

Original Research

The Assessment of Anxiety Levels of the Orthodontists about COVID-19 Pandemic

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ABSTRACT:

Aim: The Assessment of Anxiety Levels of the Orthodontists about COVID-19 Pandemic. **Materials and methods:** This survey research was carried out, A web-based questionnaire was prepared by using Google form, which is an online survey tool and sent through e-mail to the registered orthodontist in India. The data received within the first 10 days after the questions were sent via e-mail were included in this study. A total of 210 orthodontists attended the survey; however, only 200 of them were included in this study. Ten people who left unanswered questions were excluded from the study. **Results:** The participants tended to be mostly female (77%), and (23%) were males. Regarding PPE, medical mask and medical gloves were reported to be used mostly before the COVID-19 outbreak by the orthodontists (n=187 and n=195, respectively); however, N95 or equivalent mask (n=150), goggles (n=127), face shield (n=182), cap (n=164), and gown (n=178) were reported to be used additionally during the COVID-19 outbreak. **Conclusion:** Most of the orthodontists are aware of COVID-19 symptoms and transmission routes. They treat only emergency cases and take recommended transmission-based precautions according to the current guidelines and research.

Keywords: Anxiety, Orthodontists, COVID-19 Pandemic

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INTRODUCTION

The novel corona virus disease 2019 (COVID-19) was announced as a public health emergency of international concern by the World Health Organization (WHO) on March 13, 2020.¹ Since the emergence of the disease in late December 2019, it became a pandemic and spread out widely affecting more than 200 countries and territories.¹ By early April 2020, over a third of the global population was under some form of movement restriction or COVID-19 lockdown. China was the first country to have a COVID-19 lockdown, in Wuhan on 23 January. At its peak, China's quarantine measures were enforced in at least 20 provinces/regions. India commenced a 3-week coronavirus lockdown, with a total ban on venturing out of homes on 24 March.² 'Quarantine' is one of the oldest and most effective tools of controlling communicable disease outbreaks. This public health practice was used widely in fourteenth

century Italy, when ships arriving at the Venice port from plague-infected ports had to anchor and wait for 40 days before disembarking their surviving passengers.³ Forty days provided ample time for the incubation time to be completed so that yet asymptomatic cases became symptomatic and could therefore be identified. Quarantine was implemented successfully as an effective measure during the SARS epidemic in 2003.

As a result, all OPDs, dental clinics, and institutions across India were instructed to be shut, leaving only emergency services functioning. Thus, with no prior warning or anticipation orthodontic appointments were temporarily ceased. Orthodontic treatment is generally not considered as emergency. However, what is not understood is the importance of regular check-ups or monthly appointments, as well as the impact of restrictions put on patients concerning visiting their orthodontist in time of need.

Understanding whether patients realize the importance of regular follow-up, feel the need for orthodontic treatment to be regarded as emergencies, or assess the reason for anxiety or inconveniences in the minds of patients undergoing orthodontic treatment in the time where they are entirely restricted to the confines of their homes. This study is mainly aimed at finding the anxiety and emergencies reported in orthodontic Patients during corona virus lockdown.

MATERIAL AND METHODS

This survey research was carried out, after taking the approval of the protocol review committee and institutional ethics committee. A web-based questionnaire was prepared by using Google form, which is an online survey tool and sent through e-mail to the registered orthodontist in India. Informed consents were not taken from the participants because it was a web-based questionnaire and the participation was voluntary. The questionnaire comprised four sections. In the first section, demographic information such as age, gender, city, and the working place was collected. The second section comprised general questions about COVID-19, such as questions related to source of the information, whether the orthodontists themselves or people around them have sufficient information about the symptoms and transmission routes of COVID-19, whether adequate precautions have been taken in the orthodontists’ working area, and whether the orthodontists consider themselves to be in a high-risk position with regard to the transmission. The third section comprised the orthodontic treatment strategies and the protective measures, which the orthodontists have taken during the COVID-19 outbreak. Orthodontists were asked whether they work during the COVID-19 outbreak; whether they avoid bonding/debonding procedures or using high-speed or low-speed handpieces and 3-way syringe; whether they apply preprocedural mouth rinse; and whether their patients want to continue routine orthodontic treatment. The questionnaire also included questions about the treatment type (all treatments or emergencies), communication methods, orthodontic interventions considered as emergencies, the types of PPE used, and the highest impact of the COVID-19 outbreak on them. In the last section, to measure the orthodontists’ anxiety level, the indian version of the 7-item Generalized Anxiety Disorder (GAD) test was applied. It was used to evaluate how often the participants were bothered by each related

item in the questionnaire during the last 2 weeks. Response options were “not at all,” “several days,” “more than half the days,” and “nearly every day,” scored as 0, 1, 2, and 3, respectively. In the GAD-7, the score of 10 or above was used as the cutoff point for the diagnosis of anxiety as was reported in the original article.⁴

The data received within the first 10 days after the questions were sent via e-mail were included in this study. A total of 210 orthodontists attended the survey; however, only 200 of them were included in this study. Ten people who left unanswered questions were excluded from the study.

STATISTICAL ANALYSIS

The data were analyzed using The Statistical Package for Social Sciences version 25.0 software (IBM Corp.; Armonk, NY, USA). To analyze the distribution difference between categorical variables, Chi-square test or Fisher exact probability test was performed. Logistic regression analysis was performed to determine which factors affect anxiety together, and the forward conditional method was used. The odds ratio for risk factors was expressed with 95% confidence intervals. The significance level was set at p<0.05.

RESULTS

The participants tended to be mostly female (77%), and (23%) were males. (Table1). The sources of information about COVID-19 were reported mostly as websites and social media (n=182 and n=169, respectively); 51.2% of the orthodontists changed their working situation to a short-time working model (Table 2). Most of the orthodontists reported having sufficient information about the COVID-19 symptoms and transmission routes (n=159 and n=183, respectively). In contrast, the number of orthodontists who reported taking adequate precautions against COVID-19 at their working place was equal to those who reported taking only partial precautions (n=88). In addition, 120 orthodontists stated that people around them did not have sufficient information about COVID-19 and did not comply with hygiene rules. Of all the participants, 187 orthodontists thought that they were at a high-risk position with regard to contamination. Restricted social life, decreased income, and negatively affected psychology were among the most marked items in the questionnaire because COVID-19 has an impact on them (Table 2).

Table 1: Demographic profile

Demographic profile	N=200 (%)
Gender	
Female	154 (77)
Male	46(23)
Age	
15-30	110 (55)
30-40	62(31)
40-50	26 (13)

50-60	15 (7.5)
Above 60	2 (1)
GAD\neq	
No	169 (83.3)
Yes	31 (16.7)

GAD: Generalized Anxiety Disorder, GAD \neq was defined as individuals who scored ≥ 10 points. Almost all the orthodontists reported that they treated only emergency cases from 15th of March to 15th of June which was the end of the survey participation period (n=200). Injury due to the band or bracket failure and soft and hard tissue

Table 2: Numbers and percentages of the given answers regarding COVID-19 related questions

Parameter	n (%)
Source of information about COVID-19	
Websites	170 (85)
Social media	155 (77.5)
Television	141 (70.5)
Academic publications	104 (52)
Family and friends	84 (42)
Newspaper	24 (12)
Radio	10 (5)
Changes in working situation	
Short-time working	102 (51)
Vacation	72 (36)
Home office	34 (17)
Left work	3 (1.5)
No change	3 (1.5)
Effects of COVID-19 on lifestyle	
Restricted social life	170 (85)
Decreased income	136 (68)
Negatively affected psychology	103 (51.5)
Being far from family	80 (40)
Increased housework	78 (39)
Lost health	4 (2)
Lost work	0 (0)
Use of preprocedural mouth rinse	
No need	55 (25)
0.2% povidone-iodine	48 (24)
Chlorhexidine	34 (17)
1% hydrogen peroxide	28 (14)
2% povidone-iodine	29 (14.5)
0.1% hydrogen peroxide	18 (9)
Mouthwash	15 (7.5)
Salt water	5 (2.5)

trauma along with the problems in retention appliances were among the most marked items as an orthodontic emergency (n=185, n=174, and n=69, respectively). A total of 116 orthodontists stated that a small group of their patients wanted to continue routine orthodontic treatment, whereas 97 orthodontists reported that their patients wanted to come only for emergency treatments during the COVID-19 outbreak. Regarding the communication method, the orthodontists mostly asked the patients to send photos (n=150). It was followed by sending necessary treatment materials such as rubber bands, wax, aligners, and others (n=60) to the patients and having video calls (n=32). Most of the participants

avoided the debonding procedure and bonding of broken attachments (n=198 and n=185, respectively), using high-speed handpieces with or without water (n=198 and n=182, respectively), and using low-speed handpieces and 3-way syringe (n=180 and n=191, respectively) during the COVID-19 outbreak. Regarding PPE, medical mask and medical gloves were reported to be used mostly before the COVID-19 outbreak by the orthodontists (n=187 and n=195, respectively); however, N95 or equivalent mask (n=150), goggles (n=127), face shield (n=182), cap (n=164), and gown (n=178) were reported to be used additionally during the COVID-19 outbreak. Furthermore, most of the participants also stated that

they would continue to use additional PPE such as N95, face shield, and others after the outbreak as a routine procedure, but the ratio would be lower than the ratio reported during the COVID-19 outbreak. In addition, 24% of the participants reported using 0.2%

povidone-iodine, 17% of them reported using chlorhexidine, and 14% of them reported using 1% hydrogen peroxide as a preprocedural mouth rinse solution, whereas 25% reported not needing mouth rinse (Table 2).

Table 3: Numbers and percentages of the answers to COVID-19 related questions

	No, n (%)	Yes, n (%)	P value
Gender			
Female	126a (81.8)	28a (18.1)	0.141
Male	40a (86.9)	6a (13.04)	
Age (years)			
15-30	92a (83.6)	18a (16.3)	0.955
30-40	50a (80.6)	12a (19.3)	
40-50	22a (84.6)	4a (15.38)	
50-60	12a (80)	3a (20)	
Above 60	2a (100)	0a (0)	
Do you have enough information about symptoms of COVID-19?2 No	3a (100)	0a (0)	0.176
Partially	30a (17.7)	10a (32.2)	
Yes	136a (80.4)	21a (67.7)	
Do you have enough information about transmission routes of COVID-19?2 Partially	29a (17.1)	1a (3.2)	0.310
Yes	140a (82.8)	30a (96.7)	
Are adequate precautions taken against COVID-19 at your working place?1 No	13a (7.6)	1a (3.2)	0.958
Partially	133a (78.7)	15a (48.3)	
Yes	23a (13.6)	15a (48.3)	
Do people have enough information about COVID-19 and comply with hygiene rules?1No	36a (21.3)	14b (45.1)	0.096
Partially	100a (59.1)	6a (19.3)	
Yes	33a (19.5)	11a (35.4)	

GAD: Generalized Anxiety Disorder; COVID-19: Coronavirus disease-19

The prevalence of GAD was 16.7% among the orthodontists during the COVID-19 outbreak (Table 1). There was no statistically significant difference when the prevalence of GAD was stratified by gender, age, city, and COVID-19-related questions (Table 3). However, there was a statistically significant difference between the working place and the anxiety levels.

Although there was no statistically significant difference between the answers and anxiety presence distributions, the ratio of having anxiety above the threshold was statistically higher (38.9%) among those who reported surrounding people as having inadequate knowledge and not complying with hygiene rules (z-test for comparing proportions). Logistic regression analysis was performed to determine which factors affect anxiety; however, none of them were statistically significant.

DISCUSSION

Most of the guidelines do not have adequate information about orthodontic management during the COVID-19 outbreak. Because the orthodontic treatment is a continuous treatment and needs follow-

up every 2-6 weeks, it should be clarified what constitutes a real emergency in orthodontics and how to manage it with specific protocols during this outbreak. In this study, together with the general knowledge about COVID-19, we tried to evaluate what constituted orthodontic emergency according to the orthodontists, about the changes in their working situations, and about the personal protective measures used. In this study, mostly websites and social media were reported as the source of information about COVID-19, which coincided with the results of Lim et al.'s study.⁵ The participants in our study stated that as healthcare workers they had sufficient information about COVID-19 symptoms and transmission routes, which was also in accordance with the literature.^{5,6} Most of the participants were considered to be in a high-risk group because it was reported in the literature that healthcare workers were at substantial risk owing to pernicious characteristics of COVID-19.^{7,8} In addition, the number of orthodontists who notified that adequate precautions were taken against COVID-19 at their working place was equal to those who reported that only partial precautions were taken. This statement might be related to feeling insecure about working at a high-risk position, the short-age of protective equipment, or not trusting the

application of protective measures by the employees. The participants did not trust people around them about their COVID-19 related knowledge and hygiene rules. However, in one of the studies, authors reported that respondents carried out precautionary behaviors owing to the outbreak (78.6% in Wuhan and 63.9% in Shanghai); the duration and frequency of handwashing and wearing a mask when going out increased significantly. They added that no evidence was found about the associations between sex, age, education, working status, and behavioral responses during the COVID-19 outbreak.⁹

In the guidelines and the scientific papers, it was recommended to reschedule patient appointments and treat emergency cases only during the COVID-19 outbreak.⁶ In this study, most of the orthodontists reported treating only emergency cases as was suggested. However, they also reported that a small part of their patients wanted to continue routine orthodontic treatment even if it was not recommended. This might be related to insufficient information given to the patients about the progress of their treatments during the COVID-19 outbreak, which might have worried them that the quality of the treatment would deteriorate. This might also be related to the fact that the patients did not understand the severity of the outbreak.

In the literature, the functional or extra oral appliances, problems in the aligners and the retainers, loose brackets and bands, poking wires, abscess around the molar band, irritation of lip and cheek, and loose elastic chain were reported as orthodontic emergencies.^{10,11} Although broken brackets and bands, fixed intraoral appliances used for expansion or functional treatment, bent wires, forced eruption, and removable or extraoral appliances were also reported as emergencies in our study; injury due to the band or bracket failure, soft and hard tissue trauma, and the problems in retention appliances were considered as emergencies with a higher ratio. In an emergency, first, it was suggested to try to manage the situation remotely.^{10,11} In some cases, even patients or parents can solve the problems at home with guidance. For this purpose, orthodontists can send informative photographs and videos that are either prepared by themselves or available on websites.¹¹ In this study, virtual communication methods such as asking patients to send their photographs or making video calls were most preferred. Furthermore, the participants also provided necessary treatment materials such as aligners, rubber bands, wax, and others, in order not to disrupt the treatment.

When there is a real emergency and the patient should be seen in the clinic, strict protective measures have to be taken. Aerosol- or droplet-generating procedures should be minimized or avoided if possible.^{12,13} In this study, the participants mostly avoided debonding procedure, bonding of broken attachments, and using high-speed and low-speed handpieces and a 3-way syringe in order not to generate aerosol, as was

recommended in the guidelines. Besides deferring routine dental treatments and avoiding aerosol-generating procedures, it is also important to use proper PPE and decrease the cross-contamination risk while treating emergency cases. For instance, preprocedural mouth rinse was recommended in the literature because SARS-CoV-2 was also reported in the saliva.¹⁴ The studies showed that mouth rinse with 0.2% povidone-iodine and 1% hydrogen peroxide decreased the viral load because of oxidation; however, chlorhexidine did not affect the virus.^{12,15} In this study, 25.6% of the participants reported not needing mouth rinse, and 17.2% of them reported the use of chlorhexidine, which did not coincide with the guidelines and literature findings. Those findings may imply that the participants who stated that they did not need mouth rinse or who used chlorhexidine did not have sufficient information regarding the mouth rinse. However, 23.3% of them were reported using 0.2% povidone-iodine, and 14.9% of them preferred 1% hydrogen peroxide as was suggested.

Particulate respirators (N-95 masks or equivalent masks such as FFP2-standard masks or superior) are recommended because the standard medical mask is not effective against SARS-CoV-2 loaded aerosol.¹⁶

¹⁷ Disposable gowns and caps, goggles, or face shields are also suggested together with standard precautions during the outbreak.^{16, 17} In this study, medical mask and gloves were mostly reported to be used before the COVID-19 outbreak. However, during the outbreak, N95 or equivalent mask, goggles, face shield, disposable gowns, and caps together with the standard protective equipment were used by the participants. Furthermore, they claimed that they would continue to use the additional PPE even after the outbreak. It is evident that the standard protective equipment will go out of the ordinary and require more equipment. Hence, how this extra cost can be dealt with by the clinicians or whether this will be reflected in the treatment fees is a question for now.⁶

Regarding the effects of the COVID-19 outbreak, the participants mostly marked the items of restricted social life, decreased income, and negatively affected psychology. It was previously reported in the literature that being isolated and working at high-risk positions might adversely affect the psychology of healthcare workers.¹⁸ Healthcare workers suffering from mental health disturbances has also been advocated in some of the previous studies about COVID-19.^{6,8} In the last part of this questionnaire, to assess the anxiety level during the outbreak, the Turkish version of the GAD-7 test, which has high validity and reliability similar to the original form, was used.¹⁹ The prevalence of GAD was 16.7%, and there was no statistically significant difference when stratified by gender, age, city, and COVID-19-related questions. Qian et al.⁹ reported that 32.7% of Wuhan and 20.4% of Shanghai participants reported moderate or severe anxiety, which was higher than the results in this study. Huang and Zhao observed higher

percentages (37.4%) in the healthcare workers; however, there was no statistically significant difference when compared with other occupations. Other studies evaluating the mental health disturbances with the help of different scales reported that mostly sub threshold and mild disturbances were seen in the population.^{8,20} In the literature, there are conflicting results about associations between GAD and age and gender. Although some of the literature findings reported that females are more vulnerable to stress, the other studies reported no difference between the genders as in the results of this study.^{6, 9, 20, 21} With regard to the age, Qui et al.²⁰ reported young adults (18-30 years) as having high-stress levels, and Huang and Zhao⁶ observed that people younger than 35 years showed more anxiety symptoms, whereas Qian et al.⁹ reported no difference between the age groups in accordance with our study. The only statistically significant difference was between the work- ing place and anxiety presence distributions in this study. The orthodontists working in public institutions and organizations reported higher anxiety levels; however, the number of those was low (n=5), which may not reflect the general results. In addition, the anxiety level was found to be higher among those who reported the surrounding people as having inadequate knowledge about COVID-19 and not complying with hygiene rules. This might imply that the level of anxiety may increase when people feel insecure about protecting themselves and cannot control the people around them; however, the number of the participants was also low in this group.

CONCLUSION

Most of the orthodontists are aware of COVID-19 symptoms and transmission routes. They treat only emergency cases and take recommended transmission-based precautions according to the current guidelines and research.

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