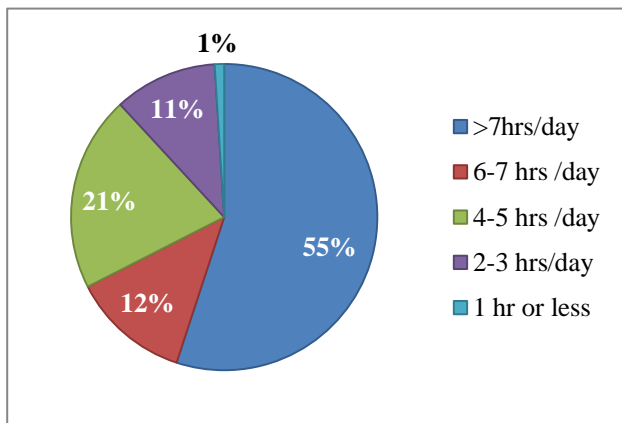


Figure 1: Daily usage of smartphone in hours.

With regard to depression, the study showed that 67.8% of participants had no symptoms of depression, while 17.6% had mild symptoms, 7.7% had moderate symptoms and 6.9% had severe symptoms.

With regard to smartphone addiction levels using the SAS-SV, the study found that 63.8% of the sample was addicted. Of them, 68.4% were females, whereas 31.6% were males. This study addressed the significant differences in addiction between genders using chi-square tests and found gender to be of no significance (p-value 0.430).

Regarding self-assessment for addiction, 50% of those who were addicted, based on SAS-SV scores, were aware that they were addicted to their smartphones, whereas 14.2% were not aware and 35.8% were not sure if they were addicted or not. On the other hand, the 64.4% of participants who were non-addicts based on SV-SAS scores were aware that they were non-addicted to their smartphones. The relation between self-assessment for smartphone addiction and SAS-SV scores was significant (p<0.005).

This study found a significant relation between smartphone addiction and depression. As the total score for depression increased by 1 point, smartphone addiction

scores increased by 0.428 points (p<0.005). The prevalence of smartphone addiction was 54.9% among those who did not have depression, 80.3% in those who had mild depression, 75.9% in those who had moderate depression and 96.2% in those who had severe depression (see figure 2 below.)

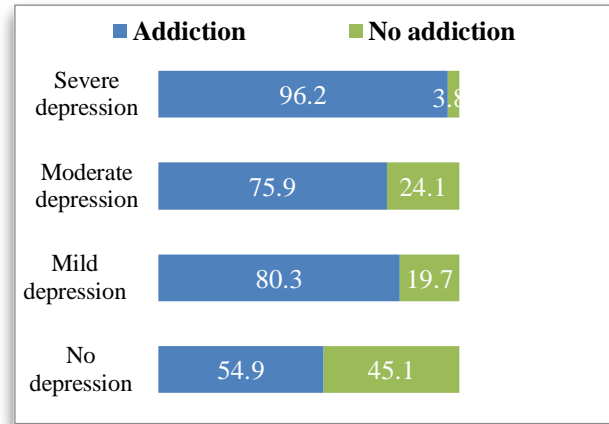


Figure 2: The prevalence of smartphone addiction in relation to depression scores.

DISCUSSION

This study showed that the prevalence of smartphone addiction among the study population using the SAS-SV was 63.8%. This prevalence is higher than those found in Spain (12.5%), France (21.5%) and Switzerland (16.9%).^{15,20} This high prevalence in Oman was also reported in two other local studies that used different scales. One of these studies showed that 26.8% had moderate smartphone addiction and 30.8% had high levels of smartphone addiction.⁹ Another study found that 61.8% of the sample had moderate smartphone addiction, and 33.1% had high levels of smartphone addiction.⁵ Considering the variation in smartphone addiction reported in these studies, it could be that this is related to different scales that were used to assess smartphone addiction and to different target populations and age distributions. In the study that was conducted in Spain and France, the target population was university students and staff, with ages between 18 and 68 years. The mean age was 25.61 years in Spain and 29.11 years in France.²⁰ In the study that was conducted in Switzerland, the majority of the population was below 19 years of age.²⁴ In this study, the mean age was 20.99 years. Some studies reported a negative relation between age and smartphone addiction, such that smartphone addiction showed a decrease with increasing age.²⁵

It is also important to note that in this study, authors excluded those who had no smartphone, but in other studies, this subgroup was included. Another difference is the lengthy usage of smartphones, which have been related in some studies to proposed symptoms of smartphone addiction. In a study done in KSA, it was found that symptoms of smartphone addiction were

greater among those using smartphones for more than four hours per day.⁴ In this study, we found that 88.3% of the sample used their smartphones for four hours and more per day. In addition, 80% of this study population had been using smartphones for more than four years. Both of these factors may be contributing to the high prevalence of smartphone addiction found in this study.

Other possible causes for such high prevalence are that smartphones now are cheaper and have many applications that are used not only for communication but also for entertainment and for learning. In her study in Oman, Dr. AL-Barashi had interviewed students to determine the possible reasons for increased levels of smartphone use among university students, and she found that students are using smartphones to escape from academic pressure, to focus on social relations and academic purposes.⁵

Despite the issues discussed above, this study is the third study that shows a high level of smartphone addiction among Omani university students compared to students in other countries.

The other important aspect of this study was the overall depression rate of 32.2%. This rate is higher than that found in a previous study that was conducted among students at another university in Oman using the same scale (the PHQ-9), which reported the prevalence of depression as 27.7%. However both falls within the international range, which varies from 10% to 44%.²³ Possible reasons for such high levels may include moving to a new stage of life, in which many students are moving away from their original towns and cities to Muscat, the capital of Oman, with a possible lack or reduction in their usual social support and parental supervision, along with increased stress, related to academic performance. It is interesting to consider the nature of this association which is consistent with the findings of other published studies.^{14,15,26-27} As shown on the SAS-SV, those with smartphone addiction symptoms fail to keep to their daily plans, have difficulty concentrating, use their smartphones more than intended, commonly communicate by smartphone and use their smartphones despite their negative consequences. In addition, smartphone addiction is linked to sleep disturbance, anxiety, low academic performance, decreased social interactions and reduced physical activities.^{4,12-16} All of these factors are features of depression. On the other hand, it may be that patients with depression turn to smartphone usage, which then becomes excessive, to cope with their symptoms. Families may use the Family Media Use Plan tool developed by the American Academy of Paediatrics to create Media Use Plans for their children and teenagers.²⁸ Among those who have symptoms of smartphone addiction, psychotherapies such as cognitive behavioural therapy and mindfulness, as well exercise rehabilitation, may be considered.²⁹

There are several limitations in this study. First, although the SAS-SV is one of the suggested tools for the screening and diagnosis of smartphone addiction, there are no clinical criteria for the diagnosis of smartphone addiction. Second, the data are based on self-reported questionnaires. Third, the target population comprise university students; thus, results cannot be generalized to the entire population. Despite these limitations, this study provides valuable evidence that smartphone addiction that correlates positively with depression.

CONCLUSION

This study showed a high level of smartphone addiction based on SAS-SV scores and found a significant positive correlation between smartphone addiction scores and depression scores. This high prevalence is alarming, and action should be considered to address this. Authors suggest the following in order to raise awareness about smartphone addiction. First, as most of the participants have had smartphones since school age, education programmes about the risk of smartphone addiction should be introduced early to school children and their caregivers. Media can play a major role in educating people about the risk of smartphone addiction and its negative consequences. For university students, further research is warranted to understand whether smartphone addiction is a possible cause of depression or depression is a possible cause of smartphone addiction.

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