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Hopelessness and Related Factors Among Students of Dentistry: A Cross-Sectional Analytical Study

Diş Hekimliği Öğrencileri Arasında Umutsuzluk ve İlişkili Faktörler: Kesitsel Analitik Bir Çalışma

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ABSTRACT Objective: This cross-sectional analytical study investigated hopelessness and related factors among dentistry students, with the ultimate goal of providing evidence for effective interventions to increase professional motivation and satisfaction. **Material and Methods:** Of all students attending a selected school of dentistry, data were gathered from 537 students (71.2%), using a standard questionnaire and the Beck Hopelessness Scale (BHS). The authors used the SPSS ver. 23 for descriptive and analytical statistics; hopelessness status was further modelled using logistic regression. **Results:** The authors examined data and using BHS scores and classification, hopelessness status was found as "minimal", "mild", "moderate", and "severe" in 51.0%, 35.9%, 10.8% and 2.2% of the participants, respectively. Dichotomizing hopelessness at BHS score of ≤3: in final logistic model, higher paternal education (OR=1.58; 95% CI=1.08-2.33), and absence of hobbies (OR=2.39; 95% CI=1.33-4.29); mismatch of education with student's professional expectations (OR=2.33; 95% CI=1.59-3.40) and having thoughts on leaving school at any time ((OR=2.41; 95% CI=1.64-3.54) were found positively associated with higher level of hopelessness, controlling for gender and grade. **Conclusion:** Hopelessness is fairly common among dental students. Increasing awareness of students on educational curricula and career options, together with ensuring acquisition of/support for different hobbies can be useful as preventive measures. Students with despair regarding their education or a wish to leave school at one point should be prioritized in interventions.

Keywords: Hope; students, dental; education, dental; hobbies

ÖZET Amaç: Bu kesitsel analitik çalışma, mesleki motivasyonu ve memnuniyeti arttırmak için etkili müdahaleler oluşturulmasına kanıt sağlamak amacıyla diş hekimliği öğrencileri arasındaki umutsuzluğu ve ilgili faktörleri araştırmıştır. **Gereç ve Yöntemler:** Veriler seçilmiş bir dişhekimliği okuluna devam eden tüm öğrencilerin 537'inden (%71,2) standart bir anket ve Beck Umutsuzluk Ölçeği (BHS) kullanılarak toplanmıştır. Yazarlar tanımlayıcı ve analitik istatistikler için SPSS ver. 23'ü kullanmış olup umutsuzluk durumu için lojistik regresyon kullanılarak ileri modellemeler yapılmıştır. **Bulgular:** Yazarlar verileri incelemiş ve BHS puanları ile sınıflandırmasını kullanarak, katılımcıların sırasıyla %51,0; %35,9; %10,8 ve %2,2'sinde umutsuzluk durumunu "minimal", "hafif", "orta" ve "şiddetli" bulmuştur. BHS skoru ≤3 olanlar "minimal düzeyde umutsuz" kabul edilecek şekilde veriler dikotomize edilerek cinsiyet ve sınıfa göre düzeltildiğinde, son lojistik modelde, baba eğitim düzeyinin daha yüksek olması (OR=1,58; %95 GA=1,08-2,33), hobisi bulunmaması (OR=2,39; %95 GA=1,33-4,29), aldığı eğitimin mesleki beklentilerini karşılamaması (OR=2,33; %95 GA=1,59-3,40); ve herhangi bir zamanda okulu bırakmayı düşünmesi (OR=2,41; %95 GA=1,64-3,54) yüksek umutsuzluk düzeyi ile pozitif olarak ilişkili bulunmuştur. **Sonuç:** Diş hekimliği öğrencileri arasında umutsuzluk oldukça yaygındır. Öğrencilerin eğitim müfredatı ve kariyer seçenekleri konusunda farkındalığının arttırılması, farklı hobilerin edinilmesi/desteklenmesi ile birlikte koruyucu tedbirler olarak yararlı olabilir. Müdahalelerde eğitimleriyle ilgili umutsuzluğu veya herhangi bir dönemde okulu bırakmayı istemiş olan öğrencilere öncelik verilmelidir.

Anahtar Kelimeler: Öğrenciler, diş hekimliği; eğitim, diş hekimliği; hobiler

Hope is a belief or an expectation that there is more than zero chance of a future aim to be realized.[1,2] In opposite, hopelessness or despair is defined as a state of mind where an individual believes that s/he cannot prevent her/his failures, and can never solve her/his problems, even if great effort is given.[3]

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Hopelessness is not considered as a health problem by itself, but can also appear as a predisposing factor or an indicator of other mental disorders. Despair is thought to be a potential mediator of the depressive effects of stress.[4] Literature also reveals hopelessness as a predictor of suicide attempts, including those among university students; and, probability of suicidal tendency was reported to be associated with the level of hopelessness.[1,5-7] Uncertainties about the future and feelings of inadequacy can cause hopelessness.[8] It is claimed that hopelessness is a natural consequence of this "learned helplessness" process.[9] In a study in the United States of America (USA), uncontrolled stress factors were associated with despair among adolescents.[10] In chronic, repetitive or extreme situtations, such stress factors can lead to psychological problems in students, including depressive symptoms, anxiety, anger, behavioral disorders, substance abuse, absenteeism, reduced work efficiency, burnout and hopelessness.[11] Such situations may lead to decrease in students' interest and coping skills, increase perceptions of incapability, and eventually result in low academic performance and adversely affect students' daily social lives.[12-14]

Dentistry is one of the leading choices of profession in many societies due to its popularity and high salaries.[15-17] However, in line with other medical occupations, dentistry education is a challenging process, often associated with high stress levels, constraining mental and physical capacities of the students.[18] Symptoms of anxiety, depression, stress, burnout, or even suicide risk, have been shown to be more common among dentistry students compared to that in general population.[19-21] Factors that trigger and affect mental problems either directly or indirectly among dentistry students may either be associated with a negative educational environment or more likely to be related to financial problems, competition with peers, difficulty in coping with curriculum and workload, fear of failing class, fear of confronting parents after failure, difficulties in learning manual and clinical procedures, insufficiency of resting hours, risk of blood-borne infectious diseases (HBV, HCV, HIV) and lack of professional self-confidence.[18,22-25]

Studies on the mental state of dental students and related factors are limited and focused mainly on stress, depression, anxiety and suicidal thoughts. The number of published researches on hopelessness is very limited. The aim of this study is to investigate hopelessness and related factors among dentistry students, with the ultimate goal of providing evidence for effective primary interventions to minimize mental problems, with a potential to increase professional satisfaction and life quality of future providers of dental care in communities.

MATERIAL AND METHODS

PARTICIPANTS AND PROTOCOL

A cross-sectional analytical study was conducted to include all (from first through fifth grades) students in the dental faculty of a public university, in Ankara, Turkey. No sample was selected and all students (N= 754) attending school in October 2018 were approached.

Data were obtained from 72% of 745 students attending the school. Completion rates were slightly different across grades; with percent values of 72.1%; 68.3%; 64.7%; 82.4%; and, 57.0% for the first thorough the fifth (last) grades, respectively. The lowest completion rate was for the last grade because many students had exhaustive clinical workload and, thus, did not want to participate in the study.

Ethical approval was obtained from Non-interventional Research Ethics Committee of the university (date: 24-November-2018 and register no: GO 18/984). A pilot testing of the questionnaire and interviewers were conducted on 20 students from another dental school located in the same city. Data were obtained though questionnaires completed by the students in classroom settings, in October 2018, following permission of instructers and informed consent of students. No participant identifiers was requested and all analyses were performed anonymously. Questionnaires included a line for voluntary insertion of personal nick name/number for any student who wanted to learn his/her personal score calculated for hopelessness index, after the completion of the study period.

QUESTIONNAIRE AND EVALUATION OF HOPELESSNESS

In the study, a standard questionnaire consists of 55 questions was used, with an additional Beck Hopelessness Scale (BHS) at the end. The questionnaire included questions on personal, family-and education-related characteristics that might confound the total hopelessness score, and provide evidence for future interventions to be tailored to high risk groups.

Validation of the BHS in Turkish population was conducted by Seber and Dilbaz in 1993, to be used for measuring hopelessness in healthy Turkish adults (Cronbach alfa=0.86).[7] In 2006, the same scale was reapplied by Durak and Palabıyıkoğlu on 201 hospitalized patients and 172 healthy hospital staff or patient relatives; and, was validated again as a valid test for measuring hopelessness in Turkish adults (Cronbach alfa=0.86).[26] The scale consists of 20 questions and the arithmetic total obtained from the test constitutes the "hopelessness score". The total score is grouped into four; so that a total score of 0-3, 4-7, 9-14, and 15 or more are considered "minimal", "mild", "moderate", and "severe" hopeless.[26]

STATISTICAL METHODS

A total of 629 dentistry students completed the questionnaires, yet, 92 were excluded from analyses because at least one question was unanswered in BHS (n=537). Descriptive statistics were presented with the median value (minimum-maximum). Chi-square tests were used for comparison of categorical groups.Odds ratio (OR) and relavant 95% confidence interval (CI) were used for revealing potential associations, in binary analyses and logistic regression modeling. According to the BHS scores, those with "mildly, moderately or severely" hopeless were coded as "hopeless" in models, and compared to those with a total score of 3 or less (i.e., those with minimal hopelessness).

In the study, for the evaluation of the presence of confounding factors and effect modification, stratified analyzes were conducted, and whether there was a statistically significant difference between the strata-specific odds ratios was examined by the MH Odds Ratio values with Breslow Day statistics. If the Breslow day statistic was not significant, it was decided that there was no effect modification.Whether there is a confounding factor according to MH Chi square value was examined. If the confounding factor causes significant changes, CMH odds ratio values have been reported instead of crude OR values. While designing the full model, all possible variables, possible confounding factors and effect modificating factors were added to the model. The most parsimonious statistically significant model was reported using the "Backward unconditional LR model" to reach the final model.

Statistical Package for the Social Sciences (SPSS) v. 23 was used for data entry and analysis.

RESULTS

Of the participants, 66.2% of were female and 98.7% were single. The ages of the participants ranged between 18 and 30 years, with a median age of 21.Parental educational attainment was considerably high; 46.2% of the mothers and 63.2% of the fathers reportedly had university education or higher (Table 1). It was remarkable that 87.3% of all participants had at least one hobby, while more than a hundred different hobbies were noted in varying fields of art, music and sports (Table 1).

Dental school was the first choice in the national university enterance exam for 73.3% of the participants. Professional status of dentistry in the community (47.8%) was the main reason for selecting dental school and 64.6% of the participants stated that "they would prefer dentistry, if they had a chance to enter university exam again". About 40% of the participants had thought of leaving the school at least once over the course of their university education. When participants were asked about their satisfaction with the choice of profession, only 8.6% stated that they were "dissatisfied". Yet, 39% of participants considered their current curricula to be in line with their a priori expectations (Table 2).

Based on BHS criteria, hopelessness about the future was minimal in 51.0%, mild in 35.9%, moderate in 10.8% and severe in 2.2% of the participants. In other words, about half of the participants had some level of hopelessness.

TABLE 1: Distribution of level of hopelessness by personal characteristics.

	Hopelessness Mild/Moderate/Severe		Hopelessness Minimal		Total		Odds ratio	Chi- square test
	n	%	n	%	n	%*	[95% CI**]	p-value
Year of study (n=537)								
First year	54	39.4	83	60.6	137	25.5	1.00	0.131
Second year	52	52.5	47	47.5	99	18.4	1.70 [1.01-2.87]	
Third year	47	53.4	41	46.6	88	16.4	1.76 [1.03-3.03]	
Fourth year	67	53.2	59	46.8	126	23.5	1.75 [1.07-2.85]	
Fifth year	43	49.4	44	50.6	87	16.2	1.50 [0.87-2.58]	
Sex (n=537)								
Female	183	51.5	172	48.5	355	66.2	1.34 [0.94-1.93]	0.107
Male	80	44.2	101	55.8	181	33.8	1.00	
Maternal education (n=533)								
University graduate or higher	126	51.2	120	48.8	246	46.2	1.00	0.378
High school or lower	136	47.4	151	52.6	287	53.8	0.86 [0.61-1.21]	
Paternal education (n=533)								
University graduate or higher	178	47.2	159	52.8	337	63.2	1.00	0.014
High school or lower	82	41.8	114	58.2	196	36.8	0.64 [0.45-0.92]	
Presence of any hobby (n=527)								
No hobby	213	46.3	247	53.7	67	12.7	2.08 [1.22-3.54]	0.006
Has a hobby	43	64.2	24	35.8	460	87.3	1.00	

*The percentage of the column is given. All other percentages are row values; **CI: Confidence Interval.

In binary analysis, level of hopelessness (at least mild versus minimal) was not associated with grade (p=0.131),gender (p=0.107), or educational attainment of the mother (p=0.378). Hopelessness was found to be significantly higher in dental students whose fathers' educational attainment was high (i.e. university graduate or higher); odds of hopelessness was 1.56 (95% CI=1.09-2.22) times among those compared to students with lower paternal education (Table 1). Gender had a confounding role in the study population in studying the potential association between paternal education and hopelessness (MH Chi-square p value=0.023):adjusting for gender, $OR_{adj=}$1.54 (95% CI=1.08-2.19), effect size decreased slightly. In the stratified analysis of the relationship between father's education and hopelessness according to whether or not the family choice was the reason for choosing the faculty, it was found that if the reason for choosing the faculty was family desire, this situation caused the effect modification on father education-hopelessness relationship (Breslow Day statistic p value= 0.035). While the estimated risk for the relationship between father education and hopelessness was 4.79 (95% CI=1.48-15.48) in those who preferred dentistry because they wanted a family, this value was 1.33 (95% CI=0.91-1.94) in those who chose the school independently. The relationship between high father education and hopelessness was positive in both groups and this relationship persists when other factors are controlled in advanced analysis.

In the stduy group, a negative association was detected between having a hobby and hopelessness score (OR=2.08; 95% CI=1.22-3.54) (p=0.006) (Table 1). The presence of hobby showed a significant difference compared to the current class. Similarly, hopelessness is more pronounced and higher in grades 2nd, 3rd, and 4th when compared to first grades; the fifth grade shows a statistically insignificant difference compared to the first grade. Therefore, it was thought that class variable may be a confounder in the relationship between hobby and hopelessness. In the stratified analysis, it was found

TABLE 2: Distribution of level of hopelessness by academic choices, satisfaction and expectations.

	Hopelessness Mild/Moderate/Severe		Hopelessness Minimal		Total		Odds ratio	Chi- square test
	n	%	n	%	n	%*	[95% CI**]	p-value
Order of dental school in university entrance exam (n=501)								
First choice	178	48.5	189	51.5	367	73.3	1.00	1.000
Not first choice	65	48.5	69	51.5	134	26.7	1.00 [0.67-1.49]	
Reason for choosing dental school (n=536)***								
His/her ideal for future	81	37.2	137	62.8	218	40.7	0.45 [0.32-0.64]	<0.001
Family desire	40	55.6	32	44.4	72	13.4	1.36 [0.83-2.25]	0.223
Dentistry is a respected profession	108	42.2	148	57.8	256	47.8	0.60 [0.42-0.84]	0.003
Taking a dentist as a role model	71	51.8	66	48.2	137	25.6	1.17 [0.79-1.73]	0.424
Having a dentist in family/neighbors	32	57.1	24	42.9	56	10.4	1.45 [0.83-2.53]	0.910
Chances of finding a job are high	145	48.8	152	51.2	297	55.4	0.99 [0.71-1.40]	0.976
High financial gain	161	48.9	168	51.1	329	61.4	1.01 [0.71-1.42]	0.974
Exam score was sufficient	47	49.5	48	50.5	95	17.7	1.03 [0.66-1.60]	0.899
No specific reason	14	66.7	7	33.3	21	3.9	2.15 [0.86-5.42]	0.096
Any wish to leave the school at one point (n=533)								
Yes	145	63.3	84	36.7	229	43.0	2.80 [1.96-3.99]	<0.001
No	116	38.2	188	61.8	304	57.0	1.00	
Would you choose dental school again? (n=536)								
Yes	129	37.3	217	62.7	346	64.6	1.00	<0.001
No	67	76.1	21	23.9	88	16.4	5.37 [3.14-9.18]	
No idea	66	64.7	36	35.3	102	19.0	3.08 [1.95-4.89]	
Level of satisfiction with school selection (n=535)								
I am very pleased	37	29.8	87	70.2	124	23.2	1.00	0.001
I am glad	145	46.3	168	53.7	313	58.5	2.03 [1.30-3.16]	
I am not pleased****	79	80.6	19	19.4	98	18.3	9.78 [5.20-18.38]	
How good school curriculum is to fulfill expectations (n=531)								
Much better than expected	8	33.3	16	66.7	24	4.5	1.00	0.001
Better than expected	24	35.3	44	64.7	68	12.8	1.09 [0.41-2.92]	
In line with expectations	81	39.1	126	60.9	207	39.0	1.29 [0.53-3.14]	
Worse than expected level	91	64.5	50	35.5	141	26.6	3.64 [1.46-9.10]	
Expectations not met	26	57.8	19	42.2	45	8.5	2.74 [0.97-7.70]	
No idea	23	65.7	12	34.3	46	8.7	3.83 [1.28-11.5]	
Any wish for staying in academia (n=533)								
Yes	89	45.4	107	54.6	267	50.1	1.00	0.236
No/Unsure	171	50.7	166	49.3	266	49.9	1.24 [0.87-1.76]	

*Column percentages are presented. All others are row percentages; **CI: Confidence Interval; ***Since more than one option can be selected, the percentages are based on the total number of respondents; ****This option has been generated by combining "I am not satisfied", "I regret" and "No idea" options.

that the class did not cause any interaction (Breslow Day statistic p-value=0.386) but it played a role as a confounding factor (MH Chi-square p value=0.020).Therefore, in the evaluation of the study findings, it was found appropriate to give the power of the relationship between hobby and hopelessness by adjusting to the class (adjusted OR=1.96; 95% CI=1.14-3.33).

There was no statistically significant association between hopelessness and the order of preference for dentistry in university entrance exam (p=1.000), nor with any desire to continue aca-

demic career after graduation from dental school (p=0.236) (Table 2).

Various reasons were stated to play a role in selection of dental school in university entrance exam. Of these reasons, only two were statistically significantly associated with hopelessness in binary analyses: These were, considering dentistry as "the ideal profession for the self" (OR (95% CI) = 0.45 (0.32-0.64)) (p<0.001) or "a respected profession" (OR (95% GA)=0.60 (0.42-0.84)) (p=0.003) (Table 2).

Hopelessness was associated with any self-reported wish to leave dental school (at least once over the past year(s)): those who reported such a wish were 2.80 times (95% CI=1.96-3.99) more likely to have mild or more hopelessness at time of the interview (p <0.001). Those who stated that would have chosen dental school again, if they had a chance to re-enter the university exam were 5.37 (95% CI=3.14-9.18) times less likely to be hopeless. The association between hopelessness and dissatisfaction with professional (school) choice was even stronger, with an odds ratio of 9.67 (95% CI=4.24-22.0) among those who felt "regret" in choosing dental school had 14.11 (95% CI=1.64-121.3) times odds of those who stated that they were very satisfied with their choice. Lastly, a significant assocaiton was detected between hopelessness and students' self-satisfaction with the current formal training s/he obtains in school: OR=3.64 (95% CI=1.46-9.10) times more hopelessness than those who expected "much better than expected", and the difference was statistically significant (p<0.001) (Table 2).

In stratified analyses, the reason for chosing dental school family appeared as an effect modifier in studying the association between paternal education and hopelessness among student. Yet, this interaction term appeared nonsignificant in multivariate model and was excluded from the final model. In modeling hopelessness among dental students, the final multivariate logistic regression model was reached as selecting the smallest statistically significant model (using Backward unconditional LR model, with an alpha of 0.05); gender and grade variables were added to the model intentionally, as these variables are widely accepted confounding factors in published articles. In this final logistic model, when gender and class were controlled for, higher paternal education (OR=1.58; 95% CI=1.08-2.33), absence of hobbies (OR=2.39; 95% CI=1.33-4.29); mismatch of education with student's professional expectations (OR=2.33; 95% CI=1.59-3.40) and having thoughts on leaving school at any time (OR=2.41; 95% CI=1.64-3.54) were found positively associated with higher level of hopelessness (Table 3).

DISCUSSION

In the study about half of the students revealed at least some sort of (mildly or higher) hopelessness.

TABLE 3: Logistic regression modeling of hopelessness based on the Beck Hopelessness Scale (mild or higher hopelessness versus minimal).

Variable	B	p value	Odds Ratio	95% CI*
Sex (ref.= male)	0.036	0.856	1.04	0.70-1.54
School grade				
1. year (ref.)			1.00	
2. year	0.220	0.455	1.25	0.70-2.22
3. year	0.120	0.698	1.13	0.62-2.04
4. year	0.090	0.749	1.10	0.63-1.91
5. year	0.203	0.507	1.23	0.67-2.23
Educational status of the father (ref.=high school or lower)	0.460	0.019	1.58	1.08-2.33
Presence of any hobby (ref.= at least one hobby)	0.871	0.004	2.39	1.33-4.29
Fulfillment of expectations (ref.= those who met their expectation)	0.844	<0.001	2.33	1.59-3.40
Any wish to leave dental school at one point (ref.= people who did not)	0.879	<0.001	2.41	1.64-3.54

*CI: Confidence Interval.

Although this study aimed to reach all students, missingness percent is not ignorable. Thus, the authors are hesitant to give estimates of robust prevalance value of hopelessness but rather investigated hopelessness frequency in subgroups to investigate potential risk factors (if any), modifiable ones, in particular. It is likely that some of such factors could be universal for dental students in Europe and, it is hoped to create a ground for discussion to compare and contrast such factors across populations.

Use of the same scale in some other Turkish study populations enabled to make some comments on the overall level of hopeless in various groups. In the study of Sahin, the despair among students of the faculty of education was found as "mild and moderate";[27] in the study conducted by Kodan among science and classroom teacher students and in the study conducted by Sanli Kula and Sarac among science and literature students level of hopelessness were "mild".[28,29] These findings suggested that, based on the BHS scores, regardless of age and profession, population values suggest some sort of hopelessness, in general. However, several confounding factors besides age and educational setting, could have caused differences in overall scores.

Hopelessness scores in the second, third and fourth grades were higher in the study group compared to the first and final grades, and this was found to be statistically significantly different from the first grades. This situation can be explained by the fact that the happiness of gaining the university in the first year is replaced by stress, fear of failure and loss of self-confidence starting from the second grade with the course curriculum becoming increasingly difficult and the start of practical courses, and negatively affects students' expectations from the future. Peker et al. showed that the stress level was significantly higher in the fourth grade than the first grade. They attributed this to concerns about future and professional opportunities.[30] In a study conducted in Germany, depression among the students was examined, while the scores of the students were similar to the normal population at the beginning of the first period, it became more prominent, and the average levels determined became a condition for clinical treatment indication in the fifth period.[31] In a study conducted with third and fifth grade students in a faculty of dentistry in the USA, 34% of students had emotional burnout, 17% had depersonalization, 9% had suicidal ideation, and 40% met the burnout criteria.[24] Depression and hopelessness can be affected by different sources, and their reflection in students may vary. However, with the assumption that mental restlessness, stress and anxiety will adversely affect both conditions; hopelessness and depression can be expected to be similar in terms of the change according to classes. As a matter of fact, in a study conducted in India, perceived stress level of dental faculty students increased in the later years of education due to factors such as changes in the curriculum and onset of clinical training. Possible factors were defined as the fear of face-to-face with the family after the failure, workload, poor relations with staff, lack of confidence in being a successful dentist, fear of unemployment, and unwillingness to work with patients with poor oral hygiene.[18] In a study it was found that the amount of experienced stress in clinical years in the faculty of dentistry was higher than in the preclinical years and that stress caused by academic factors and performance pressure appeared more frequently as the classes progressed. In the same study, the high level of stress caused by neglecting personal life and financial responsibilities of fifth grade students is not fully correlated with the findings of our study.[32] In the fifth year of the study group, hopelessness improves again, but the expectations for the future are not as high as the first year. It can be thought that self-confidence in professional knowledge and skills increases, the students have better adaptation to the school environment and positive expectations for the future as they graduate. A significant part of the student group states that they want to work in the private sector or to continue post-graduate education. For this reason, it is not a high concern to find a job immediately after school; since the concerns about the school decreased with graduation, the risk of last year's hopelessness could be perceived as low. The change of hopelessness over the years cannot be explained only by the education period and different personal, environmental and social characteristics can affect this situation.

In this study, it was found that hopelessness was not related to gender, but control was provided for gender in modeling to ensure comparability with data from other studies. In many studies, stress levels were found to be higher in female students and this situation was attributed to girls being more affected by emotional events, while in others were not related to gender.[22,33,34]

A striking finding of the study is that the hopelessness scores of the students whose fathers have university and higher education level are higher. The level of father education can be indicators of the economic and social structure of the family, the value given to the child, the level of success expected from the child and perfectionism.

In this study it was found that hopelessness status was similar between those whose first choice was dental faculty and not. In Turkey, the entrance to universities is made with a central exam and the students are placed in schools based on test scores. The entrance base score of the faculty of dentistry chosen for this study is quite high and it can be thought that the majority of the applicants of this school are genuinely willing to continue this particular school. Thus, heterogeneity in terms of a "voluntary selection process" was quite low in our group, and the finding of no difference in the population of this study could have been explained by a type II error. Similar studies to be conducted in future years may be more informative if they are conducted in more heterogeneous groups of larger sample sizes.

According to the results of this study, the most important factors in terms of hopelessness are the inability to meet the expectations from the school, the low level of satisfaction with vocational education is remarkable and consistent with the results of previously published studies. Ehtiyar and Unguren demonstrated that students' dissatisfaction with the educational institution increased their hopelessness levels.[35]

Another reason for differences across studies could be the presence of other potential confounders. In the studies conducted in Nigeria and Japan, it was found that the level of perceived stress differed in those who chose faculty of medicine as the first choice compared to the faculty of dentistry; perceived stress levels were found to be higher in those whose first choice was medicine in Nigeria group and was dentistry in Japan group.[36,37] These findings suggest that the relationship between hopelessness and the person who chooses the school, whether it is the first choice may be influenced by some external factors (if any). For example, Basudan et al. found that the relationship between depression, stress and anxiety level and whether or not the first choice of the faculty of dentistry was affected by factors such as gender, satisfaction with faculty relations and satisfaction with peer relations. It was stated that the competitive environment, workload, clinical requirements, exams and grades could be effective in the high level of stress.[38]

In this study, the most important factors in terms of hopelessness are the inability to meet the expectations from the school, the low level of satisfaction with vocational education is remarkable and consistent with the results of previously published studies. In a study, it was found that hopelessness levels of the students who were not satisfied with the department they studied were higher than those who were satisfied.[39] According to the results of the study of Ehtiyar and Unguren, it was found that students' dissatisfaction with the educational institution increased their hopelessness levels.[35] In another study of Unguren and Ehtiyar, it was found that hopelessness levels of Turkish and German students who were satisfied with the education they received were lower than those who were not satisfied with the education they received.[40] In parallel, it can be predicted that the level of hopelessness can be reduced as the satisfaction levels of the students increase, with the efforts to improve the quality of university education.

In many studies, students stated factors such as social media, watching television, reading books, sleeping, shopping, getting emotional support, traveling, eating, social relations as a method of coping with stress.[41,42] Harris et al. found that 94.8% of the students of the faculty of medicine and dentistry participated in the study directed to hobbies to combat stress.[43] In our study, hobbies were found to be protective factors from hopelessness, similar to the literature. This finding suggested that it will be beneficial to create sports halls, art workshops, halls for music ensembles etc in campus to provide a friendly and supportive environment for students to engage with different hobies;

also avalaible clubs on photography/ cinema/hiking/dancing etc. in the campus should be supported administratively and financially.

The cross-sectional nature of the study limits a thorough analysis of an exposure-outcome association for hopelessness. Majority of reasons appearing as cause of hopelessness can easily be outcomes of hopeless situations or vice versa. Keeping such a limitation in mind, the authors have studied some analysis for potential associations between hopelessness and some personal and professional characteristics, together with some modifiable environmental conditions.

CONCLUSION

In conclusion,the authors could not locate any previous study published on hopelessness among dentistry students. In this respect, our study has a pioneer feature. Inclusion of students from all grades is valuable for examining the age/grade effect and repeating the same study in the following years will be even more informative in this sense. In the study group, the role of all possible confounding factors cannot be ruled out; other psychological problems like stress, anxiety and depression, presence of any professional, drug use etc. need to be investigated in future studies.

In light of the findings, it is recommended to the administrative board of dental school that it will be beneficial to introduce the educational content and features at onset of each school year; to organize the course programs in a way to support the success of the students in the areas where they have difficulty, and to clearly define the expected works in the internship. It is recommended to strengthen the current pyschosocial counseling system. All students can be given training on how to deal with the stress and to increase personal resillience. Priority may be given to the support programs that will be offered to high-risk groups in terms of despair (those without hobby, low level of satisfaction, etc.). Since the findings show that there is a negative association between having a hobby and hopelessness score; it is valuable to encourage students to acquire hobbies and to create an appropriate environment and time to perform their hobbies on campus. Given the cross sectional design, causality of the association cannot be claimed, further studies on this issue are needed.In the coming years, it would be beneficial to continue to conduct similar quantitative studies repetitively, to support these studies with qualitative and to tailor intervention programs accordingly.

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Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: *Tülin Çoban,Canan Hekimoğlu, Dilek Yıldırım, Merve Büke Şahin, Gulaiym Batyrbekova, M. Barış Güncü, Banu Çakır;* ***Design:*** *Tülin Çoban, Dilek Yıldırım, Merve Büke Şahin, Banu Çakır;* ***Control/Supervision:*** *Canan Hekimoğlu, M. Barış Güncü, Banu Çakır;* ***Data Collection and/or Processing:*** *Tülin Çoban, Canan Hekimoğlu, Dilek Yıldırım, Merve Büke Şahin, Gulaiym Batyrbekova, M. Barış Güncü, Banu Çakır;* ***Analysis and/or Interpretation:*** *Tülin Çoban, Canan Hekimoğlu, Dilek Yıldırım, Merve Büke Şahin, Gulaiym Batyrbekova, M. Barış Güncü, Banu Çakır;* ***Literature Review:*** *Tülin Çoban,Canan Hekimoğlu, Dilek Yıldırım, Merve Büke Şahin;* ***Writing the Article:*** *Tülin Çoban, Dilek Yıldırım, Merve Büke Şahin, Banu Çakır;* ***Critical Review:*** *Banu Çakır;* ***References and Fundings:*** *Tülin Çoban,Canan Hekimoğlu, Dilek Yıldırım, Merve Büke Şahin, Gulaiym Batyrbekova, M. Barış Güncü, Banu Çakır.*

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