



ORIGINAL ARTICLE

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Receipt: 12/09/2016 **Revised:** 12/24/2016
Acceptance: 12/29/2016 **Online:** 12/29/2016

Association of burnout with stress, coping strategies and vocational satisfaction in Chilean clinical dental students.

Abstract: Objective: Dental students are particularly affected by stress, which can lead to 'burnout syndrome' by association with other psychological factors. The aim of this study was to analyse the effect of perceived stress, coping strategies, and vocational satisfaction on the severity of burnout in Chilean dental students in the clinical years. Method: The study population was comprised of clinical dental students of five Chilean dental schools. The following variables were considered: age, gender, year of study, burnout, coping strategies, perceived stress, and vocational satisfaction. Statistical analysis included descriptive measures, correlation tests, and stepwise multiple regression analysis. Results: The final sample included 244 students. Three (1.23%) students did not have burnout in any of its factors and 38 (15.57%) had severe levels in all three factors. There was a statistically significant greater 'emotional exhaustion' in 4th year students. There was a statistically significant correlation of the three factors of burnout with 'social withdrawal' coping strategy, high levels of perceived stress, and low levels of present and future vocational satisfaction. Conclusion: Most students presented moderate and high levels of burnout. This situation is associated with dysfunctional coping strategies, high levels of perceived stress, and low levels of present and future vocational satisfaction.

Keywords: *Burnout, Professional, Dental students, Education, Dental, Mental Health, Stress, Psychological.*

DOI: 10.17126/joralres.2016.067

Cite as: Pérez F, Caro P, Valenzuela B, Ortiz J & Narvaez J. Association of burnout with stress, coping strategies and vocational satisfaction in Chilean clinical dental students. *J Oral Res* 2016; 5(8): 320-327.

INTRODUCTION.

Stress is typical of the activities associated with work and university study, which can generate an adaptive or maladaptive response according to how it is addressed, lived, and solved.¹ Among the professions of the health sciences, dentistry is one that produces more anxiety,² so dental students must endure the stress associated with the practice of this profession plus the university stress, which is common to all students.³ Dental students suffer more stress than the rest of the population.⁴ It has been reported that the largest increases of stress levels in dental students are associated with transitions between basic science, the preclinical level,

and the clinical level,⁵ with the most significant increase of stress starting in the clinical years.⁶ Other conditions associated with stress in this population are depression, anxiety, substance abuse, decreased work efficiency, and burnout syndrome.⁶

Burnout is defined as 'a syndrome of emotional exhaustion, depersonalisation, and reduced personal accomplishment that can occur among individuals who work with people'.⁷ Emotional exhaustion is characterised by the feeling that nothing can be given to another person on an emotional level, due to a lack of own emotional resources;⁸ depersonalisation occurs with an attitude of detachment

to the patient, along with a negative and cynical attitude toward him or her;⁹ and finally, lack of personal fulfillment is manifested by the perception that the possibilities of personal accomplishment at work have disappeared, accompanied with feelings of failure and low self-esteem, including rejection of personal gains achieved.⁸

Dentists are the health professionals with a higher prevalence of burnout, including a greater emotional stress generated and/or triggered by factors such as climate and other organisational factors. Other demands from the activities, roles, and interpersonal ambiguity thereof can also affect dental students.^{10,11} The main associated factors in this group are increased workload, lack of time, and some aspects of clinical training.¹² It has been reported that students with higher levels of stress, depression, and burnout mainly use dysfunctional coping strategies,¹³ which is a worrisome situation considering that more than half of dental students use dysfunctional strategies to cope with stress.¹⁴ In recent years, other stress factors have appeared that are associated with the future employability and salary of dental students.⁸ All these factors can affect the satisfaction with dentistry as a career.

Despite the extensive literature about stress, coping strategies, and burnout in dental students, the interaction among them and satisfaction with dentistry as a career has not been reported. The aim of this study was to analyse the effect of perceived stress, coping strategies, and vocational satisfaction on the severity of burnout in Chilean dental students in their clinical years.

MATERIALS AND METHODS.

The project was evaluated and approved by the Bioethics Committee of the School of Dentistry, Universidad de Concepción, with the approval number CIYB N°03/14. All study participants signed the informed consent.

This cross-sectional study was conducted during the first semester of 2014. Invitations to the 17 member societies of ANACEO (Scientific National Association of Dental Students, Asociación Nacional Científica de Estudiantes de Odontología) were sent in January 2014. Each

member society represents students from a dental school of a Chilean university. Five member societies agreed to participate.

The typical undergraduate dental curriculum in Chilean Universities comprises: three years of basic sciences (anatomy, chemistry, physics, histology, physiology, and similars), and preclinical work in dental phantom head; two years (4th and 5th) of clinical work with real patients; and one year of internship in different settings (intramural and extramural). The graduates have no need to obtain a license or pass a board exam to begin their practice.¹⁵

The study population was comprised of clinical dental students (4th and 5th years) of the Universidad de Antofagasta, Universidad de Valparaíso, Universidad de Viña del Mar, Universidad de Concepción, and Universidad de La Frontera. These students permanently care for patients within the curricular activities. Students who are not regularly attending clinics were excluded.

Sociodemographic variables were age, gender, and year of study. Psychological variables were severity of burnout using the Maslach Burnout Inventory (MBI),¹⁶ coping strategies using the Coping Strategies Inventory (CSI),¹² and perceived stress using the Perceived Stress Scale (PSS);¹⁷ all instruments were validated versions for Spanish speaking populations. The vocational satisfaction was measured using a six-statement instrument with a Likert scale (1 to 7) that include three moments: past satisfaction (“I wanted another career”, “Dentistry was my first option”), current satisfaction (“I am happy studying Dentistry”, “I am dissatisfied with Dentistry”), and future satisfaction (“I wish to practice Dentistry”, “I do not see myself working as a dentist”).

Data collection was made in April and May 2014 through a written survey. Data were tabulated and coded in an electronic spreadsheet (MS Excel, Microsoft Corp., USA) without including personal identification.

The analysis included an exploration of the data generating descriptive statistics mean with standard deviation, median and interquartile range, percentage distribution, and frequency. Correlation among burnout and coping

strategies, perceived stress, and vocational satisfaction was made with the Spearman correlation test. Stepwise multiple regression analysis was carried out using the score of burnout factors and burnout cases as the dependent variables. All tests considered a significance level of $p < 0.05$. The analysis was made in StataMP 13 (StataCorp, USA).

RESULTS.

A total of 635 students from five dental schools in the 4th and 5th years were invited to participate, of which 345 agreed to participate, representing a 54.3% initial response rate. Ultimately, 101 incomplete surveys were removed because they were incomplete, so that the tested sample corresponded to 244 students, representing a 38.4% final response rate, as shown in Table 1.

Only 3 (1.23%) students did not have burnout in any of its factors, and 38 (15.57%) had severe levels in all three factors, considered as burnout cases. The level distribu-

tions of the three factors of burnout by sex and course are shown in Fig 1. No differences in the factors by sex ($p > 0.05$) were found. Statistical difference by course was found for emotional exhaustion ($p = 0.013$).

Table 2 shows the correlation between coping strategies and burnout factors; the only one that had a statistically significant correlation with the three components was social withdrawal.

Figure 2 shows the correlation between the levels of perceived stress and factors of burnout. These were: 0.62 for emotional exhaustion, 0.26 for depersonalisation, and -0.46 for personal accomplishment. All of them were statistically significant ($p < 0.0001$).

Table 3 shows the correlation between the levels of vocational satisfaction and factors of burnout. Only past satisfaction was not correlated with the factors ($p > 0.05$).

Table 4 shows the logistic and linear regression models for each of the components of burnout and for cases. Only those statistically significant variables are shown.

Table 1. Descriptive information of the 244 Chilean dental students included in the analysis.

University	Sex		Course		Total
	Male	Female	4 th	5 th	
U de Antofagasta	8	9	6	11	17
U de Valparaíso	28	17	27	18	45
U de Viña del Mar	17	16	26	7	33
U de Concepción	21	41	25	37	62
U de La Frontera	36	51	58	29	87
Total	110	134	142	102	244

Table 2. Correlation between coping strategies and burnout factors in Chilean dental students.

Coping strategies	Emotional exhaustion	Depersonalization	Personal accomplishment
Problem solving	-0.22*	-0.06	0.20*
Cognitive restructuring	0.12	0.11	-0.09
Express emotions	0.08	0.02	0.04
Social contact	0.25*	0.07	0.02
Problem avoidance	-0.04	-0.08	0.08
Wishful thinking	-0.12	0.02	0.15*
Self criticism	0.01	0.16*	-0.01
Social withdrawal	0.23*	0.36*	-0.20*

* $p < 0.05$

Table 3. Correlation between career satisfaction and burnout factors in Chilean dental students.

Type of satisfaction	Emotional exhaustion	Depersonalization	Personal accomplishment
Present satisfaction	-0.42*	-0.16*	0.40*
Past satisfaction	-0.07	0.01	0.03
Future satisfaction	-0.24*	-0.18*	0.32*
General satisfaction	-0.30*	-0.13*	0.30*

*p<0.05

Table 4. Linear and logistic regression for burnout cases and burnout factors in Chilean dental students.

Variables	Emotional exhaustion			Depersonalization			Personal accomplishment			Burnout cases		
	Coeff.	p	95% CI	Coeff.	p	95% CI	Coeff.	p	95% CI	Coeff.	p	95% CI
Perceived stress	0.69	<0.01	0.55-0.84	0.13	0.01	0.03-0.23	0.36	<0.01	0.47-0.25	1.08	0.02	1.01-1.15
Present satisfaction	-0.87	<0.01	-1.23--0.50	-0.23	0.07	-0.49-0.02	0.65	<0.01	0.31-0.98	0.76	<0.01	0.66-0.88
†Social support	0.23	0.05	0.00-0.46				0.25	0.01	0.08-0.43			
Age	-0.68	0.01	-1.18--0.18									
†Social withdrawal				0.41	<0.01	0.25-0.56	0.20	0.02	0.38-0.03	1.18	<0.01	1.08-1.29
Course				1.86	0.02	0.33-3.39	-1.78	0.04	-3.48--0.08	4.20	<0.01	1.66-10.6
Future satisfaction										0.31	0.08	0.04-0.66
Past satisfaction										-0.22	0.03	-0.43--0.02
†Cognitive restruct.										0.89	0.02	0.81-0.98
Adj. R-squared		0.44			0.18			0.33			0.29	

† Coping strategies.

Figure 1. Severity of three factors of burnout by sex and course.

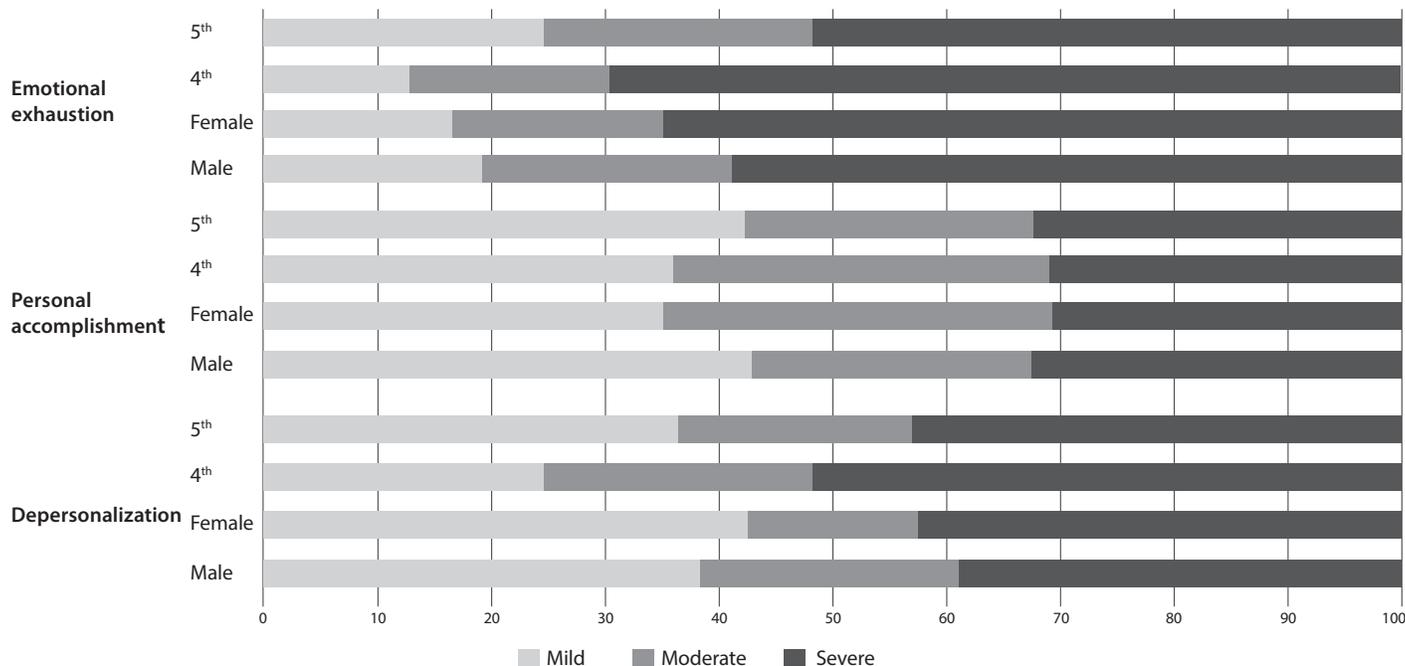
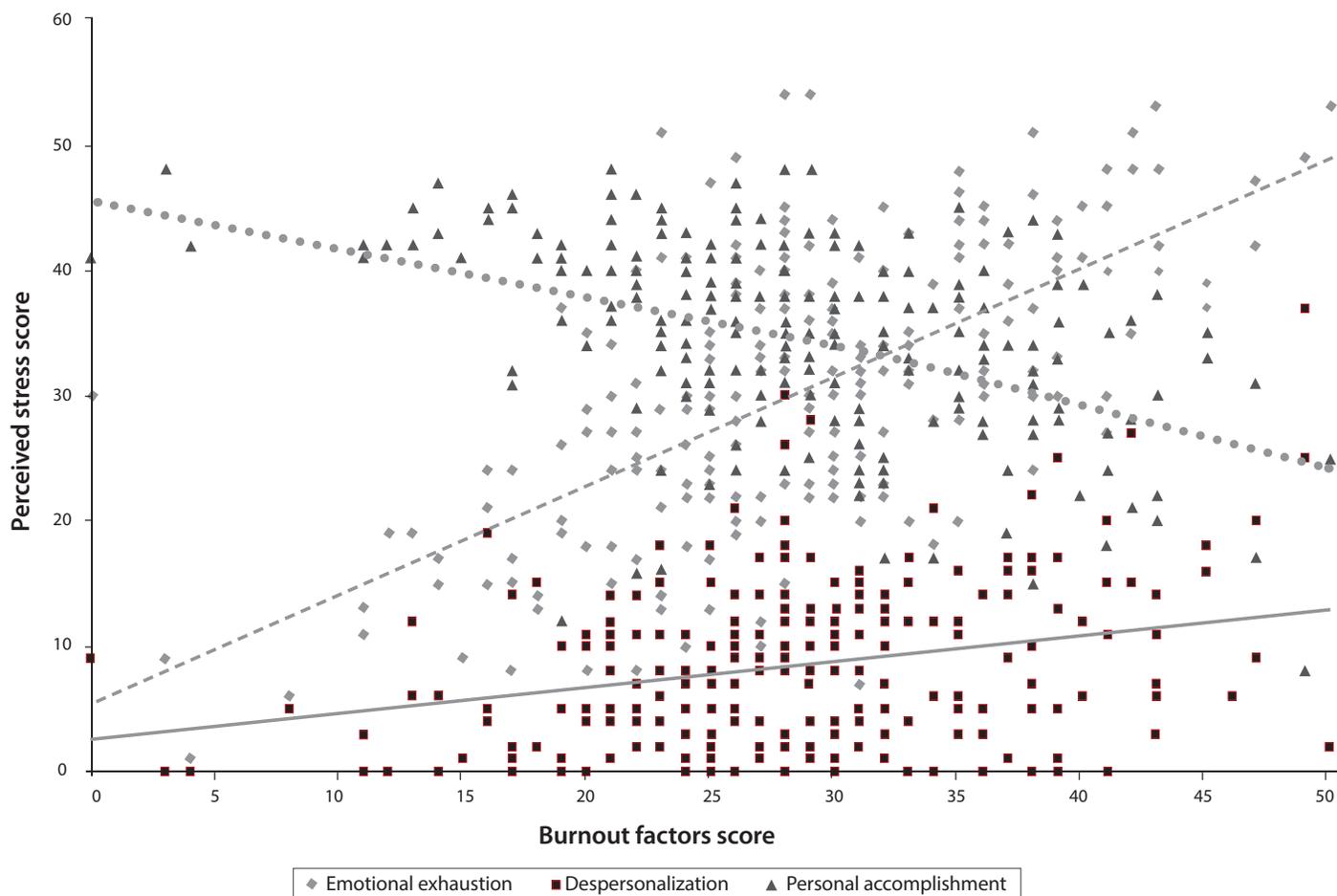


Figure 2. Correlation between the levels of perceived stress and factors of burnout.

DISCUSSION.

Burnout is a prevalent syndrome in health professionals, and because of the nature of dental practice, which is both a physically and psychologically demanding profession, dentists are the professionals most affected by burnout.^{2,10-14,18} One of the consequences of burnout is low performance at work, which is associated with rejection and intention to quit the profession.^{19,20} Unfortunately, the burnout begins during the undergraduate education,²¹ and this forms a rejection of the profession early on. This situation directly affects the dentist-patient relationship,²² which can contribute to the severity of the syndrome in the future, and thus create a vicious circle.

In the present study, we observed that almost all students were affected by the burnout in any of its factors.

'Emotional exhaustion' had the higher levels of severity, which is described as the first feature of the syndrome.²³ This situation is consistent with the literature,^{24,25} but the prevalence rate of burnout in Chilean students is higher than other countries.²¹

While women were more affected by burnout than men, this difference was not significant. This is different from previous studies,^{25,26} wherein the difference was statistically significant. It was reported that women expressed greater 'fear of failure' and 'lack of confidence' than men,²⁵ feelings that can increase the effect of stressors to produce burnout.

The 4th year students are more affected than 5th year students, but this difference was significant only in the factor 'emotional exhaustion'. This may be because the data collection was performed at the beginning of the academic year,

so there is emotional exhaustion because of the transition to a new level (clinical), but these students have not worked so long with patients to affect the other two factors of burnout. This situation can vary later in the year, assuming an increase in stress because of the demands of patient care. This trend was described in previous research,^{6,27,28} with the transition to the clinical level being a critical determinant in the increase of burnout,^{28,29} and the prevalence of depression and suicidal ideation.³⁰ This may be due to the intellectual and emotional complexity of facing new challenges related to the care of the first patients. There are non-academic demands in the clinical years, as students need to seek their own patients and encounter difficulty in finding the appropriate ones.² These demands increase the insecurity and lack of confidence previously described, but would diminish as the students progress through the clinical years.

The high prevalence and severity of burnout in this study was directly related to high levels of perceived stress, use of 'social withdrawal' as a coping strategy, and lack of present and future satisfaction with the career. These relationships are described below.

Coping strategies can be used individually or more than one simultaneously, which varies according to the situation.¹² In this study, the strategies that correlate with burnout were social withdrawal, problem solving, and social support; social withdrawal had the greater correlation with the factors of burnout. The profile of this strategy is described as 'unstable and introverted people, they perceive ineffectiveness in their coping strategy, and they tend to withdraw socially wishing that the situation would not occurred',¹² which is consistent with a higher level of burnout due to demands in the clinical years of dentistry.

Dysfunctional coping strategies were related with higher levels of stress, depression, and burnout.^{13,30} Social withdrawal and other strategies based on avoiding the situation may contribute to the component 'depersonalisation', negatively affecting the relationship with the patient and thus falling into a vicious circle. These strategies to face problems allow for the distinction between 'relaxed students'

with low levels of stress and 'highly stressed students' with alarming levels of stress.¹³ The coping strategies can provide useful information to create prevention and intervention programmes to combat the stress and burnout, as well educate students to better address the problems.

This study revealed that having another career as a priority when entering the university (past satisfaction) is not related to burnout; only present and future satisfaction were related. This result is useful because there is no need to design and implement special programmes for students who chose other careers as a first choice, which is relevant considering that one third of Chilean dental students had the medical career as a first choice.³¹

Vocational satisfaction is of great importance in the current context of Chilean and Latin American dentistry, as new professionals must face a complicated situation of the profession. There is an exponential growth in the graduation of new dentists, which affects employability, working conditions and salaries.⁸ It is important to form new committed professionals who are 'satisfied' with their careers and can face the growing demands and difficulties of the future scenario.

There is a direct relationship between stress and burnout, having a positive correlation with 'emotional exhaustion' and 'depersonalisation' and a negative correlation with 'personal accomplishment'. This result is consistent with previous studies which explain that stress can lead to developing depression, anxiety, and burnout.^{5,32,33} But studies show that stress is correlated with high²⁹ or low³⁴ academic performance, which means that some level of stress is beneficial for academic performance (eustress) but pathological levels are not (distress).

Therefore, mental health is a relevant issue when analysing the academic and social training of dental students and future professionals. Dental schools should address this gap in the training of students and detect the risk for burnout and other psychological problems in a timely manner. The identification of coping styles and a more gradual transition from the preclinical to the clinical years (e.g. start contact with patients in the first year doing simple procedures)

could be useful in the design of preventive programmes. Such interventions should differentiate according to sex, course, coping styles, vocational satisfaction and other variables to investigate further.

Some limitations must be considered in the analysis of this study. Not all Chilean dental schools were included, and the final response rate was about a third of all students invited to participate. The instrument for measuring 'vocational satisfaction' is not a validated one. Data collection was conducted at the beginning of the academic year, so it is assumed that the data do not represent the highest level of stress or burnout. Despite these limitations, this study offer new insights

on the interaction of psychological phenomena in dental student's population.

CONCLUSION

Most students analysed in this study had moderate to high levels of burnout, especially 'emotional exhaustion'. Burnout affects more to women and 4th year students, but these differences were only significant for emotional exhaustion between the 4th and 5th years. There was a positive correlation among the burnout and dysfunctional coping strategies, perceived stress, and low levels of present and future vocational satisfaction with the career.

Asociación de burnout con estrés, estrategias de afrontamiento y satisfacción vocacional en estudiantes chilenos de odontología en etapa clínica.

Resumen: Objetivo: Los estudiantes de odontología se ven particularmente afectados por el estrés, que puede conducir al síndrome de burnout por asociación con otros factores psicológicos. El objetivo de este estudio fue analizar el efecto del estrés percibido, las estrategias de afrontamiento y la satisfacción vocacional en la severidad del burnout en los estudiantes de odontología chilenos en los años clínicos. Método: La población estudiada estaba compuesta por estudiantes de odontología en etapa clínica de cinco escuelas dentales chilenas. Se consideraron las siguientes variables: edad, sexo, año de estudio, burnout, estrategias de afrontamiento, estrés percibido y satisfacción vocacional. El análisis estadístico incluyó estadísticas descriptivas, pruebas de correlación y análisis de re-

gresión múltiple. Resultados: La muestra final incluyó a 244 estudiantes. Tres (1.23%) estudiantes no presentaron burnout en ninguno de sus factores y 38 (15.57%) tuvieron niveles severos en los tres factores. Hubo un mayor "agotamiento emocional" estadísticamente significativo en los estudiantes de cuarto año. Hubo una correlación estadísticamente significativa de los tres factores de burnout con la estrategia de "retirada social", altos niveles de percepción de estrés y bajos niveles de satisfacción vocacional presente y futura. Conclusión: La mayoría de los estudiantes presentaron niveles moderados y altos de burnout. Esta situación se asocia con estrategias de afrontamiento disfuncionales, altos niveles de estrés percibido y bajos niveles de satisfacción vocacional presente y futura.

Palabras clave: *Burnout, Profesional, Estudiantes de odontología, Educación, Odontología; Salud mental, Estrés, Psicológico.*

REFERENCES.

1. Pérez F, Cartes-Velásquez R. Estrés y burnout en estudiantes de Odontología: Una situación preocupante en la formación profesional. *Rev EDUMECENTRO.* 2015;7(2):179-90.
2. Jain A, Bansal R. Stress among medical and dental students: a global issue. *IOSR J Dent Med Sci.* 2012;1(5):5-7.
3. Kumar S, Dagli RJ, Mathur A, Jain M, Prabu D, Kulkarni S. Perceived sources of stress amongst Indian dental students. *Eur J Dent Educ.* 2009;13(1):39-45.
4. Shankarapillai R, Nair MA, George R. The effect of yoga in stress reduction for dental students performing their first periodontal surgery: A randomized controlled study. *Int J Yoga.* 2012;5(1):48-51.
5. Corsini G, Bustos L, Fuentes J, Cantín M. Niveles de Ansiedad en la Comunidad Estudiantil Odontológica. Universidad de La Frontera, Temuco-Chile. *Int J Odontostomat.* 2012;6(1):51-7.
6. Alzahem A, van der Molen H, Alaujan A, Schmidt H, Zamakhshary M. Stress amongst dental students: a systematic review.

- Eur J Dent Educ. 2011;15(1):8–18.
7. Takayama Y, Miura E, Miura K, Ono S, Ohkubo C. Condition of depressive symptoms among Japanese dental students. *Odontology*. 2011;99(2):179–87.
 8. Carrizo A. Dentists' training in Chile and some iberoamerican countries. Considerations for education, health and job. *J Oral Res*. 2014;3(2):119–22.
 9. Gil-Monte PR. Factorial validity of the Maslach Burnout Inventory (MBI-HSS) among Spanish professionals. *Rev Saude Publica*. 2005;39(1):1–80.
 10. Ahola K, Hakanen J. Job strain, burnout, and depressive symptoms: a prospective study among dentists. *J Affect Disord*. 2007;104(1-3):103–10.
 11. Denton DA, Newton JT, Bower EJ. Occupational burnout and work engagement: a national survey of dentists in the United Kingdom. *Br Dent J*. 2008;205(7):E13–discussion 382-3.
 12. Cano García FJ, Rodríguez Franco L, García Martínez J. Spanish version of the Coping Strategies Inventory. *Actas Esp Psiquiatr*. 2007;35(1):29–39.
 13. Dahan H, Bedos C. A typology of dental students according to their experience of stress: a qualitative study. *J Dent Educ*. 2010;74(2):95–103.
 14. Prinz P, Hertrich K, Hirschfelder U, de Zwaan M. Burnout, depression and depersonalisation--psychological factors and coping strategies in dental and medical students. *GMS Z Med Ausbild*. 2012;29(1):Doc10.
 15. Cartes-Velásquez R. Exponential growth of dental schools in Chile: effects on academic, economic and workforce issues. *Braz Oral Res*. 2013;27(6):471–7.
 16. Maslach C, Jackson SE, Leiter MP. *Maslach Burnout Inventory Manual*. 30th Ed. Palo Alto, California: Consulting Psychologists Press; 1996.
 17. González M, Hernández R. Factor Structure of the Perceived Stress Scale (PSS) in a Sample from Mexico. *Spanish J Psychol*. 2007;10(1):199–206.
 18. Díaz R, Pérez E, Lartigue M. Burnout in a group of dentists. *Rev ADM*. 2006;63(6):220–4.
 19. Prins JT, Gazendam-Donofrio SM, Tubben BJ, van der Heijden FM, van de Wiel HB, Hoekstra-Weebers JE. Burnout in medical residents: a review. *Med Educ*. 2007;41(8):788–800.
 20. Burke FJ, Main JR, Freeman R. The practice of dentistry: an assessment of reasons for premature retirement. *Br Dent J*. 1997;182(7):250–4.
 21. Divaris K, Lai CS, Polychronopoulou A, Eliades T, Katsaros C. Stress and burnout among Swiss dental residents. *Schweiz Monatsschr Zahnmed*. 2012;122(7-8):610–5.
 22. Vera C. Empathetic Orientation in Dentistry students from Latin America. Literature review. *J Oral Res*. 2014;3(2):123–7.
 23. Barbosa FT, Leão BA, Tavares GM, Santos JG. Burnout syndrome and weekly workload of on-call physicians: cross-sectional study. *Sao Paulo Med J*. 2012;130(5):282–8.
 24. Sudhakara R, Lavanya Ramesh T, Vijayalaxmi N, Swapna LA, Rajesh S. Burnout among Dental Faculty and Students in a Dental College. *Indian J Public Health Res Dev*. 2014;5(1):64–8.
 25. Polychronopoulou A, Divaris K. A longitudinal study of Greek dental students' perceived sources of stress. *J Dent Educ*. 2010;74(5):524–30.
 26. Azimi S, AsgharNejad Farid AA, Kharaizi Fard MJ, Khoei N. Emotional intelligence of dental students and patient satisfaction. *Eur J Dent Educ*. 2010;14(3):129–32.
 27. Akbari M, Nejat A, Dastorani S, Rouhani A. Evaluation of Stress Level and Related Factors among Students of Mashhad Dental School (Iran) in Academic Year of 2008-2009. *J Mash Dent Sch*. 2011;35(3):165–76.
 28. Serrano C. Educational Climate Diagnostic for Universidad de Concepción Dentistry School undergraduate program. *Rev Educ Cienc Salud*. 2012;9(1):43–9.
 29. Murphy RJ, Gray SA, Sterling G, Reeves K, DuCette J. A comparative study of professional student stress. *J Dent Educ*. 2009;73(3):328–37.
 30. Galán F, Ríos-Santos JV, Polo J, Ríos-Carrasco B, Bullón P. Burnout, depression and suicidal ideation in dental students. *Med Oral Patol Oral Cir Bucal*. 2014;19(3):e206–11.
 31. Gambetta K, Mariño R, Morgan M. Socio-demographic characteristics and career choices amongst Chilean dental students. *J Oral Res*. 2014;3(2):83–9.
 32. Tangade PS, Mathur A, Gupta R, Chaudhary S. Assessment of Stress Level among Dental School Students: An Indian Outlook. *Dent Res J (Isfahan)* 2011;8(2):95–101.