

# Anxiety and Depression Among Dentists in the Kingdom of Saudi Arabia

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**Purpose:** Dentists face a great deal of professional stress, in dental school and in practice. Their personal, as well as professional lives, get affected negatively by stress and poor mental health. This study aims to evaluate anxiety and depression among dentists of Abha in kingdom of Saudi Arabia.

**Materials and Methods:** A cross-sectional study was carried out among 246 registered dentists of Abha to assess anxiety and depression. Participants willing to participate, and completely filled questionnaire were included in study. Data regarding demography, work-related characters, lifestyle and self-reported physical and mental status were collected. Mental status was measured by using pre validated questionnaire Zung Self-Rating Anxiety Scale (SAS) and the Zung Self-Rating Depression Scale (SDS). Data were analyzed using Statistical Package for Social Sciences (SPSS 20) by IBM. Descriptive statistics, Pearson correlation, independent *t* test and one way ANOVA were used to analyze the data at the significant interval of  $p \leq 0.05$ .

**Results:** Different levels of anxiety and depression were noticed both in males and female dentist. There was no statistical difference in the mean scores between males and females. There was a statistical difference of anxiety and depression scores noticed among dentist working in government institution, with five to ten years of experience. Habits of smoking were shown to significantly affect the risk of anxiety and depression scores.

**Conclusion:** Dentist due to nature of the practice are prone for anxiety and clinical depression. Stress coping methods should be included in dental curriculum which would indirectly improve professional abilities and personal life.

**Keywords:** anxiety, dentists, depression

## Introduction

Dentist, during initial stages of their practice experience difficulties for which they might not be aware off. It is because, their inference are not “down to earth” as they tend to expect more or less like a fairy tale which may end up in frustration leading to discomfort and emotional diversion.<sup>1</sup> These kind of habits might cause burnout which might lead to never ending anxiety and depression.<sup>2</sup> These stress related disorders are at ever increasing rate in today’s world with its impeding psychosocial toll on dentist’s health. Source of anxiety and depression might be from work place, due to financial issues or due to improper patient management.<sup>3</sup> Their personal and professional life as well as their health might be negatively affected. These conditions are chronic, relentless and can worsen if not treated. It has been demonstrated that anxiety and depression can affect patient care and might lead to increase in treatment errors. According to World Health Organization, incidence rate of anxiety and depression has increased by more than 18% between 2005 and 2015.<sup>4</sup> Hence, demand to curb on mental health condition globally is on rise. Most of them suffering from these diseases never discuss about their problem as there is shame and disgrace attached. Many studies have reported that anxiety and

depression are encountered regularly among dentist.<sup>5</sup> However, there is scarcity of data in Saudi Arabia and worst still in Abha the southern region of Saudi Arabia. Therefore, this study was conducted to evaluate the level of anxiety and depression among dentists of Abha, Saudi Arabia.

## Materials and Methods

A questionnaire based cross-sectional study was conducted among 246 registered dentists practicing in Abha city of Aseer Province Saudi Arabia, during academic year May 2019– January 2020. Ethical clearance was obtained from the Institutional Review Board of College of Dentistry, King Khalid University (duly approved by Institutional and Research committee SRC/EH/2019-20/46). All participants provided written informed consent prior to study after making them understand intention of the study and their confidentiality of data was maintained. Two co-authors approached and distributed questionnaire to each dentist at their clinics and explained the study design and purpose of the study. They were instructed to complete questionnaire within one week and were reminded once before the stipulated time. All registered dentists of Abha city were included in the study.

## Inclusion Criteria

Participants willing to participate, and completely filled questionnaire were included in study.

## Exclusion Criteria

Dentists who were not willing to participate and incompletely filled questionnaire were excluded from the study.

## Validity and Reliability of Questionnaire

Reliability of questionnaire were assessed by using test re test. Cronbach's-Alpha was used to ascertain internal consistency of the questionnaire. SAS had internal consistency with alpha coefficient of 0.82 and SDS with fair internal consistency with alpha coefficient of 0.68.

## Distribution of SAS & SDS Questionnaire

Questionnaire were split into four sections, first being socio demographic data of the participant, second life style component, third being the work-related characters and self-reported health status was the fourth component. In self-reported health physical health was assessed by using Likert scale varying from “very bad” to “very good”. Mental health status was assessed by using norm-referenced Zung Self Anxiety Scale (SAS) and Self Rating Depression Scale (SDS) scales.<sup>6,7</sup> SDS taps psychological and physiological symptoms, SAS taps affective and somatic symptoms selected from the Diagnostic criteria listed in the major American psychiatry literature.<sup>8,9</sup> SDS & SAS have twenty item Likert scale with multiple choice answers. The raw score ranges from 20 to 80, where score of 20 is normal followed by 80 which are extremely anxiety and depressed levels. These scores are later converted to index score by dividing sum of raw score by 80 and multiplying by 100. Index score of 45 (raw score=36) was kept as a cut off point for clinically significant anxiety. 50 was the index cut off score for SDS that equated raw score of 40 as recommended by Zung. The acquired data were tabulated and cross checked by two co-authors.

## Statistical Analysis

Data processing and analysis were carried out using the statistical package for social science (SPSS) software #20 by IBM. Descriptive statistics, Pearson correlation, independent *t* test and one-way ANOVA were used to analyze the data at the significant interval of  $p \leq 0.05$ .

## Results

This exploratory cross-sectional questionnaire-based study was conducted among 246 dental practitioners, among which only one dentist did not complete the questionnaire generating response rate to 99.5%. Study group comprised of 138 (56.33%) males and 107 (43.67%) females of which 73.88% of them are married. 63.67% of dentists are specialist (Master's/Saudi Board Certified). Among 245 dentist 161 (65.71%) are working in government hospitals. Most of them

have 5 to 10 years of clinical experience (44.49%). 58.37% of them reported of conflict and violence sometimes during their clinical practice. 48.16% of dentist reported their physical health status as fair and 42.45% of them reported as good. Among 138 male dentist 71.74% of them had marked to severe levels of anxiety and 69.5% of them were moderately depressed which was statistically significant. 84.11% of female dentist had marked to severe levels of anxiety and 67.29% of them were moderately depressed (Tables 1 and Tables 1). 76.2% of specialist had marked to severe levels of anxiety and 68.59% of them were moderately depressed ( $p < 0.01$ ). 80.75% of dentist working in government hospitals showed marked to severe level of anxiety and 72.05% of them were moderately depressed. Dentist with five to ten years of clinical experience had marked to severe levels of anxiety (91.74%) and 67.89% were moderately depressed which was statistically significant. There was no significant relation between levels of anxiety and depression with working hours, sleeping time and exercise (Tables 1 and Tables 1). Table 3 shows prevalence of different levels of anxiety and depression among dentist where, 77.14% of them were having symptoms of marked to severe anxiety and 68.57% of them were moderately depressed. Pearson coefficient method was used to assess the correlation between anxiety and depression which was statistically significant. One way ANOVA & independent  $t$  test were used to compare socio demographic characters, life style, self-perceived physical health with respect to mean anxiety and depression scores (Tables 4 and Tables 5). The mean (SD) of anxiety in males was  $49.93 \pm 12.91$  which was not significant. However, the mean (SD) of depression was  $58.43 \pm 9.20$  which was statistically significant. The mean anxiety scores  $49.68 \pm 12.37$  in married dentist was not statistically significant. However, there was significant difference in mean depression  $54.76 \pm 10.50$  scores of married dentist. There was a significant difference between mean anxiety and depression scores with relation to work related characters and self-perceived physical health status. There was no significant difference between mean anxiety and depression scores with relation to working hours and sleeping time (Tables 4 and Tables 5).

## Discussion

Cognizance of stress is under control of an individual attitude, belief and cultural background. One of the predisposing factor for stress in an individual is due to discrepancy between different types of demands and capacity of an individual to accomplish. Stress may motivate a person to attain exceptionally high performance or can lead to anxiety, depression, unprofessional conduct and burn out. Anxiety and depression are the most prevalent of mental illness contributing to the global disability burden.<sup>10</sup> Clinicians and research often screen anxiety and depression by using self-reported psycho motor tools which are of criterion-referenced and norm-referenced measures. Criterion-referenced measures are diagnosed based on the endorsement of published diagnostic classification system. In contrast norm-referenced measures compares individuals test results to those of normative group.<sup>11</sup> These scales typically suggest score ranges linked to symptom severity descriptors, and have a “clinically significant” total score cut off point beyond which scores are considered indicative of presence of disorder. Zung’s SAS & SDS are two such norm-referenced scales with sensitivity of 89% and 93% and specificity of 69% respectively.<sup>12</sup> In recent year’s dentists physical and mental health has been a focus of interest worldwide. They are under stress due to multiple factors like work overload, job dissatisfaction, security issues and financial problems.<sup>13</sup> To the best of our knowledge this is the first study which assessed the level of anxiety and depression among dentists of Abha. Among 138 Male dentist in our study 71.74% of them had marked to severe anxiety symptoms and 69.5% of them were moderately depressed. 84.11% of female dentist had marked to severe anxiety symptoms and 67.29% of them were moderately depressed. 76.24% of married dentist had marked to severe anxiety symptoms and 71.27% of them were moderately depressed. These findings are not in accordance with study conducted by Mathias et al where married dental professionals exhibit less anxiety and depression.<sup>14</sup> Dentist working in government hospitals had marked to severe anxiety levels and were moderately depressed when compared to dentist working in private sector. When enquired regarding the reason, it was noticed that most of the dentist working in government sector are expatriates (non-Saudi’s), who work on yearly contract basis. They were not sure about their next contract renewal which was influencing on their future social and financial wellbeing. However, dentist working in private sector their contract renewal was either for three years or five years which was not hampering on their social and financial securities. Dentist with more than five years of clinical experience had marked to severe anxiety levels and were moderately depressed. It could be due to the rules implemented by Saudi government to replace the old existing non-Saudi staff with their national citizens, as number of non-Saudi’s working in health sector are more compared to Saudi’s. Specialist were more depressed and had marked to severe anxiety levels when compared to general practitioners and consultant. This

**Table 1** Association Between Levels of Anxiety with Socio Demographic Characteristics, Work-Related Characteristics, Lifestyles and Self-Perceived Physical Health Status

Factors	Levels of Anxiety							Chi-Square	p-value
	Mild to Marked Anxiety	%	Marked To Severe Anxiety	%	Extreme Anxiety	%	Total		
<b>Gender</b>									
Male	14	10.14	99	71.74	25	18.12	138	14.0160	<0.01
Female	14	13.08	90	84.11	3	2.80	107		
<b>Marital Status</b>									
Married	17	9.39	138	76.24	26	14.36	181	7.8130	<0.05
Single	11	17.19	51	79.69	2	3.13	64		
<b>Education Level</b>									
General Dentist (B.D.S)	8	16.00	42	84.00	0	0.00	50	24.8230	<0.001
Specialist (Master's/Saudi Board)	10	6.41	119	76.28	27	17.31	156		
Consultant (PhD)	10	25.64	28	71.79	1	2.56	39		
<b>Institution Working</b>									
Private	20	23.81	59	70.24	5	5.95	84	21.2890	<0.001
Government	8	4.97	130	80.75	23	14.29	161		
<b>Years of Practice</b>									
0–5 years	1	2.78	25	69.44	10	27.78	36	38.4430	<0.001
5–10 years	4	3.67	100	91.74	5	4.59	109		
10–15 years	23	23.00	64	64.00	13	13.00	100		
<b>Conflict and Violence</b>									
None	1	1.59	46	73.02	16	25.40	63	23.4600	<0.001
Sometimes	19	13.29	114	79.72	10	6.99	143		
Often	8	20.51	29	74.36	2	5.13	39		
<b>Working Hours</b>									
37–48hrs/week	12	12.77	69	73.40	13	13.83	94	1.2840	0.5260
More than 48hrs/week	16	10.60	120	79.47	15	9.93	151		
<b>Sleeping Time</b>									
≥8hrs	0	0.00	1	100.00	0	0.00	1	2.4620	0.6510
6–8hrs	11	12.79	62	72.09	13	15.12	86		
≤5hrs	17	10.76	126	79.75	15	9.49	158		

(Continued)

**Table 1** (Continued).

Factors	Levels of Anxiety							Chi-Square	p-value
	Mild to Marked Anxiety	%	Marked To Severe Anxiety	%	Extreme Anxiety	%	Total		
<b>Exercise</b>									
Yes	7	10.29	50	73.53	11	16.18	68	2.1220	0.3460
No	21	11.86	139	78.53	17	9.60	177		
<b>Smoking</b>									
Yes	22	16.92	92	70.77	16	12.31	130	8.9620	<0.05
No	6	5.22	97	84.35	12	10.43	115		
<b>Self-Reported Physical Health</b>									
Very Good	0	0	0	0	0	0	0	27.5190	<0.001
Good	5	4.81	76	73.08	23	22.12	104		
Fair	21	17.80	92	77.97	5	4.24	118		
Bad	2	8.70	21	91.30	0	0.00	23		
Very Bad	0	0	0	0	0	0	0		
Total	28	11.43	189	77.14	28	11.43	245		

Notes: Low → ≤mean-SD, average → ≥mean-SD, <mean+SD, high → ≥mean+SD.

**Table 2** Association Between Levels of Depression with Socio Demographic Characteristics, Work-Related Characteristics, Lifestyles and Self-Perceived Physical Health Status

Factors	Levels of Depression							Chi-Square	p-value
	Mildly Depressed	%	Moderately Depressed	%	Severely Depressed	%	Total		
<b>Gender</b>									
Male	12	8.70	96	69.57	30	21.74	138	9.3170	<0.001
Female	22	20.56	72	67.29	13	12.15	107		
<b>Marital Status</b>									
Married	30	16.57	129	71.27	22	12.15	181	15.8640	<0.001
Single	4	6.25	39	60.94	21	32.81	64		
<b>Education Level</b>									
General Dentist (B.D.S)	0	0.00	40	80.00	10	20.00	50	45.5310	<0.001
Specialist (M.D.S/Saudi Board)	34	21.79	107	68.59	15	9.62	156		
Consultant (PhD)	0	0.00	21	53.85	18	46.15	39		

(Continued)

**Table 2** (Continued).

Factors	Levels of Depression							Chi-Square	p-value
	Mildly Depressed	%	Moderately Depressed	%	Severely Depressed	%	Total		
<b>Institution Working</b>									
Private	0	0.00	52	61.90	32	38.10	84	49.3070	<0.001
Government	34	21.12	116	72.05	11	6.83	161		
<b>Years of Practice</b>									
0–5 years	0	0.00	23	63.89	13	36.11	36	32.6020	<0.001
5–10 years	27	24.77	74	67.89	8	7.34	109		
10–15 years	7	7.00	71	71.00	22	22.00	100		
<b>Conflict and Violence</b>									
None	19	30.16	38	60.32	6	9.52	63	7.5310	<0.001
Sometimes	15	10.49	104	72.73	24	16.78	143		
Often	0	0.00	26	66.67	13	33.33	39		
<b>Working Hours</b>									
37–48hrs/week	17	18.09	59	62.77	18	19.15	94	2.9170	0.2330
More than 48hrs/week	17	11.26	109	72.19	25	16.56	151		
<b>Sleeping Time</b>									
≥8hrs	0	0.00	0	0.00	1	100.0	1	7.4360	0.1150
6–8hrs	8	9.30	64	74.42	14	16.28	86		
≤5hrs	26	16.46	104	65.82	28	17.72	158		
<b>Exercise</b>									
Yes	6	8.82	46	67.65	16	23.53	68	3.6610	0.1600
No	28	15.82	122	68.93	27	15.25	177		
<b>Smoking</b>									
Yes	12	9.23	85	65.38	33	25.38	130	14.4030	<0.01
No	22	19.13	83	72.17	10	8.70	115		
<b>Self-Reported Physical Health</b>									
Very Good	0	0	0	0	0	0	0	37.4430	<0.001
Good	19	18.27	72	69.23	13	12.50	104		
Fair	4	3.39	86	72.88	28	23.73	118		
Bad	11	47.83	10	43.48	2	8.70	23		
Very Bad	0	0	0	0	0	0	0		
Total	34	13.88	168	68.57	43	17.55	245		

Notes: Low → ≤mean-SD, average → ≥mean-SD, <mean+SD, high → ≥mean+SD.

**Table 3** Association Between Levels of Anxiety and Depression

Levels of Depression	Levels of Anxiety				
	Mild to Moderate Anxiety	Marked to Severe Anxiety	Extreme Anxiety	Total	%
Mildly Depressed	0	31	3	34	13.88
Moderately Depressed	18	131	19	168	68.57
Severely Depressed	10	27	6	43	17.55
Total	28	189	28	245	100.00
%	11.43	77.14	11.43	100.00	

**Table 4** Comparison of Socio Demographic Characteristics, Work-Related Characteristics, Lifestyles and Self-Perceived Physical Health Status with Respect to Mean Anxiety Scores by Independent *t* Test and One Way ANOVA Test

Factors	Mean Anxiety	SD Anxiety	T or F-value	p-value
<b>Gender</b>				
Male	49.93	12.91	1.4480	0.1489
Female	47.67	10.93		
<b>Marital Status</b>				
Married	49.68	12.37	1.6058	0.1096
Single	46.86	11.20		
<b>Education Levels</b>				
General Dentist (B.D.S)	42.38	11.00	21.6988	<0.001
Specialist (Master's/Saudi Board)	52.50	11.09		
Consultant (PhD)	43.13	11.91		
<b>Institution Working</b>				
Private	43.44	12.37	-5.4258	<0.001
Government	51.81	10.97		
<b>Years of Practice</b>				
0–5 years	55.53	8.85	14.7477	<0.001
5–10 years	50.82	9.44		
10–15 years	44.53	14.06		
<b>Conflict and Violence</b>				
None	56.46	9.13	19.6470	<0.001
Sometimes	46.90	11.96		
Often	44.28	11.84		

(Continued)

**Table 4** (Continued).

Factors	Mean Anxiety	SD Anxiety	T or F-value	p-value
<b>Working Hours</b>				
37–48hrs/week	50.53	12.37	1.6252	0.1054
More than 48hrs/week	47.95	11.89		
<b>Sleeping Time</b>				
≥8hrs	46.00	-	0.7265	0.4682
6–8hrs	49.72	12.69		
≤5hrs	48.54	11.85		
<b>Exercise</b>				
Yes	51.90	11.83	2.3884	<0.05
No	47.81	12.07		
<b>Smoking</b>				
Yes	46.82	13.43	-2.9576	<0.01
No	51.34	9.96		
<b>Self-Reported Physical Health</b>				
Very Good	0	0	20.6810	<0.001
Good	53.97	11.15		
Fair	44.28	11.69		
Bad	50.13	9.07		
Very Bad	0	0		
Total	48.94	12.12		

could be due to the fact that, most patients and complicated cases in the dental hospitals are referred to specialist rather than to a general dentist which caused an overload of patients and compromise in time management for specialist. Consultants in Abha are very few and due to exuberant consultant charges and patient affordability, patients prefer to go to a specialist rather than going to a consultant. Our study revealed that there was no significant correlation between levels of anxiety and depression in relation to number of working hours, sleeping time and physical exercise. However, there was significant correlation between levels of anxiety and depression in relation to that of smoking and self-reported physical health. These findings are in accordance with the study conducted by Prasad,<sup>15</sup> from India and Gong,<sup>16</sup> from china where their study revealed significant association between, smoking habits, self-reported physical health to that of anxiety and depression. It is a well-known fact that physical exercise keeps a person more energetic and efficient. It also develops a self-esteem, self-control and self-discipline in a person. Different levels of anxiety and depression were not among dentist of our study. However, majority of them were having marked to severe anxiety symptoms, and they were moderately depressed. Similar findings have been previously reported by Madhan et al among post graduate students.<sup>17</sup> High expectations from the ground reality are the real stress inducing situations which causes anxiety and depression.<sup>18,19</sup> Hence, there is a requirement of reassessment of one's own perspective and belief in light that can be achieved in reality or not.



**Table 5** Comparison of Socio Demographic Characteristics, Work-Related Characteristics, Lifestyles and Self-Perceived Physical Health Status with Respect to Mean Depression Scores by Independent t Test and One Way ANOVA Test

Factors	Mean Depression	SD Depression	T or F-value	p-value
<b>Gender</b>				
Male	58.43	9.20	4.2730	<0.001
Female	52.86	11.19		
<b>Marital Status</b>				
Married	54.76	10.50	-3.1585	<0.01
Single	59.48	9.61		
<b>Education Levels</b>				
General Dentist (B.D.S)	61.26	5.09	33.6821	<0.001
Specialist (M.D.S/Saudi Board)	52.36	10.98		
Consultant (PhD)	63.79	5.02		
<b>Institution Working</b>				
Private	63.27	5.08	9.0785	<0.001
Government	52.20	10.55		
<b>Years of Practice</b>				
0–5 years	62.44	5.95	20.9888	<0.001
5–10 years	51.78	10.99		
10–15 years	58.27	9.26		
<b>Conflict and Violence</b>				
None	50.59	11.05	16.1054	<0.001
Sometimes	56.87	10.12		
Often	61.51	6.22		
<b>Working Hours</b>				
37–48hrs/week	55.21	10.90	-0.9237	0.3565
More than 48hrs/week	56.48	10.19		
<b>Sleeping Time</b>				
≥8hrs	68.00		0.1992	0.8423
6–8hrs	56.13	9.96		
≤5hrs	55.85	10.75		
<b>Exercise</b>				
Yes	58.03	9.96	1.8948	0.0593
No	55.21	10.58		

(Continued)

**Table 5** (Continued).

Factors	Mean Depression	SD Depression	T or F-value	p-value
<b>Smoking</b>				
Yes	58.78	9.47	4.6145	<0.001
No	52.84	10.68		
<b>Self-Reported Physical Health</b>				
Very Good	0	0	21.6897	<0.001
Good	53.83	10.71		
Fair	59.70	7.92		
Bad	46.78	12.65		
Very Bad	0	0		
Total	56.00	10.47		

## Limitation

Results of our present study cannot be generalized as it was conducted in Abha the capital city of Aseer. Moreover, there are chances of respondent's bias as it was a questionnaire-based study which is easy to manipulate if the respondents are not willing to give an authenticated response or may have difficulty in recollecting required information.

## Future Implications

In future longitudinal studies in different regions of Aseer should be conducted to gain substantial results. Research should also be done to identify the sources and reasons of anxiety and test its impact longitudinally among dental practitioners.

## Conclusion

Dentists are prone for anxiety disorders and clinical depression owing to the nature of clinical practice and due to high expectations from the same. In future, stress coping methods should be included in the dental curriculum to manage this kind of disorders which indirectly improves the professional abilities and personal life.

## Data Sharing Statement

Supporting data are available from the corresponding author upon reasonable request.

## Ethics Approval and Consent to Participate

Our study complies with declaration of Helsinki. Ethical clearance was obtained from the Institutional Review Board of College of Dentistry, King Khalid University (duly approved by Institutional and Research committee SRC/EH/2019-20/46). All participants provided written informed consent prior to study after making them understand intention of the study and their confidentiality of data was maintained.

## Acknowledgment

The research was funded by the Deanship of Scientific Research at King Khalid university through the small Research Group project under grant number (RGP.1/336/42).

## Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agreed to be accountable for all aspects of the work.

## Disclosure

The authors declare no conflicts of interest in this work.

## References

- Gorter RC, Eijkman MA. Career expectations and the type of dentist in the light of burnout. *Ned Tijdschr Tandheelkd*. 2002;109:212–216.
- Kumar S, Dagli RJ, Mathur A. Perceived sources of stress amongst Indian dental students. *Eur J Dent Educ*. 2009;13(1):39–45. doi:10.1111/j.1600-0579.2008.00535.x
- Alzahem AM, van der Molen HT, Alaujan AH. Stress amongst dental students: a systematic review. *Eur J Dent Educ*. 2011;15(1):8–18. doi:10.1111/j.1600-0579.2010.00640.x
- World Health Organization. Mental health [Internet]. WHO. [Cited March 23, 2017]. Available from: [http://www.who.int/mental\\_health/en/](http://www.who.int/mental_health/en/). Accessed March 4, 2022.
- Badran DH, Al-Ali MH, Duaibis RB, et al. Burnout among clinical dental students at Jordanian universities. *East Mediterr Health J*. 2010;16(4):434–437. doi:10.26719/2010.16.4.434
- Zung WW. A self-rating depression scale. *Arch Gen Psychiatry*. 1965;12:63–70. doi:10.1001/archpsyc.1965.01720310065008
- Zung WW. A rating instrument for anxiety disorders. *Psychosom*. 1971;12(6):371–379. doi:10.1016/S0033-3182(71)71479-0
- American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*. 2nd ed. Washington, DC, USA: Author; 1968.
- Tanaka-Matsumi J, Kameoka VA. Reliabilities and concurrent validities of popular self-report measures of depression, anxiety, and social desirability. *Consult Clin Psychol*. 1986;54:328. doi:10.1037/0022-006X.54.3.328
- Andrews G, Henderson S, Hall W. Prevalence, comorbidity, disability and service utilisation overview of the Australian National Mental Health Survey. *Br J Psychiatry*. 2001;178:145–153. doi:10.1192/bjp.178.2.145
- Kupfer DJ. Dimensional models for research and diagnosis: a current dilemma. *J Abnorm Psychol*. 2005;114:557–559. doi:10.1037/0021-843X.114.4.557
- Dunstain DA, Scott N, Todd A. Screening for anxiety and depression: reassessing the utility of Zung Scales. *BMC Psychiatry*. 2017;17(329):1–8. doi:10.1186/s12888-016-1163-4
- Wallace JE. Mental health and stigma in the medical profession. *Health*. 2012;16(1):03–18. doi:10.1177/1363459310371080
- Mathias S, Koerber A, Fadavi S, et al. Specialty and sex as predictors for depression in dentists. *J Am Dent Assoc*. 2005;136(10):1388–1395. doi:10.14219/jada.archive.2005.0052
- Prasad M, Rajpatthi B, Singla A, et al. Assessment of anxiety and depression among dental practitioners- an exploratory cross-sectional study. *J Clin Diagn Res*. 2017;11(10):ZC01–ZC04.
- Gong Y, Han T, Chen W, et al. Prevalence of anxiety and depressive symptoms and related risk factors among physicians in China: a cross-sectional study. *PLoS One*. 2014;9(7):e103242. doi:10.1371/journal.pone.0103242
- Madhan B, Rajpurohit A, Gayathri H. Mental health of post graduate orthodontic students in India: a multi institution survey. *J Dent Educ*. 2012;76(2):200–209. doi:10.1002/j.0022-0337.2012.76.2.tb05247.x
- Kulkarni S, Dagli N, Duraiswamy P, et al. Stress and professional burnout among newly graduated dentists. *J Int Soc Prev Community Dent*. 2016;6:535–541. doi:10.4103/2231-0762.195509
- Alharbi R, Alsuhaibani K, Almarshad A, et al. Depression and anxiety among high school students at Qassim Region. *J Fam Med Prim Care*. 2019;8:504–510. doi:10.4103/jfmpc.jfmpc\_383\_18

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