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Frequency of Nomophobia in Pregnant Women and its Relationship with Depression, Anxiety, and Stress

Gebelerde Nomofobi Sıklığı ve Depresyon, Anksiyete, Stres İlişkisi

Menekşe Nazlı Aker, Neslihan Yılmaz Sezer

Ankara University Faculty of Nursing, Department of Midwifery, Ankara, Türkiye

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ABSTRACT

Objective: No mobile phone phobia (nomophobia) refers to the pathological fear of being without access to virtual communication devices, which is characterized by feelings of discomfort and anxiety when disconnected from technology. This study aimed to determine the levels of nomophobia in pregnant women and investigate the relationship between nomophobia, depression, anxiety, and stress in this population.

Methods: This descriptive study included 273 pregnant women who presented to the obstetrics outpatient clinic of a university hospital between November 2022 and January 2023. The data were collected using a demographic information form, the Nomophobia Questionnaire (NMP-Q), and the Depression Anxiety Stress Scale-21 (DASS-21).

Results: A mild level of nomophobia was found in 62.3% of the participants. Among the participants, 54.9% had normal levels of anxiety, 88.3% had normal levels of depression, and 80.2% had normal levels of stress. The participants had a mean score of 47.80±24.14 on the NMP-Q, 3.88±3.53 on the DASS-21 Anxiety subscale, 4.20±4.32 on the stress subscale, and 1.88±3.37 on the depression subscale. There was a positive correlation between the participants' daily internet usage time, daily health information search time, anxiety, stress, depression scores, and NMP-Q scores ($p<0.05$). The NMP-Q score was found to significantly influence anxiety and stress scores ($p<0.05$).

Conclusion: Nomophobia is a prevalent and current issue among pregnant women. As nomophobia increases in pregnant women, so does the depression, anxiety, and stress. Awareness and interventions by nurses, midwives, and other healthcare professionals regarding this issue are crucial.

Keywords: Anxiety, depression, phobia, pregnancy, stress

ÖZ

Amaç: *No mobile phone phobia (nomofobi)* sanal haberleşme araçlarından yoksun olma durumunda hissedilen huzursuzluk ve endişe durumunu içeren teknolojiden uzak kalmanın patolojik korkusudur. Bu araştırmada gebelerin nomofobi düzeyleri ile gebelerde nomofobi, depresyon, anksiyete ve stres arasındaki ilişkiyi belirlemek amaçlanmıştır.

Yöntem: Tanımlayıcı olarak yürütülen bu araştırmaya Kasım 2022-Ocak 2023 tarihleri arasında bir üniversite hastanesinin gebe polikliniğine başvuran 273 gebe dahil edilmiştir. Araştırmanın verileri tanıtıcı bilgi formu, Nomofobi Ölçeği (NÖ) ve Depresyon Anksiyete Stres Ölçeği-21 (DASS-21) ile toplanmıştır.

Bulgular: Katılımcıların %62,3'ünde hafif düzeyde nomofobi vardı. Katılımcıların %54,9'unun anksiyete, %88,3'ünün depresyon, %80,2'sinin stres düzeyi normaldi. Katılımcıların NÖ puan ortalaması 47,80±24,14; DASS-21 anksiyete puan ortalaması 3,88±3,53, stres puan ortalaması 4,20±4,32, depresyon puan ortalaması 1,88±3,37'dir. Katılımcıların günlük internet kullanım süresi, günlük sağlık bilgisi arama süresi, anksiyete, stres, depresyon puanları ile NÖ puanları arasında pozitif yönlü korelasyon vardı ($p<0,05$). Katılımcıların NÖ puanı, anksiyete ve stres puanlarını etkilediği belirlendi ($p<0,05$).

Sonuç: Nomofobi, gebelerde oldukça yaygın, güncel bir sorundur. Gebelerde nomofobi arttıkça depresyon, anksiyete ve stres de artmaktadır. Hemşire, ebe ve diğer sağlık profesyonellerinin bu konudaki farkındalık ve müdahaleleri önemlidir.

Anahtar kelimeler: Anksiyete, depresyon, fobi, gebelik, stres

ORCID IDs: MNA. 0000-0002-7087-9220; NYS. 0000-0003-4612-7034

Corresponding Author: Menekşe Nazlı Aker,
E-mail: menekseaker@gmail.com

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INTRODUCTION

The excessive use of information technologies, which have become an integral part of modern society, can lead to addiction [1]. The disorder known as no mobile phone phobia (nomophobia) is a consequence of the development of new technologies that facilitate virtual communication. Nomophobia is defined as the discomfort and anxiety experienced when being without virtual communication devices such as mobile phones, tablets, and personal computers [2,3]. In a broader sense, nomophobia can be described as a pathological fear of being disconnected from technology [2]. Studies have reported that nomophobia, as one of the ailments of the technology age, is associated with depression, anxiety, and stress [4,5].

While pregnancy is often seen as a time of joy, personal growth, fulfillment, and happiness, it can also bring about negative emotions like stress, anxiety, uncertainty, and feelings of being overwhelmed. Pregnancy is a stressful period and is often associated with anxiety and depression [6]. It has been shown that the stress experienced during pregnancy can have adverse consequences on the fetus, childbirth, postpartum period, and the newborn [7]. Women who experience a stressful pregnancy are reported to have increased physical complaints associated with pregnancy, such as nausea and vomiting. These women tend to seek medical attention more frequently, experience greater fear of childbirth, have a higher rate of cesarean section deliveries, and require a higher demand for epidural anesthesia during labor [8].

It is believed that nomophobia, which may arise during pregnancy, can contribute to the development of depression, anxiety, and stress in pregnant women. However, no studies have been found in the literature that specifically examine the levels of nomophobia in pregnant women or investigate the relationship between nomophobia and depression, anxiety, and stress in this population. Therefore, this study is important as the first research to elucidate this relationship in pregnant women.

Objective

This research aimed to determine the levels of nomophobia in pregnant women and investigate the relationship between nomophobia, depression, anxiety, and stress in this population.

MATERIAL AND METHOD

This descriptive study was conducted among pregnant women who presented to the obstetrics outpatient clinic of a university hospital. The population of the study consisted of literate pregnant women aged 18 years and above, who owned a smartphone, without any psychiatric diagnosis, and received treatment at the appropriate clinic from November 2022 to January 2023. In total, 8,812 pregnant women visited the clinic during March, April, and May 2022. The study's sample size was calculated using the Raosoft sample size calculator. To achieve 90% statistical power with a 0.05 margin of error, the minimum required sample size was 263. To account for potential data loss, 300 women were asked to join the study. However, seven women did not meet the inclusion criteria, and 30 declined to participate. The final sample comprised 273 women.

Data Collection

This study utilized the demographic information form, the Nomophobia Questionnaire (NMP-Q), and the Depression Anxiety Stress Scale-21 (DASS-21) as data collection tools.

Demographic Information Form

This form, consisting of 17 questions, was used to assess the participants' socio-demographic characteristics (age, education and income status, etc.), obstetric history (intention of the current pregnancy, number of pregnancies and living children, history of high-risk pregnancies, etc.), and their internet usage patterns (daily internet usage duration, daily duration of searching for health-related information online, platforms used for health-related searches, etc.).

The Nomophobia Questionnaire: NMP-Q is a scale developed by Yıldırım and Correira [9] to measure nomophobia. It consists of 20 items rated on a 7-point Likert scale (1: strongly disagree to 7: strongly agree). The NMP-Q includes four subscales: "(1) not being able to communicate, (2) losing connectedness, (3) not being able to access information and (4) giving up convenience".

In the scale, the scores obtained from each question are summed to calculate the individual's total NMP-Q score. Based on the total score, individuals are classified into different levels of nomophobia: "no nomophobia for a score of ≤20, mild nomophobia for scores between 21 and 59, moderate nomophobia for scores between 60 and 99, and severe nomophobia for scores between 100 and 140". The Turkish validity and reliability of NMP-Q were established by Yıldırım et al. [10]. In their study, the Cronbach's alpha coefficient for the entire scale was 0.90, with subscale values ranging between 0.74 and 0.94. In the current study, the Cronbach's alpha was 0.94 for the full scale, with subscale values varying from 0.86 to 0.93.

The Depression Anxiety Stress Scale-21: DASS-21 was developed by Henry and Crawford [11]. The scale consists of 7 items each for measuring depression, anxiety, and stress dimensions. It is a 4-point Likert scale (0: never, 3: always). Subscale scores are obtained by adding up the scores of the relevant items. Each subscale score ranges between 0 and 21, with higher scores interpreted as an increase in symptoms within that category. Table 1 presents the score ranges determining the levels of depression,

Table 1. According to the DASS-21, the Score Ranges for Levels of Depression, Anxiety, and Stress

	Depression	Anxiety	Stress
Normal	0-4	0-3	0-7
Mild	5-6	4-5	8-9
Moderate	7-10	6-7	10-12
Severe	11-13	8-9	13-16
Very severe	14+	10+	17+

DASS-21: Depression Anxiety Stress Scale-21

Table 2. Distribution of Socio-demographic, Obstetric Characteristics and Digital Health İnformation-Seeking Behaviors of Pregnant Women (n=273)	
Variables	
	Mean ± SD
Age	28.43±5.11
	n (%)
Education level	
Primary school	59 (21.6)
High school	119 (43.6)
University and above	95 (34.8)
Family type	
Nuclear family	235 (86.1)
Extended family	38 (13.9)
Employment status in income-generating work	
Employed	45 (16.5)
Unemployed	228 (83.5)
Monthly income	
Low	66 (24.2)
Moderate	170 (62.3)
High	37 (13.5)
Trimester	
1st trimester	26 (9.5)
2nd trimester	112 (41.0)
3rd trimester	135 (49.5)
Number of pregnancies	
1	93 (34.1)
2	98 (35.9)
3 and above	82 (30)
Number of children	
0	106 (38.8)
1	100 (36.7)
2 and above	67 (24.5)
Intention of current pregnancy	
Intended pregnancy	242 (88.6)
Unintended pregnancy	31 (11.4)
History of high-risk pregnancy	
Present	45 (16.5)
Absent	228 (83.5)
History of chronic illness	
Present	35 (12.8)
Absent	238 (87.2)
Presence of risk condition in current pregnancy	
Present	24 (8.8)
Absent	249 (91.2)
Table 2. Continued	
Variables	
	n (%)
Most commonly used platforms for health-related searches*	
Search engines	145 (53.1)
Instagram/Facebook	51 (18.7)
Mobile applications	31 (11.4)
Doctor/hospital websites	18 (6.6)
WhatsApp groups	15 (5.5)
Blogs/forums	13 (4.8)
Trust in internet-based health information for decision-making	
Does not rely	196 (71.8)
Relies	77 (28.2)
Education received from healthcare professionals on pregnancy, childbirth, and baby care	
Yes	146 (53.5)
No	127 (46.5)
*Multiple options may have been selected by participants SD: Standard deviation	

anxiety, and stress. The Turkish validity and reliability of DASS-21 were established by Sarıçam [12]. In that study, the reliability coefficients were reported to be between 0.81 and 0.87. In the current study, these coefficients ranged from 0.73 to 0.90.

Statistical Analysis

This study utilized the Statistical Package for the Social Sciences version 25.0 for data analysis. Skewness and kurtosis values from descriptive statistics were used to test the normal distribution of the data [13]. Skewness and kurtosis values within the range of ±2 were considered indicative of a normal distribution of the data [14]. Along with descriptive statistics, Pearson correlation analysis was applied to compare two quantitative variables when the data exhibited a normal distribution, whereas Spearman correlation analysis was used when the data deviated from a normal distribution. Simple linear regression analysis was conducted to determine the effect of NMP-Q on the parameters that comply with normal distribution (anxiety and stress). A significance level of $p<0.05$ was considered for statistical significance.

The Ethical Dimension of the Study

Approval for the study was obtained from Ankara University Health Sciences Sub Ethics Committee (date: 19.09.2022, decision no.: 14/139) and permission from the Ankara University Cebeci Research and Application Hospital where the study was conducted (date: 24.10.2022, no.: E-62535980-044-696548). All participants were informed and written informed consent was obtained. The study was conducted in accordance with the principles stated in the Declaration of Helsinki.

RESULTS

The participants had a mean age of 28.43±5.11. Among the participants, 43.6% had completed high school education, 86.1% belonged to nuclear families, 83.5% were not employed in income-generating occupations, and 62.3% reported having a moderate level of monthly income (Table 2).

Forty-nine point five percent (49.5%) of the participants were in the third trimester of pregnancy, 35.9% had a pregnancy count of 2, and 38.8% did not have any children. Among the participants, 88.6% had intentionally become pregnant. Regarding their pregnancy history, 83.5% had a history of high-risk pregnancy, while 87.2% had a history of chronic illness. During their current pregnancy, 91.2% did not have any risky conditions. The participants reported an average daily internet usage time of 3.80±7.14 hours and an average duration of 68.80±56.95 minutes spent on searching for health information (Table 3). The most commonly used platforms for health-related searches were search engines (53.1%), Instagram/Facebook (18.7%), mobile applications (11.4%), doctor/hospital websites (6.6%), WhatsApp groups (5.5%), and blogs/forums (4.8%). Seventy-one point eight percent (71.8%) of the participants reported that they did not rely on the information obtained from the internet to make decisions about their health. Furthermore, 53.5% of the participants had received education from healthcare professionals on topics such as pregnancy, childbirth, and baby care (Table 2).

Among the participants, 62.3% of the participants exhibited a mild level of nomophobia. Among the participants, 54.9% had normal levels of anxiety, 88.3% had normal levels of depression, and 80.2% had normal levels of stress (Table 4). The mean NMP-Q score of the participants was 47.80±24.14, the mean Anxiety score of DASS-21 was 3.88±3.53, the mean stress score was 4.20±4.32, and the mean depression score was 1.88±3.37 (Table 4).

There was a positive correlation between participants' daily internet usage time, daily health information search time, anxiety, stress, depression scores, and NMP-Q scores (Table 4). According to the results of the regression analysis, participants' NMP-Q scores were found to be influenced by anxiety and stress scores (Table 5).

DISCUSSION

To the best of our knowledge, this study is the first to assess the level of nomophobia in pregnant women and its association with depression, stress, and anxiety. Various studies have shown that nomophobia has a negative impact on mental health [1,4,5]. Therefore, which evaluates the level and consequences of smartphone addiction, a globally increasing problem [1,3-5], in pregnant women, is of great interest. Our study results revealed that only 11.7% of pregnant women did not experience nomophobia, and higher nomophobia scores were associated with increased scores of anxiety, stress, and depression. This highlights the significance of this study in understanding the outcomes of the relatively new phobia of nomophobia in pregnant women.

The pregnant women participating in our study reported an average daily internet usage time of approximately four hours on their smartphones, with about one hour spent on searching for health information. Studies in the literature have reported a daily internet usage time of 5 hours among

Table 3. Relationship Between Age, Daily Internet Usage Time, Daily Health Information Search Time, NMP-Q and DASS-21 Scores in Pregnant Women

Variables	Mean ± SD	Median	Min.-Max.	1	2[a]	3	4	5	6[a]	7	8	9	10	11
1. Age	28.43±5.11	27.00	18-43	1										
2. Daily internet usage time[b]	3.80±7.14	3.00	0.5-60	-0.198**	1									
3. Daily health information search time[c]	68.80±56.95	60.00	2-360	-0.180**	0.638**	1								
4. Anxiety	3.88±3.53	3.00	0-18	-0.012	0.177**	0.147*	1							
5. Stress	4.20±4.32	3.00	0-21	-0.009	0.202**	0.204**	0.594**	1						
6. Depression	1.88±3.37	1.00	0-21	0.049	0.162**	0.064	0.453**	0.573**	1					
7. Not being able to access information	8.91±5.90	7.00	4-28	-0.057	0.201**	0.158**	0.316**	0.358**	0.277**	1				
8. Giving up convenience	10.89±6.63	9.00	5-35	-0.038	0.198**	0.149*	0.322**	0.454**	0.378**	0.606**	1			
9. Not being able to communicate	18.41±10.20	16.00	6-42	-0.057	0.139*	0.061	0.219**	0.304**	0.199**	0.512**	0.664**	1		
10. Losing connectedness	9.59±6.23	7.00	5-35	-0.088	0.194**	0.105	0.221**	0.268**	0.302**	0.473**	0.686**	0.555**	1	
11. NMP-Q	47.80±24.14	43.00	20-139	-0.071	0.218**	0.132*	0.315**	0.410**	0.308**	0.750**	0.881**	0.874**	0.797**	1

*: p<0.05, **: p<0.001, [a]: Spearman correlation test, [b]: Hour, [c]: Minute, SD: Standard deviation, Min: Minumum, Max: Maximum, NMP-Q: Nomophobia Questionnaire, DASS-21: The Depression Anxiety Stress Scale-21

pregnant women [15-17]. Costantino et al. [18] also reported that more than half of the pregnant women included in their study used smartphones for 1-3 hours a day, while one-third used them for more than three hours. Although the duration of health-related searches was not reported in our study, it was stated that the most common reasons for smartphone usage were browsing the internet and using social networks. These findings support the view that pregnant and postpartum women, compared to other populations, are at a higher risk of excessive internet usage and addiction due to spending longer hours at home, less outdoor exposure, and fewer physical activities [17,18].

Table 4. Distribution of Pregnant Women's Levels of Nomophobia, Anxiety, Depression, and Stress (n=273)

Variables	n	%
Nomophobia		
None	32	11.7
Mild	170	62.3
Moderate	58	21.2
Severe	13	4.8
Anxiety		
Normal	150	54.9
Mild	46	16.8
Moderate	37	13.6
Severe	19	7.0
Very severe	21	7.7
Depression		
Normal	241	88.3
Mild	11	4.0
Moderate	12	4.4
Severe	4	1.5
Very severe	5	1.8
Stress		
Normal	219	80.2
Mild	21	7.7
Moderate	17	6.2
Severe	9	3.3
Very severe	7	2.6

Among the pregnant women participating in our study, 62.3% had a mild level of nomophobia, 21.2% had a moderate level, and 4.8% had a severe level of nomophobia. While no specific study on the prevalence of nomophobia among pregnant women was found in the literature, it is observed to be common in different populations [19-21]. Additionally, psychiatric comorbidities such as anxiety and depression are more prevalent among pregnant and postpartum women compared to other populations, which may increase the likelihood of internet addiction in this population [6]. The study conducted by Costantino et al. [18] also supports this view, reporting that a significant proportion of pregnant women had smartphone addiction but were unaware of it due to smartphones becoming an integral part of their lives. In light of these findings, it is evident that nomophobia is an important issue to be addressed in prenatal care and management. It is recommended to plan initiatives aimed at increasing awareness among healthcare professionals and pregnant women regarding this matter.

Among the participants in our study, the most common mental problems were anxiety (45.1%), followed by stress (19.8%) and depression (11.7%). In the literature, the prevalence of anxiety in pregnant women has been reported to range from 18.8% to 54.0% [22-24]. In studies addressing stress in pregnant women, the prevalence of stress has been reported at rates of 4.2% [23], 25.0% [22]. The prevalence of depression in pregnant women has also been reported at varying rates, similar to other mental health issues. Studies have reported depression rates ranging from 6.9% to 37.5% in pregnant women [22-24]. The variability in the prevalence of anxiety, stress, and depression observed in national and international studies may be attributed to factors such as individual differences, socio-cultural backgrounds, living conditions, and variations in measurement tools used in these studies.

Our study found a positive correlation between nomophobia and depression, stress, and anxiety scores. Consistent with our findings, previous studies in different populations have also demonstrated the relationship between nomophobia and depression [3,5,21,25,26], stress [5,25,26], and anxiety [3,5,19,21,25,26]. Similarly, Tung et al. [27] reported an association between nomophobia and distress in university students. Yang et al. [17] also found that women with higher scores of smartphone addiction were more prone to depression. High levels of nomophobia may lead to increased

Table 5. Results of Regression Analysis

Dependent variables	Independent variables	B	Standard error	β	t	p-value
Anxiety	(Constant)	39.441	2.065		19.096	<0.0001
	NMP-Q	2.156	0.394	0.315	5.470	<0.0001
	R =0.315 R2=0.099 F=29.921 p<0.0001 Durbin Watson=2.092					
Stress	(Constant)	38.187	1.863		20.494	<0.0001
	NMP-Q	2.291	0.310	0.410	7.397	<0.0001
	R=0.410 R2=0.168 F=54.712 p<0.0001 Durbin Watson=2.090					

NMP-Q: Nomophobia Questionnaire

levels of depression, anxiety, and stress, and vice versa. Therefore, it can be stated that nomophobia coexists with psychological characteristics such as stress, anxiety, and depression. Evaluating nomophobia and its associated problems, similar to other mental disorders, is recommended in prenatal care.

CONCLUSION

The findings of our study indicate a varying degree of abnormally high nomophobia rates among pregnant women. Additionally, it has been observed that depression, anxiety, and stress are associated with nomophobia. The results showing a positive relationship between nomophobia and depression, anxiety, and stress scores suggest that nomophobia could be considered as a comorbidity in pregnant women diagnosed with severe anxiety, stress, and depression. Multicenter studies are needed to better understand this disorder in pregnant women. Healthcare professionals, including nurses, midwives, and other healthcare providers, who play an active role in prenatal care, should be aware of this significant and current phobia. Increasing awareness about smartphone use in pregnant women, protecting them from nomophobia, and promoting mental well-being could be beneficial by incorporating educational interventions by healthcare professionals into prenatal care and childbirth preparation classes.

Ethics

Ethics Committee Approval: Approval for the study was obtained from Ankara University Health Sciences Sub Ethics Committee (date: 19.09.2022, decision no.: 14/139) and permission from the Ankara University Cebeci Research and Application Hospital where the study was conducted (date: 24.10.2022, number: E-62535980-044-696548).

Informed Consent: All participants were informed and written informed consent was obtained.

Footnotes

Author Contributions

Concept: MNA, NYS; Design: MNA, NYS; Data Collection or Processing: MNA; Analysis or Interpretation: MNA; Literature Search: MNA, NYS; Writing: MNA, NYS.

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