

Investigation of the Relationship Between the Levels of Nicotine Addiction and Depression Levels of University Students

Yasemin Özel¹ 

¹Kastamonu University, Tosya Vocational School, Department of Health Care Services, Kastamonu, Türkiye

Yasemin ÖZEL

Correspondence: Yasemin Özel
Kastamonu University, Tosya Vocational School, Department of Health Care Services, Kastamonu, Türkiye
Phone: -
E-mail: ykeskin@kastamonu.edu.tr

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ABSTRACT

Purpose: The study was conducted to be cross-sectional in order to determine the relationship levels between smoking and depression and to define the sociodemographic characteristics that make a significant difference.

Methods: The study was conducted with 280 students who agreed to participate in the study and stated that they smoke. The research data were conducted with university students who met the sampling inclusion criteria, and students with medium and high cigarette addiction levels who agreed to participate in the study. In the study, the "Psychological Addiction Assessment Test" and "BURNS Depression Scale" were used to evaluate the personal and addiction-related characteristics of cigarette addicts.

Results: The participants of 66.3% are between the ages of 19 and 22 and 64.2% are women. Findings of the answers given to the questions directed to the smoking variable; 29.8% started smoking before the age of 17, 70.2% after the age of 18, 23.8% smoked for more than 4 years, 37.6% used 1 pack of cigarettes a day, 51.1% of them stated that they had never tried to quit smoking before, 33.3% of their mothers and 75.2% of them their fathers were smoking. A statistically high positive correlation was obtained between the BDI total score and the SBBT scale score ($p < 0.001$).

Conclusion: It is clearly seen in the research results that there is a relationship between smoking addiction, some sociodemographic characteristics and depression. In order to increase the fight against addiction and addiction, it may be recommended to organize trainings for students or to add courses on addiction to the curriculum.

Keywords: Depression, smoking, addiction.

Üniversite Öğrencilerinin Nikotin Bağımlılığı Düzeyleri ile Depresyon Düzeyleri Arasındaki İlişkinin İncelenmesi

ÖZET

Amaç: Araştırma, sigara kullanımı ile depresyon arasındaki ilişki düzeylerini belirlemek ve anlamlı fark yaratan sosyodemografik özellikleri belirlemek amacıyla kesitsel olarak yapılmıştır.

Yöntem: Çalışma, araştırmaya katılmayı kabul eden ve sigara içtiğini belirten 280 öğrenci ile yürütülmüştür. Araştırma verileri, örneklem alınma ölçütlerini karşılayan üniversite öğrencileri ile araştırmaya katılmayı kabul eden orta ve yüksek sigara bağımlılık düzeyine sahip öğrencilerle gerçekleştirilmiştir. Araştırmada sigara bağımlılığı ve depresyonla ilgili özellikleri değerlendirmek için "Psikolojik Bağımlılık Değerlendirme Testi" ve "BURNS Depresyon Ölçeği" kullanılmıştır.

Bulgular: Katılımcıların %66,3'ü 19-22 yaş arasındadır ve %64,2'si kadındır. Sigara içme değişkenine yönelik sorulara verilen cevaplara ilişkin bulgular; %29,8'i 17 yaşından önce sigaraya başladığını, %70,2'si 18 yaşından sonra, %23,8'i 4 yıldan fazla sigara içtiğini, %37,6'sı günde 1 paket sigara kullandığını, %51,1'i sigarayı hiç bırakmayı denemediğini belirtti. Katılımcıların annelerinin %33,3'ü, babalarının %75,2'si daha önce sigara kullanmaktaydı. BDE toplam puanı ile SBBT ölçek puanı arasında istatistiksel olarak yüksek pozitif korelasyon elde edildi ($p < 0,001$).

Sonuç: Sigara bağımlılığı, bazı sosyodemografik özellikler ve depresyon arasında ilişki olduğu araştırma sonuçlarında açıkça görülmektedir. Bağımlılık ve bağımlılıkla mücadeleyi artırmak için öğrencilere yönelik eğitimler düzenlenmesi veya müfredata bağımlılıkla ilgili derslerin eklenmesi önerilebilir.

Anahtar Sözcükler: Depresyon, sigara, bağımlılık.

Cigarette addiction is a common type of addiction, as it is easily accessible and legal to use, and has effects on affective, physical, and psychomotor functions of the central nervous system (1,2). Nicotine use affects cognitive functions both positively and negatively, as shown in various studies (3,4). Furthermore, a significant relationship has been reported between smoking addiction and mental disorders, with smokers who are addicted to cigarettes exhibiting more symptoms of depression than healthy individuals (5,6). According to the report by the Organization for Economic Cooperation and Development (OECD), in which the health indicators of 35 countries are compared, Turkey is among the countries with the highest smoking rate (7). Regardless of age distribution, daily cigarette use in Turkey is 27.3%, and according to the results of the Global Tobacco Survey (2019), 29.6% of the population smokes every day (7,8). Smoking is influenced not only by socioeconomic factors, but also by psychological issues such as stress, anger, anxiety, and depression (9,10). The World Health Organization reports that over 300 million people worldwide suffer from depression, with this figure increasing by 25% due to the Covid-19 pandemic (11). Depression can be a risk factor for smoking, and major depression has been associated with neuroticism and nicotine addiction (12,13).

Studies show a strong relationship between young people's smoking and depression, anxiety, and stress (14). It is crucial to determine the relationship between smoking addiction and depression levels in university students, particularly after the pandemic, as studies suggest an increase in smoking among young people with depressive symptoms (12). Therefore, whether smoking increases in young people especially after the pandemic and its relationship with depression brings to mind. It has been suggested that there is an increase in smoking among young people with depressive symptoms and that smokers constitute a higher risk group for depression compared to healthy individuals (13,14). There are also studies in Turkey showing that university students' smoking and depression levels are quite significant (2,9,10,15). Teenagers who use multiple tobacco products are at higher risk of developing addiction and are more likely to continue using tobacco into adulthood. Therefore, this study aims to determine the relationship between smoking addiction and depression levels, as well as some sociodemographic variables, in university students. The study will provide important data on the symptom status of university students who have both smoking addiction and depressive symptoms after the pandemic. For this reason, it is anticipated that

the study will contribute to the relevant literature. The study seeks to answer the following questions:

- What are the sociodemographic characteristics and cigarette addiction levels of university students?
- What are the sociodemographic characteristics and depression levels of university students?
- What is the relationship between smoking addiction and depression in university students?

METHODS

Purpose and type of the research

The study was designed as a cross-sectional research to determine the relationship between smoking and depression levels, as well as to identify significant sociodemographic characteristics.

The population and sample of the research

The target population of this research is comprised of students who are currently enrolled at a state university. In order to calculate the sample size, the G Power 3.0.10 program was used to perform an ANOVA test, with a 95% confidence interval (1- α), 95% test power (1- β), $f=0.20$ effect size, and $\alpha=0.05$ margin of error. Based on these parameters, the required sample size was determined to be 280 individuals. The survey questions were adapted to an online survey program called "Survey," and the research team contacted university students through various social media platforms and email groups, inviting them to participate in the study by providing a survey link. The introductory page of the survey link presented a brief summary of the study, and participants were asked to declare their willingness to participate after reading and understanding the information. By marking a button, participants were able to access the remaining sections of the survey. The study was completed with 280 student participants who declared their willingness to participate and reported that they were smokers.

Inclusion criteria

- Being a university student
- Being a current smoker
- Voluntarily agreeing to participate in the study
- Having the ability to complete the survey in Turkish

- Being 18 years old or older
- Having no history of psychiatric disorders or cognitive impairments that may affect the validity of the survey responses.

Data collection and tools for data collection

The research data were conducted with university students who met the sampling inclusion criteria, and students with medium and high cigarette addiction levels who agreed to participate in the study. In the study, the "Psychological Addiction Assessment Test" and "BURNS Depression Scale" were used to evaluate the personal and addiction-related characteristics of cigarette addicts.

Psychological Addiction Assessment Test (PSAAT)

The first version was used by Ponciano Rodriguez et al. in the long version of 25 questions to assess cigarette addiction. The items in the scale are a 3-point Likert-type rating scale with "Frequently: 3 points, Rarely: 2 points, Never: 1 point". The minimum score that can be obtained from the scale is 8, and the maximum score is 24. The total score evaluation is as follows; 8-13: Slightly dependent; 14-19: Intermediate dependent; 20-24: Seriously addicted. In the adaptation study of the scale, the Cronbach's Alpha coefficient was determined to be 0.847 (16,17). In this study, Cronbach's Alpha coefficient was calculated as 0,959.

BURNS Depression Scale (BDS)

BDS is a 5-point Likert-type scale consisting of 25 items and 4 sub-dimensions, adapted into Turkish by Dikmen and Tuncer (2019) to examine depressive symptoms. The first 10 of the items are the feelings and thoughts of the person, 11-17. questions activity and personal relationships, 18-22. questions physical symptoms, 23-25. The questions measure suicidal desire. The total score of the answers given by the participants to all items from 1 to 25 is evaluated. According to the score obtained; It is evaluated as 0-5: No depression, 6-10: Normal but unhappy, 11-25: Mild depression, 26-50: Moderate depression, 51-75: Severe depression, 76-100: Extreme depression. In the adaptation study of the scale, the Cronbach's Alpha coefficient was determined to be 0.92 (18). In this study, Cronbach's Alpha coefficient was calculated as 0.961.

Statistical Analysis

The data were analyzed with the IBM SPSS Statistics 25.0 package program. Significance level was accepted as

$p < 0.05$. In the analysis of the data, the "Normality Test" was performed to determine whether the data were normally distributed, and the "MannWithney U" and "Kruskal-Wallis" tests, which were used in the "Non-Parametric" tests, were used for the data that were determined not to be normally distributed. Mann-Withney U test was used to compare the means of two independent groups in a distribution that did not show normal distribution. "Frequency" analysis was conducted to determine the socio-demographic characteristics of the individuals forming the sample. Correlation analysis (Spearman Rank Correlation Coefficient) was used to examine the hypotheses of the research. The absolute value in the correlation coefficient shows the strength of the relationship. The larger the value, the stronger the relationship is considered. In the study, the r value was accepted as 0-0.3 weak, 0.3-0.5 moderate, 0.5-0.7 high, and 0.7-1 quite high (19).

Limitations of the research

The data obtained in this study is limited to the data obtained from the statements given by the participants.

RESULTS

Data on the sociodemographic and smoking characteristics of the participants

66.3% of the participants are between the ages of 19 and 22 and 64.2% are women. While those studying in Health Sciences are 33.3%, those studying in Sciences constitute 18.8% of the participants. According to the variables of mother and father education level, 30.5% of the participants' mothers graduated from primary school and 27.7% of them were high school graduates from their fathers. 56% of the participants stated that their mother was a housewife and 40% stated that their father was a worker. 68.1% of the participants are not satisfied with the department they read. While 57.1% of the socioeconomic status is medium, 19.5% of the poor socioeconomic status is. 67.4% of the participants stated that they did not work in any job other than school (Table 1). Findings of the answers given to the questions directed to the smoking variable; 29.8% started smoking before the age of 17, 70.2% after the age of 18, 23.8% smoked for more than 4 years, 37.6% used 1 pack of cigarettes a day, 51.1% of them stated that they had never tried to quit smoking before, 33.3% of their mothers and 75.2% of them their fathers were smoking (Table 2).

Table 1. Data on the general characteristics of the participants		
Variable	Frequency	%
Age		
16-19	42	14,9
19-22	187	66,3
22-25	53	18,8
Gender		
Male	101	35,8
Female	181	64,2
Academic Branch		
Health Sciences	94	33,3
Social Sciences	57	20,2
Physical Sciences	53	18,8
Educational Sciences	78	27,7
Mother education status		
Primary School	86	30,5
Middle School	78	27,7
Senior School	67	23,8
Associate Degree	31	11
Bachelor's Degree	20	7,1
Father education status		
Primary School	57	20,2
Middle School	76	27
Senior School	78	27,7
Associate Degree	37	13,1
Bachelor's Degree	34	12,1
Mother's profession		
Housewife	158	56
Public Servant	60	21,3
Worker	64	22,7
Father's profession		
Public Servant	87	30,9
Worker	114	40,4
Self employment	81	28,7
Are you satisfied with the section you read?		
Yes	192	68,1
No	90	31,9
Where are you staying?		
House friends	33	11,7
Dorm	107	37,9
Family	107	37,9
Other	35	12,4
How to assess your socioeconomic status?		
Good	66	23,4
Middle	161	57,1
Bad	55	19,5
Do you work outside of school?		
Yes	92	32,6
No	190	67,4

Table 2. Data on smoking of participants		
Variable	Frequency	Percent
What is your age to start smoking?		
17 years and under	84	29,8
18 years and over	198	70,2
How long do you use smoking?		
0-1 month	20	7,1
1-6 month	45	16
6 month-1 year	42	14,9
1-2 year	51	18,1
3-4 year	57	20,2
4 more year	67	23,8
How much do you smoke per day?		
1 poket less	96	34
1 poket	106	37,6
1-2 poket	61	21,6
2 more poket	19	6,7
Have you tried to quit smoking?		
Yes	138	48,9
No	144	51,1
Does your mother smoke?		
Yes	94	33,3
No	188	66,7
Does your father smoke?		
Yes	212	75,2
No	70	24,8

Findings of the comparison of the sociodemographic characteristics of the participants with the smoking psychological addiction assessment test scores

There was no statistically significant difference between the participants' age, gender, academic branch, father's occupation, housing and employment status and the median scores of PSAAT Scale scores ($p>0.005$). A statistically significant difference was found between the education levels of the parents and the median scores of PSAAT Scale scores ($p=0.005$; $p=0.004$). As the mother's education level increases, the median score also increases. When the father's education level is examined, the PSAAT scale median value of those whose fathers are associate degree students is 53, while this value is 40 for those who are primary school graduates. A statistically significant difference was found between the mother's occupation and the median values of the PSAAT Scale score ($p=0.031$). While the median value of PSAAT scale was 51.5 for those whose mothers were a worker, this value was 43.5 for

those whose mothers were a housewife. A statistically significant difference was found between the level of satisfaction with the department and the median scores of the PSAAT Scale score ($p < 0.001$). While the median value of PSAAT scale was 52 for those who were not satisfied with their department, this value was 43 for those who were satisfied. A statistically significant difference was found between the socioeconomic status and the median values of the PSAAT Scale score ($p = 0.001$). While the median value of PSAAT scale was 53 for those who expressed their socioeconomic status as poor, this value was 44 for those who expressed it as moderate. There was no statistically significant difference between the participants' age at onset of smoking, duration of smoking, previous experience of quitting smoking, and the father's smoking status, and the median scores of PSAAT Scale scores ($p > 0.005$). A statistically significant difference was found between the amount of cigarette smoking that the participants used daily and the median values of the PSAAT Scale score ($p < 0.001$). While the median value of PSAAT scale was 56 for those who stated that they used more than 2 packs of cigarettes a day, this value was 40 for those who stated that they used less than 1 pack. A statistically significant difference was found between the amount of maternal smoking and the median values of the PSAAT Scale score ($p = 0.008$). While the median value of PSAAT scale was 50.5 for those who stated that their mothers smoked, this value was 44 for those who stated that they did not (Table 3).

Findings of the comparison of the sociodemographic characteristics of the participants with the depression scale scores

No statistically significant difference was found between the participants' age, gender, academic branch, father's occupation, housing status, smoking cessation experience, father's smoking status and the mean BDS score ($p > 0.005$). The mean value of BDS score for women was 63.7, and this value was 58.1 for men, and these values differed statistically between the groups ($p = 0.004$). The mean value of the BDS Emotion and Thought sub-dimension score was 25.9 for women and 23.4 for men, and these values differ statistically between the groups ($p = 0.003$). The mean value of the BDS Physical Symptoms sub-dimension score was 13.6 for women and 12.3 for men, and these values differed statistically between the groups ($p = 0.039$). There is a statistical difference between maternal education level and BDS Emotions and Thoughts, and Suicide Desire subscale scores ($p = 0.05$; $p < 0.001$). Emotions and Thoughts (20.1) and Suicidal Ideas (7.3) sub-dimensions of those who stated that their mother was an associate degree graduate were higher than the others. There was a

statistically significant difference between father's education level and BDS total score, and Suicide Desire subscale mean scores ($p = 0.03$; $p < 0.001$).

Those who stated that their fathers were associate degree graduates had higher BDS mean scores (72) and Suicidal Ideation (7.5) sub-dimensions score averages than others. There is a statistical difference between maternal occupational status and BDS total score and mean score of all subscales ($p < 0.005$). The average score of those whose mothers are workers is higher than the others. There is a statistically significant difference between the level of satisfaction with the reading and the BDS total score and mean scores of all subscales ($p < 0.001$). The average score of those who are not satisfied with their department is higher than those who are satisfied. There is a statistically significant difference between socioeconomic status and BDS total score and the mean scores of Emotions and Thoughts, Suicidal Ideas ($p < 0.05$). The mean scores of those with poor socioeconomic status are higher than the others. There is a statistically significant difference between working status out of school and the mean scores of all subscales except the BDS total score and the Emotion and Thought subscale ($p < 0.05$). The average score of students working outside of school time is higher than the others. There is a statistically significant difference between the age of starting smoking and the mean scores of the emotion and thought sub-dimensions ($p = 0.039$). While the average score of those who started smoking after the age of 18 was 25.8, the average of those who started before the age of 17 was 23.2. There was a statistically significant difference between the duration of smoking and the BDS total score and mean scores of all subscales ($p < 0.05$). Those who have been smoking for 6 months had higher BDS total score, emotion and thought, activity, and physical symptoms sub-dimension averages. Those who stated that they had been using cigarettes for 1 month had higher suicidal ideation subscale score averages. There is a statistical difference between daily cigarette consumption and BDS total score and mean score of all subscales ($p < 0.05$). Those who smoke more than 2 packs a day have higher mean scores. There was a statistically significant difference between maternal smoking and all other subscale mean scores except BDS total score and Physical Symptoms subscale mean score ($p < 0.05$). Those whose mothers smoked have a higher mean score (Table 4).

Table 3. Data on the comparison of the sociodemographic characteristics of the participants and the scores of the Evaluation of Psychological Addiction of Smoking Scale scores

Variable	N	Median (Min-Max.)	Test Ist.	p
Age				
16-19	42	45 (25-68)	*1,529	0,466
19-22	187	46 (24-75)		
22-25	53	46 (25-68)		
Gender				
Male	101	46 (24-75)	**9170,5	0,963
Female	181	46 (25-73)		
Academic Branch				
Health Scinces	94	47 (24-70)	*1,203	0,752
Social Scinces	57	48 (25-73)		
Physical Scinces	53	45 (25-70)		
Educational Scinces	78	43 (24-75)		
Mother education status				
Primary School	86	40 (24-73)	*14,662	0,005
Middle School	78	47 (24-68)		
Senior School	67	48 (25-75)		
Associate Degree	31	53 (25-75)		
Bachelor's Degree	20	54 (25-68)		
Father education status				
Primary School	57	40 (24-73)	*15,447	0,004
Middle School	76	45,5 (25-75)		
Senior School	78	46 (24-68)		
Associate Degree	37	54 (25-66)		
Bachelor's Degree	34	49,5 (25-70)		
Mother profession				
Housewife	158	43,5 (24-75)	*6,949	0,031
Public Servant	60	47,5 (25-68)		
Worker	64	51,5 (25-63)		
Father's profession				
Public Servant	87	44 (25-73)	*1,885	0,39
Worker	114	46 (24-75)		
Self employment	81	48 (24-68)		

Are you satisfied with the section you read?				
Yes	192	43 (24-70)	**11,57	<0,001
No	90	52 (24-75)		
Where are you staying?				
House friends	33	44 (25-67)	*5,724	0,126
Dorm	107	47 (24-75)		
Family	107	45 (24-68)		
Other	35	53 (25-68)		
How to assess your socioeconomic status?				
Good	66	46 (24-73)	*13,994	0,001
Middle	161	44 (24-68)		
Bad	55	53 (25-75)		
Do you work outside of school?				
Yes	92	46,5 (25-75)	**8,195	0,395
No	190	46 (24-73)		
What is your age to start smoking?				
17 years and under	84	47,5 (25-68)	**8162,5	0,806
18 years and over	198	46 (24-75)		
How long do you use smoking?				
0-1 month	20	46,5 (25-65)	*10,422	0,064
1-6 month	45	52 (25-65)		
6 month-1 year	42	53,5 (25-70)		
1-2 year	51	41 (25-68)		
3-4 year	57	43 (24-70)		
4 more year	67	45 (24-75)		
How much do you smoke per day?				
1 poket less	96	40 (25-68)	*20,754	<0,001
1 poket	106	47 (24-70)		
1-2 poket	61	52 (25-75)		
2 more poket	19	56 (25-73)		
Have you tried to quit smoking?				
Yes	138	46 (25-73)	**10235,5	0,661
No	144	47 (24-75)		
Does your mother smoke?				
Yes	94	50,5 (25-75)	**7136,5	0,008
No	188	44 (24-73)		
Does your father smoke?				
Yes	212	46 (24-75)	**7043	0,523
No	70	45 (24-70)		

* Kruskal-wallis Test, ** Mann-Whitney U Test, Median (Min-Max.)

Table 4. Data on the comparison of participants' sociodemographic characteristics and BDS Scale scores

		Total BDS	BDS Emotion and Thought Sub-Dimension	BDS Activity and Personal Relationships Sub-Dimension	BDS Physical Symptoms Sub-Dimension	BDS Suicide Request Subdimension
Variable	N	Mean ± Std.	Mean ± Std.	Mean ± Std.	Mean ± Std.	Mean ± Std.
Age						
16-19	42	56,1 ± 20,3	22,5 ± 8,7	16,3 ± 6,5	11,9 ± 4,2	5,5 ± 3,1
19-22	187	63,3 ± 23,5	25,5 ± 9,9	18,6 ± 7,6	13,4 ± 5	5,7 ± 3,2
22-25	53	60,6 ± 20,4	25,3 ± 9	17 ± 6,8	13,1 ± 4,9	5,2 ± 3,1
Total	282	61,7 ± 22,6	25 ± 9,6	18 ± 7,3	13,1 ± 4,9	5,6 ± 3,2
Test Ist.		F= 1,825	F=1,763	F= 2,414	F= 1,669	F= 0,643
p		0,163	0,173	0,091	0,190	0,526
Gender						
Male	101	58,1 ± 22,2	23,4 ± 9,2	17,1 ± 7,2	12,3 ± 5	5,3 ± 3,1
Female	181	63,7 ± 22,5	25,9 ± 9,7	18,5 ± 7,4	13,6 ± 4,8	5,7 ± 3,2
Test Ist.		t=-2,03	t=-2,185	t=-1,567	t=-2,078	t=-1,054
p		0,004	0,003	0,118	0,039	0,293
Academic Branch						
Health Sciences	94	62,3 ± 23,4	24,9 ± 9,8	18,6 ± 7,6	13 ± 5	5,8 ± 3
Social Sciences	57	63,9 ± 20,9	26,3 ± 8,9	17,6 ± 7	13,8 ± 4,6	6,1 ± 3,5
Physical Sciences	53	63,3 ± 22	26 ± 10,1	18,7 ± 6,8	13,4 ± 4,8	5,2 ± 3,1
Educational Sciences	78	58,3 ± 23,1	23,5 ± 9,4	17 ± 7,5	12,6 ± 5,1	5,2 ± 3,2
Test Ist.		F= 0,891	F=1,222	F= 0,938	F= 0,786	F= 1,291
p		0,446	0,302	0,423	0,503	0,278
Mother education status						
Primary School	86	58 ± 21,1	23,9 ± 8,8	16,8 ± 6,9	12,8 ± 4,8	4,6 ± 3
Middle School	78	60 ± 22,4	24,4 ± 10	17,4 ± 7,4	12,7 ± 4,7	5,5 ± 3,1
Senior School	67	66,5 ± 21,5	27 ± 9,1	19,6 ± 7,1	13,9 ± 4,8	6,1 ± 3,1
Associate Degree	31	67,5 ± 23,5	26,3 ± 9,7	20,1 ± 7,4	13,7 ± 5,2	7,3 ± 3,2
Bachelor's Degree	20	59 ± 28,3	23,6 ± 11,5	17 ± 8,8	12,7 ± 5,7	5,8 ± 3,4
Test Ist.		F= 2,034	F=1,310	F= 2,296	F= 0,783	F= 5,235
p		0,090	0,267	0,050	0,537	<0,001
Father education status						
Primary School	57	57,3 ± 21,9	23,3 ± 9,1	16,3 ± 7,2	12,9 ± 4,8	4,8 ± 3,3
Middle School	76	60 ± 23,4	24,7 ± 9,9	17,4 ± 7,3	12,6 ± 5,3	5,3 ± 2,9
Senior School	78	61 ± 20,7	24,9 ± 9,4	18,2 ± 6,9	12,8 ± 4,6	5,2 ± 2,8
Associate Degree	37	72 ± 18,9	29 ± 8,1	20,8 ± 6,1	14,8 ± 4	7,5 ± 3
Bachelor's Degree	34	63,1 ± 26,9	24,7 ± 10,8	18,5 ± 8,9	13,6 ± 5,5	6,3 ± 3,8
Test Ist.		F= 2,695	F=2,104	F= 2,294	F= 1,441	F= 5,412
p		0,031	0,081	0,060	0,221	<0,001
Mother profession						
Housewife	158	58,8 ± 23,6	24 ± 9,9	17,3 ± 7,8	12,6 ± 5,2	4,9 ± 3,2
Public Servant	60	62,2 ± 22	25 ± 9,3	17,8 ± 7	13,2 ± 4,8	6,2 ± 3,2
Worker	64	68,5 ± 19	27,6 ± 8,6	19,9 ± 6,2	14,4 ± 4	6,6 ± 2,9
Test Ist.		F= 4,370	F=3,428	F= 3,050	F= 3,057	F= 7,713
p		0,014	0,034	0,049	0,049	0,001

Table 4. Data on the comparison of participants' sociodemographic characteristics and BDS Scale scores (Continued)						
		Total BDS	BDS Emotion and Thought Sub-Dimension	BDS Activity and Personal Relationships Sub-Dimension	BDS Physical Symptoms Sub-Dimension	BDS Suicide Request Subdimension
Variable	N	Mean ± Std.	Mean ± Std.	Mean ± Std.	Mean ± Std.	Mean ± Std.
Father's profession						
Public Servant	87	59,9 ± 23,8	23,8 ± 10	17,5 ± 7,8	12,9 ± 4,9	5,7 ± 3,4
Worker	114	62 ± 21,9	25,1 ± 8,9	18 ± 6,8	13,3 ± 5	5,6 ± 3,3
Self employment	81	63,2 ± 22,2	26,2 ± 9,9	18,5 ± 7,5	13,2 ± 4,9	5,3 ± 2,8
Test Ist.		F= 4,67	F=1,325	F= 0,353	F= 0,152	F= 0,296
p		0,627	0,267	0,703	0,859	0,744
Are you satisfied with the section you read?						
Yes	192	57,1 ± 22,6	23 ± 9,5	16,7 ± 7,6	12,4 ± 4,9	4,9 ± 3
No	90	71,6 ± 19	29,3 ± 8,2	20,7 ± 6	14,8 ± 4,5	6,9 ± 3,1
Test Ist.		t=-5,276	t=-5,349	t=-4,325	t=-3,924	t=-5,029
p		<0,001	<0,001	<0,001	<0,001	<0,001
Where are you staying?						
House friends	33	57,9 ± 23,3	22,7 ± 9,7	17 ± 8,1	13,1 ± 5,5	5,2 ± 3,1
Dorm	107	60,3 ± 21,8	24,7 ± 9,2	17,4 ± 7	12,8 ± 4,7	5,4 ± 3,2
Family	107	63 ± 23,6	25,5 ± 10	18,4 ± 7,7	13,3 ± 5	5,7 ± 3,3
Other	35	65,9 ± 21	27 ± 8,9	19,2 ± 6,5	13,6 ± 4,6	6,1 ± 3
Test Ist.		F= 0,966	F=1,269	F= 0,838	F= 0,341	F= 0,752
p		0,409	0,285	0,474	0,796	0,522
How to assess your socioeconomic status?						
Good	66	62,7 ± 25	25,2 ± 10,4	18,2 ± 7,8	13,1 ± 5,3	6,2 ± 3,4
Middle	161	59 ± 21,5	24 ± 9,3	17,3 ± 7,2	12,7 ± 4,8	5 ± 2,9
Bad	55	68,4 ± 21,4	27,8 ± 8,9	19,7 ± 6,9	14,3 ± 4,7	6,6 ± 3,3
Test Ist.		F= 3,730	F=3,222	F= 2,412	F= 2,214	F= 7,431
p		0,025	0,041	0,092	0,121	0,001
Do you work outside of school?						
Yes	92	66,1 ± 22	26,6 ± 9,5	19,3 ± 7,2	14 ± 4,9	6,2 ± 3,1
No	190	59,6 ± 22,5	24,3 ± 9,5	17,3 ± 7,3	12,7 ± 4,9	5,3 ± 3,2
Test Ist.		t=2,295	t=1,909	t=2,175	t=1,995	t=2,419
p		0,022	0,057	0,03	0,047	0,016
What is your age to start smoking?						
17 years and under	84	59 ± 20,4	23,2 ± 8,3	17,5 ± 6,6	12,6 ± 4,7	5,7 ± 3,4
18 years and over	198	62,9 ± 23,4	25,8 ± 10	18,2 ± 7,6	13,3 ± 5	5,5 ± 3,1
Test Ist.		t=-1,336	t=-2,079	t=-0,737	t=-1,181	t=0,275
p		0,183	0,039	0,462	0,239	0,783

Table 4. Data on the comparison of participants' sociodemographic characteristics and BDS Scale scores (Continued)

		Total BDS	BDS Emotion and Thought Sub-Dimension	BDS Activity and Personal Relationships Sub-Dimension	BDS Physical Symptoms Sub-Dimension	BDS Suicide Request Subdimension
Variable	N	Mean ± Std.	Mean ± Std.	Mean ± Std.	Mean ± Std.	Mean ± Std.
How long do you use smoking?						
0-1 month	20	70,1 ± 17,9	28 ± 7,6	20,4 ± 6,6	14,1 ± 4,1	7,7 ± 2,4
1-6 month	45	69,1 ± 19,3	27,6 ± 8,1	20,6 ± 5,9	14,6 ± 4,6	6,2 ± 3
6 month-1 year	42	67 ± 20,4	27 ± 8,3	19,9 ± 6,6	13,5 ± 4,7	6,5 ± 3,1
1-2 year	51	54,2 ± 19,7	22,7 ± 9,1	15,3 ± 6,6	11,6 ± 4,1	4,6 ± 2,7
3-4 year	57	57,5 ± 24,4	23,4 ± 10,4	16,9 ± 7,9	12,4 ± 5,4	4,8 ± 2,9
4 more year	67	60,2 ± 25,1	24,4 ± 10,7	17,2 ± 7,9	13,3 ± 5,3	5,3 ± 3,6
Test Ist.		F= 3,701	F= 2,441	F= 4,165	F= 2,289	F= 4,880
p		0,003	0,035	0,001	0,046	<0,001
How much do you smoke per day?						
1 poket less	96	56,2 ± 22,1	22,9 ± 9,7	16,4 ± 7,4	12,1 ± 4,8	4,7 ± 2,7
1 poket	106	60,5 ± 19,9	24,6 ± 8,7	17,8 ± 6,4	13 ± 4,6	5,2 ± 2,9
1-2 poket	61	67,7 ± 23,7	27,4 ± 9,8	19,4 ± 8	14 ± 5	6,9 ± 3,5
2 more poket	19	77,1 ± 25	30,6 ± 10	22,4 ± 7,6	16,2 ± 5,5	7,9 ± 3,7
Test Ist.		F= 6,784	F=5,369	F= 4,585	F= 4,702	F= 10,582
p		<0,001	0,001	0,040	0,003	<0,001
Have you tried to quit smoking?						
Yes	138	61,5 ± 23	25 ± 9,9	17,9 ± 7,6	13,1 ± 5	5,5 ± 3,2
No	144	61,9 ± 22,2	25,1 ± 9,3	18,1 ± 7,1	13,1 ± 4,8	5,7 ± 3,2
Test Ist.		t=-0,158	t=-0,061	t=-0,252	t=0,70	t=-0,458
p		0,875	0,951	0,801	0,944	0,647
Does your mother smoke?						
Yes	94	66,3 ± 21,4	26,8 ± 8,9	19,3 ± 6,7	13,9 ± 4,9	6,2 ± 3,2
No	188	59,4 ± 22,8	24,1 ± 9,8	17,3 ± 7,5	12,7 ± 4,8	5,2 ± 3,1
Test Ist.		t=2,424	t=2,208	t=2,181	t=1,925	t=2,522
p		0,016	0,028	0,03	0,05	0,012
Does your father smoke?						
Yes	212	62,9 ± 21,8	25,5 ± 9,2	18,3 ± 7,1	13,4 ± 4,8	5,7 ± 3,2
No	70	57,9 ± 24,4	23,5 ± 10,5	17,1 ± 7,9	12,2 ± 5	5,2 ± 3,2
Test Ist.		t=1,619	t=1,510	t=1,219	t=1,855	t=1,266
p		0,106	0,132	0,224	0,065	0,207

* One way ANOVA, ** Independent Sample t Test

Findings on the relationship between participants' smoking addiction and depression scale scores

A statistically high positive correlation was obtained between the BDS total score and the PSAAT scale score (r=0.638; p<0.001). There was a statistically positive correlation between PSAAT score and BDS Emotion and

Thought (r=0.612; p<0.001), Activity and Personal Relationships (r=0.588; p<0.001), Physical Symptoms (r=0.578; p<0.001) subscale scores. A high correlation was obtained. A statistically positive moderate correlation was obtained between the PSAAT score and the Suicide Desire subscale scores (r=0.468; p<0.001) (Table 5).

Table 5. The relationship PSAAT and BDS Scale Score

		PSAAT	BDS	BDS Emotion and Thought Sub-Dimension	BDS Activity and Personal Relationships Sub-Dimension	BDS Physical Symptoms Sub-Dimension
BDS	r*	0,638				
	p	<0,001				
BDS Emotion and Thought Sub-Dimension	r	0,612	0,947			
	p	<0,001	<0,001			
BDS Activity and Personal Relationships Sub-Dimension	r	0,588	0,935	0,83		
	p	<0,001	<0,001	<0,001		
BDS Physical Symptoms Sub-Dimension	r	0,578	0,872	0,76	0,781	
	p	<0,001	<0,001	<0,001	<0,001	
BDS Suicide Request Subdimension	r	0,468	0,719	0,614	0,612	0,582
	p	<0,001	<0,001	<0,001	<0,001	<0,001

* Spearman's rho correlation coefficient

DISCUSSION

The research was conducted as a cross-sectional and correlation study in order to investigate the relationship between cigarette addiction and depression levels among university students and to identify significant sociodemographic characteristics. The study aimed to answer the following questions: What is the relationship between sociodemographic characteristics and depression levels? What is the relationship between cigarette addiction and depression? The participants' responses to the questions were analyzed, and the findings were evaluated.

Statistically significant differences were found between the participants' parents' education level, mother's occupation, satisfaction with the department, socioeconomic status, amount of cigarettes consumed daily, mother's smoking status, and PSAAT scores. These results suggest that smoking addiction can be influenced by various factors, such as the mother's occupation, education level, and smoking status, which may serve as risk factors for negative behavior. The study found that the PSAAT scores of participants whose parents had higher education levels were higher than those whose parents had lower education levels. However, this result is not consistent with the literature, which suggests that higher parent education has a protective effect against tobacco use (20,21). This discrepancy may be due to the parents' work outside their area of expertise, stress factors, and socioeconomic status.

Furthermore, the PSAAT scores of participants whose mothers were workers were significantly higher than those whose mothers were housewives or civil servants. This finding may be attributed to the insufficient time spent by working parents with their children and the stress factors associated with their job. Moreover, the study found that participants whose mothers smoked had significantly higher PSAAT scores than those whose mothers did not smoke. These results suggest that parental smoking may facilitate a young person's preference for smoking as a coping mechanism.

The study also found that the PSAAT scores of participants who smoked more than two packs of cigarettes per day were significantly higher than those who smoked less than two packs per day. This finding indicates that the frequency of smoking may be a predictor of addiction strength, and increasing attitudes towards addiction may lead to ignoring the harmful effects of smoking.

Additionally, the study found statistically significant differences between the participants' depression levels and their sociodemographic characteristics, such as gender, parents' education level, mother's occupation, satisfaction with the department, socioeconomic status, working in a job other than school, age of starting smoking, duration of smoking, daily smoking amount, maternal smoking status, and BDS mean score. Although the study found that university students were moderately depressed, some participants had severe depression symptoms. These findings are consistent with previous studies in the literature (22), which suggest that mental health significantly deteriorates among university-age youth.

The study findings are consistent with previous research on the relationship between smoking addiction and depression (23). The literature also suggests that higher parental education has a protective effect against tobacco use among young people (24). However, in this study, the results regarding parental education were not consistent with previous research, which may be due to factors such as the parents' occupation and socioeconomic status. The study's findings also indicate that the depression levels of university students are a predictor of their cigarette addiction. These findings are in line with other studies that have investigated the relationship between mental distress and smoking (23).

In addition, a recent study conducted by Bahrami et al. (2021) found that individuals who reported higher levels of stress were more likely to smoke cigarettes. This suggests that mental health and stress management may be important factors to consider in smoking cessation programs for university students (25). Furthermore, a meta-analysis by Taylor et al. (2014) indicated that smoking cessation interventions that target depression and anxiety symptoms can be effective in promoting smoking cessation among individuals with mental health problems (26).

Overall, this study adds to the growing body of research on the relationship between smoking addiction, depression, and sociodemographic factors among university students. The findings underscore the need for tailored prevention and intervention efforts that take into account these important factors. Future research should continue to investigate the complex interactions between these variables to inform effective public health strategies aimed at reducing the prevalence of smoking and improving mental health outcomes among young adults.

CONCLUSION AND RECOMMENDATIONS

Conclusion

The findings of this study suggest that there is a relationship between smoking addiction, some sociodemographic characteristics, and depression among university students. Specifically, a highly positive and significant correlation was found between the level of depression and cigarette addiction. In addition, significant differences were found in terms of gender, education level of the parents, mother's occupation, department studied, satisfaction, socioeconomic status, working in any job other than school, age of starting smoking, duration of smoking, daily smoking amount, and mother's smoking status.

However, it should be noted that the limited sample size may limit the generalizability of the results. To enhance the generalizability of the findings, future studies could use larger and more diverse samples that represent different demographic variables.

Recommendations

The results of this study have implications for university administrators and policymakers in their efforts to address smoking addiction among university students. Based on our findings, we suggest the following recommendations:

Offer educational programs and courses on addiction:

Educational programs and courses on addiction can increase students' awareness of the harmful effects of smoking and addiction, and provide them with the necessary skills to resist peer pressure and avoid addiction.

Provide counseling services for students:

Counseling services that focus on addiction prevention and intervention can help students who are struggling with addiction to overcome their addiction and improve their mental health.

Increase support for students from lower socioeconomic backgrounds:

Given that socioeconomic status was found to be a significant factor in smoking addiction, it is important to provide additional support and resources for students from lower socioeconomic backgrounds to prevent and intervene in addiction.

Collaborate with parents and families:

Given that parental education and occupation were found to be significant factors in smoking addiction, university administrators and policymakers could collaborate with parents and families to promote healthy behaviors and prevent addiction among their children.

In summary, this study sheds light on the relationship between smoking addiction, some sociodemographic characteristics, and depression among university students. The findings provide useful information for policymakers and university administrators who seek to prevent and intervene in smoking addiction among university students.

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Conflict of Interest

The author declare that have no conflict of interest.

Ethical Approval

This study was approved by the Ethics Committee of Kastamonu University Ethics Commission with the decision dated 09.06.2022 and numbered 6/13. In order to carry out the research, written permission from the relevant institution and informed voluntary online consents from the participants were obtained. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Availability of Data and Material

The datasets analyzed during the current study are available from the corresponding author on reasonable request.

Authors' Contributions

YÖ: Design, data collection, analysis and writing.

REFERENCES

1. Koob GF and Volkow ND. Neurobiology of addiction: a neurocircuitry analysis. *The Lancet Psychiatry*. 2016;3(8):760-77.
2. Oğuz S, Çamcı G and Kazan M. The frequency of smoking among university students and their knowledge of diseases caused by smoking. *Van Medical Journal*. 2018; 25(3):332-337.
3. Wittenberg RE, Wolfman SL, De Biasi M, et al. Nicotinic acetylcholine receptors and nicotine addiction: A brief introduction. *Neuropharmacology*. 2020;177:108256.
4. Bajrektarevic D, Corsini S, Nistri A, et al. In *Neuroscience of Nicotine*. Nicotine neuroprotection of brain neurons: the other side of nicotine addiction. Academic Press;2019. p. 79-86.
5. Audrain-McGovern J, Rodriguez D and Kassel JD. Adolescent smoking and depression: evidence for self-medication and peer smoking mediation. *Addiction*. 2009;104:1743-1756.
6. Dierker L and Donny E. The role of psychiatric disorders in the relationship between cigarette smoking and DSM-IV nicotine dependence among young adults. *Nicotine Tob Res*. 2008;10:439-446.
7. Organisation for Economic Co-operation and Development (OECD). *Health at a Glance 2017: OECD Indicators*, OECD Publishing, Paris, 2017. p. 23-24. (updated; 2023). Accessed: 03.01.2023. doi: 10.1787/health_glance-2017-en.
8. Öntaş E and Aslan D. *Global Adult Tobacco Survey Turkey 2016 - HUTF Public Health Department Public Information Series-(2018/2019-63)* <http://www.halksagligi.hacettepe.edu.tr/> Accessed: 06 January 2023.
9. Sağar ME. Examination of university students' attitudes towards cigarette addiction according to their smoking frequency. *Gumushane University Journal of Health Sciences*. 2017;6(3):41-49.
10. Şahiner NC, Şahin A and Akbağ NNA. University students' smoking status and their attitudes towards cigarette addiction. *Bandırma Onyedli Eylül University Journal of Health Sciences and Research*. 2020;2(2):64-79.
11. WHO. COVID-19 pandemic triggers 25% increase in prevalence of anxiety and depression worldwide. Accessed: <https://www.who.int/news/item/02-03-2022-covid-19-pandemic-triggers-25-increase-in-prevalence-of-anxiety-and-depression-worldwide>. 01 January 2023.
12. Mendelsohn PC. Smoking and depression: a review. *Aust Fam Physician*. 2012;1:304-307.
13. Jacobsen LK, Krystal JH, Mencil WE, et al. Effects of smoking and smoking abstinence on cognition in adolescent. *Biol Psychiatry*. 2005;57:56-66.
14. Substance Abuse and Mental Health Services Administration. 2018 National Survey on Drug Use And Health: Detailed Tables. Substance Abuse and Mental Health Data Archive [accessed 04 January 2023.].
15. Bayar BD, Can SY, Erten M, et al. Determination of depression and stress levels of university students during the Covid-19 pandemic process. *Journal of Paramedic and Emergency Health Services*. 2021;2(1):12-25.
16. Kutlu R. Evaluation of the effects of psychological dependence and desire to smoking on the success of quitting in smokers. *Selcuk Medical Journal*. 2021;37(3):231-237.
17. Hezer H and Karalezli A. The effect of psychological dependence on cigarettes on smoking desire and nicotine withdrawal symptoms. *Ankara Medical Journal*. 2019;19(4):700-707.
18. Dikmen M and Tuncer M. The validity and reliability study of the Turkish version of the Burns depression scale. *International Journal of Social and Human Sciences Research*. 2019;6(42):2848-2857.
19. Bhandari P. Correlation Coefficient Types, Formulas, Examples. Accessed: <https://www.scribbr.com/statistics/correlation-coefficient/>. 01 January 2023.
20. Öztürk M, Yücel A. The effects of sociodemographic factors on smoking behavior of university students. *TAF Prev Med Bull*. 2012;11(2):179-186.
21. Kaya M, Genç M, Kırıcı K, Yalçın Ö. The relationship between depression, anxiety and stress levels and suicidal ideation among university students. *Anatolian Journal of Psychiatry*. 2019;20(4):367-374.
22. Assari S, Boyce S, Caldwell CH, et al. Parent education and future transition to cigarette smoking: Latinos' diminished returns. *Frontiers in Pediatrics*. 2020;8:457.
23. Fluharty M, Taylor AE, Grabski M, et al. The Association of Cigarette Smoking With Depression and Anxiety: A Systematic Review. *Nicotine & Tobacco Research*. 2017;19(1):3-13.
24. Hu L, Sekine M, Gaina A, et al. Association of parental smoking and depression with adolescent smoking and depressive symptoms: findings from cross-sectional and longitudinal analyses of the child and adolescent behaviors in long-term evolution study in Japan. *Journal of Adolescent Health*. 2015;56(2):209-215.
25. Bahrami S, Mohammadi R, Barati M, et al. Association between perceived stress and cigarette smoking: A systematic review and meta-analysis. *Nicotine & Tobacco Research*. 2021;23(1):17-25.
26. Taylor G, McNeill A, Girling A, et al. Change in mental health after smoking cessation: Systematic review and meta-analysis. *British Medical Journal*. 2014;348:g1151.