



Research Article

## Emotional Intelligence and Addictive Smartphone Uses among Nursing Students in Oman

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### Abstract

**Objective:** To examine the relationship between emotional intelligence and smartphone addiction among nursing students in Oman.

**Method:** A descriptive correlational design was used. A convenience sample of 275 undergraduate nursing students was recruited from Sultan Qaboos University and Omani nursing institute (Muscat) in Oman; the questionnaires consisted of the Brief emotional intelligence scale, smartphone addiction scale, the participants' socio-demographic background, and academic background.

**Results:** 275 undergraduate students participated in this study, the mean age of them was 20.3 years. The majority of the them were females (76.7%), single (96.4%), lived out of campus (58.5%), were not substance users (92.7%), and spent at least 1 to 3 hours daily with either their families or friends (45.1%) and (32.4%) respectively, The mean score of smartphone addiction among nursing students was 118. And the mean score for emotional intelligence was 34.66, a linear regression for these variables was calculated; however, it show no significant correlation [ $F(15.385)=0.919, p=0.359$ ], with an  $R^2$ .

**Conclusion:** It is being revealed that the advent of technology has remarkably contributed to the development of human society altogether in all the facets of life, thus emotional intelligence is considered as a controlling factor in preventing the frequent checking of message notifications during the class time itself.

### Keywords

Emotional intelligence; Smartphone addiction; Nursing students

### Introduction

Recently, the investment in technology has become an essential part of our life, companies have dramatically opened their hands up to communication and human connections. Nowadays, cell phones and applications play a key role in communication all over the world and become a mark of our civilization and the spirit of human connections. Smartphones are the mobile phones that have the capability to perform many tasks due to its touch screen, accessibility to the internet, and advanced operational system Alosaimi et al. [1]. Despite the positive imprint of smartphone's applications that allow the users to browse the internet easily, enjoy entertainments, games, and video, and socially connected to others, adverse health issues may result as the overuse of smartphones.

People with smartphone addiction are excessively at loss of control while using smartphones for a long period of time, and feel more enjoyable with their devices than with friends. Indeed, the prolonged usage of smartphone can negatively impact health conditions causing, for example, headache Demirci et al. [2], fatigue and dizziness Al-Khlaiwi et al. [3], sleep disturbances Demirci et al. [4], and anxiety and depression Zulkefly et al. [5], as well as affecting concentration and attention while students studying, distracting them away from learning in classroom Lepp et al. [6], and affecting their communication and accessing to the learning information and opportunities Telefon et al. [7].

Recent studies indicated that smartphone addiction occupied a serious problem among young generation; college students are superior to others in using a smartphone Jeong et al. [8], they spend a considerable time using their smartphone and rely on it even for the simplest daily tasks Aljomaa et al. [9].

Indeed, it was postulated that smartphone addiction runs in 24.8 to 27.4% among general college students Park et al. [10]. Students justify their prolonged use of smartphone devices to obtain information, social connection, academic task performing and entertainment [1].

Just like any other students, nursing students may face the same challenges with their smartphone, nursing students consume about  $5.81 \pm 2.65$  hours daily using their mobiles. smartphone either for entertainment or academic purpose [11]. Mobile technologies, as well as smartphone medical applications, may modify the ways that nurses intervene, access to health information [12], utilizing updated clinical resources and evidence based information [13] developing patient care plan, and therapeutically communicate with the multidisciplinary team [14]. Once at clinical placements, nursing students are at the borderlines of facing excessive stressful situations to promote and regulate their emotions toward others [15]. Nowadays one important aspect that is excessively highlighted among nursing disciplines is emotional intelligence.

Emotional intelligence (EI), refers to the ability to positively perceive, recognize, understand, direct, and express emotions that can override thoughts, promote relationships, and influence behavior and emotional and intellectual growth [16], EI helps to motivate and regulate self and self-rawness, overcome frustrations and impulsiveness, enhance self-management and self-awareness, and promote relationship management [17]. Nursing students with high emotional intelligence show a high level of self-awareness, emotional control, effective conflict management style, and improved academic performance [18].

Unlikely, the use of electronic devices can also deviate students concentration, attention, psychosocial wellbeing, physiological health [19] as well as emotional intelligence [20].

During their academic years, nursing students are requested to enhance their knowledge, skills, leadership, communication, working within multidisciplinary team, independent learning, and care providing, which can be improved through theoretical and clinical nursing courses and using the concept of evidence-based practice, that require the students to be updated with the rapid growth of information and knowledge. With the limited literature in the Arab world, particularly in Oman and the non-existence of identified

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researches to examine the extent of smartphone addiction among nursing student in a relation of their emotional intelligence, this study was conceptualized.

The findings of the current study will provide academic staff with increased knowledge of the distribution of this problem and enhance their ability to determine whether there are other technical aspects that might affect students' academic performance. Therefore, the aim of the current study was to examine the relationship between emotional intelligence and smartphone addiction among nursing students in Oman.

## Methodology

A descriptive, correlational, and cross-sectional research design was utilized. This study was conducted at two colleges of nursing in Oman; Sultan Qaboos University, and Omani nursing institute (Muscat). This study utilized all nursing students in the college of nursing at Sultan Qaboos University and Omani nursing institute (Muscat), a convenience sample was used to obtain the sample. A power analysis was conducted to determine the estimated sample size [21] and a sample of 275 participants was estimated with an effect size of 0.5 ( $\alpha=0.05$ ,  $p=0.80$ ).

Data were collected using a self-administered questionnaire at the SQU and Omani Nursing Institute (Muscat) during the fall semester 2018. The sample consisted of 275 undergraduate students who met the eligibility criteria, including all students who were willing to participate in the study, had completed their foundation program (English, computer skills, and mathematics), and had at least one smartphone device that was continuously connected to the Internet. After ethical approval was obtained from the Research Ethics Committee of the College of Nursing at the SQU and Omani Nursing Institute, the questionnaire was distributed to the students in their classroom after their lectures, the study purpose, and procedure, and ethical considerations were explained *via* consent form; in which, they were assured for their voluntary and harm free participation, anonymity, confidentiality and right to withdraw. The researchers explained that the questionnaire would not take more than 15 minutes to be completed. Once they finished, they could return the questionnaires back to the researchers themselves or put it in a locked box prepared for that reason.

## Study instruments

A self-report instrument will be employed in this study to address the research questions, and it consists of three sections: (1) Demographic data, (2) the Smartphone Addiction Scale and (3) Brief Emotional Intelligence Scale. In the section of demographic data, the students were asked about their gender, age, level of academic years, and type of education program, and cumulative Grade Point Average (GPA), gender and academic year.

The second section is the Smartphone Addiction Scale (SAS); this instrument was adapted by Kwon et al. [22] who tested 197 participants by accomplishing a set of questionnaires, including Smartphone Addiction Scale (SAS), K-scale, modified Kimberly Young Internet addiction test (Y-scale), visual analogue scale (VAS), and substance dependence and abuse diagnosis of DSM-I. A letter has been received by the authors granting permission to utilize the tool in the study.

The SAS composed of 33 questions that are classified into six subscales, all items are weighted equally on a six point responding

scale, using the response of strongly disagree Lepp et al. [6], agree Zulkefly et al. [5], weakly agree Demirci et al. [4], weakly disagree Al-Khlaiwi et al. [3], disagree Demirci et al. [2], and strongly disagree [1]. The six subscales' scores are summed up to a total SAS score with a 33 to 198 range, where a higher score indicates more serious smartphone addiction. The cut-off of this scale has not been proven yet. The concurrent validity and internal consistency of the scale were measured and showed that the scale is considered reliable (Cronbach's  $\alpha=0.967$ ) and valid and its subscales were also verified, reliable and valid [22].

The third section is the Brief Emotional Intelligence Scale, which is a revised version of Emotional intelligence scale developed by Davies, et al. [23] from the work of the original scale contains 33 items and show adequate internal consistency reliability ( $r=0.87$  to  $0.90$ ) and acceptable test-retest reliability ( $r=0.78$ ). The brief emotional scale consists of 10 items that are rated on a 5-point Likert scale anchored by 1=strongly disagree to 5=strongly agree with a score ranged between 10 to 50, whereas the lowest score indicates lower emotional intelligence, the brief emotional intelligence scale, demonstrates evidence of content validity, factorial validity, and test-retest reliability [23].

## Results

The Statistical Package for the Social Sciences (SPSS 23) at the 0.05 level of significance was used. The mean and percentage were used to describe the results; linear regression was conducted to predict the relationship between emotional intelligence and smartphone addiction among nursing students in Oman. Out of the 300 distributed questionnaires, 275 undergraduate students who were enrolled in a nursing bachelor program at Sultan Qaboos University and Omani Nursing Institute completed the questionnaire, giving a response rate of 91.6%. The age of the respondents ranged from 18 to 28, and the mean age was 20.3 years. The majority of the participants were females (76.7%), single (96.4%), lived out of campus (58.5%), were not substance users (92.7%), and spent at least 1 to 3 hours daily with either their families or friends (45.1%) and (32.4%) respectively. Overall, the results of this study showed significant age differences in smartphone addiction ( $p=0.000$ ) and significant gender ( $p=0.000$ ), marital status ( $p=0.021$ ), substance use ( $p=0.000$ ), and social hours with families ( $p=0.024$ ) differences in emotional intelligence (Table 1).

With regard to students' academic profile, the majority of the students are from Omani Nursing Institute (58.5%), their GPA was within B category (58.9%); more than half of the participants were in their second (23.3%) and third (30.5%) academic year; whereas the majority of them were neither under study probation nor appreciation (83.6%) (Table 2). The evaluation of students' academic profiles showed a significant correlation between students' emotional intelligence and academic year ( $p=0.001$ ), whereas no relationships were noted between smartphone addiction, emotional intelligence, and other academic variables.

Of the respondents, 84% use at least one smartphone. The main area of using a smartphone in the college is the cafeteria, whereas the main reason for using a smartphone in the classroom is chatting (45.5%) followed by studying (17%). During class time, 82.5% of the students keep their smartphone on "silent," and 46.2% of them ignored any mobile notifications received. Statistically, smartphone addiction was correlated significantly with notification response in the class ( $p=0.030$ ) and not significantly with a number of smartphones and smartphone status ( $p=0.980$ ,  $0.304$ ). On the other hand, emotional intelligence correlated significantly with smartphone status only ( $p=0.047$ ) (Table 3).

The Smartphone Addiction Scale (SAS) and Brief Emotional Intelligence Scale were tested for reliability among nursing students and obtained Cronbach’s alpha 0.924 and 0.887 respectively. The mean score of smartphone addiction among nursing students was 118. And the mean score for emotional intelligence was 34.66. To

understand further whether the students ‘smartphone addiction’ (the dependent variable) could be predicted by their emotional intelligence experiences (the independent variable), a linear regression was calculated; however, no significant correlation was found [F (15.385)=0.919, p=0.359], with an R2 of 0.003 (Table 4).

**Table 1:** Distribution of Smartphone addiction and emotional intelligence across students’ demographic variables.

Demographic variable	Number	Percentage (%)	Significant with smartphone addiction at p<0.05	Significant with emotional intelligence at p<0.05
<b>Age</b>				
17-19 Years	165	60	Significant F=10.042, p=0.000	Not significant F=1.937, p=0.146
20-19 Years	107	38.9		
23-25 Years	3	1.1		
<b>Gender</b>				
Male	64	23.3	Not significant F=0.003, p=0.956	Significant F=30.245 p=0.000
Female	211	76.7		
<b>Marital Status</b>				
Single	265	96.4	Not significant F=0.666, p=0.415	Significant F=5.413, p=0.021
Married	10	3.6		
<b>Living Arrangement</b>				
In Campus	114	41.5	Not significant F=0.517, p=0.970	Not significant F=0.473, p=0.326
Out of Campus	161	58.5		
<b>Substance Misuse</b>				
None	255	92.7	Not significant F=2.4, p=0.839	Significant F=6.442, p=0.000
Shisha	18	6.5		
Alcohol	1	0.4		
Smoking	1	0.4		
<b>Hours spent with families</b>				
Less than 1 hour	43	15.6	Not significant F=1.944, p=0.123	Significant F=3.182, p=0.024
1-3 hours	124	45.1		
4-6 hours	75	27.3		
More than 6	33	12		
<b>Hours spent with friends</b>				
Less than 1 hour	27	9.8	Not significant F=1.321, p=0.268	Not significant F=0.707, p=0.548
1-3 hours	89	32.4		
4-6 hours	75	27.3		
More than 6	84	30.5		

**Table 2:** Distribution of smartphone addiction and emotional intelligence among students academic profile.

Academic variable	Number	Percentage	Significant with smartphone addiction at p<0.05	Significant with emotional intelligence at p<0.05
<b>College</b>				
Omani Nursing institute	161	58.5	Not significant F=0.055, p=0.815	Not significant F=9.804, p=0.002
SQU	114	41.5		
<b>Academic Year</b>				
1st year	62	22.5	Not significant F=3.205, p=0.08	Significant F=4.123, p=0.001
2nd year	64	23.3		
3rd year	84	30.5		
4th year	48	17.5		
5th year	15	5.5		
Other	2	0.7		
<b>Probation History</b>				
Yes	45	16.4	Not significant F=1.407, p=0.237	Not significant F=2.898, p=0.090
No	230	83.6		
<b>Academic achievement</b>				
Yes	45	16.4	Not significant F=0.000, p=0.992	Not significant F=0.083, p=0.773
No	230	83.6		

**Table 3:** Distribution of Smartphone addiction and emotional intelligence among students smartphone pattern of use.

Smartphone variable	Number	Percentage	Significant with smartphone addiction at p<0.05	Significant with emotional intelligence at p<0.005
Number of Smartphone				
1	231	84	Not significant F=0.20 p=0.980	Not significant F=1.217, p=0.304
2	35	12.7		
More than 2	9	3.3		
Smartphone Status				
Loud	18	6.5	Not significant F=1.217, p=0.304	Significant F=2.684, p=0.047
Silence	227	82.5		
Vibrated	19	6.9		
Off	11	4		
Notification in Class				
Ignore the notification till class ends	127	46.2	Significant F=3.018, p=0.030	Not significant F=1.926, p=0.126
Send a message saying in the class	84	30.5		
As the instructor to allow you to response	18	6,5		
Reply without permission	46	16.7		

**Table 4:** Result of the linear regression analysis.

Predictor	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
TOTAL Emotional intelligence	111.549	7.251	-	15.385	0.000	97.257	125.824
	0.188	0.204	0.056	0.919	0.359	-0.214	0.589

a. Dependent Variable: Smartphone addiction

## Discussion

Present study results showed significant age differences in the prevalence of smartphone addiction ( $p=.000$ ) which in par with the established report of Haug et al. [24] that smartphone addiction among students of younger years of age is higher than the students above 19 or 20 years of age. These findings highlight the need for initiating appropriate interventions to avert smartphone addiction among younger age group students, and also it is essential to design rehabilitation programs to contain the existing smartphone addiction Kim et al. [25]. Current study elicited that smartphone addiction is independent of students' gender ( $F=0.003$ ,  $p=0.056$ ) which contradicts the report of Ibrahim, et al. [26], that males had higher addiction than the females. Similarly, the current study findings state that marital status has nothing to do with the smartphone addiction ( $F=0.666$ ,  $p=0.415$ ) which is in contrary to the evidence put forth by Ibrahim et al. [20], in which it is significantly affected ( $\chi^2=42.85$ ,  $p=.0001$ ).

The authors found a significant difference in emotional intelligence across genders ( $p=0.000$ ), this supports the reports of Ibrahim et al. [26,27] that women possess higher emotional intelligence compared to men. Researchers in the current study proved that no statistically significant difference existed between emotional intelligence and age ( $p=0.146$ ) that contradicts the finding of Snowden et al. [27].

Current study showed significant correlation between students' emotional intelligence and academic year ( $p=0.001$ ) which is congruent with the findings of Cerit et al. [28] who reported that the mean scores of Emotional Intelligence Evaluation Scale (EIES) and mean scores of the subscales of the 4th year students were consistently higher than 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> year students; with statistically significant difference only in Emotional Awareness subscale ( $p<0.05$ ). No relationships were noted between smartphone addiction and academic achievement and also emotional intelligence and noted between smartphone addiction and academic achievement in the

present study which is in contrary to the reports of Ahmed et al. [29] that there was significant increase in the cumulative GPA of students who had higher EI ( $F=5.009$ ,  $p<0.001$ ), Collins [30] showed that there was a relationship between EI and academic factors of student nurses and showed that there was a positive correlation between students' EI and their clinical performance skills [26]. Further this current evidence also is non-congruent with Lepp et al. [6] who through a hierarchical regression ( $R^2=0.449$ ) established that cell phone use was significantly ( $p<0.001$ ) and negatively ( $\beta=-0.164$ ) related to actual college GPA after controlling for demographic variables, self-efficacy for self-regulated learning, self-efficacy for academic achievement, and actual high school GPA, which were all significant predictors ( $p<0.05$ ).

Authors revealed that 84% of the respondents in the current study owned at least one smartphone, which is a higher rate compared to the report of 57% by Khraim et al. [31]. This could be due to the advanced lifestyle with the advent of time. The main area of smartphone usage of the subjects of the present study was in the college cafeteria, and they mainly used a smartphone in the classroom for chatting (45.5%) followed by studying (17%). These findings are in line with the reports of Khraim et al. [31,32] that the nursing students preferred chatting with friends rather than doing other activities. Majority (82.5%) of the students in the present study kept their smartphone on "silent mode," during the class time and 46.2% of them ignored any mobile notifications received and this finding is in consistent with Khraim et al. [31] that majority of the students (77%) did not find the smartphone useful for their clinical experience and perceived the smartphone usage as "unprofessional".

The present study finding that smartphone addiction was correlated significantly with notification response in the class ( $p=0.030$ ) is incongruent with the finding that the smartphone message control period was negatively correlated with the SAS total score ( $r=-0.390$ ;  $p<0.001$ ) and all the subscale scores ( $p<0.001$ ) [33], Indeed, No significant correlation was found between smartphone

addiction and emotional intelligence [ $F(15.385)=0.919, p=0.359$ ] in the current study, however this finding contradicts the report of Kalaivani [34] that there was a significant association between emotional intelligence and technology addiction ( $\chi^2=23.145, p=0.000$ ). Ibrahim et al. [26] proved that there is an inverse proportion exists between both internet addiction (IA) and EI ( $r=-0.316, p=0.004$ ) that implies the IA was prevalent among the students with lower EI. The current findings indirectly challenges the report of Demirci et al. [35] that the total Brief Social Phobia Scale (BSPS) scores were significant predictors for SAS total scores ( $\beta=0.313, t=5.992, p<0.001$ ), because it is highly likely that people with social phobia could easily be withdrawn to smartphones and can be deciphered as seen among people with less emotional intelligence.

Particularly, the use of smartphone among nursing students is found to be useful since the social interactions through these devices are safe, the students' self-confidence will be enhanced in comparison with face to face contact, thus the social properties of these devices bring people together despite their background and the miles of distances separates them Kiweri et al. [36]. Students may find themselves away from their desired social connections and wish a level of contact unlike they currently encounter [37];

This assumption could be justified with the report of Raju et al. [38] that there was a negative correlation ( $r=-0.185, p=0.001$ ) between online social network usage and perceived quality of the interpersonal relationship. Further Choi et al. [39] also reported negative effects of smartphone addiction on mental health, campus life, and personal relations. We can undoubtedly relate that quality of one's mental health, campus life, and personal relations are directly linked to his or her emotional intelligence.

## Limitations

The current study sample was drawn conveniently out of a small population from two institutions in Oman. A larger sample from a nationwide population of all the nursing students through stratified random sampling could have offered more generalizability to the study findings. Further, the self-reported questionnaires have the inherent limitation of true responses by the participants.

## Conclusion

In conclusion, smartphone addiction is found more in students with younger age. Students' emotional intelligence is related to their gender, marital status, substance use, and a number of daily hours spent with families and their academic year. Almost all the present day students have at least one smartphone with them. Students tend to use a smartphone in the college mostly in the cafeteria. The main reason for using a smartphone in the classroom is chatting followed by studying. Students tend to keep their smartphone in "silent mode" and they attempt to ignore any mobile notifications received. The students those who respond to the notifications in the classroom are likely to have smartphone addiction. Emotional intelligence is linked with smartphone status but not with smartphone addiction.

The findings of the present study throw more light into the emerging phenomenon of smartphone addiction in the background of emotional intelligence. The key finding that emotional intelligence is a controlling factor in preventing the frequent checking of message notifications during the class time itself. It is being revealed that the advent of technology has remarkably contributed to the development of human society altogether in all the facets of life. The number of smartphones possessed by each student has increased over time, the

technology is further on the rise and instead of technology controls man and the man should find a way to control the technology so that it can be utilized effectively for the right purposes. We live in the era of technology and we have already shifted from the traditional teaching strategies to the e learning, instructional software, and flipped classrooms. In the light of the present findings, the authors have already started encouraging the students to use their smartphones for effective learning in the classrooms. In a nutshell, the smartphone could be smartly used by human beings to reap benefits rather than winning on the disadvantages.

## Conflicts of Interest

The authors declare no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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