

# Association Between Cellphone Overuse and Depression Among Medical College Students in Hamadan, West of Iran

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## Abstract

**Background:** Its contact the main reason for the use of mobile phones is especially students living in dormitories. As well as students to communicate in cyber space than in real space of communication are interested, this can threaten their mental health.

**Objectives:** The current study aimed at exploring the amount of mobile phone overuse and determining the association between mobile phone overuse and depression among medical college students in Hamadan, West of Iran.

**Methods:** The current cross sectional study was conducted through the stratified sampling method on 300 students residing in dormitories of Hamadan University of Medical Sciences in 2016. The subjects completed a self-administered questionnaire including demographic characteristics, the cellphone overuse scale (COS), and the Beck depression inventory. Data were analyzed with SPSS version 16 using the linear regression analysis, independent t test, and one-way ANOVA.

**Results:** The results showed that 45% of the students use their mobile phone for 3 to 6 hours per day; 32% had excessive use of cellphone. Similarly, 22% of participants had minor depression and 20.7% of the students had moderate depression. Also, the results showed that cellphone overuse significantly promoted depression ( $\beta = 0.351$ ,  $P < 0.001$ ).

**Conclusions:** According to the obtained results, excessive users of cellphones were more depressed. It seems that living in student dormitories provides better conditions for mental disorders. Therefore, it seems necessary to consider the psychological problems of dormitory students.

**Keywords:** Cellphones, Depression, Students, Medical

## 1. Background

Today, communication with social media owes to the use of cellphone, which is considered as the most pervasive and dominant culture in worldwide communities. In other words, cellphone constitutes a significant part of people's life, especially young people (1) in such a way that the number of mobile lines has surpassed the population in some countries (2). Apart from being a necessity, the use of such communicating instruments become as a habit, especially among the young population (3). Rakow and Navarro indicated in their study that use of cellphone among young people has some properties that distinguish it from the way it is used by adults. For example, text message overuse, lengthy phone call conversation, and excessive use of games and entertainment are the components of the culture of cellphone use by young people. Unfortu-

nately, cellphones, as a means of communication, are often ignored in investigations (4).

Since communication is the main reason for cellphone overuse, especially among campus students, cellphone-based internet applications (such as Viber, WhatsApp, Tango, LINE, WeChat, etc.) grew rapidly in a short while and became increasingly popular among students. This issue can threaten the mental health of students and lead to the incidence of disorders such as depression, social isolation, identity disorder, reduced feelings, and loss of self-confidence (5). According to the research findings, there is a relationship between cellphone overuse and psychological symptoms (6). Mental health is one of the important dimensions of students' health (7). However, depression, which threatens mental health, is unfortunately the 4th most common disease in the current world. According to the figures released by the World health organization

(WHO), 340 million people worldwide have depression. In this connection, it is predicted that this disease becomes the 2nd most common disease in the world by 2020 (8). In this regard, the majority of researchers studying the potential harms of cellphones refer to the psychological consequences of cellphone use in addition to its physical aspects (9).

Students are at risk of a variety of psychological pressures due to academic problems, competition with other students, tests, financial problems and difficulties, job finding, and a large volume of courses. However, these problems are more intensely available in campus students as they are far from home and family (10-12).

## 2. Objectives

Therefore, the current study aimed at determining the amount of cellphone use and its association with depression in campus students at Hamadan University of Medical Sciences in 2016.

## 3. Methods

### 3.1. Sample and Procedure

The current descriptive-analytical study was performed cross sectionally on 300 college students living in dormitories at the Hamadan University of Medical Sciences. Participants were recruited through stratified sampling method from October to November 2016. There are 8 dormitories in the university divided into female (6 dormitories) and male (2 dormitories) sections. Four dormitories were randomly selected from the 2 sections using the random numbers table (3 out of 6 in section one, and 1 out of 2 in section two). From each of the selected dormitories, 80 students were randomly selected from the male and female students. Totally, 320 students were selected, but only 300 subjects completed the study protocol.

Data were collected using anonymous questionnaires by 2 well-trained interviewers. The researchers introduced themselves to the participants and explained the research objectives. They informed the participants that all questionnaires were confidential and collected for statistical analysis. The participants were enrolled voluntarily and the informed consent was obtained. The current study protocol was approved by Hamadan University of Medical Sciences' institutional review board and ethical committee (IR.UMSHA.REC.1395.46).

### 3.2. Tools

The self-administered questionnaire included closed questions and required approximately 25 minutes to be completed. The questionnaire comprised 3 sections:

Demographic and background variables: This section includes age, gender, degree, major, marital status, time of daily phone use, and length of dormitory dwelling.

Beck depression inventory II: BDI-II is one of the most commonly used psychometric tests to measure the severity of depression in adults and adolescents (13). This scale is a 21-item, multiple-choice, self-report inventory to assess depression symptoms. Answer options indicate 4 levels of depression severity. Each answer is scored on a scale value of 0 to 3, and total score may range from 0 to 63; higher total scores indicate more severe depression symptoms. Previous studies reported acceptable validity and reliability for this scale in Iranian population (14).

Cellphone overuse scale: twenty-one items were used to evaluate cellphone overuse by the students. The items were scored on a 6-option Likert scale ranging from 0 (never) to 5 (always). Similar to the original questionnaire, scores below the 21th percentile and over 63th percentile were considered as low and high frequency of cellphone use, respectively. The reliability of the Farsi version of COS was 0.90 in the Iranian population (15).

### 3.3. Statistical Analysis

Data were analyzed by the independent t test, one-way ANOVA, and linear regression analysis with SPSS version 16. The level of significance was set at  $P < 0.05$ .

## 4. Results

Out of 300 participants, 60% were female, and 95.3% were single. Age of respondents ranged from 18 to 29 years, with a mean age of 21.3 years ( $SD = 2.1$ ). Almost 3-quarters of the participants (74.7%) lived less than 2 years in dormitory. Regarding the educational status, 93.6% of respondents were undergraduates, and 6.4% were postgraduates.

The students used their cellphones  $1.95 \pm 0.86$  hours daily in average. The results showed that 41.2% of the students scored within the low degree of cellphone use category (scored 0 to 21), 26.8% scored within the moderate category (scored 22 to 62), and 32% scored within the overuse category (scored 63 to 105). According to the categorical levels of BDI-II, 7% of students had probable major depression and 20.7% had probable mild/moderate depression.

Table 1 summarizes the descriptive and inferential results of the independent t test and ANOVAs with demographic variables and cellphone use. According to the results, cellphone overuse was mostly observed in male stu-

dents ( $P < 0.001$ ). No statistical significant mean differences were observed for depression (Table 2).

**Table 1.** Comparison of Cellphone Overuse and Demographic Variables Among Participants (n = 300)

Variables	Mean $\pm$ Standard Deviation	P Value
<b>Gender</b>		< 0.001
Male	61.82 $\pm$ 12.94	
Female	55.29 $\pm$ 14.76	
<b>Age, y</b>		0.205
18 - 20	58.98 $\pm$ 14.2	
21-25	57.54 $\pm$ 14.6	
26 - 30	51.77 $\pm$ 12.1	
<b>Marital status</b>		0.408
Single	58.06 $\pm$ 14.44	
Married	54.79 $\pm$ 14.07	
<b>Major</b>		0.562
Medicine	56.91 $\pm$ 13.34	
Dentistry	53.94 $\pm$ 8.37	
Pharmacy	59.81 $\pm$ 13.83	
Rehabilitation	55.28 $\pm$ 11.77	
Health sciences	55.77 $\pm$ 14.01	
Paramedical	60.63 $\pm$ 18.32	
Nursing and midwifery	59.02 $\pm$ 15.04	
<b>Degree</b>		0.923
BSc	58.25 $\pm$ 15.02	
MSc	56.11 $\pm$ 15.11	
GP	57.48 $\pm$ 12.83	
PhD	56.01 $\pm$ 12.15	
<b>Time of phone use, h</b>		< 0.001
1 - 3	52.15 $\pm$ 13.38	
3 - 6	58.93 $\pm$ 13.75	
7 - 10	62.30 $\pm$ 13.84	
> 10	70.21 $\pm$ 13.16	
<b>Time of dormitory dwelling, mo</b>		0.212
1 - 12	58.83 $\pm$ 13.99	
13 - 24	57.31 $\pm$ 13.93	
25 - 36	59.13 $\pm$ 15.87	
> 36	52.46 $\pm$ 14.64	

Additional analyses showed a positive correlation between cellphone use and depression ( $r = 0.348$ ,  $P < 0.001$ ). Higher cellphone use was associated with higher level of depression.

In the multiple linear regression model ( $R^2 = 0.130$ , standard error = 9.894), cellphone overuse was significantly associated with the increase of depression ( $\beta = 0.351$ ,  $P < 0.001$ ). Thus, cellphone overuse predicted improved depression symptoms independently from the cut-off scores. None of the other included risk factors were predictive of depression in the linear regression analysis (Table 3).

**Table 2.** Comparison of Depression and Demographic Variables Among Participants (n = 300)

Variables	Mean $\pm$ Standard Deviation	P Value
<b>Gender</b>		0.283
Male	10.63 $\pm$ 13.60	
Female	12.28 $\pm$ 10.41	
<b>Age, y</b>		0.262
18 - 20	13.66 $\pm$ 9.99	
21 - 25	12.43 $\pm$ 10.90	
26 - 30	9.15 $\pm$ 6.73	
<b>Marital status</b>		0.408
Single	12.98 $\pm$ 10.49	
Married	9.29 $\pm$ 7.65	
<b>Major</b>		0.426
Medicine	14.02 $\pm$ 10.10	
Dentistry	10.56 $\pm$ 5.69	
Pharmacy	15.29 $\pm$ 11.89	
Rehabilitation	9.72 $\pm$ 8.44	
Health sciences	13.17 $\pm$ 11.57	
Paramedical	13.65 $\pm$ 11.51	
Nursing and midwifery	11.87 $\pm$ 9.46	
<b>Degree</b>		0.119
BSc	12.99 $\pm$ 10.67	
MSc	7.22 $\pm$ 7.38	
GP	13.63 $\pm$ 10.05	
PhD	10.01 $\pm$ 8.79	
<b>Time of phone use, h</b>		0.396
1 - 3	12.27 $\pm$ 9.53	
3 - 6	12.41 $\pm$ 9.93	
7 - 10	13.72 $\pm$ 11.57	
> 10	16.32 $\pm$ 14.37	
<b>Time of dormitory dwelling, mo</b>		0.212
1 - 12	12.68 $\pm$ 9.43	
13 - 24	12.68 $\pm$ 10.42	
25 - 36	13.19 $\pm$ 12.06	
> 36	13.17 $\pm$ 12.01	

## 5. Discussion

The results of the current study showed that 32% of the students were involved with cellphone overuse where this rate among males was significantly higher than that of females. This finding was consistent with that of the study conducted by Majidayi et al. (16). In addition, according to the findings of the current study, more than a quarter of campus students had moderate and severe depression. In a study by Rahmani Bidokhti et al. 21% of medical students had moderate and severe depression, which was consistent with the results of the current study (17). Kheirabadi also showed that 31.7% of the students in various medical disciplines had some degrees of moderate and severe depression and the prevalence of depression among campus students was significantly higher than that of others

**Table 3.** Linear Regression Analyses to Predict Depression by Cellphone Overuse (N = 300)

Variables	$\beta$	B	S.E	P Value
Cellphone overuse	0.351	0.253	0.044	> 0.001
Gender	-0.022	-0.477	1.292	0.712
Age	-0.061	-0.308	0.323	0.340
Marital status	-0.057	-2.793	2.797	0.319
Major	-0.58	-0.111	0.144	0.441
Degree	-0.011	-0.132	0.850	0.877
Time of phone use	-0.025	-0.081	0.194	0.674
Time of dormitory dwelling	0.044	0.031	0.056	0.583
Constant	-	8.984	7.540	0.234

Abbreviations: B, unstandardized regression coefficient;  $\beta$ , Beta; SE, standard error.

(18). According to the results of the current study and similar studies, it seems necessary to establish entertainment venues, including sports halls, TV lounges, and counseling centers.

Other findings of the current study represented that cellphone overuse was correlated with variables such as gender and duration of cellphone use. In this regard, Yaseminejad et al., reported the existence of a significant difference between male and female students as well as between single and married ones in terms of cellphone use (19). Amidi Mazaheri et al. also showed that females used short message service (SMS) and educational software such as dictionaries significantly more than males. However, males used cellphones to log on to the internet more than females. Similarly, the mean scores of using cellphone accessories in males were reported to be significantly higher than those of females (20). These results were consistent with the findings of the current study. Mansourian et al. found that female students had more dependence on their cellphone use than male ones (21). The study by Chang and ManLaw is another representation for the confirmation of the point that gender and socioeconomic status have a direct and significant relationship with internet addiction (22). However, no significant relationship was found between cellphone use and economic status of students in the current study. This can be due to the fact that 93.7% of the participants in the current study had a good and moderate economic status.

The findings of the current study showed that cellphone overuse had a significant positive correlation with depression; this finding was consistent with those of other studies (23). For example, Jenaro et al. reported that anxiety reinforced cellphone use (24). Thomee et al. also reported that cellphone overuse was associated with an increased risk of stress and long-term depression symptoms

(6). However, the findings of the current study were contradictory to the results of the study by Hong et al. that showed anxiety and cellphone addiction (SMS use) had a negative relationship (25). This inconsistency seems to be attributable to factors such as the different research instruments and statistical populations in the 2 studies.

In the same way, the results of the current study did not reveal any significant relationship between the use of social networks and depression. The current study finding were contradictory to those of the studies by Martin and Schumachir (26), Kraut et al. (27), Anderson (28), Atash Pour and Kazemi (29), and Widyanto and McMurrans (30) in which the relationship of internet use with the incidence of depression and social isolation was emphasized. According to the results of the current study the following solutions and strategies were suggested to reduce the use of cellphones and prevent the incidence of depression in campus students: provision of sports and educational facilities, encouragement of physical activity, production and distribution of cellphone educational applications, and promotion of the sound culture in the society regarding the correct use of cellphones, especially in high-risk groups. One of the limitations of the current study was the employment of self-reporting methods to measure the research variables. The results of the current study showed that cellphone overuse was considered as a good predictor of depression among students. Accordingly, researchers and psychotherapists can contribute to the promotion of psychological well-being and mental health in students.

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