Perceived Stress and Psychological Impact among practicing dentist in Bengaluru city during the COVID 19 pandemic

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Abstract

Introduction: Public health emergencies like the current pandemic Covid-19 affect the health, safety, and well-being of both individuals and communities with psychological implications. Hence this study intends to evaluate the patterns of perceived psychological stress as well as explore the factors associated with it using the validated Covid- 19 Peritraumatic Distress Index (CPDI) among practicing dentists in Bengaluru city.

Methodology: The survey used a pretested, self-reported COVID-19 Peritraumatic Stress Index (CPDI) questionnaire. It captures the details concerning anxiety, depression, phobias, cognitive change, avoidance and compulsive behaviour, physical symptoms, and loss of social functioning and collectively quantifies the stress on a scale of 0–100. A CPDI score of ≤27 indicated low or no stress, 28–51 indicated mild to moderate stress, and ≥52 indicated severe stress. A sample size of 300 was obtained and descriptive and inferential statistics were done using SSP software version 24.

Results: A logistic regression analysis showed that the general practitioners had higher CPDI scores which indicated significantly increased stress (p=0.000). Similarly, practitioners with work experience between 6-10years showed significantly increased signs of stress.

Conclusion: Every practicing dentist had some form of stress as measured according to CPDI. This is an easy tool that can be used for screening for distress during the pandemic. The risk of contagion, fear or uncertainty of education, financial implications and future practice avenues may be the cause of acute stress.

Key Words: Covid-19, (Dis)Stress, Pandemic, Dental Practitioners, Cpdi.

Introduction

Coronavirus disease (COVID-19) emerged as a devastating pandemic of unprecedented magnitude pushing the world into a looming health crisis. While the physical implications of this infectious disease are apparent, it is undeniable that the condition also holds the potential for mediating psychological and negative socioeconomic implications[1]. It has been established by now that the mental stress was high during the COVID-19 pandemic across the globe [2-7]. To measure psychological suffering and distress in the 'hot' phases of an event with characteristics of natural catastrophe, such as phase 1 of a pandemic, in which we witnessed the dramatic consequences of the strong epidemic spread, is an important element for predicting and preventing the risk of developing Post-Traumatic Stress Disorder (PTSD) in later periods. Specifically, peritraumatic distress reactions refer to behaviours, emotions, thoughts and symptoms associated with stress during or immediately after the traumatic event. There is evidence that peritraumatic distress is an important predictor for PTSD. To measure peritraumatic distress in a pandemic emergency, an easy to administer, short and accurate instrument is required [8].

Oral health care involves use of aerosol producing devices as well as working in close proximity with the oral mucosa and secretions. The risk of cross infection could be high between dental

practitioners and COVID19 patients. Following the universal norms, societal and government advisory, most of the dental practices and hospitals in India, were closed since 25th March to mid May 2020. Only emergency and urgent cases were taken up. Even in such instances, strict and effective infection control protocols were to be followed. Among dentists, there is a constant, looming anxiety of encountering a COVID19 infected patient especially when there is limited access to personal protective equipment, no proper standard protocol for management and possibility of incurring financial implications in the future due to decreased clinical operation hours. These uncertainties impact the stress levels among the dental practitioners.

The diagnosis of depression or anxiety is associated with several symptoms that often overlap, while stress has been shown to be a risk factor for the development of anxiety and depression. Depression has characteristics such as hopelessness, low positive affect, low self-esteem, and low motivation. Anxiety, on the other hand, is associated with physiological hyperstimulation, while stress is caused by persistent tension, irritability, and low threshold for frustration. Stress is defined as an emotional experience associated with physiological, biochemical, cognitive, and behavioural events [9]. Although anxiety and stress can be causal factors for depression [10]. Hence this study intends to evaluate the patterns of perceived psychological stress as well as explore the factors associated with it using the validated Covid- 19 Peritraumatic Distress Index (CPDI) among practicing dentists in Bengaluru city.

Materials and methods
The study proposal was submitted for approval and clearance was obtained from the ethical review board of Bangalore Institute of Dental Sciences. This observational cross-sectional survey was conducted using a validated Covid- 19 Peritraumatic Distress Index (CPDI) among practicing dentists in Bengaluru city. The study was conducted for a period of month between November 30th 2020 to December 31st 2020.Data was collected from the dental practitioners practising during COVID -19 pandemic in Bengaluru City, Karnataka. Snowball sampling technique was used. All dentist practicing during the COVID-19 outbreak who accepted to participate and submitted the completed electronic questionnaires successfully were eligible included in the present study. 304 completed responses were included in the study.

The study was conducted by an online survey in English language. The instrument was designed using simple Google Forms and the link was shared among various social media and email, using the snowball sampling technique to about 500 practitioners from the 4889 registered practitioners with the Karnataka State Dental Council. It was set to receive one form per participant to avoid duplication of data. Anonymity was ensured and no personal identification, such as IP address, email IDs, or details of COVID-19 exposures, was collected. Participation was on a purely voluntary basis.

Demographic details were recorded based on Gender: Male / Female, Age group in years: Less than 25 years ,25 – 35 years, 36-45 years and Above 45 years; Education qualification: MDS/BDS; Practice Setting: Solo practice, GP, Consultations, Teaching and Practice, PG, Intern and Experience: 0 to 5 years ,6 to 10 years, above 10 years.

This survey used a pretested questionnaire, COVID-19 Peritraumatic Stress Index (CPDI). This self-reported questionnaire captured the details concerning anxiety, depression, phobias, cognitive change, avoidance and compulsive behaviour, physical symptoms, and loss of social functioning in the past week and collectively quantifies the stress on a scale of 0–100. A CPDI score of ≤27 indicated low or no stress, 28–51 indicated mild to moderate stress, and ≥52 indicated severe stress.

Statistical analysis
Data was entered in Microsoft Excel spread sheet and analysed using Statistical Package for the Social Sciences (IBM Corp. Released 2016. IBM SPSS Statistics for Windows, Version 24.0. Armonk, NY: IBM Corp). Descriptive statistics, mean, standard deviation (SD) or median for continuous variables, as well as proportions for categorical variables was calculated.

Results
A total of 303 valid, completed responses were received of which 67.4% were females. 41.8% respondents were between 25-35 years of age, 48% consultants followed by 48. 7% dentist with less than 5 years' experience. Table1 shows that 39.5 % of respondents felt extremely sympathetic and had a sorrowful feeling towards the COVID-19 patients and their families. About 22.4% felt helpless and angry about people around them, government, and media. 18.4% of them couldn't stop themselves from imagining themselves or their family being infected and feeling terrified and anxious about it. 13.8 %feel insecure and bought a lot of masks, medications, sanitizers, gloves and/or other home supplies to prevent covid infection.

Table 1: Based on responses:

		Not answered	Always	Never	Occasionally	Often	Sometimes
Compared to usual, I feel more nervous and anxious	N	0	26	35	78	43	121
	%	0	8.6	11.5	25.7	14.1	39.8
I feel insecure and bought a lot of masks, medications, sanitizers, gloves and/or other home supplies	N	0	42	56	70	47	88
	%	0	13.8	18.4	23.0	15.5	28.9
I can't stop myself from imagining myself or my family being infected and feel terrified and anxious about it.	N	0	56	41	87	47	72
	%	0	18.4	13.5	28.6	15.5	23.7
I feel helpless no matter what I do.	N	0	25	111	76	29	62
	%	0	8.2	36.5	25.0	9.5	20.4
I feel sympathetic to COVID-19 patients and their families.	N	0	120	23	28	75	57
	%	0	39.5	7.6	9.2	24.7	18.8
I feel helpless and angry about people around me, governors, and media.	N	0	68	51	54	48	82
	%	0	22.4	16.8	17.8	15.8	27.0
I am losing faith in the people around me.	N	0	26	105	54	38	80
	%	0	8.6	34.5	17.8	12.5	26.3
I collect information about COVID-19 all day. Even if it's not necessary, I can't stop myself.	N	0	26	99	84	25	69
	%	0	8.6	32.6	27.6	8.2	22.7
I will believe the COVID-19 information from all sources without any evaluation.	N	0	7	167	54	9	66
	%	0	2.3	54.9	17.8	3.0	21.7
I would rather believe in negative news about COVID-19 and be skeptical about the good news.	N	0	8	184	40	21	50
	%	0	2.6	60.5	13.2	6.9	16.4
I am constantly sharing news about COVID-19 (mostly negative news).	N	0	9	176	77	13	28
	%	0	3.0	57.9	25.3	4.3	9.2
I avoid watching COVID-19 news since I am too scared to do so.	N	0	22	134	66	22	59
	%	0	7.2	44.1	21.7	7.2	19.4
I am more irritable and have frequent conflicts with my family	N	0	13	146	69	19	56
	%	0	4.3	48.0	22.7	6.3	18.4
I feel tired and sometimes even exhausted.	N	0	18	60	106	33	86
	%	0	5.9	19.7	34.9	10.9	28.3
When feelings anxious, my reactions are becoming sluggish	N	0	10	92	99	31	71
	%	0	3.3	30.3	32.6	10.2	23.4
I find it hard to concentrate.	N	0	23	75	89	28	88
	%	0	7.6	24.7	29.3	9.2	28.9
I find it hard to make any decisions.	N	0	10	85	101	30	77
	%	0	3.3	28.0	33.2	9.9	25.3
During this COVID-19 period, I often feel dizzy or have back pain and chest distress.	N	0	6	180	68	12	37
	%	0	2.0	59.2	22.4	3.9	12.2
During this COVID-19 period, I often feel dizzy or have back pain and chest distress.	N	0	4	192	65	7	35
	%	0	1.3	63.2	21.4	2.3	11.5

I feel uncomfortable when communicating with others.	N	0	10	146	75	14	58
	%	0	3.3	48.0	24.7	4.6	19.1
I talked with my family members very rarely.	N	0	15	186	50	12	40
	%	0	4.9	61.2	16.4	3.9	13.2
I have frequent awakening at night due to my dream about myself or my family being infected by COVID-19.	N	0	7	230	39	5	22
	%	0	2.3	75.7	12.8	1.6	7.2
I have changes in my eating habits	N	0	11	120	60	38	74
	%	0	3.6	39.5	19.7	12.5	24.3
I have constipation or frequent urination	N	0	3	203	57	15	25
	%	0	1.0	66.8	18.8	4.9	8.2

Table 2 shows that 94.1% respondents said that it would be beneficial if mental health professionals help people in dealing with the current COVID-19 situation and 93.8% were willing to suggest highly anxious individuals to seek counselling. 89.8% felt that virtual counselling would be helpful and 270 responded positively to seeking help if they panicked due to the pandemic.

Table 2: distribution of responses :

		Not answered	No	Yes
Do you think it would be helpful to talk to someone about your worries for the COVID-19 infection?	N	0	93	210
	%	0	30.6	69.1
Do you think it is necessary to get mental health help if someone panics due to COVID-19?	N	0	33	270
	%	0	10.9	88.8
Do you think it would be beneficial if mental health professionals help people in dealing with the current COVID-19 situation?	N	0	17	286
	%	0	5.6	94.1
Will you suggest people for seeking counselling who are highly anxious due to the COVID-19?	N	0	18	285
	%	0	5.9	93.8
Do you think it would be helpful to have online virtual counselling during the current pandemic?	N	0	30	273
	%	0	9.9	89.8

Table 3 shows a cross tabulation of stress scores with demographic details such as gender, age, educational qualification, experience and practice setting distribution. There was no statistically significant (p=0.14) difference for distress scores among males and female respondents. There was no statistically significant difference for distress scores based on age (p=0.13) and educational qualification (p= 0.35). Practice setting showed a statistically significant (p=0.003) difference for distress scores with 6.6% consultants, 5.9% general practitioners, 6.9% solo practitioners, 5.6% Teachers with practice and 25.1% post graduate students had mild to moderate distress. 2.6% consultants. 6.3% general practitioners 10.6% solo practitioners ,3.3% teachers with a practice and 15.2% post graduate students showed no distress and 7.9% post graduates had severe distress.

Table 3: Cross-tabulation of the stress scores with the demographic details

			Score interpretation			Total	Chi-square value	p value
			MMD	ND	SD			
Gender	Female	Count	104	71	29	204	6.8	0.14
		%	34.3%	23.4%	9.6%	67.3%		
	Male	Count	46	44	7	97		
		%	15.2%	14.5%	2.3%	32.0%		
	Prefer not to say	Count	2	0	0	2		
		%	.7%	0.0%	0.0%	.7%		

Age group (in years)	Less than 25 years	Count	61	40	20	121	9.75	0.13
		%	20.1%	13.2%	6.6%	39.9%		
	25 to 35 years	Count	67	51	9	127		
		%	22.1%	16.8%	3.0%	41.9%		
	36-45 years	Count	23	19	6	48		
		%	7.6%	6.3%	2.0%	15.8%		
	Above 45 years	Count	1	5	1	7		
		%	.3%	1.7%	.3%	2.3%		
Educational qualification	BDS	Count	63	52	15	130	4.38	0.35
		%	20.8%	17.2%	5.0%	42.9%		
	MDS	Count	58	41	9	108		
		%	19.1%	13.5%	3.0%	35.6%		
	Intern/PG student	Count	31	22	12	65		
		%	10.2%	7.3%	4.0%	21.5%		
Practice setting	Consultations	Count	20	8	2	30	23.48	0.003*
		%	6.6%	2.6%	.7%	9.9%		
	GP	Count	18	19	0	37		
		%	5.9%	6.3%	0.0%	12.2%		
	Solo practice	Count	21	32	4	57		
		%	6.9%	10.6%	1.3%	18.8%		
	Teaching and Practice	Count	17	10	6	33		
		%	5.6%	3.3%	2.0%	10.9%		
	Intern/PG student	Count	76	46	24	146		
		%	25.1%	15.2%	7.9%	48.2%		
Experience	0 to 5 years	Count	37	32	11	80	13.29	0.039*
		%	12.2%	10.6%	3.6%	26.4%		
	6 to 10 years	Count	17	16	0	33		
		%	5.6%	5.3%	0.0%	10.9%		
	Above 10 years	Count	17	22	3	42		
		%	5.6%	7.3%	1.0%	13.9%		
	Intern/PG student	Count	81	45	22	148		
		%	26.7%	14.9%	7.3%	48.8%		

P ≤0.005

Based on the experience a statistically significant (p=0.039) difference for distress scores was seen with 12.2% with less than 5years, 5.6% with 6-10 years of practice, 5.6% above 10 years and 26.7% PG students had mild to moderate distress. 10.6% with less than 5 years, 5.3% with 6-10 years. 7.3% above years and 14.9% PG students exhibited no distress. And 7.3% PG students had severe distress.

Table 4 shows multinomial logistic regression with stress as a dependent variable, Mild to moderate distress was statically significant among general practitioners in practice setting (p=0.000) and was statistically insignificant among consultant (p=0.164), solo practice (p=0.433) and teaching with practice (p=0.661) in a practice setting. Based on experience of the practitioners, mild to moderate distress was statically significant among practitioners with 6-10 years of experience(p=0.000) and was statistically insignificant among practitioners up to 5years of experience (p=0.291), and among practitioners with more than 10 years of experience(p=0.881) No distress was not statistically significant among consultants (p=0.741), solo practitioners (p=0.138) and teaching with practice (p=0.285) in a practice setting. Based on experience no distress was not statistically significant among practitioners with up to 5years work experience (p=0.998) and in practitioners with more than 10years of experience (p=0.396).

Table 4: Multinominal logistic regression with stress as dependent variable

score interpretation			B	p value	OR	95% Confidence Interval for Exp(B)	
						Lower Bound	Upper Bound
MMD	Intercept		1.225	.000			
	Practice setting	Consultations	1.197	.164	3.310	.614	17.842
		GP	18.195	0.000*	79761302.246	33225490.984	191475434.899
		Solo practice	.533	.433	1.704	.449	6.463
		Teaching and Practice	-.267	.661	.766	.232	2.527
		Intern/PG	0b				
	Experience	0 to 5 years	-.514	.291	.598	.230	1.552
		6 to 10 years	17.595	.000*	43806863.763	17045047.809	112586443.536
		Above 10 years	-.121	.881	.886	.180	4.362
		Intern/PG	0b				
ND	Intercept		.628	.021			
	Practice setting	Consultations	.303	.741	1.353	.226	8.121
		GP	18.315		89930287.910	89930287.910	89930287.910
		Solo practice	1.012	.138	2.751	.722	10.487
		Teaching and Practice	-.713	.285	.490	.133	1.811
		Intern/PG	0b				
	Experience	0 to 5 years	-.002	.998	.998	.371	2.688
		6 to 10 years	18.247		84068247.242	84068247.242	84068247.242
		Above 10 years	.702	.396	2.017	.400	10.182
		Intern/PG student	0b				
a. The reference category is: SD.							
b. This parameter is set to zero because it is redundant.							

Discussion

India reposted its first COVID-19 case in January 2020 and the number increased exponentially in a few weeks which warranted a nation -wide lockdown to contain the pandemic. The Indian Psychiatry Society has warned that the loss of livelihood and increasing levels of economic hardship, isolation, as well as the rise in domestic abuse amid the pandemic could trigger a new mental health crisis in India and may substantially increase the risk of suicide. Health professionals, particularly those at medical facilities that take care of people with 2019-nCoV disease, are susceptible to a higher risk of illness as well as mental health issues. They may even feel afraid of the consequences that the illness could spread to their family, acquaintances, or co-workers [11]. Recent Indian and international studies have reported high rates of mental health-related issues and psychological morbidities [12, 13]. The overall rates of psychological morbidities in health professionals were higher than that of the general population [14]. In the present study 34.3%female respondents had mild to moderate distress followed by no distress in 23.4% and 9.6% exhibited severe distress. No statistically significant (p=0.14) difference for distress scores among males and female respondents was found. Similar results were seen based on age group (p=0.13) and educational qualification (p=0.35).

In the present study, 20(6.6%) consultants, 18 (5.9) general practitioners 21(6.9%) solo practitioners 17 (5.6%) Teachers with practice and 76 (25.1%) post graduate students had mild to moderate distress. 8(2.6%) consultants. 19 (6.3%) general practitioners 32 (10.6%) solo practitioners ,10(3.3%) teachers with a practice and 46 (15.2%) post graduate students showed no distress and 24 (7.9%) post graduates had severe distress. Thus, practice setting showed a statistically significant (p=0.003) difference for distress scores. The results were similar to study conducted on endodontists in India [15]. Practice setting plays a

vital role in stress. The stress and job satisfaction levels in group practice or those with multiple models of practice as compared with solo practice to consultants may vary. (Lo Sasso et al., 2015) As compared to stand alone practice those pursuing exclusively consultation (more than 1 clinic) had 3 times elevated risk of severe distress levels. This probably indicates that financial implication posed by COVID19 situation is a driver of the (dis)stress.

In the present study 37(12.2%) with less than 5years, 17 (5.6%) with 6-10 years of practice, 17 (5.6%) above 10 years and 81 (26.7%) PG students had mild to moderate distress. 32 (10.6%) with less than 5 years, 16(5.3%) with 6-10 years. 22(7.3%) above years and 45 (14.9%) PG students exhibited no distress. And 22 (7.3%) PG students had severe distress. Thus, experience has shown a statistically significant (p=0.039) difference for distress scores. These results were similar to the study conducted in Indian endodontist were the RR of 1.67 (mild-moderate to normal) and 0.35 (severe to normal) as compared to solo practitioner were documented [15].

It has been documented that the dental students have higher stress. (Knipe et al., 2018) In the present situation, shifting to a different platform of education, risk of contagion, fear or uncertainty of education and future practice avenues may cause an acute stress on the post graduate trainees/residents.

As there was a paucity of data on the stress reaction to the developing COVID-19 situation among dental surgeons in Bengaluru, this study was designed to capture the stress among the Dentists using a non-contact, anonymous, brief, indirect, self-reporting, and self-volunteering format. The mean score of CPDI for this cohort of Indian population was 33.36± 15.26 which is greater than the Chinese general population 23.65±15.45 but lower than that of Iranian population 34.54±14.92 [13,16].

The difference could be multi-fold, as the population in this study is practising dentist whereas the Chinese and Iranian cohorts comprised of general population. The other reason is that Chinese and Iranian had a significant number of populations infected with COVID19, unlike India. The biological, anthropological, immunological, socio-demographic and cultural variations could also be accountable. The data for this study was collected post the first lockdown in India. The limitation of this study would include self-reporting bias, non-consideration of Indian states (as the whole country was under lockdown, unlike China), role of other stressors and COVID19 exposure. Further studies, in this direction have to explore role of other possible confounders as well as factors that could meaningfully add to present models.

Conclusion
In the present study based on the stress scores of individuals according to the validated CDPI tool, in a practice setting general practitioners were likely to have stress. (p=0.000) and practitioners with 6-10 years of work experience (p=0.000). Increasing experience was associated with decreased likelihood of exhibiting

stress(p=0.88).

The stress among the dental population has been captured in the initial phases of the pandemic containment effort. The risk of contagion, fear or uncertainty of education, financial implications and future practice avenues may be the cause of acute stress. This would help the mental health professionals and the policymakers to institute appropriate mental health efforts and solutions for the dental fraternity. Hence this study that was conducted was of relevance to the dental fraternity. These results should be reassessed at the end of the pandemic to verify the evolution of the psychological health of dentists. In addition, follow-up studies are encouraged to see whether professionals who have anxiety and stress will develop depression after some time.

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