Assessing the Quality of Life of Dental Students by using the WHOQOL-BREF Scale

SUMMARY

*Background/Aim: The study aimed to evaluate the quality of life (QOL) of dental students in a private dental school with the use of the WHOQOL-BREF scale. **Material and Methods:** The Turkish version of the WHOQOL-BREF questionnaire was used to assess the QOL of dental students in their first (n=73), second (n=58), third (n=55), fourth (n=47) and fifth (n=48) years with a mean age of 22,15 ± 1,89 between January and February 2019. The items were organized in four domains (physical and psychological health, social relations and the environment) with most response options on a five-point Likert-type scale. Descriptive statistics were computed and the P-value of <0,05 was set as statistically significant. **Results:** The sample was composed of 281 students, corresponding to an overall response rate of 90,6%. The overall QOL was rated good by the responding students. The difference between male and female respondents' answers was not statistically significant. Mean scores were lowest for the psychological domain and were highest for the physical health domain. The psychological domain of the first-year participants was significantly better than that of fourth-year participants. Furthermore, the overall quality of life was highest for first-year students' compared to all years. **Conclusions:** Although the overall QOL for students in the present study was generally acceptable, the psychological domain was the lowest in dental students. A positive relationship was observed between students' satisfaction with health and their QOL. Dental schools should focus on reorganizing the curriculum and provide support for dental students, especially for those in their fourth-year.*

Key words: WHOQOL-BREF, Quality of Life (QOL), Dental Students, Dental Educational Stress

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Introduction

Dental students encounter high stress levels during their education. Practical courses, oral and written examinations, patient care and a long duration of education are the most common causes of stress within this period[1–4]. Systematic reviews have documented that compared to other student populations, dental students are more vulnerable to burnout, anxiety, and depression and are exposed to higher levels of stress[1,3]. It has also been proposed that the factors indicated above adversely affect the quality of life (QOL) of students[4].

The World Health Organization Quality of Life (WHOQOL)-BREF is the abbreviated form of the WHOQOL-100 Questionnaire, an international, cross-cultural assessment tool used to compare QOL. The WHOQOL-BREF questionnaire is one of the most known instruments that has been built for cross-cultural comparisons of QOL by focusing on individuals' own opinions of their well-being, ensures a new perspective on life[5]. The questionnaire has been already translated into many languages, including a Turkish version, and it has has been shown to have validity and reliability in different countries while capturing the standard subjective measurement of QOL[6–9]. Although, there have been many

studies that investigate the QOL of patients, people, and health-care staff; there are limited studies that evaluate dental students[10,11].

The aim of this study was to evaluate the QOL of dental students in a private dental school in Turkey, using the WHOQOL-BREF, a validated, reliable and culturally adapted survey scale.

Material and Methods

Yeditepe University Ethics Committee approved the study (No: 831). The study was performed according to the Declaration of Helsinki between January and February 2019. Out of 310 undergraduate dental students, 281 dental students in their first (n=73), second (n=58), third (n=55), fourth (n=47) and fifth (n=48) years, signed informed consent and informed of their confidentiality in the survey. The students participated voluntarily, and they were not obligated to take part.

One of the trained surveyors provided access to the online questionnaire to all participants simultaneously, and the students were asked to complete the survey forms. Incomplete questionnaires were excluded to preserve the accuracy of the analysis. Participants were not limited in the time taken to complete the questionnaire. The Turkish version of the WHOQOL-BREF was used in this study[12]. The WHOQOL-BREF questionnaire contains 26 questions. The first 2 questions are independent variables, related to the respondents' socio-demographic data, self-assessment about overall QOL and their level of satisfaction with their general health status. The remaining 24 items are the dependent variables, divided into four domains (DOM 1-4): 1) Physical Health, which includes 7 items about dependence on medical substances and medical aids; activities of daily living; mobility; energy and fatigue; sleep and rest; pain and discomfort; work capacity (DOM1); 2) Psychological, which consists of 6 items about negative feelings; positive feelings; body image and appearance; spirituality, religious, personal beliefs; self-esteem; learning, thinking, concentration and memory (DOM2); 3) Social Relationships, which consists of 3 items about sexual activity; social support; personal relationships (DOM3); and 4) Environmental Health, which consists of 8 items about resources of finance; freedom, physical safety and security; health and social care: accessibility and quality; home environment; opportunities for acquiring new skills and information; participation in and opportunities for recreation-leisure activities; physical environment (pollution, noise, traffic, climate); transport (DOM4). Responses for each item in the 4 domains were rated on a 5-point Likert scale. The response options were scored from 1 (very dissatisfied) to 5 (very satisfied) on the scale. Each domain was scored according to the WHOQOL-BREF scoring guide, ranging from 0 to 100[1]. The 2 items assessing the overall QOL and satisfaction with general health status were analyzed separately. The Statistical Package for Social Sciences (SPSS® IBM Corporation) version 21.0 was used for the statistics. The significance level was a P-value of <0.05. Descriptive analyses were performed to generate summary statistics for participant characteristics and the WHOQOL-BREF domains, including frequencies, percentages, ranges, means, and standard deviations. The internal consistency index Cronbach's Alpha was used to determine the reliability of the WHOQOL-BREF. Pearson's correlation coefficient was used to determine the level of association between the four domains of the WHOQOL-BREF. A one-way ANOVA test was used to compare the difference between years in terms of QOL and the questions relating to satisfaction with health. A Tukey test was used to find the difference between years. Paired *t*-tests were used to compare the difference between the mean scores of different WHOQOL-BREF domains. A t-independent test was used to investigate the association between participant characteristics and their QOL.

Results

Socio-Demographic Characteristics

In total, 281 students filled out the cross-sectional WHOQOL-BREF questionnaire, meaning the overall response rate of 90,6%. The mean age of the students was 22,15 ± 1,89 years (Range: 18-25 years). One hundred eighty-nine respondents (67,3%) were female (mean age 22,05 ± 1,68 years), and 92 (32,7%) were male (mean age 22,36 ± 2,25 years). While the number of female respondents (67,3%) was significantly higher than the number of males, no significant difference was noted between sexes in terms of age (p<0,05). Dental school year of the respondents were lined as: First (D1) 26%, second (D2) 20,7%, third (D3) 19,6%, fourth (D4) 16,7% and fifth (D5) 17% with no significant difference (p<0,05). The number of single respondents (94%) was significantly higher than the respondents with a different marital status, and the number of the healthy participants (92,5%) was significantly higher than the ones who suffer from chronic diseases (7,5%; p<0,05).

The association between the 2 overall questions and 4 domains in terms of sex revealed no statistically significant difference between male and female respondents (p>0,05).

The mean scores for the first two questions related to the respondents' self-assessment about their overall QOL and level of satisfaction with general health are demonstrated according to the year in Table 1. The first-year students rated their overall QOL significantly higher than fourth-year students (p<0,05). However, no statistically significant difference could be shown between years in terms of satisfaction with health. The mean scores for each domain according to year are demonstrated in Table 2.

Table 1. The overall QOL and satisfaction with health according to year

		Number of students	Mean	Std. Deviation	Min.	Max.	p
	Year	73	4,32	0,91	3,00	5,00	
	Year	58	4,03	1,01	1,00	5,00	
Q1. The overall quality of life	Year	55	4,15	0,91	3,00	5,00	**0,012***
	Year	47	3,64	1,26	1,00	5,00	
	Year	48	4,19	1,16	1,00	5,00	
	Year	73	3,93	0,69	2,00	5,00	
	Year	58	3,72	0,97	1,00	5,00	
Q2. Satisfaction with health	Year	55	3,84	0,66	2,00	5,00	0,164
	Year	47	3,60	0,92	1,00	5,00	
	Year	48	3,65	0,86	1,00	5,00	

Table 2. Mean scores for each QOL domain according to years of study

	Year 1 Mean	Year 2 Mean	Year 3 Mean	Year 4 Mean	Year 5 Mean
Physical Health	75	72	70	69	70
Psychological	67	62	65	57	62
Social Relationships	67	64	65	65	65
Environment	66	63	64	61	66

Domain Scores

The internal reliability was determined by Cronbach's Alpha coefficient, with values equal to or higher than 0,70 indicating good reliability. The Cronbach's Alpha score for the WHOQOL-BREF questionnaire was found to be 0,811 which shows adequate reliability. The Cronbach's Alpha scores and summary of statistics are shown in Table 3. The participants rated their QOL between very good and good (4,09; on a scale of 1-5). The rating for satisfaction with their general health was slightly lower (3,77; on a scale of 1-5), corresponding to good. The physical health (DOM1) had the greatest mean score (71,31) followed by social relationships (65,45; DOM3), environment domain (DOM4; 64,26) and psychological domain (DOM2; 62,99; $p<0,05$).

Table 3. Scores for 2 overall questions and the WHOQOL-BREF domains

	Mean	Std. Deviation	Min.	Max.	Cronbach's Alpha	Number
Physical Health	71,31	14,42	28,57	100	0,767	281
Psychological	62,99	15,36	12,50	100	0,744	281
Social Relationships	65,45	16,43	0	100	0,792	281
Environment	64,26	14,78	12,50	96,88	0,762	281
The overall quality of life	4,09	1,06	1,00	5,00	-	281
Satisfaction with health	3,77	0,82	1,00	5,00	-	

Table 4. Differences between pairs of WHOQOL-BREF domain scores

	Mean Difference	Std. Deviation	95% CI Lower	t Upper	df	p
Physical Health & Psychological	8,32	13,41	(6,75; 9,90)	10,40	280	0,000*
Physical Health & Social Relationships	5,86	16,84	(3,89; 7,84)	5,84	280	0,000*
Physical Health & Environment	7,05	14,97	(5,30; 8,81)	7,90	280	0,000*
Psychological & Social Relationships	-2,46	15,11	(-4,24; -0,69)	-2,73	280	**0,007***
Psychological & Environment	-1,27	13,73	(-2,88; 0,34)	-1,55	280	0,122
Social Relationships & Environment	1,19	15,78	(-0,66; 3,04)	1,27	280	0,207

Paired t- test, df: degrees of freedom; CI: Confidence Interval ***p<0,05**

Table 5. Correlations among the 2 overall questions and the WHOQOL-BREF domains

	General Health	Physical Health	Psychological	Social Relationships	Environment
General Health	-	0,48	0,45	0,30	0,46
Physical Health	0,48	-	0,60	0,41	0,48
Psychological	0,45	0,60	-	0,55	0,59
Social Relationships	0,30	0,41	0,55	-	0,49
Environment	0,46	0,48	0,59	0,49	-

Pearson's correlation test **p<0,05**

A paired t-test was carried out to compare the means of all domains and two stand-alone questions (Table 4). The mean value of the physical health domain was significantly higher compared to other domains (p<0,000), and the mean value of the social relationship domain was significantly higher than the mean value of the psychological domain (p<0,007).

Correlation parameters were compared between the 4 domains and 2 overall questions on general health with Pearson's correlation tests ranging from 0,30 to 0,60 (p<0,05); the differences were significant (Table 5). There was a positive correlation between general health status and physical health (48%), environment (46%), psychological (45%) and social relationships (30%). The highest correlation was 60% and was between the domains of psychological and physical health. The lowest correlation was between the general health and social relationships domains at 30%.

Discussion

The response rate was 90,6%, which was satisfactory and indicates that the findings were representative of the targeted population. The mean age of the respondents was 22,15 ± 1,89 years, which was showing that despite the younger age, the findings are similar to the findings of Zhang *et al.* and Naseem *et al.*[8,13]. Younger students are reported to be more prone to peer pressure, drug addictions, and psychological stress[14]. It has been suggested that stress-prone students should be identified early in their dental education and that their problems should be resolved immediately[15].

Andre et al. reported that the majority of their respondents were female, which was reflective of the changing face of the dental workforce[16]. Our results showed a higher percentage of females (67,3%) compared to other studies. However, contrary to the results of other studies[16], the difference between the responses from male and female participants for all domains was not statistically significant (p>0,05). Both Zhang *et al.* and Andre *et al.* reported that female students scored higher for QOL in the social relationships domain, while some other studies have identified females more stressful in general[8,10]. No significant differences were noted between sexes in the present study.

A reliability analysis using Cronbach's Alpha coefficient revealed an acceptable internal consistency of the WHOQOL-BREF questionnaire (α= 0,811), though the score for the psychological domain was slightly lower (α= 0,744). The WHOQOL-BREF was a reliable and reproducible survey to use on dental students to assess the QOL in Turkey. The results of this study were supporting other studies[7,8,17].

QOL can be used as a tool to identify groups with physical or mental health problems and to serve as a guide for intervention and follow-up evaluation[5]. Among the dental students included in this study, the overall QOL score for first-year students was significantly higher than for fourth-year students. During the fourth-year, the Yeditepe University Dental School curriculum focuses on a clinical-based education as students provide comprehensive patient care, which involves more working hours. It can thus be assumed that fourth-year students may experience a greater amount of pressure compared to other years. It is quite likely that students may feel a higher burden due to their high workload and the competency exams they are required to pass. Shibani *et al.* reported that the QOL of students improved as they progressed from the first to the fifth year. However, no gradual increase was noted in QOL with progressing years in the present study[11].

The mean score of the physical health was the highest, while the mean score of the psychological health was the lowest in the present study. The mean score of the social relationship domain was also higher than the mean score of the environment domain. These findings suggest that the social relationship and physical health domains appear to be more influencing factors on the QOL compared to the psychological and environmental domains. Our results comply with a study by Andre *et al.*, which was conducted on US-based dental students[10]. However, Andre *et al.* reported that the physical health domain scores of the fourth-year students were significantly higher than first-year students, whereas the results of the present study revealed just the opposite[10]. Zhang *et al.* found significant differences in social relations and psychological health domains according to the academic year of the students, with third-year students having the lowest score[8].

The present study showed no statistically significant relationship between the physical health, social relationship or the environment domains and years. A statistically significant relationship was found between psychological health and years. First-year students' psychological health was determined to be higher than fourth-year students. Meanwhile, first-year students' overall QOL was determined to be the highest. As stated previously, the fourth-year of dental school is a busy period and can be demanding, which may create anxiety for the student. The demands of the fourth-year may be a reason why fourth-year students reported lower psychological domain scores. The Yeditepe University Dental School curriculum focuses on not only a clinical-based education as students provide comprehensive patient care, but there is also an increase in residency competency exams. Through the clinical years, especially in the fourth-year, these competencies are set and assessed mostly via patient care experiences. Unlikely Andre et al. reported lower psychological domain scores for third-year

students[10]. This difference may be attributed to curricular differences and variations in teaching modalities.

One of the limitations of the study is that this is the first research evaluating the QOL of dental students in a private dental school with the use of the WHOQOL-BREF in this region of Turkey. This limitation makes it difficult to discuss our results with other universities or to compare them to similar studies. The limited sample size was another limitation of the study; the survey was carried out in one school, and the results should be interpreted with caution. A study incorporating a larger population including all dental schools in the city may provide a better understanding of the life quality of dental students. A countrywide survey is now available, and our team is planning to continue working further on this subject for further study.

Conclusions

The overall QOL for the students in the present study was acceptable in terms of the physical health, social relationships and environmental domains. Meanwhile, psychological domain had the lowest mean score. Students' self-perception of their health also was favorable. In addition, a positive relationship was observed between students' satisfaction with health and their QOL. Further studies are necessary to explore the effects of the dental faculty environment on the QOL of students. To deal with the factors influencing QOL, dental schools must focus on providing psychological counseling services for students, specifically for those in the fourth-year, who appears to be the most affected class.

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