



Association of Burnout with Socio-Educational Variables in a Sample of Chilean Dental Students

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ABSTRACT

Objective: To assess the association of burnout with socio-educational variables in a sample of Chilean dental students

Material and Methods: A cross-sectional study was carried out on dental students in their 4th/5th years of Universidad de Concepción. The following variables were considered: sociodemographic (sex, age, with whom the student lives and commune of origin), educational (course, course failure, number of years behind and their cause, number of career options, funding, and secondary school type), and burnout using the Burnout-MBI-SS (Maslach's Burnout Inventory for students). Descriptive statistics were made, Shapiro-Wilk test was used to assess normality, as non-normal distribution was verified for MBI-SS, Mann-Whitney and Kruskal-Wallis was used to estimate statistical differences amongst categorical variables, and Spearman for correlations.

Results: Most students were in 4th year, female with a mean age of 23. For the majority, dental school was their first option, and were studying with a scholarship. Most of them lived with their nuclear family and 58% had at least failed one course. MBI subscales' levels distribution is as follows: Emotional exhaustion (EE, 16.47% low, 31.76% moderate, and 51.76% high), Depersonalization (DP, 18.82% low, 24.71% moderate, and 56.47% high), and Personal accomplishment (PA, 7.65% low, 31.76% moderate, and 60.59% high). Statistical significant correlations were only found for Depersonalization with students' age ($\rho=0.2420$) and reprobation years ($\rho=0.1838$).

Conclusions: Dental students from the University X, which are female, attending their fifth year, and students who failed courses, especially clinical ones, exhibit higher levels of burnout.

Key words: Burnout, Professional; Dental Students; Dental Education.

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Introduction

Work and academic activities are by themselves a source of stress¹⁻³, whereas dental practice is one of the health professions that produce more anxiety.^{4,5} Stress has also been described in students, whereas dental students report higher levels of stress than medical students.⁶ In addition to stress, a phenomenon typical of those who work in personal care has been described: burnout.⁷ Burnout is "a syndrome of emotional fatigue, depersonalization and low personal fulfillment, which can occur among individuals who work with people" and which originates as a prolonged response of the body to environmental factors to which it cannot adapt.^{5,8} This syndrome mainly affects professionals and students who are more committed to a humanistic philosophy of work in direct contact with people.^{9,10}

Students who suffer burnout are more predisposed to the use of medications to control anxiety, manage cognitive performance problems, and regulate sleep problems or symptoms of depression.¹¹ If burnout is not treated in time,

it could be a precursor to deterioration in mental health, leading to long-term depression and suicide.^{9,12,13} Dental students present high rates of burnout as a consequence of highly demanding professional training, accompanied by high fees and difficult recovery of investment, which translates into high levels of dissatisfaction with low personal fulfillment.^{14,15} Moreover, during clinical courses the students must develop skills such as therapeutic and psychological management of the complex dental patient (who may experience anxiety, pain, and fear) which increases burnout levels.^{5,14,16}

Burnout in dental students is mainly related to social and educational factors.^{5,12-15} Though there are studies in Chile that explored most of these variables, the impact on burnout levels of the separation of the student from his family when studying in another city, course reprobation, or type of funding is lacking.¹⁵⁻¹⁹ Thus, this paper aims to determine the association of burnout with socio-educational variables in a sample of Chilean dental students.

Material and Methods

Study design, settings, and participants

A cross-sectional study was carried out, including dental students from the Universidad de Concepción, corresponding to the 4th/5th year, as in those years dental students begin their clinical courses. The Universidad de Concepción is one of the oldest, most traditional, and prestigious universities in Chile, the 2nd biggest city in Chile.

All students who were enrolled in clinical courses were included, regardless of whether they have failed any course. Exchange students were excluded because they are exposed to different risk factors and the language and cultural barrier of the version of the instrument. There was no sample size calculation, as the target was the whole population.

Variables

The data collection included sociodemographic variables: sex (female/male), age (in years), with whom the student lives (nuclear family/extended family/student room) and commune of origin (name of the commune); and educational variables: course (fourth or fifth year), course failure (yes/no) number of years behind (in years) and their cause (clinical/practical/theory), number of career option (1st/ 2nd/3rd), funding (loan/free grant/loan + free grant/self-funding/other), and secondary school type (Public/Private/Subsidized); and burnout using the Maslach's Burnout Inventory for students (MBI-SS). MBI-SS had been extensively used to assess burnout amongst health students, thus it was chosen for comparison with other studies.⁷⁻¹⁹

The MBI-SS validated in Chile¹⁷ was used. The MBI-SS measures the 3 aspects of the syndrome: emotional fatigue, depersonalization, and personal fulfillment. The emotional exhaustion subscale consists of 7 questions and assesses the experience of being emotionally exhausted by the demands of work, the maximum score is 42 points. Similarly, the depersonalization subscale is made up of 7 questions and assesses the degree to which each one recognizes attitudes of coldness and detachment, the maximum value is 42 points. Finally, the lack of personal fulfillment subscale is made up of 8 items, which assess feelings of self-efficacy and personal fulfillment at work. the maximum value is 48. To consider the presence of Burnout Syndrome, high scores are considered for emotional fatigue and depersonalization and low for personal fulfillment. MBI-SS subscales were categorized in three levels: low, moderate and high, as suggested in the Maslach Burnout Inventory Manual.²⁰ There is not widely accepted cutoff points to diagnose burnout using MBI-SS, thus the results are shown for subscales levels.

Measurement

The students participated freely by previously signing an informed consent. Two researchers collected sociodemographic data and the application of the instrument through an self-applied survey. Students were

contacted in the classroom, at the beginning of theory or clinical activities, during the first two months of the second semester of 2019. Each course was visited twice in case a student was absent the first time. There was no monetary nor academic compensation associated with participation.

Ethics

This study was authorized by the Bioethics Committee of the School of Dentistry of the Universidad de Concepción (C.E.C. N °016/ 18).

Data analysis

Data were tabulated in MS Excel (Microsoft Corp., USA) and then analyzed with STATA 10/SE (Stata Corp., USA). Descriptive statistics for quantitative were made using mean and standard deviation for normal distribution variables, and median and interquartile range for non-normal distribution variables; for categorical variables, frequency and percentage distribution were calculated. Shapiro-Wilk test was used to assess normality, as non-normal distribution was verified for MBI-SS and its subscales, Mann-Whitney and Kruskal-Wallis was used to estimate statistical differences amongst categorical variables, and Spearman for correlations ($p < 0.05$).

Results

One-hundred and seventy dental students were included as they answered the entire survey, 65.88% were women, and the age mean was 23.14 years, with a participation rate of 87%. The characterization of the sample is shown in Table 1.

MBI subscales' levels distribution is as follows: Emotional exhaustion (EE, 16.47% low, 31.76% moderate, and 51.76% high), Depersonalization (DP, 18.82% low, 24.71% moderate, and 56.47% high), and Personal accomplishment (PA, 7.65% low, 31.76% moderate, and 60.59% high). MBI subscales have non-normal distribution ($p < 0.05$), thus, non-parametric tests were used to assess statistical significance. MBI subscales' scores by socio-educational variables are shown in Table 2. Statistically significant correlations were only found for DP and students' age ($\rho = 0.2420$, $p = 0.0015$) and reprobation years ($\rho = 0.1838$, $p = 0.0164$).

Discussion

More than half of the surveyed students present high levels of burnout considering the MBI-SS subscales, which is very worrying since the data was collected at the beginning of the academic year. This situation implies that the syndrome is not resolved even with a (summer) break from the stressor but is a prolonged response of the body where its well-being is affected.^{21,22}

Entering the clinical stage requires the student to have clinical and cognitive skills that allow them to solve oral health problems.¹⁰ This can lead to high/unsustainable

levels of stress due to working under constant time pressure, completing jobs on a scheduled basis, performing repetitive work, and enduring stress led by uncooperative and anxious patients.^{21,22} To avoid increased stress in students and prevent burnout syndrome, better curricular planning and administration, as well as progressive and early contact with patients, are necessary.¹⁵

Regarding the sociodemographic variables, no statistically significant results were found, which is consistent with the study by Barraza *et al.*²³ However, it is relevant to mention that studies such as that of Mohebbi *et al.*²⁴ show that financial support from family and residential status (living without parents) is associated with greater emotional exhaustion in students. These factors are likely to be determining factors in the appearance of burnout in early years students, who must go through a period of adaptation to changes in their lives, such as leaving the parents' home, who act as a psychological supporter in the face of difficulties.^{25,26}

Regarding the choice of a career in dentistry, no significant differences were found in burnout levels between those for whom dentistry was the first choice and those who were not. This agrees with the results of Jiménez-Ortiz *et al.*²⁶, unlike Mafla *et al.*¹⁴, who found higher levels of burnout among those who did not choose dentistry as their first choice. These differences are probably influenced by social factors specific to each region, especially in terms of the social value of being a dentist. While the type of secondary school of origin was not associated with differences in burnout levels, similar to the study by Muñoz *et al.*¹⁶ in this same university.

The literature shows dissimilar results regarding differences by sex, and there is no agreement if it affects more women or men.^{12,25-27} The women surveyed presented higher levels of emotional exhaustion, similar to the study by Muñoz *et al.*¹⁸, this could be explained by the social constructs of masculinity, in which men are repressed in terms of expressing their emotions.

Those students who failed any course(s), especially clinical courses, have more depersonalization than the rest of the students, feeling little empathetic about their work and their patients. This result is contradictory to Parra-Sandoval *et al.*²⁸, who did not find any difference in the stress levels of those who had failed and those who had not. More research is needed on the effects of failure on burnout levels and the mental health of dental students.

Depersonalization can lead to dental students centering their attention only on completing the number of clinical requirements to approve the course²⁹. Moreover, dental programs do not usually promote soft skills such as empathy or social responsibility^{30,31} in their curricula, which can worsen the situation. The above could explain the findings of Irfan *et al.*³² where only half of the dental students reported high levels of empathy, the empathy decline that has been observed in dental students during their first year of training⁵, and the

empathy level decreased as patient exposure increased.³³ The latter is a worrying situation as it overlooks their patients' needs and their social role and commitment to their community³¹ thus, generating future dental professionals with low empathy and commitment to their role in society.

Worldwide, one of the main sources of stress in dental programs is course failing³⁴ and facing their parents after course failure³⁵ which can lead to burnout. This could be due to that, as most dental program only promotes hard skills, neglecting self-confidence, and positive attitudes, among others.⁹ In addition, as dental students usually hold a previously successful academic track in high school, such as being Valedictorians, may not be able to fulfill their previous high standards.¹⁶ As emotional intelligence is the cornerstone of soft skills, its development in dental students should be stressed out.⁹ Given the above, different interventions have been successfully implemented in dental programs aimed at reducing burnout such as Yoga to reduce stress³⁶, courses to enhance emotional intelligence³⁷, or strengthening personal confidence.³⁸ Yet future research is needed to decrease burnout, promoting the development of emotional intelligence, as it can help tolerate stress and minimize burnout levels³⁹ and has a strong correlation with empathy.³²

Burnout has a complex origin, it is not only a lack of resilience or vocation in students but also the social environment and the characteristics of the educational institution are involved.^{13,23} Ensuring an environment that provides a good level of quality of life to the student could lead to them feeling more satisfied and with lower levels of stress. This would allow their self-efficacy to be higher and they engage with greater dedication, effort, and perseverance in their studies.^{14,19,40}

Some limitations must be considered: the sample represents only one institution; thus it is difficult to extrapolate these results to other settings. The sample selection was not probabilistic, which might have affected the results; and, these results do not implicate causality, but offer initial evidence on the impact of socio-educational variables on burnout levels for dental students.

Conclusions

Dental students from Universidad de Concepción, which are female, attending their fifth year, and students who failed courses, especially clinical ones, exhibit higher levels of burnout.

Funding

None.

Conflicts of Interest

None.

Table 1. Characterization of the sample.

Variable	4 th year	5 th year	General
Sex			
Female, n (%)	73 (70.19)	39 (59.09)	112 (65.88)
Male, n (%)	31 (29.81)	27 (40.91)	58 (34.12)
Age, years (SD)	22.70 (2.19)	23.83 (2.58)	23.14 (2.41)
Dentistry as first option, n (%)	55 (52.88)	36 (54.55)	91 (53.53)
Funding			
Loan	13 (12.50)	10 (15.15)	23 (13.53)
Scholarship	48 (46.15)	24 (36.36)	72 (42.35)
Loan + Scholarship	22 (21.15)	18 (27.27)	40 (23.53)
Self-funding	16 (15.38)	9 (13.64)	25 (14.71)
Other	5 (4.81)	5 (7.58)	10 (5.88)
Secondary school type			
Public	23 (22.12)	13 (19.7)	36 (21.18)
Private	20 (19.23)	10 (15.15)	30 (17.65)
Subsidized	61 (58.65)	43 (65.15)	104 (61.18)
Live with			
Nuclear family, n (%)	75 (72.12)	40 (60.61)	115 (67.65)
Extended family, n (%)	5 (4.81)	7 (10.61)	12 (7.06)
Student room, n (%)	24 (23.08)	19 (28.79)	43 (25.29)
Reprobation rate, n (%)	56 (53.85)	43 (65.15)	99 (58.24)
Reprobation years, mean (SD)	0.95 (1.21)	1.03 (1.05)	0.98 (1.15)
Reprobation motive			
Theory	21 (37.50)	17 (39.53)	38 (38.38)
Practice	6 (10.71)	5 (11.63)	11 (11.11)
Clinics	16 (28.57)	15 (34.88)	31 (31.31)
More than one motive	13 (23.21)	6 (13.95)	19 (19.19)

SD: standard deviation

Table 2. MBI subscales' scores by categorical socio-educational variables.

Variable	EE score (IQR)	DP score (IQR)	PA score (IQR)
Course	$p = 0.8930$	$p = 0.0142$	$p = 0.0475$
4 th	27 (22-32)	10 (6-16)	33 (28-36)
5 th	25 (21-33)	13.5 (7-20)	30.5 (24-35)
Sex	$p = 0.0008$	$p = 0.5714$	$p = 0.1793$
Female	28 (23-34)	10.5 (6-19)	31 (25.5-36)
Male	24 (15-29)	12 (6-17)	33 (29-36)
Dentistry	$p = 0.4690$	$p = 0.8169$	$p = 0.8867$
First career option	28 (21-34)	12 (7-19)	32 (26-36)
Second or greater	26 (22-32)	10 (6-19)	32 (28-36)
Funding	$p = 0.7698$	$p = 0.2868$	$p = 0.9385$
Loan	27 (20-32)	16 (6-21)	31 (26-35)
Scholarship	27.5 (22-33)	10.5 (6-18)	33 (27-36)
Loan + Scholarship	27 (24-30.5)	12.5 (8-19)	31 (25-36)
Self-funding	23 (20-34)	9 (8-13)	32 (27-36)
Other	29 (27-32)	9 (6-11)	30.5 (28-36)
Secondary school type	$p = 0.1413$	$p = 0.3151$	$p = 0.3809$
Public	24.5 (14-30.5)	9 (6-17)	33 (30-36)
Private	24.5 (20-34)	9.5 (7-17)	32.5 (27-36)
Subsidized	28 (23-32.5)	12.5 (6-19)	31 (25-35.5)
Live with	$p = 0.6321$	$p = 0.7888$	$p = 0.8986$
Nuclear family	27 (22-32)	11 (7-19)	32 (27-36)
Extended family	27.5 (23.5-33.5)	10 (4.5-18.5)	31 (27-35)
Student room	25 (15-34)	13 (5-19)	33 (25-35)
Reprobation	$p = 0.9686$	$p = 0.0206$	$p = 0.3352$
Yes	27 (23-31)	13 (7-19)	31 (26-35)
No	27 (20-34)	9 (5-16)	33 (27-37)
Reprobation motive	$p = 0.6358$	$p = 0.0180$	$p = 0.5665$
Theory	27.5 (23-35)	9.5 (6-17)	31 (25-35)
Practice	24 (20-29)	11 (9-19)	31 (28-34)
Clinics	28 (23-33)	18 (12-21)	31 (26-35)
More than one motive	24 (21-29)	12 (6-17)	33 (31-36)

SD: standard deviation. IQR: interquartile range. EE: emotional exhaustion. DP: depersonalization. PA: personal accomplishment.

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