

# Effect of COVID-19 on Psychological, Socioeconomic Status and Performance of Clinical Practices of Dental Professional in Riyadh, Saudi Arabia

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## Abstract

**Background:** Prevailing conditions of COVID-19 has hit all sectors of society including dentistry. Both personal and professional lives of dentists have been influenced. Several studies have been undertaken regarding aspects like influence of clinical practices, awareness regarding the pandemic among patients and dentists. Only a few studies have been conducted in Saudi Arabia. The present study evaluates the impact of COVID-19 on Fear, anxiety, socioeconomic status and performance of clinical practices of dental professionals in Riyadh. **Methods:** A Questionnaire was designed as Google form and sent to 400 dental professionals and responses were statistically evaluated. **Results:** 244 males and 156 females' dental professionals participated in study. Most of the clinical practices were found to be open but with lower patient volumes. There was decline in both monthly volumes of patients and volumes of collections. Majority of dental professionals were in fear of getting COVID-19 and transmitting to their families. They were afraid of getting quarantined also. In general, all agreed that it will take more than a year for their practices to come back to normal but most of them did not want to shift their profession. There was found to be significant association between designation and effects of COVID-19. **Conclusion:** There was definite negative impact of COVID-19 on socioeconomic status and performance of clinical practices along with increase in Fear and anxiety among dental professionals.

**Keywords:** COVID-19; Psychological; Socioeconomic Impact; Dental Practices

## Introduction

A new Virus high jacked the Year 2020 from the beginning and started affecting lives of millions. WHO declared it officially as pandemic. It was an acute respiratory syndrome, potentially lethal, [1] and was named as Coronavirus Disease (COVID-19). [2]

This tragedy affected the lives in many facets including Physical, social, mental and Financial status. Dentists were most hardly hit community from all. They were struggling as individual for their health but also were responsible for taking care of dental needs of community in this time of urgency. [3,4]

Earning a decent livelihood and maintaining respectable social status is also one of the outcomes that a dentist running his Private dental practice expects apart from being responsible for the commitment towards society. But this became far from reality owing to overall economic slowdown as a direct effect of Pandemic. Dental practices worldwide observed downward trend and plunged to bare minimum. This caused multifaceted effect on dentists causing many of the small dental practices to either shut down or bear heavy economic losses. [5] It not only affected dentist as individual but families that were directly dependent on the dentists.

Earlier, studies were carried out focusing awareness and preparedness of dentists for the Pandemic. [6] Also studies regarding impact of the disease on various aspects of lives were performed. [2,7,8] A few of the studies touched psychological and financial aspects of dental professionals but none of those were

carried out in Saudi Arabia.

The present paper focusses on the way in which the Pandemic has influenced socioeconomic lives and clinical practices of dental professionals in capital city Riyadh. It highlights direct impact of this crisis on psychological aspects like fear and anxiety among the professionals, future of their dental practices and safety concerns for their families.

## Materials and Methods

### Study design and procedure

The study was conducted from March till September 2020 involving 400 dental professionals [9] either owning or working in Private dental practice. They were divided based on their gender and designations. [5] A Questionnaire was designed in a manner that responses to questions 4-9 reflected effect of COVID-19 on socioeconomic status and clinical practices of dental professionals [10] in Riyadh whereas responses to questions 10-14 reflected Psychological status (fear and anxiety). [5] Questionnaire was prepared as google form and sent by mail, whatsapp or personally to the dental professionals. All responses were statistically evaluated using SPSS version 16.0.

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**How to Cite this Article:** Singh YP. Effect of COVID-19 on Psychological, Socioeconomic Status and Performance of Clinical Practices of Dental Professional in Riyadh, Saudi Arabia. Ann Med Health Sci Res. 2021;11:1331-1338.

Confidence level of study was 95%, margin of error as 5% with response distribution of 50%.

### Results and Discussion

Commendable and extensive reforms and rapid development were seen in cities of Saudi Arabia over the past 20 years. Riyadh is one of the world's fastest growing cities and 4% per year population growth was recorded at steady rate. [11] Therefore, Riyadh was chosen as centre for present study.

Table 1 demonstrates demographic distribution of participating dental professionals as per their age and designation. [5] Majority of participants [61%] were males as compared to female participants [39%]. Similarly, Specialist dentists participated most in the study followed by Consultants and General practitioners.

Table 2 demonstrates effect on socioeconomic status and clinical

Practices of dental professionals due to COVID-19 t based on the various responses that were received. Majority of dental professionals (83%) agreed that there was negative effect of COVID-19 on their clinical practices, whereas there were a few dentists who even disagreed (4%). Dental practices were open but with lower patient volume for majority of dentists (68%) with some dental practices doing their business as usual (26%) and rest closed down their practices except for emergency cases (6%). This was because patients were not coming to dental clinics as usual except emergencies owing to apprehensions due to COVID-19. Monthly volume of patients was decreased from 50%-75% in 38% of dental practices whereas surprisingly patient volumes were reported to increase in 3% of the practices and no change in 7%. For other practices, there was variation in percentages fall in patient volume. Monthly volume of total collection was decreased from 50%-75% in 33% of dental practices whereas volume of total collection were reported to increase in 7% of the practices. This could be attributed to less number of patients visiting to dental practices. For other practices, there was variation in percentages fall in volume of total collection from 11%-28%. Most of all dental practices [85%] agreed that common reason for fall of patient volume was fear of COVID-19. 59% of dental practitioners agreed there was negative impact on their socioeconomic status with only 3% of them saying that there was no effect on their socioeconomic status. Therefore, as expected, there was negative effect of COVID-19 on dental practices. Most of them opened with lower patient volume. There was decrease in monthly patient volumes and collections affecting socioeconomic status of the dental professionals. Fear of COVID-19 was found to be major factor for fall in patient volume. [12,13]

**Table 1: Demographic information of dental care professionals.**

		Frequency (N)	Percent (%)
Gender	Male	244	61.0
	Female	156	39.0
Age	20-30 Years	88	22.0
	31-40 Years	140	35.0
	41-50 Years	88	22.0
	51-60 Years	56	14.0
	Above 60 Years	28	7.0
Designation	General Practitioner	76	19.0
	Specialist	228	57.0
	Consultant	96	24.0

**Table 2: Effect on socioeconomic status and clinical Practices due to COVID-19.**

		Frequency (N)	Percent (%)
Negative Effect on performance on practice	Do not Know	52	13.0
	No	16	4.0
	Yes	332	83.0
Current status of Practice	Open and Business as usual	104	26.0
	Open but lower patient volume than usual	272	68.0
	Closed but seeing emergency patients only	24	6.0
	Volume has increased	12	3.0
Fall in monthly volume of Patients	Less than 25%	72	18.0
	25%-50%	68	17.0
	50%-75%	152	38.0
	More than 75%	68	17.0
Fall in monthly volume of total collection	No Change	28	7.0
	It has increased	28	7.0
	Less than 25%	44	11.0
	25%-50%	84	21.0
Reason for Fall in patient volume	50%-75%	132	33.0
	More than 75%	112	28.0
	Patients were not aware of guidelines to be followed	16	4.0
	Lack of trust in Infection protocol being followed in the clinic	4	1.0
Negative Effect on Socioeconomic status	Less dental problem in this time of the year	40	10.0
	Fear of COVID-19	340	85.0
	No Change	12	3.0
	Low	52	13.0
	Medium	100	25.0
	High	236	59.0

Table 3 depicts Fear and anxiety due to COVID-19 on Dental care professionals. Most of the dentists [86%] were afraid of transmitting the infection to their respective families. This was quite expected as well because dentists are most prone of contracting the infection from patients and can become the potential source of transmission. Majority of them (81%) were afraid of getting quarantined. It was quite logical to understand as getting quarantined is going to affect already suffering dental practices. Also, 89% of dentists were in fear of getting COVID infection from patients for obvious reasons. It was seen that in spite of having such a negative effect of COVID-19, majority of dentists (79%) were not ready to shift to other professions that are least affected and only a few of them (13%) thought to change their profession. This reflects positive mindset of dental practitioners in Riyadh. Yet, most of dentists (60%) believed that it may take more than a year for their practices to come back to normal that showed that majority of dentists have realistic point of view on this issue. Whereas some of the dentists (12%) maintained that there was no effect of COVID-19 on their practices reflecting an absolute contrast and a few (2%) even thought that their practice will never come back to normal again showing negative mindset of some the

**Table 3: Fear and anxiety due to COVID-19 on Dental care professionals.**

		Frequency (N)	Percent (%)
Fear of transmission to Family	Do not Know	24	5.0
	No	36	9.0
	Yes	344	86.0
Fear of getting Quarantined	Do not Know	32	8.0
	No	44	11.0
	Yes	324	81.0
Fear of getting COVID	Do not Know	12	3.0
	No	32	8.0
	Yes	356	89.0
Shift of profession due to COVID	Do not Know	32	8.0
	No	316	79.0
	Yes	52	13.0
Time for Practice to come back to normal	Clinical Practice was not affected	48	12.0
	Less than a Year	104	26.0
	More than a Year	240	60.0
	Never	8	2.0

**Table 4: Association of Fear, anxiety, socioeconomic status and effect on Practices of dental professionals with their gender.**

		Gender		Pearson Chi-Square, d.f	P value
		Male	Female		
Negative Effect on performance on practice	Do not Know	6 9.8%	7 17.9%	5.714, 2	0.057 <sup>NS</sup>
	No	1 1.6%	3 7.7%		
	Yes	54 88.5%	29 74.4%		
Current status of Practice	Open and Business as usual	18 29.5%	8 20.5%	9.427, 5	0.093 <sup>NS</sup>
	Open but lower patient volume than usual	42 68.9%	26 66.7%		
	Closed but seeing emergency patients only	1 1.6%	5 12.8%		
	Volume has increased	3 4.9%	0 0%		
Fall in monthly volume of Patients	Less than 25%	13 21.3%	5 12.8%	6.378, 4	.173 <sup>NS</sup>
	25%-50%	11 18.0%	6 15.4%		
	50%-75%	23 37.7%	15 38.5%		
	More than 75%	10 16.4%	7 17.9%		
	No Change	1 1.6%	6 15.4%		
Fall in monthly volume of total collection	It has increased	7 11.5%	0 0%	6.378, 4	.173 <sup>NS</sup>
	Less than 25%	6 9.8%	5 12.8%		
	25%-50%	14 23.0%	7 17.9%		
	50%-75%	20 32.8%	13 33.3%		
	More than 75%	14 23.0%	14 35.9%		

	Patients were not aware of guidelines to be followed	4	0		
		6.6%	.0%		
Reason for Fall in patient volume	Lack of trust in Infection protocol being followed in the clinic	1	0	3.741,	
		1.6%	0%	3	
	Less dental problem in this time of the year	5	5		.291
		8.2%	12.8%		
Fear of COVID-19	Fear of COVID-19	51	34		
		83.6%	87.2%		
	Do not Know	1	2		
		1.6%	5.1%		
	No	4	4	1.510;	
Fear of getting COVID		6.6%	10.3%	2	
	Yes	56	33		.470 <sup>NS</sup>
		91.8%	84.6%		
Fear of transmission	Do not Know	1	4		
		1.6%	10.3%		
	No	5	4	3.960'	
		8.2%	10.3%	2	
Fear of Quarantine	Yes	55	31		.138 <sup>NS</sup>
		90.2%	79.5%		
	Do not Know	2	6		
Negative Effect on Socioeconomic status		3.3%	15.4%		
	No	7	4	4.738,	
		11.5%	10.3%	2	0.094 <sup>NS</sup>
	Yes	52	29		
		85.2%	74.4%		
Shift of profession due to COVID	No Change	3	0		
		4.9%	0%		
	Low	8	5	2.296,	
		13.1%	12.8%	3	
	Medium	16	9		.513 <sup>NS</sup>
Time for Practice to come back to normal		26.2%	23.1%		
	High	34	25		
		55.7%	64.1%		
	Do not Know	2	6		
		3.3%	15.4%		
Clinical Practice was not affected	No	50	29	4.903,	
		82.0%	74.4%	2	.086 <sup>NS</sup>
	Yes	9	4		
Time for Practice to come back to normal		14.8%	10.3%		
	Clinical Practice was not affected	9	3		
		14.8%	7.7%		
	Less than a Year	18	8	2.739,	
		29.5%	20.5%	3	
Time for Practice to come back to normal	More than a Year	33	27		.434 <sup>NS</sup>
		54.1%	69.2%		
	Never	1	1		
		1.6%	2.6%		

dental practitioners which can be attributed to impact of fear and anxiety among them. Table 4 demonstrates association of Fear, anxiety, socioeconomic status and effect on Practices of dental professionals with their Gender. Majority of males [88.5%] and female [77.4%] dental professionals agreed for negative effect of COVID-19 on their dental practices. It was observed that more percentages of females (12.8%) said that their practices were closed and were seeing only emergency patients as compared to males (1.6%). This reflected that Female practitioners were more careful in their approach and did not want to take risk in prevailing COVID-19 conditions.

Both male and female agreed by and large in same percentages that there was definite fall in monthly volume of patients and total collection. Only 4.9% of males reported increase in patient monthly volume and 11.5% of males confirmed increase in monthly total volume of collections. None of the female respondents reported such observations. This might be attributed to certain zones of practice where COVID-19 was in constraint and restrictions regarding movement of people were not employed. Majority of male (83.6%) and female (87.2%) respondents felt that main reason for fall in patient volume was fear of getting COVID. Majority of male (91.8%) and female

**Table 5: Association of Fear, anxiety, socioeconomic status and effect on Practices of dental professionals with their designation.**

		Designation			Pearson Chi-Square, d.f	P value		
		General Practitioner	Specialist	Consultant				
Negative Effect on performance on practice	Do not Know	1 5.3%	4 7.0%	8 33.3%	18.298, 4	0.001**		
	No	0 0%	4 7.0%	0 0%				
	Yes	18 94.7%	49 86.0%	16 66.7%				
Current status of Practice	Open and Business as usual	6 31.6%	19 33.3%	1 4.2%				
	Open but lower patient volume than usual	12 63.2%	38 66.7%	18 75.0%				
	Closed but seeing emergency patients only	1 5.3%	0 0%	5 20.8%				
	Volume has increased	0 0%	0 0%	4 15.8%				
Fall in monthly volume of Patients	Less than 25%	4 19.8%	15 26.3%	4 15.8%			5.036, 10	0.000**
	25%-50%	6 33.3 %	4 7%	6 26.3 %				
	50%-75%	6 33.3%	23 40.4%	3 14.3%				
	More than 75%	2 8.3%	15 26.3%	0 0%				
	No Change	1 5.3%	0 0%	7 27.8%				
Fall in monthly volume of total collections	It has increased	0 0%	1 1.8%	7 31.6%	37.776, 8	0.001**		
	Less than 25%	3 15.7%	11 19.3%	2 6.8%				
	25%-50%	6 31.6%	7 12.3%	8 33.3%				
	50%-75%	6 31.6%	19 33.3%	3 12.3%				
	More than 75%	4 21.1%	19 33.3%	4 16%				
Reason for Fall in patient volume	Patients were not aware of guidelines to be followed	4 21.1%	0 .0%	0 0%	27.307; 6	0.000**		
	Lack of trust in Infection protocol being followed in the clinic	1 5.3%	0 0%	0 0%				
	Less dental problem in this time of the year	1 5.3%	9 15.8%	0 0%				
Fear of getting COVID	Fear of COVID-19	13 68.4%	48 84.2%	24 100.0%	17.712, 4	0.001**		
	Do not Know	1 5.3%	0 .0%	2 8.3%				
	No	0 .0%	2 3.5%	6 25.0%				
Fear of transmission	Yes	18 94.7%	55 96.5%	16 66.7%	14.060, 4	.007**		
	Do not Know	1 5.3%	0 .0%	4 16.7%				
	No	0 .0%	5 8.8%	4 16.7%				
	Yes	18 94.7%	52 91.2%	16 66.7%				

	Do not Know	1 5.3%	0 .0%	7 29.2%		
Fear of Quarantine	No	0 .0%	10 17.5%	1 4.2%	25.573, 4	0.000**
	Yes	18 94.7%	47 82.5%	16 66.7%		
	No Change	0 0%	0 0%	4 15.8%		
Negative Effect on Socioeconomic status	Low	0 0%	10 17.5%	11 44.2%	20.653, 6	.002**
	Medium	14 26.6%	11 19.3%	8 33.3%		
	High	7 73.4%	36 63.2%	1 6.7%		
Shift of profession due to COVID	Do not Know	1 5.3%	0 0%	2 9.2%	27.721, 4	0.000**
	No	12 63.2%	50 87.7%	22 90.8%		
	Yes	6 31.6%	7 12.3%	0 0%		
Time for Practice to come back to normal	Clinical Practice was not affected	0 0%	6 10.5%	5 21.6%	16.634, 6	.023**
	Less than a Year	5 26.3%	13 22.8%	11 43.3%		
	More than a Year	13 68.4%	38 66.7%	7 30.9%		
	Never	1 5.3%	0 0%	1 4.2%		

(84.6%) dental practitioners were afraid of getting COVID-19 from patients. Lesser percentage of Females (79.5%) had fear of transmission of COVID as compared to male [90.2%]. This may be due to more cautious and careful approach by Female practitioners. Mostly both male [85.2%] and female (74.4%) had fear of getting quarantined. Many of male [55.7%] and female (64.1%) agreed that prevailing COVID conditions had high negative effect on their socioeconomic status. This was quite expected seeing the earlier responses confirming fall in both patient's volume and monthly collections. Only very few of male (9%) and females (4%) felt the need of shifting profession as compared to majority of male (82%) and female (74.4%) practitioners who did not want to shift. This reflected common belief in system and optimism regarding getting all things back to normal in recent future. Majority of male (54.1%) and female (69.2%) respondents felt that it will take more than a year for their practice to get back to normal. It again shows realistic expectations of the dentists. But association of responses of dental practitioners with their Gender was not significant as p value was >0.05. [16,17]

Table 5 shows association of fear, anxiety, socioeconomic status and effect on Practices of dental professionals with their designation.

By Pearson chi square test, from Table 5 it was found that there is highly significant association Fear, anxiety and practice of dental professionals with their designation,  $p < 0.01$ . Negative effect on Performance of Practice was found to be maximum for General practitioner (94.7%) followed by Specialist (86%) and consultants (66.7%). None of the General Practitioners and Specialists and only a few of consultants (4%) said that there was

no negative effect on their practices, It shows that consultants were least affected among the three. This can be attributed by the fact that consultants generally see complicated cases which are difficult to handle by specialist or general dentists and their practice is not that much affected by patient volumes. Status of Practice of consultant was Open but lower patient volume than usual 75%, which was significantly higher than others. Percentage of practice closed but seeing emergency patients was significantly higher for consultants than general practitioner and specialists. Percentage of practice open and business as usual was significantly lower for consultants than general practitioner and specialists. This again reflects that consultants were seeing higher number emergency cases that may not be handled by general dentist or specialist. Nature of practice for consultants is generally based on complicated or emergency patients. Fall in monthly volume of patients were seen more in case of specialist. Effect on number of patient Input decreased by 50%-75%. Was 40.4% for specialists, which was significantly high? It was least in case of consultants and in fact a few of them saw increase in number of patients even (15.8%) and no change in patient's volume in 27.8%. There was fall in monthly volume of total collections in all three designations. A few of general consultants saw increase on volume of total collections (31.6%). This again can be attributed to nature of practice of consultants which is least affected of all three designations. All the three designations agreed that fear of COVID-19 was major cause of fall in patient volumes. The reason for fall in patient due to Fear of COVID-19 was 100% in consultant. 96.5% specialist that is significantly high. 21% of General dentist also felt that unawareness of guidelines by patients was also one of the reasons for fall in

patient volumes. Fear of getting COVID-19 was confirmed by all three categories of designation with maximum % in specialist (96.5%) and General dentists (94.7%). All of the designations were afraid of transmitting the disease. Fear of transmission in general practitioner was 94.7%, which was significantly higher than others. This apprehension was least in consultant. This might be due to selected number of patients seen by them. All three classes were afraid of getting quarantined and Fear of Quarantine in general practitioners was 94.7%, which was significantly higher than others. It might be due to large number and all varieties of patients seen by general dentists. There was variable negative effect of COVID-19 on socioeconomic status of all three classes. It was medium to high impact on General dentist (26.6 and 73.4% respectively) and specialist (19.3% and 63.2% respectively). There was low to medium impact on consultants (44.2% and 33.3%) and even 15.8% of consultants reported that there was no change in their socioeconomic status. This is well attributed to earlier observations showing that consultants were least affected of all. [18-20]

Majority of the three categories did not want to shift the profession with consultants as 90.8%. It was important to note that 31.6% of General dentist wanted to shift profession. It was quite explainable by seeing earlier trends. Majority of all three classes felt that it will take some time for profession to come back to normal. 21.6% of consultants felt that their practice was not affected by Pandemic influence.

## Conclusion

Following conclusions can be drawn based on observations made in questionnaire-based study:

- There was definite negative effect of COVID-19 on clinical practices of dental professionals. Majority of dental practices were open with lower patient volumes.
- Monthly volume of patients and total collections saw a definite decrease.
- Reason for fall in patient volume was agreed by most of dental practitioners as fear of COVID-19. Also, there was negative impact on socioeconomic status of dental professionals.
- Most of the dental professionals were afraid of transmitting the virus to their families and were in fear of getting quarantined. Also, they were afraid of getting COVID-19 from the patients.
- In general, dental professionals disagreed on shifting of their profession due to downslide in dental practices and were of belief that it will take more than a year for their practices to come back to normal.
- There was no significant association of Gender with Effect on Fear, Anxiety, socioeconomic status, and clinical practices of dental professionals due to COVID-19.
- There was significant association of Designation with Effect on Psychological, socioeconomic status, and clinical practices of dental professionals due to COVID-19. Clinical practice of consultants was least affected by COVID-19 as compared to General practitioner and specialists.

## Acknowledgement

This Project is supported by Deanship of Graduate Studies and Scientific Research at Dar Al Uloom University.

## Competing Interests

The authors report no competing (commercial/academic) interests.

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