

Depression, anxiety, and stress in dentists in times of covid-19 in northern Peru.

Depresión, ansiedad y estrés en cirujanos dentistas en tiempos de covid-19 en el norte del Perú.

Gleiser Arias-Vásquez.¹
María Espinoza-Salcedo.¹

Affiliations:

¹Universidad Privada Antenor Orrego, Perú.

Corresponding author: María Espinoza-Salcedo. Avda. América Sur 3145, Trujillo #13008, Perú. **Phone:** (+51-9) 4387 1082. **E-mail:** mespinozas@upao.edu.pe

Receipt : 12/20/2020 **Revised:** 02/08/2021
Acceptance: 04/30/2021

Abstract: Objective: To determine the levels of depression, anxiety, and stress in dentists working in the northern region of Peru in times of COVID-19. **Material and Methods:** 310 dentists working in the northern region of Peru in times of COVID-19 were evaluated by means of an observational and cross-sectional study. Subjects were asked to give their informed consent and answer a virtual questionnaire containing 21 items based on the DASS-21 Scale that assesses depression, anxiety, and stress. A descriptive analysis was carried out with frequencies; for the variables of gender and years of work experience the Chi square test ($p < 0.05$) was used. **Results:** It was found that 291 (93.87%) of the dentists suffered from some type of psychological disorder: stress (35.74%), anxiety (35.05%), depression (29.21%). Mild stress was the most prevalent accounting for 49.04% (51); mild depression with 45.88% (39), and moderate anxiety with 40.20% (41). A higher prevalence was found in females and in those dentists who had less than 5 years of work experience. **Conclusion:** 93.87% of dentists working in the northern region of Peru in times of COVID-19 presented some type of psychological disorder, a higher frequency of mild stress was found, followed by mild depression, and moderate anxiety.

Keywords: Depression; anxiety; stress, psychological; COVID-19; dentists; surveys and questionnaires.

Cite as: Arias-Vásquez G & Espinoza-Salcedo M.

Depression, anxiety, and stress in dentists in times of covid-19 in northern Peru.

J Oral Res 2021; 10(2):1-7.

Doi:10.17126/joralres.2021.022

Resumen: Objetivo: Determinar los niveles de depresión, ansiedad y estrés en cirujanos dentistas que laboran en la región norte del Perú en tiempos de COVID-19. **Material y Métodos:** Se realizó un estudio observacional de corte transversal, evaluando a 310 cirujanos dentistas que laboran en la región norte del Perú en tiempos de COVID-19 y que respondieron un cuestionario virtual sobre la base de la Escala de Dass-21 que evalúa depresión, ansiedad y estrés y que contiene 21 ítems, previo consentimiento informado. Se realizó un análisis descriptivo con frecuencias y para las variables género y tiempo de servicio se empleó la Prueba Chi cuadrado ($p < 0.05$). **Resultados:** Se encontró que 291

(93.87%) de cirujanos dentistas presentaron algún trastorno psicológico, de los cuales el 35.74% presentaron estrés; ansiedad el 35.05% o depresión el 29.21%; siendo mayor el estrés leve con el 49.04% (51); depresión leve el 45.88% (39) y ansiedad moderada el 40.20% (41), presentando un porcentaje mayor en mujeres y en aquellos cirujanos dentistas que laboran menos de 5 años. **Conclusión:** El

93.87% de los cirujanos dentistas que laboran en la región norte del Perú en tiempos de COVID-19, presentaron algún tipo de trastorno psicológico, se encontró mayor frecuencia de estrés leve, seguido de depresión leve y ansiedad moderada.

Palabra Clave: Depresión; ansiedad; estrés psicológico; COVID-19; odontólogos; encuestas y cuestionarios.

INTRODUCTION.

The world is in a global pandemic that started at the end of 2019. The coronavirus pandemic (COVID-19) began in Wuhan, capital of the province of Hubei (China), and spread rapidly to other countries, becoming a global health emergency.^{1,2}

The pandemic has brought about a major social and health emergency, and the world is facing all kinds of critical situations. Entire populations have gone through changes and adaptations to new norms, which have resulted in increased stress, anxiety, or depression.

It is hard for people to adapt to such dramatic changes or face these enormous challenges as they often create stressful situations. COVID-19, the 21st century pandemic,³ has also become a threat to the health of dentists. The indirect impact of the measures taken by the Peruvian government to control the disease has significantly affected the way dentists live and work, creating a huge negative impact on their mental health.^{3,4}

In this context, dentistry has transitioned from a stage of great clinical development to one where the dentists is bound to take additional and more restrictive biosafety measures, simplifying therapies, and reducing treatment time for each patient. Today their daily work merely consists of the management of dental emergencies.^{5,6} Respiratory tract infections have the highest mortality rates worldwide among communicable diseases. At the beginning of 2020, COVID-19 began to spread in many countries, and as the number of positive cases and deaths began to rise, medical and non-medical staff and the population in general began to suffer from increased stress, anxiety, and depression.^{7,8}

In Peru, the first imported case of COVID-19 was confirmed on March 6, 2020, and by May 5 of 2020, it had already expanded to all districts.^{8,9} By January 2021,

over 46.4 million cases of corona-virus and more than 1.1 million deaths were confirmed worldwide.¹⁰

Besides the medical risks, the COVID-19 pandemic is causing psychological and social damage. This life-threatening disease and its sudden onset could place additional pressure on health workers, who may not be able to cope with the emotional impact.^{11,12} Health staff who work in hospitals and other health centers not only face increased workload, physical exhaustion, and nosocomial transmission, but also the ethically difficult decision of rationing care, which can have a significant impact on their physical and mental well-being.¹³

Dentists generally perform their work alone, in a small room, in sedentary fashion, and in stressful body positions in order to achieve better visibility of the work area. The search for precision in their treatments usually makes them feel irritable and anxious. Significant changes in sanitary measures have made oral health professionals go through an adaptation process and adopt a different approach in relation to their patients, which may result in a disturbance in their internal homeostasis, leading to stress and a potential physical illness.^{14,15} In a complex context like this, it is difficult to accurately predict the emotional and psychological consequences of COVID-19. Fear of the unknown and uncertainty can trigger the onset of mental disorders such as: anxiety and stress disorders, somatization, depression, and negative behaviors such as excessive consumption of alcohol and tobacco.¹⁶

Depression is a frequent mental disorder characterized by the presence of sadness, feelings of guilt, lack of self-esteem, loss of interest or pleasure, sleep or eating disorders, a feeling of tiredness, as well as a lack of concentration. According to the World Health Organization (WHO), it is first characterized by a lack

of interest and enjoyment of those things that were previously pleasant and secondly, a decrease in the levels of energy necessary to carry out daily functions, and the feeling of extreme fatigue after performing simple activities.

Anxiety is an unpleasant state, similar to fear when there is no apparent danger. In other words, fear of a potential risk that may compromise the integrity of the individual.^{7,17,18}

Finally, stress is a "general symptom of adaptation", that is, the body's response to any event. The body produces a natural response to stress when facing new situations, but when it becomes a prolonged and intense reaction, it can lead to serious physical and mental problems. Therefore, in the face of any biological threat, fear and uncertainty are frequent reactions among health professionals and the general population.^{8,13,19}

Studies such as that of Tan BYQ *et al.*,²⁰ in Singapore found that prevalence of anxiety was higher in non-medical health workers (20.7%) than medical staff (10.8%). Likewise, studies conducted on an adult population such as that by Niaz Kamal *et al.*,⁴ in Iraq found prevalence of depression (45%), and anxiety (47%).

Wang *et al.*,²¹ in a study conducted in China showed that 16.5% suffered from depression, and 28.8% from anxiety (moderate to severe). Many times, the manifestation of depression, anxiety, and stress can be overlooked in healthcare workers, especially in dentists. It is possible that these symptoms have been occurring before the COVID-19 pandemic, and that they may have become worse in the current state of national health emergency.

It is important to study the psychological impact that the pandemic may be having on dentists in the region since most of them are engaged in private practice and have the responsibility of supporting their families. Everyone has their own way of perceiving risk, but when it comes to dentists, prevention measures should be taken to improve their mental health and their overall well-being. Since COVID-19 is a new pandemic, there are no studies in this regard at the regional level and, therefore, the present research will serve as a basis for future public health research studies.

Consequently, the aim of this research is to determine the levels of depression, anxiety, and stress in dentists working in the northern region of Peru in times of COVID-19.

MATERIALS AND METHODS.

The study had an observational and cross-sectional design. It was carried out in Region La Libertad, Peru, during the months of August and September 2020.

The sample selection method was non-probabilistic. The virtual questionnaire was sent to 472 dentists, and 310 responses were received. Inclusion criteria consisted of in-service dentists registered in the official registry of Region La Libertad, who agreed to participate in the study and signed an informed consent.

A virtual questionnaire was used based on the DASS-21 scale (Depression, Anxiety, and Stress Scale-21)^{22,23} translated into Spanish and previously validated, showing internal consistency.

The scale of 21 items is structured in 3 subscales:

Depression (items: 3, 5, 10, 13, 16, 17, and 21),

Anxiety (items: 2, 4, 7, 9, 15, 19, and 20),

and Stress (items: 1, 6, 8, 11, 12, 14, and 18), and uses a score of 0, 1, 2, 3, according to the degree of occurrence of each item.

The virtual questionnaire was prepared and sent through the Google Form platform to the email and telephone number of each participating dentists. A time limit of 30 minutes was given to respond.

This study was approved by Resolution No. 1255-2020-FMEHU-UPAO, and the Ethics Committee's Resolution No. 0279-2020-UPAO. Subsequently, the descriptive analysis based on frequencies was carried out using the Chi square test ($p < 0.05$).

RESULTS.

Of the 310 dentists who agreed to participate in the study, it was found that 93.87% (291) presented some psychological disorder, and 19 (6.13%) did not. (Table 1)

According to the levels of depression, out of 29.21% of dentists, 45.88% suffered from mild depression, and 43.53% from moderate depression. In the different levels of anxiety accounting for 35.05%, moderate anxiety scored the highest with 40.20%, along with mild stress with 49.04%. (Table 2)

Females presented higher levels of depression, anxiety, and stress compared to males; however, no statistically significant difference was found ($p = 5.99$). (Table 3)

Dentists with less than five years of work experience had a higher percentage of levels of depression, anxiety, and stress: 14.09%, 18.21%, and 16.49%, respectively, with no statistically significant difference with those who have worked for a longer period of time ($p = 9.84$). (Table 4)

Table 1. Levels of depression, anxiety, and stress in dentists working in northern Peru in times of COVID-19.

Disorder	N	%		N	%
Depression	85	29.21	Only Depression	13	15.29
			Depression – Anxiety	5	5.88
			Depression – Stress	14	16.47
			Depression – Anxiety – Stress	53	62.35
			85	100	
Anxiety	102	35.05	Only Anxiety	29	28.43
			Anxiety – Depression	5	4.90
			Anxiety – Stress	15	14.71
			Depression – Anxiety – Stress	53	51.96
			102	100	
Stress	104	35.74	Only Stress	22	21.15
			Stress – Depression	14	13.46
			Stress – Anxiety	15	14.42
			Depression – Anxiety – Stress	53	50.96
			104	100	
Total			291	100	

Table 2. Levels of depression, anxiety, and stress in dentists working in northern Peru in times of COVID-19.

Level	Depression		Anxiety		Stress	
	N	%	N	%	N	%
Mild	39	45.88	34	33.33	51	49.04
Moderate	37	43.53	41	40.20	36	34.62
Severe	7	8.24	12	11.76	14	13.46
Extremely severe	2	2.35	15	14.71	3	2.88
Total	85	100	102	100	104	100

Table 3. Levels of depression, anxiety, and stress in dentists according to gender.

	Depression		Anxiety		Stress	
	N	%	N	%	N	%
Females	58	19.93	67	23.01	67	23.03
Males	27	9.28	35	12.04	37	12.71
Total	85	29.21	102	35.05	104	35.74

Chi-squared = 0.31; *p*-value= 5.99

Table 4. Degrees of depression, anxiety, and stress in dentists according to work experience.

Work experience	Depression		Anxiety		Stress	
	N	%	N	%	N	%
< 5 years	41	14.09	53	18.21	48	16.49
5 to 10 years	37	12.71	40	13.74	38	13.07
> 10 years	7	2.41	9	3.09	18	6.19
Total	85	29.21	102	35.04	104	35.75

Chi-squared = 5.34; *p*-value= 9.84

DISCUSSION.

The COVID-19 pandemic has had a profound global impact affecting thousands of people around the world in 2020. Published studies have shown that people of all ages are susceptible to this virus. However, those who are in close contact with COVID-19 patients, including healthcare workers, have an increased risk of infection; within this group are dentists.

Dentists are at the highest risk of contagion due to the production of aerosols during dental care procedures. The WHO has recommended the suspension of dental treatments, and that dental care should be limited only to emergency and urgent care following extremely rigorous biosafety protocols. Consequently, besides disturbing dentists' health, the pandemic has affected them socially and financially. And although international studies have evaluated anxiety, depression, and stress disorders in health professionals, this has not been studied or reported in the region of northern Peru.

In the present study it was found that 93.87% of dentists presented some type of psychological disorder. This alarming figure may be a reflection of their mental health status. Dentists may be suffering from anguish because their services are being limited by health restrictions reducing treatment times and the number and quality of therapies. All this situation has also been affecting their financial well-being, making them unable to support their families.

Dentists presented high values of stress and anxiety and a lower percentage of depression. This result differs from that reported by Tan *et al.*,²⁰ which may be due to the fact that their study was carried out in Singapore, a country with a better organized health care system, where regulations are properly observed, with better medical facilities and greater capacity to care for COVID-19 patients. Quite the opposite occurs in Peru. To make things worse, Region La Libertad is located in northern Peru, a region where even before the pandemic mental health problems such as depression and stress were already being considered a public health problem by the authorities. Consequently, dentists working in that region suffer from psychological disorders due to the difficulties and lack of resources in the health care centers where they work and the constant fear of contagion by COVID-19 despite following international and national biosecurity standards for providing dental care during the pandemic. High levels of stress can also be attributed to uncertainty regarding the future,

especially job loss.²⁴

On the other hand, the highest depression levels found were mild to moderate. This result also differs from that found by Wang *et al.*,²¹ because their study was carried out at the beginning of the pandemic, when health workers were not actually familiar with COVID-19 behavior and treatment. As the months have gone by, and although there is more information on the behavior of COVID-19, there is still no definitive treatment and the search for an effective vaccine that would immunize the population still continues. High levels of depression can also be attributed to underinvestment by the government in mental health.²⁴

Regarding anxiety, a higher moderate level was found. Again, this result differs from that reported by Wang *et al.*,²¹ since their study was carried out in China in an adult population at the beginning of the pandemic, when its impact on global public health and the difficulty in the treatment of COVID-19 patients were still unknown. The present study evaluated dentists who, as members of the health staff, were more aware of the risks and had already adopted strong measures to reduce contagion.

Females had a higher percentage in the levels of depression, anxiety, and stress, but it was not statistically significant compared to males, which is similar to the findings of Kamal *et al.*,⁴ On the other hand, between years of work experience and levels of psychological disorders, dentists who had worked for less than 5 years presented a higher percentage of depression, anxiety, and stress, which may be due to the fact that they do not have enough work experience to face the serious and unexpected problems posed by the current pandemic. This is understandable because this is a new situation for everyone. Notwithstanding, it is important to highlight another relevant factor: financial concerns. Professionals with fewer years of work experience are more concerned about their financial stability and the risk of contagion. On the other hand, dentists with more than 10 years of experience are more financially stable and perhaps they are also more capable of overcoming and adapting themselves to this complex situation, managing to control their emotions.

There are high levels of psychological disorders among dentists who work in times of COVID-19 in the northern region of Peru. These data show that an intervention is required to promote better mental health. Developing coping strategies and adopting

positive behaviors such as receiving messages on how to take care of their mental health through the media or social networks may prove effective. Likewise, it is suggested to carry out complementary studies using other psychological tests that may complement these findings. Among the limitations of this study were the delays in the subjects' response regarding their participation in the study before sending the questionnaire, along with memory bias since the questionnaires were self-reported. Consequently, the results cannot be generalized because convenience sampling was used to recruit participants.

CONCLUSION.

A total of 93.87% of dentists working in the northern region of Peru in times of COVID-19 presented some level of psychological disorder; the most frequent was mild stress, followed by moderate anxiety, and mild to moderate depression.

Conflict of interests: The authors declare that they have no conflict of interest, do not have any affiliation with any organization or entity, or economic interests in the topic developed in this manuscript.

Ethics approval: Approved by institutional resolution No. 1255-2020-FMEHU-UPAO, and the Ethics Committee's resolution No. 0279-2020-UPAO. Participants provided informed consent.

Funding: None.

Authors' contributions: The present manuscript and study were carried out by the authors, who prepared and approved the final manuscript.

Acknowledgements: To the dental surgeons registered in the Colegio Odontológico de La Libertad CODELL – Perú for their participation.

REFERENCES.

1. Chan JFW, Yuan S, Kok KH, To KKW, Chu H, Xing JYF, Liu J, Yip CCY, Poon RWS, Tsoi HW, Lo SKF, Chan KH, Poon VKM, Chan WM, Ip JD, Cai JP, Cheng VCC, Chen H, Hui CKM, Yuen KY. A familial cluster of pneumonia associated with the 2019 novel coronavirus indicating person-to-person transmission: a study of a family cluster. *The Lancet*. 2020;395(10223):514-23.
2. OMS, Declaración sobre la segunda reunión del Comité de Emergencia del Reglamento Sanitario Internacional (2005) sobre el brote de nuevos coronavirus (2019-nCoV). 2020.
3. Fernández-García R. El estrés laboral. Su gestión en situaciones de crisis. *Gestión Práctica de Riesgos Laborales*. 2020;181:7-22.
4. Kamal N, Othman N. Depression, Anxiety, and Stress in the time of COVID-19 Pandemic in Kurdistan Region, Iraq. *Kurdistan Journal of Applied Research*. 2020;5(3):37-44.
5. Sigua-Rodríguez EA, Bernal-Pérez JL, Lanata-Flores AG, Sánchez-Romero C, Rodríguez-Chessa J, Haidar ZS et al Olate S, Iwaki Filho L. COVID-19 y la Odontología: una Revisión de las Recomendaciones y Perspectivas para Latinoamérica. *Int J Odontostomat*. 2020;14(3):299-309
6. Rodríguez J. ¿Y mis dientes? Impacto del COVID-19 en la atención dental. *Esan.edu.pe*. 2020.
7. Orellana Curamil G, Arias González V. Evaluación de síntomas de depresión, ansiedad y estrés: estructura y dimensionalidad de la escala DASS_21 [Licenciatura]. Universidad de Talca; 2015.
8. Yang L, Zhang C, Xiang Y, Liu Z, Hu S. Online mental health services in China during the COVID-19 outbreak. *The Lancet Psychiatry*. 2020;7(4):e17-18.
9. CDC – MINSA, Covid-19, Más allá de la prospectiva. Lima. 2020.
10. Coronavirus-Reporte-Mundial. Available at: <https://www.rtve.es/noticias/20201101/mapa-mundial-del-coronavirus/1998143.shtml>.
11. Idoiaga Mondragon N, Gil de Montes L, Valencia J. Understanding an Ebola outbreak: Social representations of emerging infectious diseases. *J Health Psychol*. 2016;22(7):951-60.
12. Liu X, Kakade M, Fuller CJ, Fan B, Fang Y, Kong J, Guan Z, Wu P. Depression after exposure to stressful events: lessons learned from the severe acute respiratory syndrome epidemic. *Comprehensive Psychiatry*. 2012;53(1):15-23.
13. Lung FW, Lu YC, Chang YY, Shu BC. Mental Symptoms in Different Health Professionals During the SARS Attack: A Follow-up Study. *Psychiatr Q*. 2009;80(2):107-16.
14. Bravo Ramírez B, Nava Mariela F, González Atala U, Márquez Vera V, Martínez Arcos D. Como afecta el estrés en la salud del cirujano dentista. 2020. Available from: http://odontologia.iztacala.unam.mx/instrum_y_lab1/otros/ColoquioXVI/contenido/indice cartel_archivos/trabajos.
15. Mark R, Lon K. *Practical Programming for Strength Training*. Aasgaard, United States of America;2006.
16. Shigemura J, Ursano RJ, Morganstein JC, Kurosawa M, Benedek DM. Public responses to the novel 2019 coronavirus (2019-nCoV) in Japan: Mental health consequences and target populations. *Psychiatry Clin Neurosci*. 2020;74(4):281-2.
17. Goldman H, Padilla Sierra G. *Psiquiatría general*. 5th ed. México: El Manual Moderno; 2001.
18. Olabarría B. RESEÑA de: Belloch, Amparo; Sandín, Bonifacio; Ramos, Francisco. *Manual de Psicopatología*. Vols. 1 y 2. Madrid: McGraw Hill/Interamericana, 1995.
19. Solís Ávila S, Urgilés González F, Uyaguari Morocho M. Desarrollo y validación del test de estrés laboral en médicos/as e internos/as del Hospital Vicente Corral Moscoso, Cuenca 2013 [Licenciatura]. Universidad de Cuenca; 2014.
20. Tan B, Chew N, Lee G, Jing M, Goh Y, Yeo L et al. Psychological Impact of the COVID-19 Pandemic on Health Care Workers in Singapore. *Annals of Inter Med*. 2020.
21. Wang C, Pan R, Wan X, et al. Immediate Psychological Responses and Associated Factors during the Initial Stage of the 2019 Coronavirus Disease (COVID-19) Epidemic among the General Population in China. *Int J Environ Res Public Health*. 2020;17(5):1729.
22. Bados A, Solanas A, Andrés R. Psychometric properties of the Spanish version of Depression, Anxiety and Stress Scales (DASS). *Psicothema*. 2005;17(4):679-83.
23. Daza P, Novy DM, Stanley MA, Averill P. The Depression Anxiety Stress Scale-21: Spanish Translation and Validation with a Hispanic Sample. *J Psychopathol Behav Assess*. 2002; 24(3):195-205.
24. Stanton R, To QG, Khalesi S, Williams SL, Alley SJ, Thwaite TL, Fenning AS, Vandelanotte C. Depression, Anxiety and Stress during COVID-19: Associations with Changes in Physical Activity, Sleep, Tobacco and Alcohol Use in Australian Adults. *Int J Environ Res Public Health*. 2020;17(11):4065.