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THE BURNOUT SYNDROME AND MAINTAINING A HEALTHY LIFESTYLE AMONG DENTAL MEDICINE STUDENTS AND DOCTORS

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Objective: To examine the association between burnout symptoms and healthy lifestyle habits among dental medicine students at the University of Split School of Medicine and compare the results with dental medicine doctors in Split-Dalmatia County.

Materials and methods: The study involved 85 students from the Medical University of Split and 75 dental medicine doctors from Split-Dalmatia County. The research was conducted using an anonymous survey questionnaire and the Google Forms application. The Oldenburg Burnout Inventory (OBI) was used to assess burnout symptoms, while the Fantastic Lifestyle Questionnaire (FLQ) was used to evaluate adherence to healthy lifestyle habits.

Results: 79.4% of respondents considered themselves to have good stress-coping skills, with no significant differences between the groups (P = 0.836). OBI results showed a significantly higher overall score (P = 0.015) and exhaustion domain score (P = 0.011) among the students. In the group with good stress-coping skills, OBI domains showed significantly lower results compared to the group with poor stress-coping skills. FLQ results indicated that 51.2% of participants adhered very well, 33.7% well, and only 5% excellently to a healthy lifestyle. The group with good stress-coping skills had significantly higher FLQ scores compared to those who coped poorly with stress (P < 0.001). A negative correlation was found between the total FLQ score and OBI score (P < 0.001). Finally, job/study satisfaction and frequent physical activity were associated with lower levels of burnout symptoms.

Conclusion: A healthy lifestyle may play an important protective role against burnout syndrome in dental medicine students and doctors. Given the significance and prevalence of burnout in this population, further studies are needed to explore these associations.

Keywords: BURNOUT, DENTAL MEDICINE DOCTORS, DENTAL MEDICINE STUDENTS, MAINTAINING A HEALTHY LIFESTYLE

INTRODUCTION

Burnout syndrome is a result of chronic workplace stress, often coupled with inadequate coping mechanisms. It is globally recognized as a serious issue among healthcare professionals, with an average prevalence of 67% and significant gender differences, predominantly affecting the female population (30.9% vs. 23.3%) (1-3). This syndrome is also frequently observed in medical and dental students (38%, ranging from 7% to 70%), with exhaustion being the most common symptom (4-9). Alarmingly, data show that 20% of medical students suffer from depression during the first two years of their studies, with 9% considering suicide (10). Risk factors encompass a broad range, from individual personality traits, young age, and being female, to the nature of the work environment, including relationships with colleagues, job-related stress, and long working hours (11-17). Burnout syndrome typically includes exhaustion, depersonalization, and a reduction in personal achievement, with physical symptoms such as fatigue, weight changes, insomnia, heart disease, hypertension, type 2 diabetes, and weakened immunity (18, 19). While not always the case, burnout is often associated with numerous mental disorders such as anxiety, depression, or post-traumatic stress disorder (PTSD) following particularly stressful or consecutive stressful events. The consequences primarily depend on how the individual copes with stress, as there is a risk of substance abuse (alcohol, drugs, tobacco), eating disorders, and even suicidal thoughts (11). This syndrome has significant consequences for the individual and their work and private environment. The development of burnout presents a particular problem for the healthcare system, as medical professionals often leave their jobs or professions or reduce their productivity and work quality (11).

Treatment for burnout primarily involves identifying the stress-inducing actions and negative emotional triggers, as well as implementing resilience training and stress-management strategies (20). Beresin EV and colleagues emphasize

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the lack of education and resilience training, which are critical for developing healthy coping mechanisms to handle the challenging and emotional aspects of working in healthcare (10). Many studies focus on the quality of life of dental students and dental practitioners (21-23). In a research conducted on dental students in the USA using the WHOQOL-BREF questionnaire to assess quality of life, students rated it as "good," with the highest results in physical health, while psychological health had lower results. Santos AM and colleagues highlight the correlation between satisfaction with the educational program and overall life satisfaction among dental students (24). Syzdykova A and colleagues concluded that only a third of dental practitioners follow a healthy lifestyle, including proper nutrition and physical activity (25). Accordingly, many guidelines and studies emphasize the importance of social support, stress management, and adherence to a healthy lifestyle to improve the quality of life of dental students and other dental professionals (24, 26-31).

Thus research aims to investigate the relationship between burnout symptoms and healthy lifestyle habits in dental students from the School of Medicine in Split and compare them with dental practitioners in Split-Dalmatia County.

The research hypotheses are as follows: dental students will have a higher overall OBI score compared to dental practitioners, and they will report higher levels of burnout symptoms in the domains of exhaustion and depersonalization compared to dental practitioners. Furthermore, females will exhibit higher levels of burnout symptoms across all domains. Additionally, participants who rate their stress-coping abilities as goodwill report significantly lower scores in each domain of burnout compared to those who assess their stress-coping abilities as poor. Moreover, adherence to a healthy lifestyle will be significantly correlated with lower levels of burnout symptoms. Finally, job or study satisfaction, as well as frequent physical activity, will be associated with lower levels of burnout symptoms.

MATERIALS AND METHODS

Participants

The study included 160 participants, consisting of 85 dental students from the Medical School in Split (from the first to the sixth year of study) and 75 dental practitioners in Split-Dalmatia County. The participants were given a questionnaire, with prior consent from the authors, which included a series of questions and statements measuring burnout levels and adherence to a healthy lifestyle. The survey was conducted using an online link and Google Forms application or in person at the Medical School in Split. The research was conducted between February and March 2022. Participation was anonymous, with informed consent obtained from all participants, and only correctly completed questionnaires were included in the analysis. The data was then entered into Microsoft Office Excel 2016 (Microsoft Corporation, Redmond, Washington, USA) for further statistical processing. The research was approved by the Ethics Committee of the Medical School in Split (Class: 003-08/21-03/003; Reg. no: 2181-198-03-04-21-0089), following the ethical principles of the Helsinki Declaration.

Study Design and Description

The first part of the questionnaire included general questions regarding age, sex, occupation, year of study, and self-assessment of stress-coping abilities. In the second part, burnout tendencies were assessed using the Oldenburg Burnout Inventory (OBI). This scale measures two dimensions of burnout: emotional exhaustion (OBI-E) and cognitive and somatic disengagement (OBI-D). Each subscale consisted of eight different statements related to feelings and attitudes towards work or study, with participants indicating their level of agreement on a Likert scale from 1 (strongly disagree) to 4 (strongly agree). Each statement was scored from 1 to 4, with higher scores indicating higher levels of burnout (32). The third part of the questionnaire assessed lifestyle habits using the FANTASTIC Lifestyle Questionnaire (FLQ), which consists of 25 questions regarding individual behaviors and habits over the past month. The questions are divided into nine domains (family/friends, activity, nutrition, tobacco/toxins, alcohol, sleep/seat belts/stress/safe relationships, behavior type, insight, and career). Most questions have five possible answers, except for two dichotomous questions, and participants were categorized based on their scores into five groups (0-34 points "needs improvement"; 35-54 points "adequate"; 55-69 points "good"; 70-84 points "very good"; 85-100 points "excellent") (33).

Statistical Analysis

Data analysis was conducted using MedCalc software, version 19.1.2 (MedCalc Software, Ostend, Belgium). Categorical variables were presented as whole numbers and percentages, and statistical differences between groups were tested using the chi-square and Fisher's exact tests where appropriate. Quantitative variables were presented as mean values with standard deviations or medians with interquartile ranges, depending on the results of the D'Agostino-Pearson test for normality of data distribution. Non-normally distributed variables were tested using the Mann-Whitney U test and Kruskal-Wallis test.Normally distributed variables were tested using the independent t-test and one-way ANOVA. Finally, the correlation between the OBI burnout inventory and the FLQ lifestyle adherence questionnaire was tested using the Spearman correlation test. Statistical significance was set at $P < 0.05$.

RESULTS

A total of 160 participants were surveyed, comprising 85 students and 75 dental practitioners. In both groups, there was a higher representation of females (82.4% of students and 84.0% of dentists), with no significant differences ($P = 0.782$). Dentists were significantly older than students (40.9 ± 10.7 years vs. 21.9 ± 2.3 years; $P < 0.001$). Regarding the overall population, 79.4% of participants believed they possessed good stress management skills, with no significant differences between the groups ($P = 0.836$) (Table 1).

Table 1.
Basic Characteristics of the Studied Population Regarding the History of Mental Health Disorders

Parameter	DM Students (N=85)	DM Doctors (N=75)	Total (N=160)	P*
Female Gender	70 (82,4)	63 (84,0)	133 (83,1)	0,782
Age (years)	40,9 ± 10,7	21,9 ± 2,3	21,8 ± 1,9	<0,001
Good Coping with Stress§	68 (80,0)	59 (78,7)	127 (79,4)	0,836
Year of Study				
1st Year	15 (17,6)	-	-	-
2nd Year	15 (17,6)	-	-	-
3rd Year	10 (11,8)	-	-	-
4th Year	10 (11,8)	-	-	-
5th Year	15 (17,6)	-	-	-
6th Year	20 (23,5)	-	-	-

Data are presented as N (%) or mean ± SD; DM- Dental Medicine; *Chi-square test / Fisher's exact test / t-test for independent samples; †Self-assessment of increased risk for COVID-19 complications; §Self-assessment of one's ability to cope with stressful situations

In the second part of the survey, the Oldenburg Burnout Inventory (OBI) was used to measure burnout levels in students and dental practitioners. The results showed that dental students had a significantly higher total OBI score (39.0 (34.0-43.0) vs. 36.0 (32.0-39.0); P = 0.015). Additionally, when examining the burnout domains, analysis of alienation and exhaustion revealed that students had significantly higher exhaustion scores compared to dentists (20.0 (18.0-23.0) vs. 19.0 (17.0-21.0); P = 0.011), while no statistically significant difference was found in the alienation domain (P = 0.084).

Analysis of OBI results based on gender did not show any statistically significant differences in any of the burnout domains (Table 2). However, in participants who categorized themselves as good at handling stress, each of the OBI domains showed significantly lower scores compared to those who rated their stress management poorly - alienation domain (18.0 (15.0-19.7) vs. 19.0 (17.0-21.0); P = 0.045), exhaustion domain (19.0 (17.0-22.0) vs. 21.0 (19.7-23.0); P = 0.003), and the overall OBI score (Table 2).

Regarding adherence to a healthy lifestyle (FLQ) in the total population, the largest group of participants fell into the categories of very good (51.2%) and good (33.7%) adherence, while only 5.0% of participants adhered excellently to a healthy lifestyle. No statistically significant difference was found in the total score between the student and dentist groups (71.0 (64.0-77.7) vs. 71.0 (64.0-75.7); P = 0.497), nor the redistribution across categories (P = 0.886). In the very good adherence category, 50.6% of students and 52.0% of dentists were represented, while in the good adherence category, 32.9% of students and 34.7% of dentists were represented.

Further analysis examined levels of adherence to a healthy lifestyle concerning stress management. Participants who considered themselves good at handling stress had significantly higher FLQ scores compared to those who rated their stress management poorly (72.0 (66.0-78.8) vs. 64.0 (53.5-72.5); $P < 0.001$). In the group of participants who rated their stress management as good, 55.9% were in the very good adherence to a healthy lifestyle category, which was significantly higher compared to the group with poor stress management, where only 33.3% fell into this category (P = 0.001).

Since the results of the OBI questionnaire do not have predefined threshold values for burnout categories, participants were divided into tertiles based on their total OBI score (presented as mean± standard deviation) for more even distribution and clearer categorization, including low (30.65±4,54, N=60),

Table 2.
Results of the Burnout Syndrome Questionnaire Based on Gender and Self-Assessment of Coping with Stress

Parameter	OBI Alienation	P*	OBI Exhaustion	P*	OBI Total Score	P*
Female Gender (N=133) Male Gender (N=27)	18,0 (15,0-20,0) 18,0 (17,0-20,0)	0,143	20,0 (17,0-22,0) 19,0 (16,0-21,0)	0,194	37,0 (33,0-42,0) 38,0 (33,2-39,7)	0,985
Good Coping (N=127)† Bad Coping (N=33)†	18,0 (15,0-19,7) 19,0 (17,0-21,0)	0,045	19,0 (17,0-22,0) 21,0 (19,7-23,0)	0,003	37,0 (33,0-41,0) 40,0 (36,5-44,0)	0,006

Data are presented as median (interquartile range); OBI-Oldenburg Burnout Inventory; Mann-Whitney U test; †Self-assessment of one's ability to cope with stressful situations

Table 3.
OBI Tertiles Based on the Total Questionnaire Score in Relation to Different Parameters in the Studied Population

Parameter	1st tertile (N=60)	2nd tertile (N=53)	3rd tertile (N=47)	P*
Female Gender	51 (85,0)	41 (77,4)	41 (87,2)	0,373
Age (years)	31,1 ± 11,9	30,7 ± 12,8	30,6 ± 11,66	0,383
Good Coping with Stress †	52 (86,7)	42 (79,2)	33 (70,2)	0,113
FLQ result	76,0 (71,5-81,0)	71,0 (66,0-76,0)	60,0 (53,2-70,0)	<0,001
FLQ categories				
Adequate	0 (0,0)	2 (3,8)	14 (29,8)	
Good	12 (20,0)	22 (41,5)	20 (42,6)	<0,001
Very Good	42 (70,0)	27 (50,9)	13 (27,7)	
Excellent	6 (10,0)	2 (3,8)	0 (0,0)	
Intense Physical Activity 30 min/day				
> 3x week	23 (38,3)	13 (24,5)	23 (4,3)	<0,001
< 3 x week	37 (61,7)	40 (75,5)	45 (95,7)	
Moderate Physical Activity 30 min/day				
> 3x week	45 (75,0)	33 (62,3)	26 (55,3)	0,093
< 3 x week	15 (25,0)	20 (37,7)	21 (44,7)	
Job/Study Satisfaction				
Never/Rarely/Sometimes	5 (8,3)	8 (15,1)	29 (61,7)	<0,001
Often/Always	55 (91,7)	45 (84,9)	18 (38,3)	

Data are presented as N (%) / median (interquartile range) / mean ± SD; OBI-Oldenburg Burnout Inventory; FLQ-Fantastic Lifestyle Questionnaire; Chi-square test / Kruskal-Wallis test / One-way ANOVA; †Self-assessment of one's ability to cope with stressful situations

medium (38.04±1.37, N=53), and high burnout levels (44.68±3.43, N=47) (Table 3). It was shown that the categories of better adherence to a healthy lifestyle were more represented in the first tertile compared to the others ($P < 0.001$). In the third tertile, there was a significantly higher proportion of those engaging in vigorous physical activity less than three times a week (95.7%) in relation to the second (75.5%) and first tertiles (61.7%) ($P < 0.001$). Additionally, there was a significantly lower proportion of individuals satisfied with their job/studies in the third tertile (38.3%) compared to the second (84.9%) and first tertile (91.7%) ($P < 0.001$).

DISCUSSION

While 79.4% of participants in our study believed they had good stress management skills, existing studies suggest that dental students and practitioners form a population with high perceived stress levels (34-36). Despite high levels of perceived stress, Halboub et al. explain that most participants believe they handle daily stresses well, adapting to new work and study conditions (36).

The results of our study indicated statistically significant differences in the exhaustion domain for students, consistent with research showing that biomedical science students, including dental students, have high burnout levels (37, 38). Plakhotnik MS and colleagues attribute these findings to significant life changes for students, differing study patterns, and employment uncertainties after graduation, leading to higher burnout symptoms in the exhaustion domain (39). Furthermore, Barello et al. conducted a study measuring burnout in the emotional exhaustion and depersonalization domains among healthcare staff. In this study, 37% of respondents had high emotional exhaustion, and 25.5% had low levels, while 24.7% had high alienation, and 33.5% had low alienation (40).

Our OBI results, showing no significant gender differences in burnout domains, align with those of Özarslan and Caliskan. While there were no statistically significant differences between genders in emotional exhaustion, men had significantly higher levels of alienation. In their study, self-rated health correlated with higher burnout symptoms in the exhaustion and alienation domains (41). In contrast, our study examined self-assessed stress management, and the results showed significantly lower burnout scores across all OBI domains in participants who considered themselves good at handling stress, compared to those who rated themselves poorly. It is possible that participants accurately assess their abilities, and those who feel better

overall and have adapted better to new challenges in a professional environment report lower burnout symptoms.

Machula et al. studied Polish students and found that those who rated their health and stress-free lifestyle better had significantly higher FLQ scores (42). Our study supports this finding, as participants who believed they managed stress well scored higher on the FLQ questionnaire compared to those who rated their stress management poorly.

The negative correlation between total FLQ and OBI scores suggests that participants with better adherence to a healthy lifestyle show significantly lower burnout levels. These findings support the idea that an unhealthy lifestyle and high stress levels are potential risk factors for burnout (11). Recent studies emphasize healthy living as a key factor in preventing burnout (43, 44).

Our results show that personal job/study satisfaction, as a psychological factor, is linked to better adherence to a healthy lifestyle, potentially reducing the risk of burnout (45). Friganović and Selić demonstrated a connection between job satisfaction and lower burnout symptoms in emotional exhaustion and alienation (46). Our study also found that the third OBI tertile (high burnout) showed lower adherence to a healthy lifestyle and lower job satisfaction, compared to the first and second tertiles, which had opposite results. This supports studies suggesting that personal job/study satisfaction correlates with healthier lifestyle habits and potentially reduces burnout risk (45). This tertile also had a higher proportion of those engaging in intense physical activity less than three times a week, reinforcing the notion that physical activity plays a crucial role in reducing burnout symptoms (47). Naczenski et al. highlighted the strong relationship between physical activity and reduced burnout symptoms among healthcare workers, as did Jonsdottir et al., who found that healthcare workers engaging in moderate physical activity were less likely to report exhaustion compared to those with a sedentary lifestyle (48, 49).

This study contributes to understanding a relevant and socially significant issue - how well individuals cope with stress and the potential protective effect of a healthy lifestyle. It can serve as a basis for future studies aiming at further exploration of these connections. The strength of this research lies in using validated OBI and FLQ questionnaires, which allow for multidimensional measurement of psychological well-being and lifestyle habits, suitable analysis, and a representative sample of dental students from the Medical School in Split.

The limitations of this study include the inability to establish causal relationships between the results, a regional sample of dental medicine doctors, the sample of students from a single institution, and the reliance on self-assessment regarding stress management without additional evidence to support the responses.

CONCLUSIONS

Dental students at the Medical School in Split show significantly higher overall burnout levels compared to dental practitioners in Split-Dalmatia County, particularly in the exhaustion domain. No statistically significant differences in burnout levels were found based on gender. The majority of participants rated themselves as good at managing stress, and those individuals had significantly lower scores across all burnout domains compared to those who rated their stress management poorly. Furthermore, the majority of participants fell into the categories of very good (51.2%) and good (33.7%) adherence to a healthy lifestyle, while only 5.0% adhered excellently. Adherence to a healthy lifestyle was associated with lower burnout levels. Finally, participants who were more satisfied with their jobs/studies and those who engaged in regular physical activity also exhibited fewer burnout symptoms.

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Autori su popunili *the Unified Competing Interest form na www.icmje.org/coi_disclosure.pdf (dostupno na zahtjev)* obrazac i izjavljuju: nemaju potporu niti jedne organizacije za objavljeni rad; nemaju financijsku potporu niti jedne organizacije koja bi mogla imati interes za objavu ovog rada u posljednje 3 godine; nemaju drugih veza ili aktivnosti koje bi mogle utjecati na objavljeni rad./ *All authors have completed the Unified Competing Interest form at www.icmje.org/coi_disclosure.pdf (available on request from the corresponding author) and declare: no support from any organization for the submitted work; no financial relationships with any organizations that might have an interest in the submitted work in the previous 3 years; no other relationships or activities that could appear to have influenced the submitted work.*

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Sažetak

SINDROM IZGARANJA I PRIDRŽAVANJE ZDRAVOM NAČINU ŽIVOTA U STUDENATA I DOKTORA DENTALNE MEDICINE

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Cilj: Ispitati povezanost simptoma sindroma izgaranja i zdravih životnih navika u studenata dentalne medicine Medicinskog fakulteta u Splitu i usporediti ih sa liječnicima dentalne medicine na području splitsko-dalmatinske županije.

Materijali i metode: Sudjelovalo je 85 studenata Medicinskog fakulteta u Splitu i 75 liječnika dentalne medicine s područja splitsko-dalmatinske županije. Istraživanje je provedeno pomoću anonimnog anketnog upitnika i Google Forms - aplikacije. Za određivanje simptoma sagorijevanja koristio se Oldenurški upitnik sagorijevanja (engl. Oldenburg Burnout Inventory, OBI), a za pridržavanje zdravih životnih navika FLQ upitnik (engl. Fantastic Lifestyle Questionaire).

Rezultati: 79,4% ispitanika smatra da ima dobre vještine nošenja sa stresom, bez značajnosti među skupinama (P=0,836). OBI rezultati pokazuju značajno veći ukupan rezultat (P=0,015) i rezultat u domeni iscrpljenosti (P=0,011).Kod dobrog nošenja sa stresom, OBI domene pokazuju značajno niže rezultate u odnosu na kategoriju lošeg nošenja sa stresom. FLQ rezultati pokazuju da se 51,2% ispitanika jako dobro, 33,7% dobro te samo 5% izvrsno pridržava zdravog načina života. Kategorija dobrog nošenja sa stresom pokazuje značajno veći FLQ rezultat u odnosu na ispitanike koji se loše nose sa stresom (P<0,001). Utvrđena je negativna korelacija između zbroja bodova FLQ upitnika i OBI upitnika (P<0,001). Konačno, zadovoljstvo poslom/studijem te česta fizička aktivnost povezani su s nižim razinama simptoma izgaranja.

Zaključak: Moguć je važan utjecaj zdravog načina života kao zaštitnog čimbenika od sindroma izgaranja u populaciji studenata i liječnika dentalne medicine. S obzirom na važnost i učestalost sindroma ispitivane populacije, potrebne su daljnje studije za ispitivanje navedenih povezanosti.

Ključne riječi: DOKTORI DENTALNE MEDICINE, PRIDRŽAVANJE ZDRAVOG NAČINA ŽIVOTA, SINDROM IZGARANJA, STUDENTI DENTALNE MEDICINE

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