

# Psychological Impact of Covid-19 on Dental Surgeons and Students

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## ABSTRACT

**Background:** Since the start of January 2020, COVID-19, has been a serious health risk concerning the wellbeing and welfare of people worldwide. Health care workers are prone to more psychological problems because of their direct contact with infectious patients. Owing to the disruption of educational activities worldwide, stress was common among students. The objective of this study was to determine the psychological impact of COVID-19 pandemic on dental surgeons and dental students.

**Methods:** The survey was conducted at Islamic International Dental Hospital from February 2021 to July 2021. A total of 400 questionnaires were sent to students and dental surgeons, however 340 completely filled questionnaires were returned. Questionnaire using the Depression Anxiety Stress Scale (DASS-21) was used to assess the psychological influence. Data was compiled and independent sample t -test and Pearson's correlation were applied using the Statistical Package for Social Sciences SPSS version 23 to determine difference of means considering  $p < 0.05$  as cut off for significance.

**Results:** The means of stress score, anxiety score and depression were  $2.24 \pm 0.5$ ,  $3.56 \pm 0.06$  and  $2.83 \pm 0.06$  respectively. Pearson's correlation among the dimensions of DAS scale showed that Depression, Anxiety and Stress were positively and significantly correlated with each other.

**Conclusion:** There were high levels of Depression, Anxiety and Stress among dental students during COVID-19 Pandemic.

**Keywords:** Covid-19, Depression, Dental surgeons, Dental students.

Authors' Contribution:

<sup>1</sup> Conception; Literature research; manuscript design and drafting; <sup>2</sup> Critical analysis and manuscript review; <sup>3</sup> Data analysis; Manuscript Editing.

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## Introduction

Since the start of January 2020, COVID-19, has been a serious health risk concerning the wellbeing and welfare of people worldwide. The viral pandemic was first identified in the Chinese city of Wuhan and was able to spread globally in a couple of months. This highly contagious and fatal disease prompted observable public tension and anxiety. Early investigations during the first COVID-19 wave of infection showed moderate or extreme psychological impacts of the outbreak on the

general population. <sup>(1)</sup> Notwithstanding the psychological impacts of the pandemic on everyone, health care workers were prone to more psychological problems because of their direct contact with infectious patients. <sup>(2)</sup> Among all the healthcare workers, the COVID-19 pandemic significantly discouraged the activities of the dental practitioners. <sup>(3)</sup> Dentists, dental students, and other staff are in danger of contracting disease. <sup>(4)</sup> Dental hospitals and clinics are environments where

disease transmission can happen easily. Aerosol transmission due to routine dental methods is a potential source of transmission when there is an exposure to high concentrations of aerosols in a moderately shut climate with possible dangers to the dental specialist, dental care staff, and patients.

<sup>(5)</sup> Likewise, the utilization of hand pieces or ultrasonic instruments aerosolize patient secretions. The standard defensive measures in every day clinical work are not adequately effective to stop the spread of COVID-19. Dental surgeons and dental students working closely with patients of COVID-19, both symptomatic and asymptomatic are at a much higher risk. <sup>(6)</sup>

Dental students are even more vulnerable to contracting COVID-19 disease because of their inability, technical inadequacy, and absence of information. Psychological conditions of dental students might be influenced due to the high danger of infection. COVID-19 pandemic can cause significant degrees of uneasiness in dental students. Owing to the disruption of educational activities worldwide, a sense of uncertainty and stress was common among students. Dental students were more prone to exhibiting higher levels of anxiety firstly due to possible exposure in their clinical activities and secondly due to disturbed undergraduate educational programs. A study was done on students to examine the psychological effect of academic disruptions; it was shown that student's anxiety level was increased especially because of interruption of education. <sup>(7)</sup> The aim of this investigation was to find out the burden of psychological impact of the COVID-19 pandemic on dentists and dental students. The findings of this study can help devising effective strategies to alleviate depression, stress and anxiety among health care workers especially dentists and dental students in our region.

## Methodology

The study was a survey of Psychological Impact of Covid-19 on Dental Students and Dentists working at Islamic International Dental Hospital. It was conducted from February 2021 to July 2021. Ethical approval was taken from Ethical Review Board and those that gave verbal consent to being part of the study were asked to fill the questionnaires.

A total of 400 questionnaires were sent to students and dental surgeons, however 340 completely filled questionnaires were returned and data was compiled. Sample size was calculated by using PMDC statistics of the total population of Registered Dental Surgeons in Pakistan till 2019 which was 25000 along with the number of Students enrolled in Bachelor of Dental Surgery in Islamabad (1500). <sup>(8)</sup> Confidence Level was set at 95% with 5% margin of error in the WHO sample size calculator. The required sample size came out to be 379 which was rounded off to 400 and questionnaires were distributed. Questionnaire using the Depression Anxiety Stress Scale (DASS-21) was used to assess the psychological influence. <sup>(9)</sup> It is a highly reliable and consistent scale capable of producing results with high validity.

Data was obtained through Google forms from the students and dentists working in the hospital. Questionnaire was divided in two sections, Demographics and DASS (Depression Anxiety Stress Scale). A total of 21 Questions, based on 3 sub - sections of 7 questions each, evaluating Depression, Anxiety and Stress was used up to 4-point Likert Scale (Ranging 0 to 3). Scores were summed and grouped according to the guidelines. <sup>(10)</sup>

Statistical Package for Social Sciences SPSS version 23 was used for simple descriptive analysis, Anova test was applied to determine whether there is a significant difference in stress scores among dental surgeons/clinical and preclinical year students and Pearson's correlation was applied to determine strength of association.

## Results

Out of total sample of 340, 53 (15.58%) were dental surgeons and 84.2% were students. Mean age of the participants was  $20.77 \pm 1.34$ . 266 (78.2%) of the participants were females, 71 (20.9%) were males and 3 (0.9%) participants preferred not to say. Most of the participants (90%) were unmarried among the dental surgeons. Based on the year of graduation of students, 30.9% belonged to pre-clinical year and 53.5% were from clinical year. Table 1 shows the demographic information of the participants.

The overall means of stress score, anxiety score and depression were  $17.5 \pm 5.6$ ,  $15.43 \pm 5.3$  and  $16.49 \pm 6.2$  respectively. 38.8% of the participants had moderate stress, 35.3% were severely anxious and 34.7% of the participants suffered from moderate depression. Mean anxiety score among females ( $15.92 \pm 5.3$ ) was more than males ( $13.41 \pm 5.2$ ). Mean depression score was  $16.6 \pm 5.9$  and  $15.7 \pm 6.7$  among females and males respectively. Mean of stress score was  $17.7 \pm 5.4$  among females and  $16.3 \pm 6.2$  among males. There was a significant difference ( $p=0.033$ ) in the mean values of depression and

stress ( $p=0.012$ ) among the genders (table 2). The combined scores categorized as severe and extremely severe accounted for 4 and 24 in relation to stress, 66 and 104 in relation to anxiety and 38 and 55 in relation to depression for the pre-clinical and clinical students respectively. (Table 3), t-test showed statistically significant difference ( $p=0.005$ ) in anxiety and stress ( $p=0.017$ ) score among clinical and preclinical year students (table 2). Pearson's correlation among the dimensions of DAS scale showed that DASS was positively and significantly correlated with each other. (Table 4)

Variable		Percentage %	n =340
Gender	Females	78.2	266
	Males	20.9	71
	preferred not to say	0.9	3
Marital Status	Married	10	34
	Un Married	90	306
Type of under graduate students	Pre-Clinical	30.9	105
	Clinical	53.5	182
Type of Graduates	House-officer	10	34
	FCPS/Masters	5.3	19

Variables	n=340	Mean Depression Score	Mean Anxiety Score	Mean Stress Score
Gender	Males	$15.7 \pm 6.7$	$13.41 \pm 5.2$	$16.3 \pm 6.2$
	Females	$16.6 \pm 5.9$	$15.92 \pm 5.3$	$17.7 \pm 5.4$
		<b>p=0.033</b>	p= 0.984	<b>p=0.012</b>
Marital Status	Married	$14.41 \pm 5.65$	$14.47 \pm 5.0$	$16.38 \pm 6.17$
	Un Married	$16.72 \pm 6.17$	$15.53 \pm 5.4$	$17.62 \pm 5.55$
		p= 0.433	p= 0.57	p= 0.085
Type of undergraduate students	Pre-Clinical	$17.01 \pm 6$	$15.1 \pm 4.9$	$17.3 \pm 4.9$
	Clinical	$16.52 \pm 6.3$	$15.9 \pm 5.7$	$17.9 \pm 6$
		p=0.389	p=0.005	p=0.017
Category	Students	$16.7 \pm 6.2$	$15.59 \pm 5.4$	$17.7 \pm 5.6$
	Dental Surgeons	$15.3 \pm 5.8$	$14.5 \pm 4.7$	$16.3 \pm 5.3$
		p=0.306	p=0.506	p=0.404

Levels	Stress n= 340 (% of total)			Anxiety n=340 (%of total)			Depression n=340 (% of total)		
	Pre-clinical	Clinical	Dental surgeons	Pre-clinical	Clinical	Dental surgeons	Pre-Clinical	Clinical	Dental surgeons
Normal	32(9.4)	58(17.1)	19(5.6)	9(2.6)	11(3.2)	4(1.2)	15 (4.4)	33(9.7)	9(2.6)
Mild	23(6.8)	32(9.4)	15(4.4)	10(2.9)	21(6.2)	7(2.1)	15(4.4)	34(10)	12(3.5)
Moderate	46(13.5)	68(20)	18(5.3)	20(5.9)	46(13.5)	14(4.1)	37(10.9)	60(17.6)	21(6.2)
Severe	4(1.2)	24(7.1)	1(0.3)	45(13.2)	55(16.2)	20(5.9)	36 (10.6)	45(13.2)	9(2.6)
Extremely Severe				21(6.2)	49(14.4)	8(2.4)	2(0.6)	10(2.9)	2(0.6)
Combined scores of the levels (severe and extremely severe)	4	24	1	66	104	28	38	55	11

Correlation among three variables by Pearson's correlation coefficient		
Variables	r	
Stress versus Anxiety	0.783	p=0.00
Stress versus Depression	0.848	p=0.00
Anxiety versus Depression	0.751	p=0.00

P=<0.05

## Discussion

A recent study was conducted on 338 Israeli Dentists and Hygienists who answered questions about Covid 19 related factors and were assessed for psychological distress. The results revealed that dental surgeons are under high pressure and have increased levels of fear and psychological distress during the Covid-19 outbreak. <sup>(11)</sup> According to our study, increased level of depression (83.23%), anxiety (92.9%) and stress (67.94%) were identified. These results are comparable with other researches that have reported the depression and anxiety among dental surgeons from 30 countries in the course of COVID-19 outbreak. <sup>(12)</sup> These studies have suggested increased proportion of individuals experiencing depression, anxiety, and stress. Dentists are at a high risk of being exposed to the infectious disease. The fear of being exposed at work at some point of their work hours has affected the intellectual fitness of dentists. It has been reported that dental college students also show significant

stress signs all through their training and that they are extra anxious than the general population, displaying higher degrees of depression, obsessive-compulsive problems, and interpersonal sensitivity than age-matched norms. <sup>(13)</sup>

Our results are also similar to the results of another study that was conducted in Israel among dental experts <sup>(10)</sup> showing high degrees of fear and psychological distress throughout COVID-19 outbreak. This can be supported by different studies displaying an unwillingness on the part of dentists to deal with the patients with infectious diseases like HIV and tuberculosis. <sup>(14)</sup>

A high prevalence of stress among medical students is concerning since it may damage students' behavior, learning, and ultimately patient care after graduation. <sup>(15)</sup> It has been stated that dental education is more stressful than medical education. <sup>(16)</sup> A study conducted in Saudi Arabia revealed that 55.9%, 66.8% and 54.7% of the respondents had experienced depression, anxiety and stress respectively. <sup>(17)</sup> Another study conducted in Makkah also showed that there was elevated level of depression (69.9%), anxiety (66.4%) and stress (70.9%) among dental students. <sup>(18)</sup> Nevertheless, these elevated degrees of depression, anxiety and stress may be attributed to the stress exerted on dental college students during the educational time as they try to attain suitable grades, correctly meet

the course requirement, and constantly perform at their best.<sup>(18)</sup>

Stress levels amongst dental students are higher as compared to the general population, and female students suffer more than adult males.<sup>(17)</sup> According to our study, the depression, anxiety and stress level in female participants was higher (67%, 73.9% and 55%) than male participants (15.3%, 18.2% and 12%). Our findings are similar to other studies done on mental health status of dental students in several other countries. Our study results are similar to those conducted in KSA and Turkey during COVID-19, which also found that female participants showed elevated levels of depression, anxiety and stress score as compared to male participants.<sup>(20, 21,22)</sup> It has been reported that clinical factors, together with technical abilities, are the reasons of maximum stress for females.<sup>(20)</sup> Previous research suggests that females are more expressive and responsive towards stimuli as compared to males, which may additionally account for the variations.<sup>(22)</sup> When marital status was examined, married participants showed lower depression having a mean value of 2.41±1.04, anxiety having mean value of 3.29±1.19 and stress showing a mean value of 2.06±0.95 as compared to unmarried participants having mean scores 2.88±1.1, 3.59±1.16 and 2.26±1.0 for depression, anxiety and stress respectively. Our results are similar to the results of Madhan et al study<sup>(23)</sup> and contrary to the results of study done in India in which participants who were married showed more symptoms of these emotional states. This could be because there is increased level of responsibility in balancing private and professional life simultaneously.<sup>(24)</sup>

In our study when academic years were assessed, clinical year students showed more stress ( $p=0.023$ ) as compared to the students who were in pre-clinical years. Our results are in favor with the other studies which indicate that clinical years are more stressful than non-clinical years<sup>(12)</sup>. Patients; being late or absent for his or her appointment can also increase the level of stress. Final year students, as

they are closer to their graduation, might have felt that this pandemic would affect their study process. The limitation of this study is that it focused on dentists and dental students belonging to one institute and hospital, further research spread out across more hospitals can be done to get a better representation of the community.

## Conclusion

There is increased level of Depression, Anxiety and Stress among dental students amidst the COVID-19 Pandemic. Among the students, depression is significantly more in preclinical while anxiety and stress is more in clinical students. Also, females are psychologically more affected.

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