

Prevalence of depression among Turkish University Students and related factors

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Abstract

Objective: This investigation was performed to determine the prevalence rate of depression and its correlates in students at Erciyes University. **Method:** A total of 1003 university students at the Medical, Theology and Engineering Faculties of Erciyes University in Kayseri, Turkey were included in the study. A socio-demographic questionnaire and a Beck Depression Inventory were completed by the students. An unpaired t test, a one way ANOVA test and a logistic regression analysis were used for the statistical analyses. **Results:** Total numbers of male and female students in the study group were similar and the mean age was 20.3±1.8. The mean Beck Depression Inventory Beck Depression Inventory score was 11.3±8.6 points and prevalence rate of depression (Beck Depression Inventory ≥17) was 21.2%. The Mean Beck Depression Inventory score and depression prevalence were found higher among the students who had a physical illness, who were not satisfied with their body image or their faculty and who rated the economic level of their families as poor. **Conclusion:** It was concluded that approximately one-fifth of the students had depression. For the students, studying in a faculty which they are not satisfied is a major factor affecting depression. A better leadership should be provided for the students during the faculty selection procedure.

Key Words: University student, depression, Beck Depression Inventory

Üniversite öğrencilerinde depresyon prevalansı ve ilişkili faktörler

Özet

Amaç: Bu çalışma, Erciyes Üniversitesi öğrencilerinde depresyon prevalansını ve bununla ilişkili faktörleri belirlemek amacıyla yapılmıştır. **Yöntem:** Erciyes Üniversitesinin Tıp, İlahiyat ve Mühendislik fakültelerinde okuyan toplam 1003 öğrenci araştırma kapsamına alındı. Öğrencilere sosyo-demografik anket ve Beck Depresyon Ölçeği uygulandı. Verilerin istatistiksel analizinde unpaired t testi, tek yönlü ANOVA testi ve logistik regresyon analizi uygulandı. **Bulgular:** Araştırma grubundaki erkek ve kız öğrenci sayıları birbirine yakındı ve yaş ortalaması 20.3±1.8 olarak

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belirlendi. Ortalama BDÖ puanı 11.3 ± 8.6 ve depresyon prevalansı (Beck Depresyon Ölçeği puanı ≥ 17) % 21.2 bulundu. Fiziksel hastalığı olanlarda, beden görünümünden memnun olmayanlarda, okuduğu fakülteden memnun olmayanlarda ve ailesinin ekonomik durumunu kötü olarak belirtenlerde ortalama Beck Depresyon Ölçeği puanı ve depresyon prevalansı daha yüksek bulundu. **Sonuç:** Öğrencilerin yaklaşık beşte birinde depresyon vardır. Öğrencilerin, hoşlanmadığı bir fakültede okumaları depresyon sıklığını etkileyen en önemli faktörlerden biridir. Fakülte seçimi sırasında öğrencilere daha iyi rehberlik hizmeti sağlanmalıdır.

Anahtar Kelimeler: Üniversite öğrencisi, depresyon, Beck Depresyon Ölçeği

Introduction

Depression is one of the most important public health issues worldwide. In the European Region, unipolar depression is responsible for 5.6% of the total burden of disease and an increase in this proportion is expected in the near future.¹ In Turkey, the proportion of unipolar depression within the total burden of disease has been reported as 3.9%, with 2.6% in males and 5.4% in females.²

Apart from the general aspects of youth, the university students, most of them aged between 18–24, are more prone to emotional problems due to factors such as being separated from family, having a new social environment, economical problems and the pressure of lessons and exams in general.³ The prevalence rate of depression was found to be between 19.0 and 31.8% in different earlier studies of Turkish university students.^{4–6}

The Beck Depression Inventory (BDI) is one of the most popular scales for both population-based and clinical studies and has been used since 1960's.⁷ A Turkish version of the BDI was validated by Hisli.⁸ The BDI includes 21 questions, all of which are scored between 0–3. The scores of each of the questions are summed up to obtain a total score between 0–63 points. The total BDI score is assessed as follows: scores between 0–9, normal; 10–16, mild depression; 17–22, moderate depression and 23 and above, severe depression.⁸ It has been established that, when the cut-off point is accepted as 17, the scale can correctly determine depression cases up to 90%.⁸

This study was performed with the aim of establishing depression prevalence among students from different faculties of Erciyes University, and to investigate the effect of socio-demographic and health-related factors on the prevalence rate of depression.

Method

There were 16 faculties at Erciyes University. Medical, Theology and Engineering faculties were selected for this study because the students of these faculties have distinct characteristics. Ethical approval for the study was obtained from the Ethical Committee of Erciyes University Medical Faculty, and administrative permission from the Deans of the Medical, Engineering and Theology Faculties.

The students from the first three years of the Medical, Theology and Engineering Faculties of Erciyes University, were planned for inclusion in the study. It was determined that the numbers of students in the 2009–2010 academic year, in the first three years of the Medical, Theology and Engineering Faculties were 650, 231 and 1688 respectively. All students from the Medical and Theology Faculties were planned for inclusion in the study. In order to include a similar number of students from the Engineering Faculty, three of the nine divisions of the engineering faculty were chosen randomly and 501 students from these divisions were planned for inclusion in the study. A total of 15 students who were

registered in a program but did not attend were excluded. Finally, a total of 1367 students were assigned for inclusion in the study.

The classes included in the study were visited by the investigators. A questionnaire including 26 questions about the socio-demographic and educational characteristics and the health conditions of the students were distributed to the students as well as a Turkish version of the Beck Depression Inventory (BDI). The questionnaires were filled in by the students under the supervision of the investigators. The students were informed about the study before the questionnaires were distributed, and verbal consent was taken. The students were asked not to write their names. All of the students in the classes accepted participation in the study. Those that were not present during the visit were excluded. The questionnaire was applied to 1015 students out of the 1367 students who were planned for inclusion. Twelve questionnaires were excluded due to incompleteness. A total of 1003 students were thus included. Of the group originally assigned for the study, 73.4% were included in the study. The economic level of the families were classified into five categories according to the students' statements as "very good, good, medium, poor and very poor". As the students in the very good and very poor categories were few, the "very good and good" and "very poor and poor" categories were combined as "good" and "poor" respectively during the statistical analyses.

The body mass index (BMI) was calculated as kg/m² from the reported weight and height values. BMI values below 18.5 were accepted as "thin", between 18.9–24.9 "normal", between 25–29.9 as "overweight", and 30 and above as "obese".

The answers given to the questions in the BDI were evaluated according to the instructions and scores between 0–63 were obtained. BDI scores between 0–16 points were accepted as "normal", and 17 and above points as "depression".

The results were evaluated with the SPSS 13.0 program on a computer. The mean values were shown together with the standard deviations. Pearson's chi square test was used for the categorical data, and the unpaired t test and one way ANOVA test (post hoc Scheffe test) were used for the numerical data. Logistic regression analysis was used for the evaluation of the impact of different factors upon depression prevalence. $p < 0.05$ values were accepted as statistically significant.

Results

In the study group, the numbers of male and female students were similar. Almost two thirds of the students were above 20 years of age, with a mean of 20.3 ± 1.8 .

The mean BDI score of the students was found to be 11.3 ± 8.6 . The total BDI score was above 17 in 21.2% of the study group. The mean BDI scores of the students according to different socioeconomic characteristics, and the depression rates established according to these scores are given in Table 1.

As seen in Table 1, there was no significant difference regarding the mean BDI scores and depression prevalence between male and female students and between the age groups.

BDI scores and prevalence rates of depression in students who reported the economic level of their families as poor were higher than those of students who reported the economic level of their families as good or medium ($p < 0.001$).

The living arrangement of the students and residence of the families had no significant effect on the BDI scores, nor on the depression rates.

The BDI scores and depression rates of the students in the study group according to their school-related characteristics are given in Table 2.

Table 1. Mean BDI scores and depression prevalences according to some socio-demographic characteristics

Characteristics	Groups	n	Total BDI Score				Mean ± SD
			0 - 16		17 +		
			Number	%	Number	%	
Gender	Male	507	397	78.3	110	21.7	11.5 ± 9.2
	Female	496	393	79.2	103	20.8	11.1 ± 8.0
	Statistical comparison		$\chi^2 = 0.130, p = 0.719$			$t = 0.71, p = 0.480$	
Age groups	<20	322	248	77.0	74	23.0	12.0 ± 9.4
	20 and above	681	542	79.7	139	20.3	11.0 ± 8.2
	Statistical comparison		$\chi^2 = 0.972, p = 0.324$			$t = 1.73, p = 0.085$	
Economic level of the family	Good	414	341	82.4	73	17.6	10.4 ± 8.4 ^a
	Medium	553	427	77.2	126	22.8	11.6 ± 8.4 ^a
	Poor	36	22	61.1	14	38.9	16.0 ± 12.2 ^b
Statistical comparison		$\chi^2 = 10.713, p = 0.005$			$F = 7.96, p < 0.001$		
Family residence	Urban	640	502	78.4	138	21.6	11.00 ± 8.0
	Semi - urban	258	203	78.7	55	21.3	11.9 ± 9.6
	Rural	105	85	81.0	20	19.0	11.7 ± 9.4
Statistical comparison		$\chi^2 = 0.342, p = 0.843$			$F = 1.16, p = 0.313$		
Living arrangement of the student	With the family	421	337	80.0	84	20.0	10.0 ± 8.4
	Dormitory	129	94	72.9	35	27.1	12.3 ± 10.2
	Others*	453	359	29.2	94	20.8	11.4 ± 8.2
Statistical comparison		$\chi^2 = 3.159, p = 0.206$			$F = 1.16, p = 0.313$		
Total		1003	790	78.8	213	21.2	11.3 ± 8.6

a,b: The differences between the groups not having the same letter for each variable are statistically significant.

**: In a house with friends, alone in a house, with the relatives etc*

As seen in Table 2, there was no significant difference in the mean BDI scores and depression rates according to the faculties. On the other hand, the mean BDI scores and depression rates were lower for the third years

students compared to first and second years. The mean BDI scores and depression rates were lower for the students that stated they were satisfied with their schools compared to those who were not.

Table 2. Mean BDI scores and depression prevalences according to school-related characteristics

Characteristics	Groups	n	Total BDI Score				Mean ± SD
			0 - 16		17 +		
			Number	%	Number	%	
Faculty	Medical	451	352	78.0	99	22.0	11.7 ± 9.4
	Theology	195	154	79.0	41	21.0	10.9 ± 7.5
	Engineering	357	284	29.6	73	20.4	11.1 ± 8.1
	Statistical Comparison		$\chi^2 = 0.276, p = 0.871$				F = 0.74, p = 0.476
School years	I	432	335	77.5	97	22.5	12.2 ± 9.4 ^a
	II	307	239	77.9	68	22.1	11.1 ± 7.9 ^{a,b}
	III	264	216	81.8	48	18.2	10.0 ± 7.8 ^b
	Statistical Comparison		$\chi^2 = 2.009, p = 0.366$				F = 5.89, p = 0.003
Satisfaction with the faculty	Satisfied	722	606	85.9	116	16.1	9.8 ± 7.3 ^a
	Unsatisfied	209	152	72.7	57	27.3	13.5 ± 8.8 ^b
	Undecided	72	32	44.4	99	22.0	20.1 ± 12.4 ^c
	Statistical Comparison		$\chi^2 = 206.456, p < 0.001$				F = 62.32, p < 0.001
Total		1003	790	78.8	213	21.2	11.3 ± 8.6

a,b,c: The differences between the groups not having the same letter for each variable are statistically significant

The BDI scores and the depression rates of the study group according to their health status are given in Table 3.

As seen in Table 3, the prevalence rate of depression was significantly higher in the

students who stated they had a physical illness, compared to those who did not ($p < 0.001$). As the BMI values increased, the mean BDI scores and depression rates also increased. The mean BDI score and depression prevalence of those who were not satisfied with their body image

were higher than those who were satisfied with it ($p < 0.001$).

Table 3. Mean BDI scores and depression prevalences according to the health-related characteristics

Characteristics	Groups	n	Total BDI Score				Mean \pm SD
			0 - 16		17 +		
			Number	%	Number	%	
Physical disease	Yes	89	52	58.8	37	41.6	10.8 \pm 8.2 ^a
	No	914	738	80.7	176	19.3	16.1 \pm 10.8 ^b
	Statistical Comparison	$\chi^2 = 24.149, p = 0.719$				$t = 4.51, p < 0.001$	
BMI	Thin	87	72	82.7	15	17.3	10.7 \pm 7.2 ^a
	Normal	754	604	80.1	150	19.9	11.2 \pm 8.4 ^a
	Overweight	146	104	71.2	42	28.8	12.0 \pm 9.4 ^{a,b}
	Obese	16	10	62.5	6	37.5	16.8 \pm 15.1 ^b
	Statistical Comparison	$\chi^2 = 9.123, p = 0.028$				$F = 2.71, p < 0.05$	
Satisfaction with the body image	Satisfied	687	575	83.7	112	16.3	9.9 \pm 7.7 ^a
	Unsatisfied	265	187	70.6	78	29.4	13.7 \pm 8.8 ^b
	Undecided	51	28	54.9	23	45.1	18.2 \pm 11.9 ^c
	Statistical Comparison	$\chi^2 = 38.005, p < 0.005$				$F = 38.09, p < 0.001$	
Total		1003	790	78.8	213	21.2	11.3 \pm 8.6

a,b,c: The differences between the groups not having the same letter for each variable are statistically significant.

Logistic regression analysis was performed in order to investigate the effects of the various factors upon the probability of depression. During this analysis, the depression state was taken as the dependent variable. Gender, age groups, faculty, years, living arrangement, satisfaction with the body

image, satisfaction with the faculty, presence of any physical illness, weight status of the students, economic level and residence of the families were all taken as independent variables. The results of logistic regression analysis are shown in Table 4.

Table 4. The effects of the various factors on the depression prevalence (Logistic regression analysis)

Independent variables	Groups	n	BDI Score ≥ 17		OR (95% CI)
			Number	%	
Gender	Male	507	110	21.7	1.00
	Female	496	103	20.8	1.01 (0.69–1.46)
Age groups	<20	322	74	23.0	1.00
	20 or above	681	138	20.3	0.86 (0.55–1.32)
Economic level of the family	High	414	73	17.6	1.00
	Medium	553	126	22.8	1.34 (0.94–1.91)
	Poor	36	14	38.9	2.33 (1.01–5.33)*
Residence of the family	Provincial centre	640	138	21.6	1.00
	District centre	258	55	21.3	0.88 (0.60–1.31)
	Town–village	105	20	19.0	0.74 (0.41–1.36)
Living arrangement	With the family	421	84	20.0	1.00
	Student dormitory	129	35	27.1	1.56 (0.93–2.62)
	Other**	453	94	20.8	1.12 (0.78–1.63)
Faculty	Medical	451	99	22.0	1.00
	Theology	195	41	21.0	1.20 (0.72–2.02)
	Engineering	357	73	20.4	0.96 (0.64–1.46)
School years	I	432	97	22.5	1.00
	II	307	68	22.1	1.12 (0.74–1.71)
	III	264	48	18.2	0.74 (0.46–1.19)
Satisfaction with the school	Satisfied	722	116	16.1	1.00
	Undecided	209	57	27.3	1.85 (1.25–2.74)*
	Unsatisfied	72	40	55.6	6.17 (3.59–10.62)*
Physical illness	Yes	89	37	41.6	1.00
	No	914	176	19.3	2.38 (1.44–3.95)*
BMI	Thin	87	15	17.3	1.00
	Normal	754	150	19.9	1.24 (0.65 – 2.35)
	Overweight	146	42	28.8	1.79 (0.84 – 3.82)
	Obese	16	6	37.5	2.81 (0.75 – 10.56)
Satisfaction with the body image	Satisfied	687	112	16.3	1.00
	Undecided	265	78	29.4	2.05 (1.43–2.95)*
	Unsatisfied	51	23	45.1	2.55 (1.29–5.06)*
TOTAL		1003	213	21.2	

*: $p < 0.05$

**.: In a house with the friends, alone in a house, with the relatives etc.

According to the results of the logistic analysis, risk of depression was found to be higher among the students who had any physical illness, were not satisfied with their body images, not satisfied with their faculties, and who reported the economic level of their families as poor. There were found to be no significant effects of gender, age, weight or living arrangement of the students and residence of the family on the probability of depression.

Discussion

The mean BDI score of the students in the study group was 11.3 ± 8.6 , and the prevalence rate of depression was found to be 21.2%. The mean BDI scores and prevalence rates of

depression in different studies from Turkey and other countries are given in the Table 5.^{4-6,9-11}

As seen in table 5, there are substantial differences between studies, both in mean

BDI scores and prevalence rates of depression. These differences can be due to the differences between the societies investigated, to the differences in educational programs of the students included in the study, or else they may be due to the differences in the methods used to diagnose of depression. For example, in the study from Brazil, BDI scores of 9 and above were accepted as depression and therefore prevalence rates of depression were much higher.

Table 5. Mean BDI scores and depression prevalences in different earlier studies (6–11)

Location	Study group	BDI score (Mean \pm SD)	Prevalence rate of depression (%)
Konya – Turkey	Medical students	9.9 \pm 8.2	19.0
Malatya – Turkey	Medical students	10.6 \pm 8.0	21.9
Malatya –Turkey	Vocational high school students	13.5 \pm 8.5	31.8
Eskisehir – Turkey	University students	11.2 \pm 8.6	21.8
Macedonia	Medical students	8.3 \pm 7.4	10.4
Brazil	Medical students	9.1 \pm 7.6	38.2
Japan	Female university students	11.8 \pm 6.7	-
Korea	Female university students	14.0 \pm 6.6	-

In this study no significant difference was found among different age groups, regarding the BDI scores and depression prevalence. In the earlier studies from Turkey, it was reported that the depression rates increased with age.^{5,12}

There was no significant difference in our study, in the BDI scores and depression rates when compared for male and female students. In two different previous studies performed with university students in Turkey, there were significant differences in the BDI scores and depression rates between

male and female students.^{12,13} In another study performed in Turkey, the depression prevalence in female students was twice that in the males.⁵

In a study performed with American and Japanese female students, the BDI scores were found to be 8.48 ± 6.55 in American, and 12.66 ± 7.05 in Japanese students.¹⁴ In our study the BDI scores of the female students were lower than the Japanese female students, but higher than the American. In a study performed with university students in Germany, Denmark, Poland and Bulgaria, the depression prevalence of female students in Denmark and Poland was twice the depression prevalence in male students, but was the same for both sexes in Germany.¹⁵ These results show that there can be differences in depression prevalences, and the effect of gender upon depression rates can vary within different societies.

In our study the depression scores in students who rated economic level of their families as poor were much higher than those who rated it as high or medium. In studies from Turkey, the BDI scores of university students increased as the economic level of the families worsened.^{7,12} In a study performed in Germany, Poland and Bulgaria, the depression rates were reported to be higher in students with a low income level.¹⁶

No important effects of the living arrangements of the students and the residence of the families were found upon BDI scores and depression prevalence. In two earlier studies from Turkey, the residence of the families and living arrangements of the students also had no significant effect upon BDI scores.^{8,13} In another study from Turkey, depression rates were higher in students that came from other provinces and were staying in student dormitories.¹⁷ These differences between the studies may be due to the fact that the characteristics of the students were different from each other.

In this study, there was no significant difference between the BDI scores of the students from the Medical, Engineering and

Theology Faculties. On the other hand, the prevalence rate of depression in students that were not satisfied with the program they were studying was six times higher than in those who were satisfied. In an earlier study performed in Turkey upon university students, the depression prevalence in those who were studying in the programs they wanted to be in was significantly lower compared to those who entered their programs incidentally.⁶ In a study performed in Germany, Poland and Bulgaria, the depression rates were higher in university students with a low academic performance¹⁶. The academic performance and the emotional state of the students who are obliged to enter a program, or through lack of knowledge, can be negatively affected.

In our study, the BDI scores and prevalence rates of depression among the students who had any physical illness were significantly higher than those who were healthy. Also, the BDI scores and depression prevalences of those who stated they were not satisfied with their body image were higher. Similarly, in two previous studies performed in Turkey, it was reported that the depression risk increased in university students with a physical disease.^{5,6} The presence of a physical disease, affects a person's daily activities and also their future professional activities in a negative way, and thus can cause an increase in depressive symptoms.

In conclusion, one in every five university students has symptoms of depression. The prevalence of depression is similar in male and female students. The prevalence of depression is higher in students with families who have a poor economic level. Depression risk was found to be higher in students not satisfied with their schools and with their body images and in those who have any physical illness.

Students should be guided about the program they really want to be in, right before entering university. An integrative approach such as evaluating the students according to their family characteristics, their

living conditions and socioeconomic status, putting in some effort in order to resolve their social problems, and creating a more protective educational environment can all be effective in preventing depression.

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