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Original Article

Relationship between attachment styles and nomophobia in medical students: A cross-sectional study

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Abstract

Background: Nomophobia, despite being a relatively new phenomenon, has had significant and wide-ranging impacts on various life aspects and the physical and mental health of individuals, particularly the younger generation. This study sought to explore the correlation between attachment styles and nomophobia among students.

Methods: This study employed a descriptive-cross-sectional design to examine the relationships between variables using the correlation method. A sample of 245 students was selected from the medical student population in Tabriz, Iran, using a convenience sampling method in October 2023. The participants filled out questionnaires on nomophobia and attachment styles. The collected data were analyzed using the Pearson correlation statistical method in SPSS26.

Results: The mean (±SD) scores of nomophobia were (males: 7.52±3.04, females: 74.93±3.77), attachment avoidance (males=20.37±3.72, females=19.03±2.98), anxious attachment (males: 7.52±3.04, females: 74.93±3.77) and secure attachment (males: 20.97±4.93, females: 22.35±5.07). The correlation results between the variables showed a positive and significant relationship between anxious attachment and nomophobia ($P<0.001$; r=0.543) and between avoidant attachment and nomophobia ($P<0.01$; r=0.322). There was also a significant negative relationship between secure attachment and nomophobia ($P<0.001$; r=0.475).

Conclusion: The findings suggest that insecure attachment contributes to problematic smartphone use and nomophobia, whereas individuals with secure attachment can control addictive smartphone behaviors. Therefore, attachment styles have a significant impact on nomophobia.

Introduction

In modern societies, mobile phones have become essential tools of life. Worldwide mobile phone subscription is 103.5 per 100 people.[1] In Iran, according to the Communication Regulatory Authority of The I.R. Iran, mobile phone subscription is 166.5 per 100 people (https://irna.ir/xjMzHT). In recent years, the significant growth of the use of smartphones (mobile phones)[2] with the ability to connect to the Internet, provides users with facilities and opportunities such as; It gives access to unlimited information, games, video, music, social interaction, entertainment, education.[3,4] Despite these positive benefits, today with the widespread use of smartphones, a condition called nomophobia is emerging which leads to several health-related problems such as headaches, reduced attention and concentration, muscle tension, depression, anxiety, sleep problems and changes in body weight.[5,6] Nomophobia is a relatively new term that describes a person's fear, discomfort, or anxiety when a smartphone is unavailable or separated from it.[7]

Studies conducted in different countries have reported the prevalence of nomophobia from 6% to 99.7%.[8] The prevalence rate was between 13% and 79% of people at risk, with 6% to 73% suffering from mild nomophobia, 25.7% to 73.3% suffering from moderate nomophobia, and 1% to 87% suffering from severe nomophobia.[9] Especially studies in different countries among medical students have reported a high prevalence of smartphone addiction from 29.8% to 85.4%.[10] The growing research has shown that higher scores of nomophobia are associated with higher scores of sleep disorders and social distress,[8] anxiety and cell phone addiction,[3] Increased heart rate, high blood pressure, unpleasant feelings and clinical manifestations such as anxiety, respiratory distress, tremors, and panic attacks,[11] psychological problems such as depression, anxiety, stress, and physical issues such as higher scores for pain, fatigue, headache,[5] emotional loneliness and insomnia,[12] and with lower scores of self-esteem and perceived social support[13] Less satisfaction with life,[14] it is related. On the other hand, the increasing dependence on smartphones has brought not only functional benefits, but also effective results such as stress reduction and emotional relaxation, and has been perceived as a "soothing technology" by users.[15]

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It is argued that understanding the psychological and emotional aspects of the user's interaction(anxiety/relaxation) with the smartphone can be discussed within the framework of attachment theory. Research has shown that people with an anxious attachment style are very sensitive to signs of possible rejection or release, constantly perceive others as unattainable and unresponsive, and show greater attachment to objects and brands.[16,17] Therefore, attachment styles are an important factor in the problematic use of smartphones.[18]

According to attachment theory, humans and many animal species are born with an innate attachment system that encourages them to seek and maintain closeness with important people in their lives.[19] The attachment system is sensitive to specific cues and is activated by stress, separation, or danger, elicits similar emotions or behaviors, and aims to provide survival, comfort, and safety.[20] In all forms of attachment, closeness to the attachment form creates a sense of security for the individual, and separation from the attachment form leads to separation stress.[21] Empirical evidence shows that people who lack confidence and feel anxious in face-to-face communication engage in social communication through their smartphones and become more dependent on their smartphones.[22] However, most researches show that people's higher attachment anxiety is related to the tendency to use more and show attachment characteristics to smartphones.[2,22,23] Anonymous and interactive communication in social media through smartphones can reduce the feeling of social isolation for people with insecure attachment.[24,25] While securely attached people do not show any tendency towards Internet addiction.[23] For people with anxious and avoidant attachment styles, virtual worlds can provide a way to satisfy security needs while inducing less negative emotions and anxiety.[26] Moreover, people with anxious and avoidant attachments show more problematic behaviors in using smartphones compared to secure people.[27] On the other hand, some research found no relationship between avoidant attachment and smartphone attachment.[28,29]

Despite the importance of attachment styles as an important and relatively stable interpersonal tendency, little research is available on the specific relationship between attachment styles and problematic smartphone use,[30] and some studies show contradictory findings.[31] Although research in this area is developing, it is not yet clear what period or duration of smartphone use should be considered problematic, and delineating the boundary between harmful use and practical use in everyday life requires much research. Given the high prevalence of smartphone addiction among medical students,[10] and contradictory findings on the relationship between attachment styles and nomophobia,[31] this research was conducted to develop the existing knowledge by exploring the correlation between attachment styles and nomophobia among medical students.

Materials and Methods

Study procedures

This study, conducted in 2023, is correlational research aimed at exploring the relationship between attachment styles and nomophobia among medical students. The inclusion criteria comprised owning a smartphone and using it for a minimum of 4 hours daily.

Research participants and sample size

From the statistical population of medical students of Tabriz University of Medical Sciences, an initial screening was conducted using the nomophobia scale. Subsequently, 245 students, who scored one standard deviation above the average on this scale, were selected for the study. For this purpose, using the sample volume calculation formula (Eq 1), with a confidence factor of 0.95, an error rate was 0.05, Z score = 1.96, and the probability coefficient P = 0.20. The number of participants were 115(46/93%) females and 130(53/7%) were males.

$$n = \frac{z^2_{1-\frac{a}{2}} p(1-p)}{d^2} \qquad \text{(Eq 1)}$$

Tools

Nomophobia questionnaire (NMP-Q)

The NMP-Q was created by Yildirim and Correia,[32] has 20 items and four subscales including; (1) not being able to communicate, (2) losing connectedness, (3) not being able to access information, and (4) giving up convenience. All items are graded on a 7-point Likert scale from 1 "completely false" to 7 "completely true". The total score of people is between 20-140, in which the higher the score, the higher the nomophobia and vice versa. The creators of the questionnaire stated Cronbach's alpha coefficient for the whole scale as 0.945 and for the mentioned sub-scales as 0.827, 0.814, 0.939, and 0.874 respectively, also, to check the convergent validity, they found a positive correlation between the nomophobia questionnaire and the mobile phone involvement questionnaire. In Iran, Sayah et al[33] validated the scale of nomophobia for students, the validity of this tool has been confirmed and the reliability for the whole questionnaire is 0.956 and for the sub-scales, respectively, 0.931, 0.923, 0.851, and 0.821 has been reported.

Revised Adult Attachment Scale (RAAS)

This scale includes 18 items and 3 subscales, each composed of six items which is graded on a 5-point Likert scale from 1 for "completely disagree" to 5 for "completely agree". The three subscales are CLOSE, DEPEND, and ANXIETY. The CLOSE scale measures the extent to which a person is comfortable with closeness and intimacy. The DEPEND scale measures the extent to which a person feels he/she can depend on others to be available when needed.

The anxiety subscale (A) corresponds to ambivalent insecure attachment, and the closeness subscale (C) is a bipolar dimension that contrasts secure and avoidant descriptions; Therefore, closeness (C) is consistent with secure attachment, and the dependence subscale (D) can be the opposite of avoidant attachment. Collins and Reed reported Cronbach's alpha for subscale (C) 0.81, subscale (D) 0.78, and subscale (A) 0.85.[34] In Iran, this scale has been validated on the general population of men and women, adolescents and adults. Exploratory and confirmatory factor analysis was used to evaluate the factor structures proposed in the original version. In general, the factor analysis indicated that the factor structure of this scale has a better fit with the data following the previous theoretical foundations. The validity of the test using Cronbach's alpha was higher than 0.76 for all the factors, and their internal consistency is acceptable. The reliability of the test using the retest method, with a time interval of one month from each other, was not significant. Therefore, this scale is approved for use in general and clinical populations.[35,36]

Analysis method

The data collected, were analyzed using SPSS software version 26. Descriptive statistics, encompassing the mean and standard deviation, were employed for data analysis, while Pearson's correlation test was utilized to examine the research hypothesis.

Results

The participants in the research were 245 medical students with an age mean of 20.9 ± 3.7 years. For a more detailed description of the participants, their demographic characteristics are outlined in Table 1.

To measure the level of education, economic and social level (monthly income), and marriage, three items were placed at the beginning of the questionnaire, which obtained the demographic information of the participants.

The results of Table 1 show that most of the participants in the research sample had a basic science education level (n = 103, 42.04%), had a middle socioeconomic level (n = 155, 63.27%), and most of the participants (n = 244, 91.43%) were single.

Table 1. Status, frequency, and percentage of participants in the research

Variables	Status	No. (%)
Education	Basic science	103 (42.04)
	Pre-clinical	82 (33.47)
	Clerkship	47 (19.18)
	Intern	13 (5.31)
Socioeconomic	High	69 (28.16)
	Middle	155 (63.27)
	Low	21 (8.57)
Marital	Married	15 (6.12)
	Single	224 (91.43)
	Widow	6 (2.45)

To investigate the gender differences, the scores of descriptive indices of the variables by gender are presented in Table 2.

Table 2 shows that average scores of nomophobia and anxious attachment are higher in girls than in boys. Furthermore, the mean avoidant attachment scores of males are higher than females. However, there is not much difference in the mean scores of secure attachment between males and females. The correlation matrix presented in Table 3 investigates the relationship between nomophobia and attachment styles among medical students.

The results of the correlation analysis in Table 3 show a positive and significant relationship between nomophobia and anxious attachment ($P < 0.001$; r = 0.543), and between nomophobia and avoidant attachment ($P < 0.01$; r = 0.322). Moreover, there is a negative and significant relationship between nomophobia and secure attachment ($P < 0.001$; r = 0.475).

Discussion

This research aimed to investigate the relationship between attachment styles and nomophobia in medical students. The results showed that the more people have an avoidant or anxious attachment, the more they tend to be addicted to mobile phones or nomophobia. In addition, people with secure attachments have less smartphone addiction or nomophobia. This finding is consistent with the results of studies,[2,16,19,22,23,37] which showed that avoidant and anxious attachment styles have a positive and direct effect on nomophobia, and secure attachment style has a negative and significant effect on nomophobia. Therefore,

Table 2. Mean, standard deviation, Minimum, and Maximum score in research variables (males = 130, females = 115)

Variables	Gender	M	SD	Min	Max
Nomophobia	Male	71.52	3.04	52	93
	Female	74.93	3.77	56	91
Anxiety or insecure	Male	20.97	4.93	12	26
	Female	22.35	5.07	11	27
Closeness or secure	Male	18.02	2.37	12	28
	Female	18.5	2.94	11	29
Dependence or avoidant	Male	20.37	3.72	13	30
	Female	19.03	2.98	14	32

Table 3. Correlation matrix between nomophobia and attachment styles (n = 245)

Variables	M	SD	(1)	(2)	(3)	(4)
1. Nomophobia	73.64	3.68	1.000			
2. Anxiety or insecurity	21.79	5.66	0.543**	1.000		
3. Closeness or security	18.42	2.81	-0.475**	-0.451**	1.000	
4. Dependence or avoidant	19.31	3.09	0.322*	0.372*	-0.41**	1.000

**$P < 0.001$, *$P < 0.01$

attachment styles are among the important factors in the problematic use of smartphones and nomophobia.

In explaining this finding, it can be said that based on Bowlby's theory in 1969, attachment has proposed and assumed the ability of humans to create and maintain strong emotional bonds with their caregivers. In fact, attachment is the allocation and excessive use of cognitive and emotional resources to the caregiver, a specific object, structure, or idea to gain support and reassurance.[23] In the framework of this theory, people who have avoidant or anxious attachment consider the world to be an unsafe and uncertain place due to their needs not being met in childhood. In adulthood, they do not establish close relationships with other people because they do not trust others and use a compensatory attachment strategy (such as attachment to objects) when the primary attachment goals are not available. In this regard, Soleymani et al,[16] showed that anxious and avoidant attachment style has a significant effect on nomophobia. Participants who were aware of uncertainty about their relationships reported increased dependence on belongings, increased separation stress caused by not having their phone, and increased motivation to access it. Therefore, the mobile phone may act as a compensatory attachment goal that provides a sense of security and is considered a substitute for one's social connections. At the same time, it has a facilitating function concerning which primary attachment relationships can be maintained and strengthened. The existence of such alternative and enjoyable roles of smartphones for people with insecure attachment acts as a stimulating and motivating sign and leads them to addictive use of new communication technologies such as mobile phones with the fear of loneliness.[38]

On the other hand, people who have secure attachments can better manage their emotions and desires. Because they evaluate themselves and the world as trustworthy, they are also successful in building close relationships, managing their stress, and seeking support. Therefore, according to the attachment theory, people with this style in adulthood also better manage themselves in stressful situations due to their belief in their ability to control their environment and also the availability of others when they need help, and when they need support or communication, they can express their need practically and evaluate it in the real world. Therefore, they go less towards compensatory and addictive behaviors.

Conclusion

In summary, as the pace of life expedites in the 21st century, smartphone usage continues to rise. Concurrently, it appears that adult attachment styles significantly influence the prediction of addictive mobile phone use and nomophobia. Therefore, a person with insecure attachment may resort to cyber communication to fulfill their need for belonging, thereby temporarily alleviating their feelings of loneliness and anxiety. Therefore, for individuals with insecure attachment styles, smartphones serve a similar purpose to other harmful coping mechanisms, such as alcohol and psychoactive substances. These individuals tend to engage more with their smartphones to evade negative experiences. Consequently, by focusing on individuals' attachment styles, we can gain a deeper understanding of the nomophobia phenomenon and contribute to the expanding body of knowledge in the field of smartphone addiction. This study had several limitations. Firstly, its cross-sectional design precluded the determination of causal relationships between the variables. Secondly, the data were collected through self-report scales, which could be subject to participants' social desirability bias. As such, it is recommended that future research employ experimental and longitudinal designs to further explore the causal relationship between attachment styles and nomophobia.

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Authors' Contribution

Conceptualization: Omid Ebrahimi, Delaram Mohammadi.
Data curation: Omid Ebrahimi.
Investigation: Omid Ebrahimi, Delaram Mohammadi.
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Resources: Delaram Mohammadi.
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Supervision: Delaram Mohammadi.
Writing–original draft: Omid Ebrahimi, Delaram Mohammadi.
Writing–review & editing: Omid Ebrahimi, Delaram Mohammadi.

Competing Interests

The authors declared no competing interest.

Ethical Approval

This research adhered to ethical principles, which included obtaining informed consent from participants, ensuring the confidentiality of information, maintaining respectful behavior, allowing participants free entry and exit, and ensuring the integrity of data.

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