

The smartphone, new mental health challenge: prevalence of addiction and usage practices among Moroccan nursing students

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Abstract

Smartphones are now omnipresent in the daily lives of young people, particularly university students. However, excessive use of smartphones could create an addiction. This study aims to describe smartphone use practices by Moroccan nursing students and determine the prevalence and factors associated with smartphone addiction. The survey was conducted among Moroccan nursing students. Data was collected from 1067 smartphone users, through an online structured questionnaire. This questionnaire is divided into three parts: a) identification of participants, b) the SAS-SV scale and c) the use of the smartphone. The prevalence of smartphone addiction is 34.9%, 45.1% in males, and 32.3% in females. The average number of hours per day spent using the mobile phone was about 6.7 hours. 44.9% believe that the use of the smartphone has a negative effect on their state of health. In this study, the factors associated with smartphone addiction are gender ($p=0.003$), duration of use ($p=0.000$) as well as times of use in the morning ($p=0.02$) and evening ($p=0.01$). This study revealed a significant prevalence of smartphone addiction among the participants. It is therefore necessary to plan broader awareness programs on the possible early warnings and potential consequences of smartphone addiction.

Keywords: Smartphone, Addiction, Usage, Nursing student, Morocco.

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1. Background

The number of smartphone users globally is projected to reach 5.22 billion, being occupied by 66.6% of the worldwide population and this will grow by one hundred million in the next years [1]. Like in countless Western countries, 96.2% of the Moroccan people have a mobile phone. In addition, 98.45% of the youth population aged 15-24 years have one [2]. Smartphones are popular due to their usefulness and appropriateness for user requirements. But, there are also harmful effects of their application [3]. The smartphone is a handheld device widely used for academic and social activities. Yet, it is not without risks and addictive behaviours; the most researched one being smartphone addiction [4].

To the best of our knowledge, there are few studies on smartphone addiction and none in Morocco. Moreover, there is virtually no literature on smartphone addiction among nursing students in Morocco and this one will be the first to carry out using a sample of over 1000 participants. In this perspective, the current research intends to investigate the pattern of smartphone use among Moroccan nursing students and estimate the prevalence and predictors for smartphone addiction.

2. Methods

2.1. Study type and setting

This is a cross-sectional survey, carried out at the Higher Institute of Nursing Professions and Health Techniques in Fez, Meknes and Taza (Morocco) in 2023.

2.2. Population and sampling

The study group includes all the students at three schools, all grades and all programs considered. Convenience sampling has been approached considering accessibility. The fact that this sampling approach yielded these respondents can be justified by its simplicity and speed, although it should always be remembered that no method is free from limitations (eg, the sample may not be representative of the entire population to which recruiters want to generalize our results).

Inclusion criteria were the consent to voluntarily participate in the study, ownership of a smartphone and age between 17–24 years old.

The minimum sample size to include was calculated by the formula: $N = \frac{Z\alpha^2 \times p \times (1-p)}{i^2}$

Where:

- $Z\alpha$ fixed at a value of 1.96 for a confidence interval of 95%
- p : prevalence value set at 50% for the current study
- i : the absolute error which was 3%

The minimum sample size to be achieved is therefore $N = 1067$.

2.3. Procedures

Data was collected through the use of an online questionnaire. Participants were sent a link with an attached text explaining the aim of the research and asking for participation. The questionnaire had been constructed based on literature review and other questionnaires. It consists of 17 items, with closed and open questions and a set of 10 items on the SAS-SV. It includes three sections: a) identification of participants, b) the SAS-SV scale and c) smartphone use.

The SAS-SV is a measurement instrument to assess the risk of smartphone addiction. It is composed of 10 items rated on a 6-point Likert scale (from «I strongly disagree» to «I strongly agree», with 1 to 6 scales). On a 10-60 full scale score. Addiction status is recorded as frequency of use (abuse scores) and is determined by sex-specific cutoffs: 31 and 33 (on a scale ranging from 0 to 60 for abuse scores) were used to categorize male and female users, respectively. Symptomatology was assessed with a procedure already used in other researches. Thus, the pointing of 4 and over of each item as symptoms points between 1 to 6. For two-item symptoms an average of the two was used. For each symptom, items or pairs are compared: loss of control (1, 8), interruption (2, 10), neglecting consequences (3, 7), withdrawal (4,5) as well as preoccupation (6) and tolerance (9 [5]).

2.4. Data analysis

Categorical data are expressed as the frequency (%) and continuous ones as the mean \pm standard deviation (SD). The groups were compared using the Pearson chi-square test after and Student test for categorical and continuous variables, respectively. The variables kept in multivariate analysis were those that had a relationship with p value ≤ 0.2 in univariate analysis. Level of significance was $p \leq 0.05$. Results were evaluated with computer software package may IBM SPSS (version 26.0).

2.5. Ethics

The aims of the study were briefly explained to the subjects in the investigation. The participants were told that participation was voluntary, their responses were completely anonymous and that they could refuse to complete the questionnaire if they so desired. The privacy of the participants and confidentiality were also protected during all phases of the study. Moreover, all participants were informed about the survey and obtained a written consent from them. The design, and the process of the study have been approved by the ethics committee of The Hassan II University Hospital of Fez, under the N° 18/22.

3. Results

3.1. Description of study participants

A total of 1095 participants provided responses, 1.8% of which did not have a smartphone ($n=20$) and 0.7% were over 24 years old ($n=8$). Thus, in total, 1067 students were included in the study. 212 (20,0 %) were male, while 845 (80,0 %) were female. The mean age was 19.69 ± 1.48 years. 2.5% of respondents were international students. In addition, 64.1% participants live with their parents. 92.6% of the study participants come from families with a medium to high economic level, while 7.4% come from families with a low economic level. In another sense, 1.4% of respondents are smokers. In addition, 2.4% specify that they suffer from psychological disorders. (Table 1)

3.2. Smartphone addiction among study participants

Of the 1067 participants, 34.9% (95% CI: 32.0 – 37.8%) were identified as a group with a smartphone addiction and 65.1% were classified as a normal user group according to their scores on the SAS-SV. Moreover, the prevalence of smartphone addiction is 45.1% (95% CI: 38.4 - 51.8%) of males with an average score equal to 29.81, and 32.3% (95% CI: 29.1 – 35.5%) in females whose average score is 29.44. (Figure 1)

In addition, the prevalence of addiction of male students were found to be statistically significantly higher than those of female students ($p=0.003$). Furthermore, the present study did not highlighted a significant association between tobacco consumption and smartphone addiction. Also, in this study, there is not a statistically significant relationship between the history of psychological disorders and smartphone addiction ($p > 0.05$).

3.3. SAS-SV items analysis in addicted participants

Included in the addicted participants, the mean scores of Item 4 (Won't be able to stand not having a smartphone) and Item 5 (Feeling impatient and fretful when I am not holding) were highest, followed by those of Item 3 (Feeling pain in wrist/back neck while using smartphone) and Item 2 (Having a hard time concentrating class / when doing assignments or works because of use of smartphones). (Table 2)

3.4. SAS-SV symptoms

The most common symptom was "Tolerance" with a frequency of 67.2%, followed by the symptoms of "Preoccupation" and "Withdrawal" with a frequency of 61.3% and 58.3% respectively, while the least common symptom was "Disregard for consequences" (36.3%). In girls, the frequency of all symptoms was higher compared to their frequency in boys. (Table 3)

3.5. Smartphone use practices by study participants

40.3% of respondents have owned a smartphone for more than 5 years and 52.7% have owned it for between 2 and 5 years with a significant association with smartphone addiction in the univariate analysis ($p=0.02$). 46.5% acquired it at an age of less than or equal to 14 years ($p > 0.05$). In addition, smartphone addiction was significantly associated with the duration of use per day ($p=0.000$) and the average number of hours per day spent using the mobile phone was about 6.7 ± 4.13 with an average of 6.5 hours for participants without smartphone addiction and 7.8 hours for participants addicted to smartphones. 54.5% of participants always have access to the internet on their smartphone and only 0.3% never have access to the internet. (Table 4)

Moreover, 51.6% of respondents consult their smartphone within 5 minutes of waking up, while only 32.1% wait more than an hour to consult it. Similarly, in the evening, 63.6% of participants put down their phone just before going to sleep and only 8.2% put it down more than an hour before going to sleep. These usage practices are significantly associated with the smartphone addiction with a $p=0.02$ and $p=0.01$ respectively. (Table 5)

The respondents were asked to select two contents of a smartphone that they used most frequently. As evident from Table 5, 84.6% of respondents use social networks, 72.1% use the smartphone for learning purposes, 48.9% use it mainly for to make and receive calls, 35.6% use it to take photos and videos, 16% for games and only 15% use their smartphone to texting messages.

3.6. Negative effects of smartphone use on health

Among the participants in the study, 44.9% believe that the use of the smartphone has a negative effect on their state of health, 40% suffer from sleep disorders, 28.3% have vision disorders, and 11% feel anxiety and stress, while 10.9% complain of fatigue and difficulty concentrating. (Table 6)

3.7. Factors associated with smartphone addiction

All the correlates of smartphone addiction in univariate analysis are listed in table 7 and non-influential factors of smartphone addiction through multivariate analysis is shown in table 8.

4. Discussion

Regarding participant addiction to the smartphone, 34.9% is its prevalence and the average achieved score for this factor of SIS was 29.51. Prevalence of smartphone addiction presented by this study is greater than* other studies with the same scale. Therefore, the addiction rate of Turkish Medical and Nursing School Students was 31.89% for smartphone[6]. However, the prevalence of smartphone dependence in this study remains lower than that reported in the past. In that line, the prevalence rate of smartphone addiction among university students in Ghana was 59.3% [4]. Resolution The frequency of smartphone addiction was 69.8% among the university students in Cameroon [7]. Similarly, the prevalence rate among nurses in India was 72.6 % [1]. Additionally, in another study conducted in Turkey among medical and nursing students the mean total SAS-SV score was 31.89 ± 9.90 [6].

Analyzing the present study, there was an association found between smartphone addiction and gender which was significant. Hence, smartphone addiction and male students' SAS-SV mean scores were higher than those of female students. Likewise, prevalence rates of smartphone addiction were found to be higher among male than female university students in some studies [8]. Furthermore, unlike our research, no significant relationship between smartphone use and gender was observed in a study of university students in Pakistan [9]. Also, In another Indian study on nursing students there was no statistically significant correlation between smartphone addiction and gender [1]. Smartphone addiction and gender Also, a research among university students in Cameroun revealed that there was a significant relationship between smartphone addiction and gender [7].

In this study, the most common symptom was "Tolerance", which agrees with the results of a study carried out in Morocco [10]. We note that even if smartphone addiction is higher in boys than in girls, the symptoms of this are more marked in girls than in boys.

When the association between the age of participants and the SAS-SV total scores was examined, a statistically non-significant, negative ($p > 0.05$) was observed probably because the participants belong to the same age group (17-24 years). However, a study conducted in Ghana among university students revealed high levels of smartphone addiction among participants, with significant differences according to age [4].

Moreover, 40.3% of respondents have owned a smartphone for more than 5 years. In this regard, a study conducted among young Turkish adults showed that 85.6% of participants had been using a smartphone for at least three years [11].

Regarding the duration of use of the smartphone per day, the study participants use their smartphones on average 6.7 ± 4.1 hours a day with a statistically significant association to smartphone addiction. Furthermore, a study conducted among nursing students in Albania revealed that 48.1% of participants used smartphones between 4 and 6 hours per day [12]. In addition, a study conducted in Turkey on a sample including medical and nursing students showed that participants used their smartphones for an average of 5.07 ± 3.32 hours per day significantly associated with smartphone addiction [6]. Nevertheless, these results remain superior to those obtained in another study conducted on nursing students in India, which revealed that the majority of participants used their smartphones for less than two hours a day [1].

With regard to the grounds for using the smartphone, 84.6% of respondents use social networks. This is in agreement with a study of nursing students in Egypt for whom the main reason for using the smartphone was social networks [13]. Also, for participants in a study conducted in Turkey among medical and nursing students, consulting social networks was the main reason for using their smartphones [6]. Similarly, a study conducted among nursing students in India revealed that the majority of participants used their smartphones primarily for entertainment, and that WhatsApp was the most frequently used application by almost all participants [1].

Also, 51.6% of respondents consult their smartphone within 5 minutes of waking up and 63.6% of participants in this study put down their phone just before going to sleep while 14% fall asleep while using it. Furthermore, in the present study a significant association was highlighted of smartphone addiction with the time of its first use in the evening and the time of its installation in the evening. Furthermore, the results of a study among freshmen medical students in China revealed a significant correlation between smartphone addiction and smartphone use before sleep [14].

On another angle, 44.8% of the participants in our study perceive that the use of the smartphone has negative effects on their state of health. These results reveal that study participants are aware that the misuse and excessive use of smartphones carries associated risks and negative health consequences. Similarly, In a study conducted in Turkey among medical and nursing students, 39.1% of participants reported suffering from health problems related to smartphone use [6].

Similarly, findings of the current study has also emphasized on a significant relationship between the presence of some of health problems and addiction to smartphone ($p < 0.05$). And, with this group, 40% have sleep disturbances. In fact similar findings were observed 52 among Indian nursing students in which the prevalence of sleep disorders was 22% [1].

In addition, 11 percent experience anxiety and stress. In addition, a study conducted on Moroccan nursing students demonstrated that the stress was common among students [15].

Furthermore, 28.3% of the participants in this study presented visual impairment. These findings are in agreement with a previous Indian study conducted on nursing students which found that 27% of the participants suffered from eye complaints [1].

5. Conclusion

All in all, this study investigated a novel and increasingly common phenomenon: smartphone addiction among young nursing students. Very few studies have addressed this issue, despite the escalating adverse effects of this addiction on young people's lives and future. Thus, the current investigation, aiming to characterize the usage of smartphones among a sample of young Moroccan nursing students and estimate how many suffer from addiction to smartphone in this vulnerable group offers a substantial contribution for science in this domain. Conclusion This research revealed that nursing students are vulnerable to smartphone addiction which has adverse effects on sleep and the different psychological aspects of the young students. Results of this present study indicated that larger awareness programs concerning early warnings and possible outcomes of smartphone addiction should be conducted for the young ones.

Indeed, nursing students being future health professionals must be a model for patients and for young people in general. In addition, their future profession requires an excellent lifestyle to ensure quality care and for better professional development.

This study is not without limitation. In addition, the cross-sectional design of the survey prevents causality from being inferred. It is important that future research examines these causal links with longitudinal studies and explores potential mediating factors.

A further limitation of this research is that it relied solely on self-reported answers. Smartphone habits and the existence about negative health issues were measured through self-reporting from participants, which could lead to measurement bias. Participants may have under- or overreported their behavior as a result of measurement error or social desirability. Thus, the integration of both self-reports and objective measures would be appropriate.

Moreover, our analysis was one of associations. Nevertheless, further sophisticated statistical approach should be taken in future.

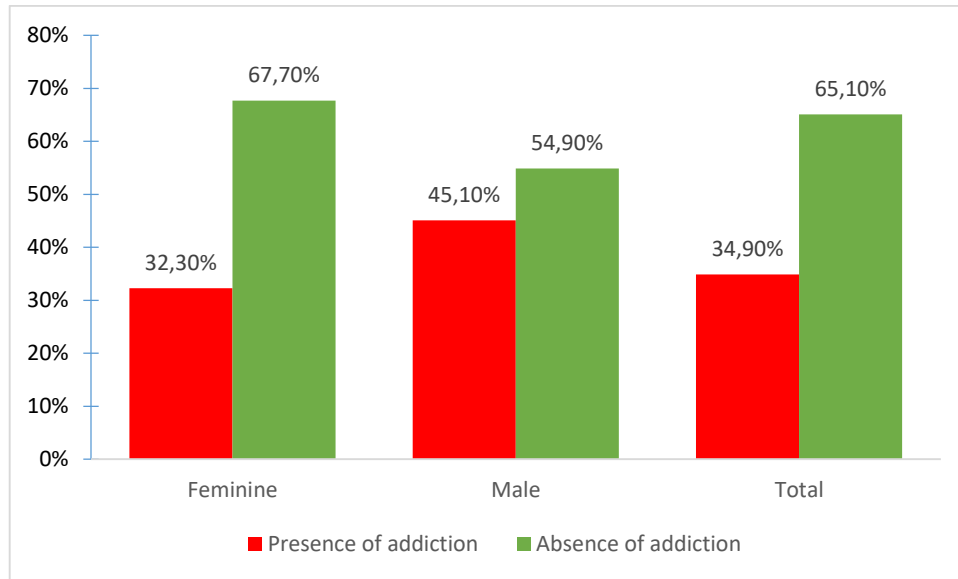
Nursing students, the future healthcare professionals, must be role models for patients and young people in general. Furthermore, their future profession demands a healthy lifestyle to ensure quality care and optimal professional development. Therefore, it is crucial to properly inform students about the risks associated with smartphone use so they can take precautions against addictive use of these devices.

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Figure 1: Total prevalence of smartphone addiction and prevalence in relation to sex according to the SAS-SV²

² Smartphone Addiction Scale- Short Version



Comment: The prevalence of smartphone addiction is 34.9%, 45.1% of males and 32.3% females.

Table 1: Description of sample characteristics and addiction score

Characteristics	Mean	SD ³	
Age (year)	19.6	1.4	
Characteristics	n	%	Score of smartphone addiction Mean± SD
Sex			
Male	213	20.0	29.81± 8.97
Female	854	80.0	29.44± 9.82
Nationality			
Moroccan	1039	97.5	29.53± 9.61
Foreign	27	2.5	28.26± 10.67
Residence with parents			
Yes	683	64.1	29.62± 9.97
No	383	35.9	29.27± 9.03
Economic level			
Low	78	7.4	31.15± 11.15
Medium to high	988	92.6	29.36± 9.51
Smokers			
Yes	14	1.4	31.93± 12.09
No	1052	98.6	29.46± 9.61
Psychological disorders			
Yes	25	2.4	34.84± 12.22
No	1041	97.6	29.37± 9.54

Comment: 80.0% of the study participants were female. 2.5% were international students. 64.1% live with their parents. 92.6% come from families with a medium to high economic level. 1.4% are smokers. 2.4% suffer from psychological disorders.

³ Standard deviation

Table 2: SAS-SV items results in addicted participants

	Mean	SD
1- Item 1 (loss of control)	4.06	1.55
2- Item 2 (disruptions)	3.64	1.66
3- Item 3 (disregard for consequences)	3.62	1.68
4- Item 4 (withdrawal)	4.30	1.60
5- Item 5 (withdrawal)	4.28	1.50
6- Item 6 (preoccupation)	3.83	1.52
7- Item 7 (disregard for consequences)	3.98	1.49
8- Item 8 (loss of control)	4.17	1.42
9- Item 9 (tolerance)	4.05	1.54
10- Item 10 (disruptions)	3.86	1.56

Comment: Item 4 and Item 5 had the highest scores among addicted participants with an average of 4.30 and 4.28 successively

Table 3: Symptoms analysis in SAS-SV among addicted participants

Symptoms	Total		Females		Males		χ^2 ⁴	<i>p</i> ⁵
	n	(%)	n	(%)	n	(%)		
Symptom 1(Loss of control)	164	44.1	125	45.3	39	40.6	0.62	0.42
Symptom 2 (Disruptions)	142	38.2	111	40.2	31	32.3	1.89	0.16
Symptom 3 (Disregard for consequences)	135	36.3	107	38.8	28	29.2	2.84	0.09
Symptom 4 (Withdrawal)	217	58.3	176	63.8	41	42.2	12.99	0.000
Symptom 5 (Preoccupation)	228	61.3	170	61.6	58	60.4	0.04	0.83
Symptom 6 (Tolerance)	250	67.2	191	69.2	59	61.5	1.93	0.16
Symptoms 4 and 6 simultaneously	159	42.7	133	48.2	26	27.1	12.96	0.000
Symptoms 4, 6 and 1 simultaneously	84	22.6	71	25.7	13	13.5	6.04	0.01
Symptoms 4, 6 and 2 simultaneously	82	22.0	69	25.0	13	13.5	5.44	0.02
Symptoms 4, 6 and 3 simultaneously	74	19.9	64	23.2	10	10.4	7.29	0.000
Symptoms 4, 6 and 5 simultaneously	113	30.4	92	33.3	21	21.9	4.42	0.03
From two to five symptoms simultaneously	316	84.9	242	87.7	74	77.1	6.25	0.01
From four to six symptoms simultaneously	130	34.9	104	37.7	26	27.1	3.51	0.06

Comment: “Tolerance” was the most common symptom with a frequency of 67.2% followed by the symptoms of “Preoccupation” with a frequency of 61.3%.

⁴ Chi- squared test

⁵ *P* value

Table 4: Smartphone ownership time

	n	%	Score of smartphone addiction Mean± SD
Smartphone ownership length			
> 5 years	423	40.3	30.34± 10.44
2- 5 years	553	52.7	28.92± 9.04
≤ 1 year	73	7.0	29.14± 8.80
Smartphone acquisition age			
≤ 11 years	89	8.5	31.27±10.44
12- 14 years	399	38.0	29.44±9.85
15- 17 years	427	40.7	29.13±9.23
≥ 18 years	134	12.8	29.78±9.62

Comment: 40.3% have owned a smartphone for more than 5 years and 52.7% have owned it for between 2 and 5 years. 46.5% acquired a smartphone at an age of less than or equal to 14 years.

Table 5: Smartphone use practices

	Mean	SD
Duration of use per day (hours)	6.7	4.1
	n	%
Internet access		
Never	3	0.3
Sometimes	131	12.3
Often	351	32.9
Always	582	54.5
Smartphone consultation in the morning		
Less than 5 minutes after wake up	550	51.6
In the hour following wak up	173	16.3
More than an hour after waking up	342	32.1
Put down the phone in the evening		
I sleep using it	149	14.0
Just before sleeping	679	63.6
About an hour before sleep	152	14.2
More than an hour before sleep	87	8.2
The most frequent uses of the smartphone*		
Social networks	903	84.6
Learning	788	72.1
Calls	522	48.9
Photos and videos	379	35.6
Games	172	16.1
Messaging	160	15.0

*Multiple responses

Comment: The average number of hours per day spent using the mobile phone was about 6.7. 54.5% of participants always have access to the internet on their smartphone. 51.6% of respondents consult their smartphone within 5 minutes of waking up. 63.6% of participants put down their phone just before going to sleep.

Table 6: Participant-reported negative effects of smartphone use on health

	n	%	Score of smartphone addiction Mean± SD
Presence of negative effects			
Yes	478	44.9	31.80± 10.23
No	587	55.1	27.66± 8.74
Negative effects of the smartphone use*			
Sleep disorders	426	40.0	30.52± 9.93
Eye disorders	301	28.3	31.35± 10.46
Stress and anxiety	117	11.0	32.93± 10.35
Concentration problems	116	10.9	34.21± 9.92

*Multiple responses

Comment: 44.9% believe that the use of the smartphone has a negative effect on their state of health, 40% have sleep disorders, 28.3% suffer from vision disorders, and 11% feel anxiety and stress, while 10.9% complain of fatigue and difficulty concentrating.

Table 7: Factors associated with smartphone addiction: univariate analysis

	Smartphone addiction	Not smartphone addiction	χ^2	p
Sex			12.20	0.000
Male	45.1%	54.9%		
Feminine	32.3%	67.7%		
Origin			0.06	0.8
Moroccan	34.7%	65.3%		
Foreign	37.0%	63.0%		
Residence with parents			0.33	0.56
Yes	35.4%	64.6%		
No	33.7%	66.3%		
Economic level			3.84	0.05
Low	44.9%	55.1%		
Medium to high	34.0%	66.0%		
Smokers			5.43	0.02
Yes	64.3%	35.7%		
No	34.4%	65.5%		
Psychological disorders			5.06	0.02
Yes	56.0%	44.0%		
No	34.3%	65.7%		
Smartphone ownership time			7.34	0.02
> 5 years	39.7%	60.3%		
2- 5 years	31.8%	68.2%		
≤ 1 year	30.1%	69.9%		
Smartphone acquisition age			3.73	0.29
≤ 11 year	43.8%	56.2%		
12- 14 years	35.1%	64.9%		
15- 17 years	33.3%	66.7%		
≥ 18 years	33.6%	66.4%		
Duration of use per day			27.62	0.000
≥ 4 hours	38.7%	61.3%		
< 4 hours	18.4%	81.6%		
Smartphone consultation in the morning			12.36	0.002
≤5 minutes of waking up	39.6%	60.4%		
1 hour after waking up	32.4%	67.6%		
>1 hour after waking up	28.4%	71.6%		
Put down the phone in the evening			14.27	0.003
I sleep using it	45.0%	55.0%		
Just before sleeping	35.5%	64.5%		

About an hour before sleep	25.0%	75.0%
> 1h before sleep	29.9%	70.1%

Comment: The prevalence of addiction of male students are significantly higher than those of female students. There is a significant association between tobacco consumption and smartphone addiction. The history of psychological disorders and smartphone addiction are significantly associated. Duration of ownership is significantly associated with smartphone addiction. There is an association between smartphone addiction and the practices of its use during the morning and evening.

Table 8: Factors associated with smartphone addiction: multivariate analysis

	<i>OR (95 % CI)</i>	<i>p''</i>
Sex	1.67 (1.19- 2.33)	0.003
Male		
Feminine		
Economic level	0.75 (0.45- 1.25)	0.27
Low		
Medium to high		
Smokers	1.99 (0.56- 7.09)	0.29
Yes		
No		
Psychological disorders	1.83 (0.79- 4.20)	0.16
Yes		
No		
Smartphone ownership time	1.18 (0.94-1.47)	0.14
> 5 years		
2- 5 years		
≤ 1 year		
Duration of use per day	2.71(1.79-4.10)	0.000
≥ 4 hours		
< 4 hours		
Smartphone consultation in the morning	0.84 (0.72- 0.98)	0.02
≤5 minutes of waking up		
1 hour after waking up		
>1 hour after waking up		
Put down the phone in the evening	0.78 (0.64- 0.94)	0.01
I sleep using it		
Just before sleeping		
About an hour before sleep		
> 1h before sleep		

Comment: According to the final model, the independently significant factors associated with smartphone addiction are gender (OR= 1.67; 95 % CI: 1.19- 2.33; $p= 0.003$), daily usage time (OR= 2.71; 95 % CI: 1.79-4.10; $p= 0.000$), first use of the smartphone in the morning (OR= 0.84; 95 % CI: 0.72- 0.98; $p= 0.02$) and putting it down in the evening (OR= 0.78; 95 % CI: 0.64- 0.94; $p= 0.01$).

Figure 2: Prevalence of smartphone addiction

