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The Relationship between Nomophobia and Depression, Anxiety and Stress Levels of University Students

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ABSTRACT

In today's world, smartphones are an indispensable part of people's daily lives because smartphones facilitate daily routines. However, problematic or excessive use of smartphones can cause some psychological problems. Nomophobia is considered as one of the psychological problems caused by excessive use of smartphones. Nomophobia is referred to as modern age phobia and refers to irrational fears and anxieties of a person who cannot access or communicate with their mobile phone. Therefore, this study examines the prevalence of nomophobia among college students, behavioral patterns associated with nomophobia, and reveals the relationship between nomophobia and depression-anxiety-stress. A personal questionnaire, the Depression Anxiety Stress (DASS-42) and Nomophobia (NMP-Q) scales were used to investigate the research questions. . Descriptive statistics, one-way analysis of variance (ANOVA), independent samples t-test, Pearson correlation coefficient and simple linear regression methods were used to analyze the data. The results show that the level of nomophobia among college students is higher than average. There were significant differences between the level of nomophobia and the college students' behaviors such as carrying a charger, checking the smartphone after waking up, checking the phone frequently during the day, the duration of daily smartphone use, and the time of internet use through the smartphone. A positive correlation was found between nomophobia and depression-anxiety-stress level. Finally, in the regression analysis, the model was found to be statistically significant. This result shows that the level of nomophobia is a significant predictor of the level of depressionand anxiety stress. The results obtained show that nomophobia has negative impact on mental health.

Keywords:
Smartphone, nomophobia, depression, anxiety, stress.

1. Introduction

In today's world, advances in technology and information and communication technologies have brought many revolutionary innovations that will make human life more manageable. With the emergence of smartphones, computer use and internet access, used to access information in the past, have transferred these tasks to smartphones. Smartphones not only provide communication capabilities such as making phone calls, sending messages, and keeping track of emails, but can also be used for various purposes such as browsing the Internet, using social media accounts, playing games, making appointments, reading books, doing homework, having fun, and shopping (Lee et al., 2017).

Having all these features in a single device and offering possibilities that make life easier make smartphones indispensable for daily life and human life. So much so that smartphones are getting more widespread in the world and Turkey, and the age of using mobile phones is gradually decreasing. According to the research data on mobile phone subscriptions in the world in 2014, this rate was determined as 96.1% worldwide

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(International Telecommunication Union [ITU], 2015).According to the Turkish Statistical Institute (2019), the percentage of households with a mobile phone is 98.7% in Turkey. Everyday activities can be done with the same device have paved the way for smartphones to become so popular in people's lives (Erdem et al., 2016).With the increase in smartphone ownership and the expansion of the areas of usage, it is observed that the time spent on these devices is increasing day by day (Buyukcolpan, 2019). Besides its opportunities, problematic and excessive use of the smartphone can lead to some problems (Kang & Jung, 2014). One of the negative effects caused by mobile technologies is thought to be nomophobia (Ozturk, 2015).

Nomophobia is believed to be caused by excessive and problematic use of smartphones and it has been newly introduced to psychology terminology (Gezgin et al., 2017). In this context, nomophobia is accepted as the phobia of the modern age (King et al., 2010; King et al., 2013). Nomophobia is obtained by shortening the words "no mobile phone" and can be defined as the fear of being deprived of the smartphone (Lin et al., 2018). Although nomophobia is considered a problem close to addiction problems, it is thought to be among phobias (Guzel, 2019). İndividuals affected by nomophobia may experience an irrational fear and anxiety when deprived of their smartphones (Adnan & Gezgin, 2016). This fear and anxiety can affect the person's daily life and it can negatively affect the individual's concentration (Dixit et al., 2010). Therefore, when a person forgets his mobile phone or is out of the near area, this situation negatively affects his life (Jena, 2015). Considering all these, some studies have been conducted to include this disorder in DSM-V. (Bragazzi & Puente, 2014). The study prepared for this purpose; the symptoms of nomophobia are listed as follows:

Using a smartphone regularly, spending a great deal of time on the smartphone, owning one or more devices, carrying the charger with you all the time.

- Situations and thoughts such as the loss of the smartphone, not being around, its lack of proximity, being out of coverage, running out of credit or battery, avoiding or wanting to stay away from places where mobile phone use is prohibited (airport, theatre, public transport, etc.) cause great anxiety in the person. Continuously checking whether the notification is received on the smartphone
- The device is kept on all day, never turned off or sleeping with the device
- Restricting face-to-face communication with the thought that it will cause stress or anxiety and preferring more communication with mobile devices.
- Including significant expenses and entering debt to use a smartphone.

It has been suggested that people with these symptoms exhibit nomophobic behaviors and may be affected by nomophobia. Besides, considering the rates of mobile phone usage, it is thought that nomophobia is a widespread disorder worldwide. Although nomophobia can be seen in every age range, it is suggested that it primarily affects individuals between the ages of 18-25 (Kanmani et al., 2017). In this context, it is stated that university students are a risk group, as it is a group where smartphone use is common (Bianchi & Philips, 2005). Studies in the related literature show that nomophobia may be associated with individuals' depression, stress, and anxiety levels rather than being a problem alone. In a study examining the sources of anxiety, it was found that 53% of the participants were affected by nomophobia and were worried when they could not use their mobile phones (DailyMail, 2008). According to the data of another study, it was determined that 66% of the participants were affected by nomophobia (Secure Envoy, 2012). In addition, it has been determined that individuals between the ages of 18-24 exhibit more nomophobic symptoms than 77%. In a study conducted by Yildirim et al. (2015), the prevalence of nomophobia among university students was examined, it was determined that 42.6% of the participants had nomophobic behaviors. In another study, it was found that the nomophobia level of university students was above average (Adnan & Gezgin, 2016). Nomophobia is thought to cause some changes in individuals' daily behavioral patterns. For this purpose, in a study conducted by Akıllı and Gezgin (2016), it was found that university students' nomophobia levels were above average. They also observed that students who tend to develop nomophobia exhibit behaviors such as checking their phones frequently during the day, carrying the charger with them at all times, not turning off their smartphones during the night, spending time on their phones in bed before going to sleep, and checking their phones as soon as they wake up in the morning. When the relationship of nomophobia with depression, anxiety, and stress levels is examined, it is seen that the relationship between nomophobia and the mentioned variables has been revealed in different studies. Pavithra et al. found that 39.5% of the students had nomophobia, and 27% were at risk of developing nomophobia. In the same study, it was determined that 23% of the students lose their concentration and experience intense stress and anxiety

when their smartphones are not near or when their devices are about to run out of battery. In addition, Tams et al. found that (2018) nomophobia increases individuals' stress levels. At the same time, in a study by Katharine (2008), it is highlighted that 53% of the participants experience intense anxiety when their smartphones are not near or unable to use their devices, and they are under stress when their mobile phones are turned off. A similar result was found in the study by Sharma and Wavere (2015). Accordingly, 21% of university students were worried when their smartphones were not with them. In addition, it is thought that nomophobia affects the psychological well-being of individuals, and therefore nomophobia may cause depression in individuals (Randler et al., 2016). Buyukcolpan (2019) found in his study with university students that depression levels of individuals significantly predicted the level of nomophobia. Lin et al. concluded that (2018) the level of nomophobia in individuals is associated with depression, anxiety, and stress levels. According to another study, it is emphasized that anxiety caused by nomophobia can lead to psychological problems such as depression and stress in individuals (Lin & Pakpour, 2018). In addition, Katep that (2017) points out thatfactors such as the duration of smartphone use of university students and loss of connection can cause nomophobia, while nomophobia can lead to psychological symptoms such as depression, anxiety, and stress. Different studies emphasize that depression, stress, anxiety, and anxiety disorders can accompany nomophobia (Clayton et al., 2015).

Smartphones have many features that make human life more manageable when used accordingly and for their intended purpose. However, problematic, and excessive use of smartphones can cause some psychological and physical problems. Nomophobia, which is described as the phobia of the modern age, comes first among these problems. When the relevant literature is examined, it can be seen that nomophobia is more common among university students and may also lead to problems such as depression, anxiety and stress. In this context, it is seen that studies on nomophobia and depression, anxiety, and stress variables are limited, and there is no such study in the country. It is seen that previous studies, especially in the country, are related to the level of nomophobia and behavioral patterns. In the present study, the relationship between depression, anxiety, and stress was examined in addition to the level of nomophobia and behavioural patterns. Therefore, this study of nomophobia, newly introduced into psychology terminology, is considered necessary to expand the diversity of data in the literature. In order to investigate the relationships between anxiety and stress, four main hypotheses were made in the present study.

The first hypothesis of the study is that the nomophobia levels of university students are expected to be above average., the second hypothesis justifies the relationship between university students' levels of nomophobia, gender, and some behavioral patterns. The second hypothesis has four subheadings. According to this, female students are expected to have higher nomophobia levels than male students. Another one is that university students with a higher level of nomophobia are expected to check their smartphones as soon as they wake up in the morning compared to university students with lower level of nomophobia. On the other hand, university students with high levels of nomophobia are expected to check their smartphones daily more often than university students with low levels of nomophobia. In addition, university students with high levels of nomophobia are expected to access the Internet more frequently (in hours) through their smartphones than university students with low levels of nomophobia. Finally, university students with high levels of nomophobia are expected to use smartphones more daily (in hours) than university students with low levels of nomophobia. Third hypothesis is that there is a significant relationship between the nomophobia levels of university students and their depression-anxiety-stress levels. Fourth hypothesis is claims that Depression-Anxiety-Stress level predicts nomophobia level.

2. Methodology

2.1. Research Model

The current research was a quantitative study based on a relational model. This model aims to describe and interpret the potential relationships among two or more variables and infer from cause-effect and predictability between variables (Buyukozturk et al., 2018).

2.2. Participants

The present study has been patterned by adopting the appropriate sampling method. Before the study was carried out, the participants' necessary permission from Dicle University Social and Human Sciences Ethics

Committee and informed consent from the participants were obtained. A total of 356 university students from different age groups and studying at varying faculties of Dicle University participated in the study. The sample consists of 206 (57.9%) female students and 150 (42.1%) male students. The average age of the group is 21.48 (SD = 2.36). Of the students who participated in the study, 108 (30.3%) were first-year students, 146 were second-year students (41%), 53 were third-year students (14.9%), and 49 (13.8%) were fourth-year students. The average smartphone usage duration of students was found to be 5.31 years (SD = 2.69). The results on demographic characteristics are shown in Table 1.

Table 1. *Demographic Features*

	N	*%*	*Mean*	*SD*
Gender				
Female	206	57.9		.494
Male	150	42.1		
Age	356		21.48	2.36
Academic year				
1. year	108	30.3		
2. year	146	41.0	2.12	.995
3. year	53	14.9		
4. year	49	13.8		
Smartphone usage duration	356		5.31	2.69
Checking smartphone as waking up				
Yes	279	78.4	1.22	.412
No	77	21.6		
Frequency of Checking the Smartphone Daily				
1-16 times	84	23.6		
17-35 times	111	31.2	2.46	1.10
36-50 times	73	20.5		
50 and above	88	24.7		
Smartphone daily usage duration				
Less than 1 hour	6	1.7		
1-2 hours	34	9.6		
3-4 hours	95	26.7	4.09	1.35
4-5 hours	84	23.6		
5-6 hours	60	16.9		
6 hours and above	77	21.6		
Daily Internet Usage Duration on Smartphone				
Less than 1 hour	18	5.1		
1-2 hours	65	18.3		
3-4 hours	118	33.1		
4-5 hours	66	18.5	3.53	1.10
5-6 hours	42	11.8		
6 hours and above	47	13.2		
Total	356	100		

2.3. Data Collection Tool

Personal Information Form: To be able to obtain information from the participants such as age, gender, department, smartphone ownership status, duration, frequency of checking the smartphone, reasons for using the smartphone, the times of daily accessing the internet from the phone, and the situation of turning off their phones before going to sleep at night the information form created by the researcher was used for this purpose.

Nomophobia Scale (NMP-Q): Scale; has four sub-dimensions: Not being able to access information, giving up convenience, not being able to communicate, and loss of connection. The reliability coefficient of the original scale (Cronbach's Alpha) was reported as .95, and the reliability coefficient of the version adapted to Turkish was 0.92. The reliability coefficients of the Turkish version of the sub-dimensions of the scale were determined respectively as 0.90, 0.74, 0.94 and 0.9. In this study, the 5-point Likert type version of the scale was used by Erdem et al. (2017). When the literature was examined, previous studies determined that such a

change in the scale did not cause a statistical problem (Dawes, 2008). In the present study, the Cronbach's-alpha value was used to measure the internal consistency of the scale. This value was found to be 0.92 for the whole score and 0.81, 0.76, 0.89 and 0.87 for the sub-dimensions, respectively.

Depression-Anxiety-Stress-42 Scale (DASS-42): It was prepared as a 4-point Likert type and consisted of 42 items in total (Akın & Çetin, 2007). The scale has three sub-dimensions, and these sub-dimensions are determined as Depression, Anxiety and Stress. Cronbach alpha internal consistency coefficient of the scale was found to be 0.89. This coefficient was .90 for depression sub-dimension, 0.92 for anxiety and 0.92 for stress. In the present study, the whole score Cronbach-alpha value of the scale was found to be 0.96. Cronbach-alpha values for sub-dimensions were determined as 0.91, 0.88 and 0.90, respectively.

2.4. Data Collection and Analysis

The data collection process in the study was carried out voluntarily. In this way, the forms were given to 177 students studying at Dicle University in a classroom environment. Face-to-face education was suspended in the 2020-2021 academic year due to the coronavirus pandemic. Therefore, scales were prepared for online application in the following period. Online forms were reached to 195 university students via internet access.

Statistical techniques such as standard deviation, mean, percentage, bivariate Pearson's correlation coefficient, simple regression, t-test, one-way analysis of variance (ANOVA) was used to find answers to the sub-problems of the study. T-test analysis was conducted for paired comparison. One-way analysis of variance (ANOVA) was applied to compare more than two groups. A post-Hoc test was applied to determine the groups that differed significantly. Levene's test was used to ensure the assumption of variance homogeneity of the groups ($p > .05$). To determine the linear relationship between the level of nomophobia and scores for depression, anxiety, and stress, the bivariate Pearson correlation coefficient was used. A simple linear regression analysis was conducted to determine the strength of the relationship between nomophobia and depression-anxiety-stress using the correlation coefficient obtained.

2.5. Ethical

In this study, all rules stated to be followed within the scope of "Higher Education Institutions Scientific Research and Publication Ethics Directive" were followed.

Ethical Review Board Name: Dicle University Ethics Committee

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3. Results

In the study, the average score obtained from the Nomophobia (NMP-Q) scale was Mean = 3.01, SD = 0.78, which indicates that the nomophobia level of university students is above the average. The mean scores of the sub-dimensions of the nomophobia scale were found to be Not Being to Access Information Mean = 3.39, SD = 0.97, for Giving up Convenience Mean = 2.96, SD = 0.93, and Not Being Able to Communicate Mean = 3.23, SD = 0.98. Therefore, it was determined that the scores for these three sub-dimensions were above the average. It was determined that only the Loss of Connection Avg. = 2.48, SD = 1.02 sub-dimension was below the average. These data confirm Hypothesis 1. Descriptive statistics related to scales are presented in Table 2.

Table 2. *Descriptive Statistics of Scales and Their Sub-dimensions*

Scales	*N*	*Avg.*	*Sd*	*Skewness*	*Kurtosis*
Nomophobia	356	3.39	0.97	-.360	-.436
Not being able to access information	356	2.96	0.93	.001	-.605
Giving up convenience	356	3.23	0.98	-.297	-.351
Not being able to communicate	356	2.48	1.02	.483	-.418
Loss of connection	356	3.01	0.78	0.65	-.188
Total					
Depression-Anxiety-Stress					
Depression	356	1.06	0.73	.501	-.549
Anxiety	356	0.99	0.64	.629	-.144
Stress	356	1.32	0.68	.260	-.478
Total	356	1.13	0.68	.435	-.349

According to independent samples t-test results, a statistically significant difference was found between female students (Mean = 3.08, SD = 0.80) and male students (Mean = 2.90, SD = 0.74) nomophobia levels t (354) = 2.14, p <.05. Accordingly, it was determined that female students have higher levels of nomophobia than men. These data obtained from the study confirm the first subheading Hypothesis 2. Table 3 demonstrates independent sample t-test analysis results related to nomophobia scores in terms of gender.

Table 3. *Independent Sample t-Test Analysis Results Related to Nomophobia Scores in Terms of Gender*

Gender	*N*	*Avg.*	*Sd*	*df*	*t*	*p*
Female	206	3.08	0.80	354	2,147	0.32
Male	150	2.90	0.74			

According to the analysis, 78.4% of students said they check their smartphone as soon as they wake up in the morning. It was determined that there is a statistically significant difference between the nomophobia levels of those who control their smartphones as soon as they wake up in the morning and those who do not), t (354) = 3.11, p <.05. According to the results, it can be said that the level of nomophobia depends on whether you look at your smartphone right after waking up in the morning. These data show that the second item of Hypothesis 2 is confirmed. Results about independent sample t-test analysis results for nomophobia scores in terms of controlling the smartphone as soon as waking up are presented in Table 4.

Table 4. *Independent Sample t-Test Analysis Results for Nomophobia Scores in Terms of Controlling the Smartphone as soon as Waking up*

Gender	*N*	*Avg.*	*Sd*	*df*	*t*	*p*
Yes	279	3.07	0.79	354	3.110	0.02
No	77	2.76	0.70			

According to the results obtained from the analysis, a statistically significant difference was found between the nomophobia levels of university students and the frequency of daily smartphone control F = (3, 352) = 8.40, p <.001. Results about daily Phone checking are presented in Table 5 and Post-Hoc test results are presented in Table 6.

Table 5. *One-Way Analysis of Variance Results Regarding Nomophobia Scores in Terms of the Frequency of Daily Checking the Smartphone*

Source of Variance	*Sum of Squares*	*Sd*	*Avg. of Squares*	*F*	*p*
Between Groups	14.573	3	4.858		
Within Groups	203.394	352	0.578	8.407	.000
Total	217.967	355			

Since a significant difference was found from the obtained findings, Post-Hoc analysis was performed to identify the groups that made a significant difference. The findings showed that the nomophobia levels of those who checked their phones "50 or more times" (Mean = 3.31, SD = 0.78 is higher than those who checked "1-16 times" (Average = 2.74, SD = 0.08) and those who checked their phones "17-35 times" (Average = 2.94, SD = 0.65). The findings obtained confirm the third item of Hypothesis 2.

Table 6. *Post-Hoc-Tukey HSD Test Results Regarding the Analysis of the Difference in Nomophobia Level According to the Daily Smartphone Checking Frequency*

Freguency of Cheking (i)	*Freguency of Cheking (j)*	*Mean Difference(i-j)*	*SD*	*p*
1-16 times	17-35 times	-.20303	.10993	.253
	36-50 times	-.30345	.12163	.062
	50 times and above	-.56914	.11595	.000
17-35 times	1-16 times	.20303	.10993	.253
	36-50 times	-.10042	.11455	.817
	50 times and above	-.36611	.10850	.005
36-50 times	1-16 times	.30345	.12163	.062
	17-35 times	.10042	.11455	.817
	50 times and above	-.26569	.12034	.123
50 times and above	1-16 times	.11595	.11595	.000
	17-35 times	.10850	.10850	.005
	36-50 times	.12034	.12034	.123

According to the results obtained from the analysis, a statistically significant difference was found between the nomophobia levels of university students and the duration of internet use on their daily smartphones F = (5, 350) = 6.05, p <.001]. Results regarding the duration of daily Internet usage on smartphones are presented in Table 7 and Post-Hoc test results presented in Table 8**.**

Table 7. *One-Way Analysis of Variance Results Regarding Nomophobia Scores in Terms ofDaily Internet Usage on Smartphones*

Source of Variance	*Sum. of Squares*	*Sd*	*Mean of squares*	*F*	*p*
Between groups	17.346	5	3.469	6.052	.000
Within groups	200.621	350	0.573		
Total	217.967	355			

Post-Hoc analysis was conducted to identify the groups that made a significant difference. The findings showed that the levels of nomophobia (Avg. = 3.46, SD = 0.11) of those who use the internet on their smartphones for "more than 6 hours" were more than those who use 1 hour" (Avg. = 2.52, SD = 0.13), "1-2 hours" (Mean = 2.81, SD = 0.09), "3-4 hours" (Avg. = 2.96, SD = 0.06) and those who use "4-5 hours" (Avg. = 3.00, SD = 0.09). Besides, it was found that the nomophobia levels of those who used their smartphones for "5-6 hours" (Mean = 3.14, SD = 0.12) were higher than those who used "less than 1 hour" (Avg. = 2.52, SD = 0.13). According to the findings, the fourth item of Hypothesis 2 is confirmed.

Table 8. *Post Hoc-Tukey HSD Test Results on the Analysis of the Difference in Nomophobia Level According to the Duration of Daily Internet Usage on Smartphone*

Daily Usage of Internet (i)	*Daily Usage of Internet (j)*	*Mean Difference (i-j)*	*SD*	*p*
Less than 1 hour	1-2 hours	-.28520	.20165	.718
	3-4 hours	-.44217	.19158	.194
	4-5 hours	-.47597	.20132	.172
	5-6 hours	-.6312	.21329	.049
	6 hours and above	-.93712	.20986	.000
1-2 hours	Less than 1 hour	.28520	.20165	.718
	3-4 hours	-.15697	.11695	.761
	4-5 hours	-.19077	.13230	.701
	5-6 hours	-.32792	.14989	.246
	6 hours and above	-.65192	.14496	.000
3-4 hours	Less than 1 hour	.44217	.19158	.194
	1-2 hours	.15697	.11695	.761
	4-5 hours	-.03380	.11637	.1.000
	5-6 hours	-.170095	.13603	.808
	6 hours and above	-.49494	.13059	.002
4-5 hours	Less than 1 hour	.47597	.20132	.172
	1-2 hours	.19077	.13230	.701
	3-4 hours	.03380	.11637	1.000
	5-6 hours	-.13715	.14944	.942
	6 hours and above	-.46115	.14450	.019
5-6 hours	Less than 1 hour	.61312	.21329	.049
	1-2 hours	.32792	.14989	.246
	3-4 hours	.17095	.13603	.808
	4-5 hours	.13715	.14944	.942
	6 hours and above	-.32400	.16076	.336
6 hours and above	Less than 1 hour	.93712	.20986	.000
	1-2 hours	.65192	.14496	.000
	3-4 hours	.49494	.13059	.002
	4-5 hours	.46115	.14450	.019
	5-6 hours	.32400	.16076	.336

According to the results of one-way analysis of variance (ANOVA), a statistically significant difference was found between the level of nomophobia of university students and the duration of daily use of their smartphones F = (5, 350) = 4.86, p <.001]. The results on the duration of daily smartphone use are presented in Table 9 and the results of the post hoc test are presented in Table 10.

Table 9. *One-Way Analysis of Variance Results Regarding Nomophobia Scores in Terms of Duration of Daily Smartphone Usage*

Source of variance	*Sum. of squares*	*Sd*	*Mean of squares*	*F*	*p*
Between groups	14.171	5	2.824	4.867	.000
Within groups	203.796	350	0.582		
Total	217.967	355			

Post-Hoc analysis was conducted to identify the groups that made a significant difference. According to this, the nomophobia levels of those who use their smartphones for "more than 6 hours" daily (Avg. = 3.22, SD = .102) was found to be higher than those who use their phones for "1-2 hours" (Avg. = 2.66, SD = 0.12) and for "3-4 hours" (Mean = 2.80, SD = 0.07 The other groups that were found to be significant were those who use their smartphones for "5-6 hours" daily (Avg. = 3.20, SD = 0.08) and those who use "1-2 hours" (Avg. = 2.66, SD = 0.12) and "3-4 hours" (Avg. = 2.80, SD = 0.07). Accordingly, the nomophobia levels of those who use their smartphones for "5-6 hours" daily were determined to be higher than the other two groups. In the light of the findings obtained, the last item of Hypothesis 2 is confirmed.

Table 10. *Post Hoc-Games-Howell Test Results on the Analysis of the Difference in Nomophobia Level According to Duration of Daily Smartphone Use*

Daily Smartphone Usage (i)	*Daily Smartphone Usage (j)*	*Mean Difference (i-j)*	*SD*	*p*
Less than 1 hour	1-2 hours	-.28520	.20165	.718
	3-4 hours	-.44217	.19158	.194
	4-5 hours	-.47597	.20132	.172
	5-6 hours	-.61312	.21329	.049
	6 hours and above	-.93712	.20986	.000
1-2 hours	Less than 1 hour	.28520	.201165	.718
	3-4 hours	-.15697	.11695	.761
	4-5 hours	-.19077	.13230	.701
	5-6 hours	-.32792	.14989	.246
	6 hours and above	-.65192	.14496	.000
3-4 hours	Less than 1 hour	.44217	.19158	.194
	1-2 hours	.15697	.11695	.761
	4-5 hours	-.03380	.11637	1.00
	5-6 hours	-.17095	.13603	.808
	6 hours and above	-.49494	.13059	.002
4-5 hours	Less than 1 hour	.47597	.20129	.172
	1-2 hours	.19077	.14989	.701
	3-4 hours	.03380	.13603	1.00
	5-6 hours	-.13715	.14944	.942
	6 hours and above	-.46115	.16076	.019
5-6 hours	Less than 1 hour	.61312	.21329	.049
	1-2 hours	.32792	.14989	.246
	3-4 hours	.17095	.13603	.808
	4-5 hours	.13715	.14944	.942
	6 hours and above	-.32400	.16076	.336
6 hours and above	Less than 1 hour	.93712	.20986	.000
	1-2 hours	.65192	.14496	.000
	3-4 hours	.49494	.13059	.002
	4-5 hours	.46115	.14450	.019
	5-6 hours	.32400	.16076	.336

According to the results obtained from the analysis, a positive linear relationship was found between the nomophobia levels of university students and their depression-anxiety-stress levels r (356) = 324, p <.01). Based on this finding Hypothesis 3 is confirmed. When the sub-dimensions are examined, " Not being able to access information " sub-dimension has positive linear relationship with depression (356) = 183, p <.01), with Stress r (356) = .305p <.01) and with anxiety (356).210, p<.01). It has been determined that there is a positive relationship between the sub-dimension of "Giving up convenience" with Depression r (356) = 251, p <.01, with Anxiety r (356) = .302), p <.01 and with Stress r (356) = .354, p <.01. “Not being able to

communicate" sub-dimension was found to have a positive linear relationship with Depression r (356) = .189, p <.01), with Anxiety r (356) = .226, p <.01) and with Stress r (356) = .252, p < .01). Finally, Loss of connection was found to have a positive linear relationship with Depression r (356) = .211, p <.01), Anxiety r (356) = .241, p <.01) and Stress r (356) = .197, p <. .01). Results about correlation between Nomophobia and Depression-Anxiety-Stress are presented in Table 11.

Table 11. *Correlation Analysis Results Between Scales and Their Sub-Dimensions*

Scales and sub-dimensions	*Avg.*	*SS*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
1. Nomophobia	3.01	.78	1								
2. Depression-Anxiety-Stress	1.13	.64	.324**	1							
3. Not being able to access information	3.39	.97	.694**	.249**	1						
4. Giving up convenience	2.96	.93	.849**	.323**	.529**	1					
5. Not being able to communicate	3.23	.98	.840**	.238**	.435**	.619**	1				
6. Lose of connection	2.48	1.02	.786**	.231**	.376**	.565**	.521**	1			
7. Depression	1.06	.73	.261**	.940**	.183**	.251**	.189**	.211**	1		
8. Anxiety	0.99	.64	.307**	.924**	.210**	.302**	.226**	.241**	.805**	1	
9. Stress	1.32	.68	.341**	.930**	.305**	.354**	.252**	.197**	.809**	.791**	1

**p< .01

Simple Linear Regression analysis was conducted to reveal the direction of the relationship thought to exist between nomophobia and Depression-Anxiety-Stress. The model was found to be significant F (1, 354) = 41.46, p <.001. According to the findings, 10.5% of the variance in the Depression-Anxiety-Stress variable can be explained by the Nomophobia variable (R^2 = .105, Adjusted R^2 = .102). Nomophobia level was a statistically significant predictor for Depression-Anxiety-Stress level (B = 0.25, SD = 0.04, p <.001). Given this result, it was concluded that the level of nomophobia is a predictor of depression-anxiety-stress score, and Hypothesis 4 was confirmed. The results of the regression analysis are presented in Table 12.

Table 12. *Simple Linear Regression Analysis Results Related to the Predictor of Nomophobia*

	B	*SH*	*β*
Model 1			
Stable	.333	.128	
Nomophobia	.265	.041	.324

Note: R^2 = .105 for Model 1; p = .000, Independent Variable = Depression Anxiety Stress

4. Conclusion and Discussion

The present study discussed the relationships between the nomophobia levels and various behavioral patterns of university students and their depression-anxiety-stress levels. The findings obtained reveal that the nomophobia levels of university students are above average. It is seen that the sub-dimensions of not being able to access information, not being able to communicate and giving up convenience are of great importance for university students. It is seen that the findings obtained from the study are compatible with other results in the relevant literature (Tavolacci et al., 2015). Sharma et al. (2015) to determine the prevalence of nomophobia among university students, it was concluded that 73% of university students were nomophobic. Adnan and Gezgin (2016) examined the prevalence of nomophobia among university students; in this study, nomophobia levels of university students werefound above the average. In addition, this study revealed that the sub-dimensions of not accessing information and communicating among university students are more important than other sub-branches. A similar result regarding the sub-dimensions of lack of access to information and communication was found in a study by Yildirim et al. (2015). According to the results, they concluded that 42.6% of university students suffer from nomophobia and the factors of not being able to access information and not being able to communicate are more important. Tavolacci et al (2015) found that 35% of university students exhibit nomophobic behaviours. In light of all this information,

it is seen that nomophobia is common among university students, especially not being able to access information and communication is essential for students. It is thought that the young generation meeting with smartphones at an early age, the increase in the rate of having smartphones, the social needs that are tried to be met with smartphones and the prolongation of the time spent on smartphones can be effective in this situation.

When the results of the study were examined in relation to gender, it was found that there was a significant difference between the nomophobia of female and male students and that female students had higher nomophobia. When the related literature is examined, it is seen that there are similar results to the findings obtained from the study (Prasad et al., 2017). Studies show that female students studying at university are more affected by nomophobia (Guler & Veysikarani, 2019; Prasad et al., 2017). On the other hand, some studies found that, nomophobia is more prelant inamong male students (Al-Shaikh et al., 2019; Yildirim et al., 2015), and in some studies, there is no significant difference between male and female students' nomophobia (Dixit et al., 2009). However, in the literature, studies are showing that women spend more time with their smartphones (Andone et al., 2016) and they use their smartphones for communication and social media accounts, and men use them for games (Andone et al., 2016; Chen et al., 2017; Hakoama & Hakoyama, 2011). In this context, it is thought that among the reasons women have higher nomophobia scores, factors such as spending more time with their smartphones during the day, reaching their social media accounts and using their smartphones more for communication, chatting, sharing news may be effective. Thus, further research can be conducted to clarify whether those reasons affect these gender differences or not.

When analyzing various behavioral patterns of university students, it was found that there were significant differences between the levels of nomophobia and these behavioral patterns. The first of these behaviorpatterns is checking the smartphone as soon as you wake up. According to the findings, it was concluded that the behavior of controlling their smartphones as soon as waking up and the level of nomophobia differ significantly. The students who check their smartphones as soon as waking up have higher levels of nomophobia. When relevant literature is examined, it is understood that the result obtained from this study is in parallel with the literature. Studies conducted by Akilli and Gezgin (2016) and Gulluce et al. (2019) with university students revealed that people who control their smartphones as soon as they wake up are more nomophobic. Hosgor (2020) found that checking the phone as soon as waking up behavior creates a significant difference in the nomophobia level of university students in favor of those who check as soon as they wake up. Based on the findings mentioned above, it can be said that nomophobia and the behavior of controlling the phone as soon as you wake up go hand in hand. It is thought that this situation can be explained by the student's desire to be aware of what is going on, that is, to access information and to communicate, as they cannot use their phones until the morning. Kalaskar reported that (2015) approximately 83% of the participants spend time on social media as soon as they wake up in the morning. He stated that among the underlying reasons for these behaviors are communication (good morning message etc.) and effort to access information. One of the characteristics of nomophobia is that individuals cannot stay away from their smartphones for a long time. Thus, assuming that the person does not access his smartphone for hours during sleep, one assumes that the urge to control the smartphone is activated immediately after waking up in the morning. Another behavioral pattern examined in the study is the frequency with which the smartphone is checked during the day. The results show that there is a significant difference between the frequency with which the smartphone is checked during the day and the level of nomophobia.In this context, it has been determined that students who control their smartphones "50 or more times a day have a higher nomophobia level. Other studies in the literature are in parallel with this finding (Hosgor, 2020; Newport, 2015). Prasad et al. (2017) revealed that approximately 25% of the students determined to be nomophobic frequently check their smartphones during their internships and clinical lessons. Pavithra et al. (2015) determined that 49% of the participants checked 2-3 times an hour whether they received a notification (call, text message, e-mail) on their mobile phones. In addition, in Kalaskar's (2015) study, the time that more than 80% of the participants looked at their mobile phones to check whether they were connected or not was determined as approximately 6 hours. Considering the definition of nomophobia, it is seen that the individual wants to make sure that they are not absent from online connection, have access to information and communication by checking the notifications received by the mobile phone, or whether there is a signal and the state of charge. Otherwise, when people think that they

are deprived of their mobile devices, they experience irrational fear and anxiety and feel stressed. Therefore, it is suggested that checking the smartphone frequently is a characteristic feature of nomophobia (Pavithra et al., 2015).

Another behavioral pattern examined in the study is the daily use of smartphone. According to the results, it was determined that students who use their smartphones for "5-6 hours" and "more than 6 hours" daily have higher nomophobia levels. When the relevant literature is examined, it is seen that similar results have been found in the studies (Al-Shaikh et al., 2019; Buyukcolpan, 2019). Some studies have revealed a positive and significant relationship between the daily smartphone use of university students and their nomophobia levels (Veerapu et al., 2019). Accordingly, as daily use of smartphones increases (on an hourly basis), level of being nomophobia also increases. Yildirim and Correia (2015) argue that individuals' levels of nomophobia may increase in parallel with their daily smartphone usage. Some of the symptoms of nomophobia: the person never turns off their smartphone, sleeps with their phone, and spends most of the day with their smartphone. All these symptoms provide evidence that the individual spends more time with their smartphone. Among the reasons for this situation, it is thought that there are reasons such as staying online, staying in contact, and having access to information.

The last behavioral pattern obtained in the study is the daily internet usage time on the smartphone. When the results obtained were examined, it was determined that there was a significant difference between the daily internet use of university students on their smartphones and their nomophobia levels. Accordingly, those who use the internet for "5-6 hours" daily and those who use "more than 6 hours" on their smartphones are more nomophobic; some studies in the literature support this finding (Gezgin, 2017; Hosgor, 2020). Al-Shaikh et al. (2019) determined that university students who have internet access from their smartphones have higher levels of nomophobia. In addition, another study conducted on university students, it was another study conducted on university students found that daily internet use on smartphones and monthly internet quota from GSM operators was effective on nomophobia levels (Gezgin, 2017). Accordingly, it has been determined that university students with high daily mobile internet usage levels have higher nomophobia levels. Al-Shaikh et al. (2019) determined that university students who have internet access from their smartphones have higher levels of nomophobia. In addition, in another study conducted with university students, it was found that daily internet use on smartphones and monthly internet quota from GSM operators were effective on nomophobia levels (Gezgin, 2017). Accordingly, it has been determined that university students with high daily mobile internet users have higher levels of nomophobia. In light of these findings, it is understood that excessive internet use over mobile phones may affect the nomophobia level of university students. It is believed that the fact that almost all the functions of smartphones can be used with Internet access and that the Internet is the most widespread means of communication to communicate and keep up to date with the news has an impact on the result obtained.

It is known that nomophobia may accompany various psychopathologies. This study aims to examine the relationships between nomophobia and depression-anxiety-stress. According to the results, it was determined that there is a positive relationship between the nomophobia levels of university students and their depression-anxiety-stress levels. The regression analysis determined that the level of depression-anxiety-stress is a significant predictor for the level of nomophobia. The research concluded that nomophobia had a significant relationship with the most stress and the least depression sub-dimensions. When the relevant literature was examined, in a study conducted by Augner and Hacker (2012), it was revealed that there was a positive and significant relationship between problematic phone usage and depression-anxiety-stress levels of university students. In another study by Büyükcolpan (2019), it was concluded that the depression levels of university students are a significant predictor of nomophobia. In the same study, it was suggested that students could connect to their smartphones more and spend more time with their smartphones to alleviate or avoid negative emotions that may arise from depression. In this context, individuals with depression are expected to withdraw and limit their communication with people. Factors such as people isolating themselves and limiting face-to-face communication, using the phone as a method of coping with stressful situations, and avoiding the negative emotions they experience in the virtual world are thought to contribute. Examining the studies on anxiety, symptomatic factors of nomophobia were identified as anxiety, compulsive smartphone use, and panic, in a study conducted on university students by Rosales-Huamani et al. (2019). Therefore, individuals with nomophobia are expected to have a high level of

anxiety. Veerapu et al. (2019) concluded that there is a positive relationship between the nomophobia levels of university students and anxiety. Some studies concluded that university students experience anxiety, especially when their phones are running out of charge or cannot access their phones (Darvishi et al., 2019). Studies on stress have determined that university students experience intense stress when they cannot reach their smartphones, and when they are not near their devices, and when their battery is about to run out (Mallya et al., 2018). Based on these results, it can be concluded that there is a relationship between university students' nomophobia and their sense of stress and anxiety. Nomophobia is an irrational fear, anxiety, and stress that individuals experience when they cannot access or cannot access their mobile device. In this context, it is expected that individuals with nomophobia have high levels of anxiety and stress.

When the findings obtained from the studies are considered as a whole, it is seen that nomophobia is associated with psychological factors such as depression, anxiety, and stress. It is expected that there will be an increase in negative effects and depression. Studies show that individuals with depression use their smartphones more to cope with their negative feelings (Kim et al., 2017). Therefore, individuals with high levels of depression are expected to exhibit more nomophobia behaviors. However, it is thought that individuals with high levels of nomophobia experience intense anxiety and stress due to factors such as losing connection, inability to communicate or access information. In addition, feelings of stress and anxiety may accompany negative emotions and helplessness caused by depression.

5. Recommendations and Limitations

In recent years, advances in mobile technologies have caused smartphones to enter human life and these devices to become an indispensable part of human life. Smartphones have many benefits when used for their intended purpose, when used in a problematic way and excessively, they can cause various problems. One of these problems is nomophobia, which is called the phobia of the age. Studies have shown that nomophobia affects all age groups and is very common, especially among the younger generation. In addition, nomophobia can pose a threat to both the psychological and physical health of individuals. Therefore, it is important to raise awareness about nomophobia by informing people about nomophobia, holding seminars about nomophobia in schools and universities, and airing public service announcements about nomophobia on television or radio.

The present study is considered to have a unique value because it is one of the rare studies that examine the relationship between the nomophobia levels of university students and their depression-anxiety-stress levels. Although the relevant literature clearly emphasizes that nomophobia is related to mental health, it is noticeable that studies conducted in this area mostly focus on the extent of nomophobia and its associated behaviors. Therefore, this study on nomophobia and mental health variables provides clear evidence of the relationship between nomophobia and mental health and makes an important contribution to the literature by providing various data in this area. In addition, it is believed that conducting studies with a larger sample group and examining the relationships with various psychological variables such as loneliness, perceived social support, and irrational beliefs may help to identify the unknown aspects of nomophobia.

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