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Smartphone Addiction Among Students at the Faculty of Medicine and Pharmacy in Fez, Morocco

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Abstract **Original Research Article**

Smartphones are now an indispensable part of everyday life, providing a significant source of information, communication, education and entertainment. However, excessive use or addiction can have harmful effects on the mental and physical health of their users. This is a phenomenon that presents a real and growing public health problem, particularly affecting young people. ***Objective*:** To assess smartphone addiction among students using appropriate tools, and to describe its various negative mental and physical consequences. ***Material and Method:*** This is a descriptive analytical cross-sectional study spread from January to April 2018, on a sample of students from the Faculty of Medicine and Pharmacy of Fez, including all levels of the 2017/2018 academic year. Data were collected anonymously through an online questionnaire, constructed of several sections including the SAS-SV scale. ***Results*:** 265 students responded to our questionnaire. Participants ranged in age from 17 to 32 years, with a sex ratio of 0.43:1. The students ranged in level from first year to 8th year, with a predominance of postgraduate students. A history of psychiatric and somatic disorders was rare. The study revealed that smartphone addiction was detected in 53% of female participants and 45% of male participants, with a total percentage of addiction of 50.94% for both sexes. Psychic signs such as anxiety, loss of control, disturbance and withdrawal were more prevalent than physical signs such as wrist and neck pain. Psychic signs have the particularity of appearing instantaneously or in the short term, unlike somatic signs other than wrist and neck pain, which take longer to develop, as do tumour pathologies and ocular risks, which were not included in our study. ***Conclusion:*** The results obtained from our sample reached the threshold value predictive of smartphone addiction. Awareness of this risk needs to be raised, with recommendations on limiting the daily duration of use.

Keywords: Smartphones Addiction, Psychiatry, Medicine, behavioural addictions.

INTRODUCTION

The widespread availability of smartphones and the gradual improvement in their properties have considerably boosted the frequency of digital content consumption, given their location independence, diversity of use and immediate accessibility. However, excessive use of smartphones can exceed the appropriate threshold and become an addiction that can have harmful effects on mental and physical health [1]. The WHO defines addiction as 'a state of chronic or periodic dependence on substances or behaviours'. In 2008, the UK Post Office coined the term 'Nomophobia' (a contraction of nomobile phone phobia) to describe mobile phone addiction.

The concept of smartphone addiction belongs to the field of behavioural addictions, the distinctive feature of which is that the object of addiction is a behaviour, often an everyday one, practised to excess [2]. The DSM-IV chapter devoted to 'substance-related disorders', which included the diagnostic categories of abuse and dependence, has been replaced in DSM-5 by the chapter 'Substancerelated and addictive disorders'. This new chapter now includes substance use disorders and non-substance addictions, such as pathological gambling (the DSM-IV term, pathological gambling, has been replaced by gambling disorder). Also introduced are diagnoses of cannabis and caffeine withdrawal, which were not present in DSM-IV. Other addictive behaviours, such as addiction to Internet gaming (as opposed to gambling), are included in section 3 of the diagnoses under study,

and require the accumulation of additional clinically valid data before they can be retained. The issue of excessive smartphone use as an addictive disorder is frequently raised and debated, although it is not recognised in international classifications [2].

The small number of questionnaires evaluating this concept is one of the limitations of research in this field. Only one 10-item scale has been validated in the French-speaking (Belgian) population to assess this addiction: the short version of the Smartphone Addiction Scale (SAS) by Kwon *et al*., In addition, research into smartphone addiction does not take into account the potential link between smartphone addiction and Internet addiction, or the type of activities involved [2].

In Morocco, few studies have focused on this phenomenon, which is why it was deemed necessary to conduct this study.

The main aim of this study is to assess smartphone addiction among students at the Faculty of Medicine and Pharmacy in Fez using appropriate tools, and to describe the various negative mental and physical consequences of smartphone addiction.

MATERIAL AND METHOD

1. Type of study

Our study is cross-sectional descriptive analytical spread from January to April 2018, was conducted at the Faculty of Medicine and Pharmacy in Fez.

2. Participants

The target population consists of students at the Faculty of Medicine and Pharmacy of Fez, including all levels of the 2017/2018 academic year.

3. Data collection

The data were collected anonymously through an online questionnaire created using Google forms, constructed of five sections.

The first part is devoted to civil status (age, sex, level of education, marital status, socio-economic level, living arrangements with parents).

The second section aims to determine the patient's medical and surgical history, in order to look for any direct or indirect impact, which may be the cause or consequence of prolonged smartphone use, as well as the potential use of certain drugs, a history of psychiatric illness, a previous consultation with a psychiatrist, the use of psychoactive drugs and the existence of any associated addiction.

Then there is a section on Smartphone use, covering the length of time the Smartphone has been owned, its frequency, peak usage times, the domains and applications most frequently consulted, and accessibility to the Internet network via Wifi or a 3G or 4G mobile connection.

The last part consists of the SAS-SV scale (Smartphone addiction Scale - Short Version): this is a scale developed by Min Kwon's team, consisting of 10 items used to screen for Smartphone addiction, rated from 1 to 6 each (Smartphone addiction is defined as a score greater than or equal to 33 for women and greater than or equal to 31 for men).

The data was entered and coded in Excel. The qualitative variables were described in terms of proportions and the quantitative variables in terms of mean and standard deviation. The test was considered significant when p (significance level) was less than 0.05.

RESULTS

1. Socio-demographic and clinical data

265 students responded to our questionnaire. The ages of the participants ranged from 17 to 32 years, with a sex ratio of 0.43:1. The students ranged in level from first year to 8th year. 85% of the data was entered using a Smartphone. The socio-demographic data are shown in Table 1.

Table 1: Sociodemographic and clinical data

sex	**Man** **Woman**	**30 ,2%** **69,80%**
Level of study	1st cycle 2nd cycle	23,1% 76,9%
Marital status	Bachelor Married	91,30% 8,7%
Habitat with the parents	Yes No	56,20% 43,80%
Socio-economic level	Bottom Means Hight	7,2% 44,90% 47,90%
Surgical medical history	Yes No	56 209
Taking medication	Yes No	41 224

sex	**Man Woman**	**30 ,2% 69,80%**
Consultation with a psychiatrist	Yes No	7,9% 92,10%
Psychiatric History	Yes No	11,7% 88,3%
Taking pshychotropic medication	Yes No	19 246
Associated Addictions	Yes No	7,55% 92,45%

2. Smartphone usage data

- The average duration of smartphone ownership was 6.13 years, with average usage of 6.64 hours per day. Smartphone use was more frequent during the day than at night, and during the week than at weekends.
- The main uses were social networking and instant messaging, with 84.20% and 77% of participants respectively. 46% of participants also used the smartphone for educational purposes. 241 participants (90.90%) have Internet access from their place of residence. 209 (78.90%) participants have 3G/4G internet access from their mobile, compared with only 56 participants who do not.

Results of the SAS-SV scale and analysis of items

The scale covers the following six addictive symptoms: loss of control, disruption of family or school, disregard for consequences, withdrawal, preoccupation and tolerance.

Each item on the scale is associated with an addictive symptom: items 1 and 8 both assess 'loss of control', items 2 and 10 'disruption', items 3 and 7 'disregard for consequences' and items 4 and 5 'withdrawal'.

Considering the thresholds recommended by the authors of this scale (greater than or equal to 33 for women; greater than or equal to 31 for men). The results indicate that smartphone addiction was present in 99 (53%) female participants with an average of 33.8 and 36 (45%) male participants with an average of 29.575, giving a total addiction rate of 50.94% (135). The statistical analysis of the SAS-SV score is presented in Table 2. The test was considered significant when p (significance level) was less than 0.05.

Table 2: Statistical analysis of the SAS -SV score

Variable	**Category**	**Number**	**Percentage**	**Addiction to Smartphones according SAS-SV**	**P-Value**
Age	17-20 years 21-32 years	80 185	30,2% 69,8%	46 34 89 96	0,160
Sex	Male Female	80 185	30 ,2% 69 ,8%	36 44 99 86	0,203
Socio- economic level	Bottom Means High	19 127 119	7,16% 47 ,92% 44 ,90	10 8 70 57 55 65	0, 373
Habitat with parents	Yes No	149 116	56 ,22 43 ,77	82 67 53 63	0,131
Marital status	Single Married	242 23	91 ,3% 8 ,7%	124 117 11 12	0,454
Consultation with a psychiatrist	Yes No	21 244	8 ,6% 91 ,4%	10 11 125 119	0,751
Associeted Addiction	Yes No	20 245	7 ,5% 92 ,5%	8 12 127 118	0,216
Internet place of residence	Yes No	241 24	90,94% 9,06%	124 117 11 13	0 ,600
Connexion 3G/4G	Yes No	209 56	78 ,86% 21,13%	110 99 25 31	0,288

After analysing the various results obtained in this table, we come to the following conclusions about the profile of participants affected by smartphone addiction: The age group between 17 and 20 is the most affected by addiction. Female participants have a high rate of addiction despite the high threshold (> or = 33) for talking about addiction in the SAS-SV scale scores compared with male participants.

Students from families with an average socio-economic level and those living with their parents seem

to be the most affected by smartphone addiction. In addition, the rate of addiction is higher among single students than married students.

Most of those with an addiction had never experienced psychiatric symptoms requiring consultation with a psychiatrist, and they stated that they did not have any other associated addiction.

Finally, most of the participants who were addicted to their smartphones had internet access in their place of residence, and via 3G/4G. However, the Chi2 P-value tests show non-statistically significant values for the different variables.

DISCUSSION

The aim of this study was to assess Smartphone addiction in students at the Faculty of Medicine, Fez, using the SAS-SV Scale. We recruited 265 students, the age of the participants was between 17 and 32 years with a sex ratio of 0.43. Students in their 7th year were the most represented. Students in 7th year were the most represented.

The results indicate that smartphone addiction was present in 99 (53%) female participants with a mean of 33.8 and a standard deviation of 11.37 and 36 (45%) male participants with a mean of 29.575 and a standard deviation of 9.59, for a total addiction rate of 50.94% (135). The female participants had a more significant result for smartphone addiction than the male participants, given the number of female students who responded randomly to the questionnaire, which explains why female students use their smartphones more than male students. The main uses were for social networking and instant messaging, as well as for educational purposes. Participants who said they spent the most hours in front of their smartphone screen scored the highest on the SAS-SV scale.

However, these results do not corroborate those of a survey of a large sample of dental students in Saudi Arabia, 'Qaseem Private Colleges, Buraidah' [3]. This study used the same SAS-SV scale, and concluded that smartphone addiction was found in 136 (71.9%) of 189 students. The findings of this study revealed that high stress levels, low physical activity, higher body mass index (BMI), longer duration of phone use, higher frequency of use, shorter time to first use of smartphone in the morning and social networking sites (SNS) were significantly associated with smartphone addiction. Compared with our study, we found a fairly similar rate of addiction, which was 50.94% for both sexes combined. However, the rate of addiction by gender differed as 82 (81.18%) of male students were found to be addicted to smartphones compared to 54 (61.36%) of female students. This may be due to the size of the sample and the particular nature of Saudi society, which limits access to new technologies for women.

In 2015, another study was carried out in Switzerland on a sample of 1,519 students from 127 classes, to investigate smartphone addiction among students. This study confirmed the effectiveness of the SAS-SV scale as a valid tool for assessing smartphone addiction. The study revealed an addiction rate of 14.1% among male students, and 19.4% among female students, with a total rate of 16.9%. Other data reported, such as the longest duration of smartphone use was in the morning just a short period after waking up and social networking was the most used function. Smartphone addiction was more common among younger adolescents (aged 15 to 16) than among young adults (aged 19 and over). People reporting lower levels of physical activity and those reporting higher levels of stress were more associated with smartphone addiction. Alcohol and tobacco consumption were not associated with Smartphone addiction. Another study in 2015 sought to validate a Spanish and French version of SAS-SV 'Short version of the smartphone addiction scale adapted to Spanish and French: Towards a cross-cultural research in problematic mobile phone us' [5].

The data was collected via online surveys from 281 and 144 volunteer participants in the two countries, aged over 18 and recruited from universities. The results indicated excellent reliability and very good validity. The results showed that the prevalence of potential excessive smartphone use was 12.5% for Spanish speakers and 21.5% for French-speaking Belgians. The scale showed that at least 60% of excessive users had endorsed withdrawal and tolerance symptoms in both countries, although the proposed addiction symptomatology does not cover the entire group of estimated excessive users and with cultural differences. Other studies have also attempted to investigate the subject using other scales, such as the study 'Smartphone addiction among university students in Riyadh, Saudi Arabia' [6] on a sample of 2367. This is a study of the relationship between smartphone addiction and other addictions and physical and mental effects, without giving an addiction rate.

Another study in India, 'Assessment of Smartphone Addiction in Indian Adolescents: A Mixed Method Study by Systematic-review and Meta-analysis Approach (2014)' [7], based on 45 'eligible' studies, found that smartphone addiction among Indians was between 39% and 44%. In 'Prevalence of problematic mobile phone use in British adolescents' [8], carried out among 1,026 participants, analysis of the results found that 10% had an addiction problem. In the study 'Spanish adaptation of the "Mobile Phone Problem Use Scale for adolescent population (2012)" [9] involving 1,132 participants, analysis of the results found that 14.8% had an addiction problem.

Our results also highlight the link between smartphone addiction and somatic and psychological clinical signs. Psychological signs are reported by the

loss of control items in more than 50% of participants. We also note the disturbance and loss of concentration resulting from the withdrawal effect, which more than 26% of participants strongly agreed with. Half the participants felt anxious about being separated from their mobile phones. Signs of disregard for the consequences were also reported. These results are consistent with those of Alkhateeb *et al*., [10], who showed that higher levels of smartphone use and poor sleep quality predict depression and anxiety, which in turn alter sleep quality.

With regard to somatic clinical signs assessed by the SAS-SV scale, around 28% of participants reported pain of varying intensity following prolonged use of their mobile devices. The literature describes several types of physical damage (musculoskeletal disorders, altered sleep patterns with more frequent insomnia, reduced sperm mobility and vitality, tumour risk, etc.) [11-13].

These results of addiction, which differ from one study to another, are the consequences of cultural differences between different nations and the difference in perceptions of the Smartphone as a fairly new tool in the culture especially of underdeveloped countries.

CONCLUSION

Smartphone addiction is an increasingly common problem, yet remains poorly understood by the general public and healthcare professionals. Our work is part of this drive to gain a better understanding of this disorder, whose inclusion in the field of addictions is still being debated. At present, the only effective way of combating nomophobia is through prevention and awareness-raising.

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