

Patient Concerns and Anxiety Regarding Orthodontic Treatment and appointments during COVID-19 Pandemic

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ABSTRACT

Objective: To determine patient concerns and anxiety regarding orthodontic treatment and appointments during COVID-19 Pandemic

Methodology: After approval from Sharif Medical Research Center (SMRC) and the Ethics Committee of Sharif Medical City Hospital (SMCH), 247 orthodontic patients were selected from the Orthodontics Department of SMCH, Lahore, who had on-going orthodontic treatment. The total duration of the study was two and a half months from 12th March to 30th May 2021. Data was analyzed by IBM SPSS version 25. Percentages of the responses in each domain of the questionnaire were calculated. Chi-square test, one-way ANOVA and Pearson's correlation coefficient were applied where applicable to determine the significance of associations between different variables, with $p < 0.05$ taken as significant.

Results: Two hundred and forty seven patients were sent the questionnaire links, while 213 patients responded, out of which 132 were females and 81 were males, with mean age 22.81 ± 2.93 years. Anxiety about the coronavirus pandemic ranged from 5.32 ± 2.30 . Patients were particularly concerned about the length of time it would take to complete their orthodontic treatment as a result of quarantine (55.9 percent). 5.68 ± 2.15 was the mean anxiety level.

Conclusion: The quarantine recommended due to the COVID-19 pandemic impacted orthodontic appointments and patients' anxieties and anxiety, since a statistically significant correlation was established between quarantine and coronavirus sentiments and orthodontic appointment willingness. Males were more willing to get braces than females. Delay in treatment end, bracket breaking, and growing malocclusion were patients' top concerns. Patients said the most critical precaution in orthodontics was changing the dentists' disposable lab coats after every visit to avoid cross-contamination.

Keywords: Anxiety, Coronavirus, Cross-infection, Dental care, Orthodontic braces.

INTRODUCTION

A highly transmissible infectious virus causing pneumonia of unknown cause was reported in Wuhan, China, in December, 2019.¹ The initial route of spread was thought to be via species of bats in Wuhan, China, which then transmitted to intermediate hosts like snakes, dogs and pangolins.² In humans its spread was speculated from contaminated meat from animal markets of Wuhan, China.³ The Corona Virus is an enveloped ss-RNA virus which consists of four viral genera (alpha-, beta-, gamma- and delta- group of corona viruses).⁴ It has debilitating effects on humans and has shown to cause severe acute respiratory tract infection, common routes of transmission being viral droplets and micro-droplets via cough, sneeze, saliva, hand to hand and facial contact, nasal secretions, eye secretions and surface contacts.⁵⁻⁸ The virus remains defiant with an average incubation period from 4 to 24 days.⁹

Since the outbreak of COVID-19, it has affected the world in all aspects of life in a very devastating way. It has brought the world to its knees shutting down countries around the globe with strict social distancing measures in place. Though, the scenario is extreme still the front-line health care workers including doctors, dentists, nurses and the paramedics have been on their toes throughout the pandemic and have been infected while treating the patients and have lost so many lives.¹⁰ They were vulnerable of being exposed to the viral pathogens when in close proximity, through oral cavity and respiratory tract during dental appointments.^{11,12}

As it's proven by research that Corona Virus spreads by airborne particles, there was a lot of speculation in the masses and anxiety rose leading to fear of dental treatments. Patients were particularly worried of getting the virus from dental practices and dental practicing hospitals and were frightened of attendance. Fear and anxiety are powerful emotions expressed by human beings in stressful situations.¹³ The American Dental Association (ADA) gave key guidelines on the rapid spread of infection and steps to be taken while treating a patient during pandemic, which included the use of full PPE (personal protective equipment), including Hazmat suits for dental staff, along with use of mouthwash in

patients before treatment, precautionary measures and avoiding of aerosol generating procedures and much more.¹⁴ This was very overwhelming for the patients and may have increased their anxiety levels.

Therefore, in this patient-centered study we conducted a questionnaire-based survey to evaluate patient concerns and anxiety regarding their visit to the dentist for orthodontic treatment during COVID-19 pandemic.¹⁵ Recently, a lot of research was undertaken on prevention, spread and treatment modalities of COVID-19 which focused on health care professionals. Very few studies yet show the fear and reluctance of orthodontic patients' visit to the dental office. The present study also assessed different aspects of anxiety and fear among orthodontic patients of getting infected by dentists during treatment procedures. In addition, patient knowledge was evaluated regarding the do's and don'ts when in a dental practice during COVID-19 pandemic.

METHODOLOGY

This was an observational cross-sectional survey, performed in Department of Orthodontics, Sharif Medical City Hospital, from 12th March to 30th May 2021. Sharif Medical Research Center approved the study, followed by ethical approval with the letter number SMDC/SMRC/133-21. The study was done on a sample of 213 orthodontic patients who had to visit the orthodontic department for their on-going orthodontic treatment, selected via non-probability consecutive sampling technique. Their files were checked from departmental record and cell phone numbers were noted for communication. An informative pre-validated questionnaire having 11 items, using a method that allowed patients to express their feelings about the pandemic as well as their anxieties over their oral health was done with prior authorization. 15 Patients were emailed a link to a Google Form via WhatsApp Messenger (WhatsApp Inc., Menlo Park, CA, USA) once and then reminded via text message 24 hours later to complete the survey (Google LLC, Mountain View, CA, USA).

Inclusion criteria was patients older than 18 years of age who agreed to participate in the research. The exclusion criteria

was patients with missing, invalid or non-responding contact numbers.

How old, gender, city and region of residence did participants identify themselves as? And if they had any COVID-19-related symptoms? On the subject of orthodontic treatment, they also stated whether it was OK for them to attend their appointments, or whether they would only go in the event of an emergency, and how quarantine would effect their orthodontic therapy.

Questionnaire sent to orthodontic patients

- Q1. How old are you? _____
- Q2. Gender: Male Female
- Q3. Have you had or are experiencing symptoms of COVID-19?
- Had symptoms
 - No symptoms
 - Confused
- Q4. How are you respecting the quarantine?
- I do not leave home for nothing
 - I am staying home as much as possible (going out only to buy food/medicine)
 - I am going out as usual
- Q5. Do you work or study? If so, how is your activity?
- Yes, I am leaving home for work/study
 - Yes, but I am working/studying at home
 - I do not work/study
- Q6. Considering the general anxiety level, how are you feeling about the quarantine and the coronavirus pandemic?
- Calm
 - Anxious
 - Fear
 - Panic
 - Indifferent
- Q7. On a scale from 0 to 10, low is your anxiety with the coronavirus pandemic?
- 0 1 2 3 4 5 6 7 8 9 10
- Q8. If your orthodontist got in touch to schedule an appointment during the quarantine, would you be willing to go?
- Yes
 - Only in case of urgency/emergency
 - No
- Q9. What is your greatest concern about how quarantine can affect your orthodontic treatment?
- Delay of treatment end
 - Impair the final result
 - Debonding of brackets worsening the malocclusion
 - Break of accessories causing discomfort/injury
 - I am not concerned
- Q10. On a scale from 0 to 10, low is your anxiety regarding the impact of the coronavirus pandemic and quarantine in your orthodontic treatment?
- 0 1 2 3 4 5 6 7 8 9 10
- Q11. What do you consider important, in this actual situation, in a dental office? (select all that apply)
- Disposable lab coat
 - Disposable surgical mask
 - Disposable medical hood cap
 - Use of face shield in addition to the surgical mask
 - Avoid crossing other patients at reception
 - PPE for patients
 - Alcohol gel at reception

Statistical Analysis: Data was analyzed by IBM Statistical Package for the Social Sciences (SPSS) version 25. Quantitative variables like age were represented as mean and standard deviation, Categorical variables like gender, educational level, etc. were represented as frequencies and percentages. Percentages of the respondents in each domain of questionnaire were calculated. The chi-square test and independent t-test were used to compare the effects of gender on various factors.

RESULTS

Two hundred and forty seven patients were sent the questionnaire links, while 213 patients responded. Item no. 1 and 2 revealed that out of 213 patients, 132 were females and 81 were males, with mean age 22.81±2.93 years. Regarding COVID-19 symptoms (item no.3), 34.7% had symptoms, 53.5% had no symptoms, 11.7% were confused whether their symptoms belonged to coronavirus or not. (Figure 1).

Table-1 shows that whereas more men remained calm during the quarantine and coronavirus pandemic, women felt more frightened and panicked (Table-1). Attendance at an orthodontic appointment was statistically significantly associated with sentiments about quarantine and coronavirus expressed by the participants. Calm patients were more likely to show up for an appointment than those who were frightened or agitated. Less anxious were the orthodontic patients, compared with those who either refused to go or only went in case of an emergency (Table-2).

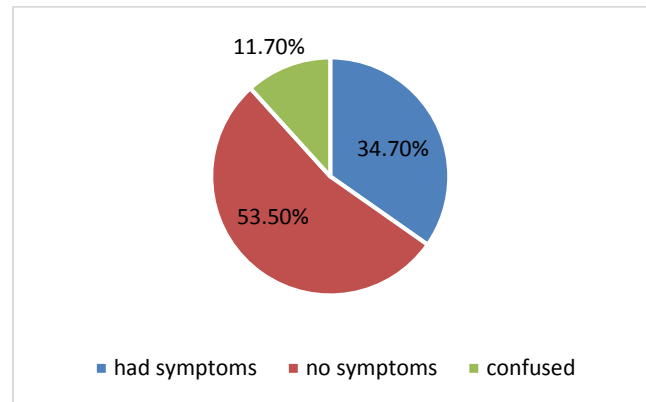


Figure1: COVID-19 symptoms in orthodontic patients

Table 1: Comparison between males and females (chi-square test and independent t-test)

Questions/Answers	Male N=81 N (%)	Female N=132 N (%)	p-value
4. How are you respecting the quarantine?			
Do not leave home	17 (20.9%)	36 (27.2%)	0.452
Leave home as little as possible	55 (67.9%)	86 (65.1)	
Go out normally	8 (9.87%)	7 (5.3%)	
Not in favour of quarantine	1 (1.2%)	3 (2.2%)	
6. Feeling about the quarantine and coronavirus pandemic			
calm	51 (63%)	42 (31.8%)	0.001*
anxious	19 (23.5%)	63 (47.7%)	
fear	10 (14.8%)	17 (13%)	
panic	1 (1.2%)	8 (6.0%)	
indifferent	0 (0%)	2 (1.5%)	
7. Level of anxiety/coronavirus	Mean (SD) 5.30 (2.29)	Mean (SD) 5.33 (2.32)	0.790
8. Would go to an orthodontic appointment			
Yes	60 (74.1%)	54 (41%)	0.001*
Yes, if urgency/emergency	15 (18.5%)	59 (45%)	
No	6 (7.4%)	19 (14%)	
9. Greatest concern about how quarantine can affect the orthodontic treatment			
Delay the treatment end	49 (60.4%)	67 (53%)	0.044*
Impair the final treatment	16 (20%)	16 (12%)	
Breakage of accessories causing injury/discomfort	2 (2.4%)	10 (8%)	
Debonding of bracket, worsening malocclusion	12 (14.8%)	21 (16%)	
Not worried	2 (2.4%)	15 (11%)	
10. Level of anxiety/impact on orthodontic treatment	Mean (SD) 5.52 (2.18)	Mean (SD) 5.78 (2.13)	0.513

Table 2: Comparison of the likelihood of attending a braces appointment and the thoughts and concerns around the coronavirus epidemic (chi-square test and one-way ANOVA)

Answers	Yes N (%)	Only in case of emergency N (%)	No N (%)	p-value
calm	76 (66.6%)	17 (22.9%)	0 (0%)	0.001*
anxious	32 (28.0%)	421 (55.4%)	9 (36%)	
fear	5 (4.4%)	15 (20.0%)	7 (28%)	
panic	0 (0%)	0 (0%)	9 (36%)	
indifferent	1 (1%)	1 (1.3%)	0 (0%)	
Level of anxiety/coronavirus	Mean (SD) 4.46 (2.02%)	Mean (SD) 5.65 (1.87%)	Mean (SD) 8.28 (2.01%)	0.001*
Level of anxiety/impact on orthodontic treatment	Mean (SD) 5.67 (2.16%)	Mean (SD) 6.09 (1.40%)	Mean (SD) 7.28 (2.79%)	0.001*

Coronavirus pandemic fear was much lower in patients who ignored quarantine rules, according to a new study. Quarantine measures and levels of anxiety/impact on orthodontic treatment were shown to be statistically indistinguishable in this study (Table-3). The fear of a coronavirus pandemic rose in direct proportion to

an individual's age. But statistically it was insignificant ($p=0.889$). Negative correlation was found between age and level of anxiety/impact on orthodontic treatment with statistically insignificant difference ($p=0.682$). (Table-4)

Table-3: The influence of the coronavirus pandemic on orthodontic treatment and the observance of quarantine regulations (one-way ANOVA)

Levels of anxiety	Do not leave home	Leave home as little as possible	Go out normally	Not in favour of quarantine	p-value
	N (%)	N (%)	N (%)	N (%)	
Level of anxiety/coronavirus	Mean (SD) 6.40 (2.63)	Mean (SD) 5.25 (1.99)	Mean (SD) 3.2 (1.20)	Mean (SD) 1.5 (1.00)	0.001*
Level of anxiety/impact on orthodontic treatment	Mean (SD) 5.77 (2.32)	Mean (SD) 5.61(2.12)	Mean (SD) 5.87 (1.92)	Mean (SD) 6.25 (2.36)	0.888

Table-4: Relationship between the patient's age, coronavirus pandemic anxiety levels, and how those factors affect orthodontic treatment (Pearson's correlation coefficient)

Correlations	r	p
Age x level of anxiety/coronavirus	0.010	0.889
Age x level of anxiety/impact on orthodontic treatment	-0.028	0.682

Regarding the most important precautionary measures to be taken in dental offices (item no.11), patients found it important that dentists should use disposable laboratory coats that should be changed after every patient (200, 93.8%), N95 masks for dentist (184,86.7%), face shield (150,70.4%) and disposable headcaps for dentists (133,62.4%), PPE for patients (106,49.7%), avoid crossing with other patients in waiting area (106,49.7%) and alcohol gel for patient at reception (98,46.0%).

DISCUSSION

Over 67 million confirmed cases and over 1.5 million fatalities worldwide have been attributed to the COVID-19 pandemic, which has affected over 210 nations. Pakistan was also affected by the pandemic, and there have been reported around 14000 fatalities and about 655,000 cases (the number is continuously rising).^{16,17}

In this study, 66.2 percent of patients left their homes only when required, and the majority of patients worked or studied at home (62.4 percent). Patients who complied with the quarantine had statistically significant concern about the coronavirus pandemic. In contrast to their anxiety over the potential impact of the coronavirus pandemic on their orthodontic treatment, there was only a small respect for social distance. As the epidemic of COVID-19 raged, patients who were unable to leave their homes were less concerned about their orthodontic treatment than those who were able to go out. According to a research by Cotrin et al¹⁵, patients only left their homes when absolutely essential.

When asked how they felt about quarantine, the majority of patients (44.6 percent) said they were peaceful, while 38.5% were nervous and 11.7% were afraid about the COVID-19 pandemic. Only 4.2 percent of patients said they were in a state of panic, and 9.0 percent were unconcerned about their feelings. Coronavirus pandemic-related anxiety among orthodontic patients was 5.32 (SD=2.30) on average, indicating a moderate level of concern.

For quarantine and the coronavirus pandemic, males were more calm than females, although there was no significant difference in the amount of anxiety across genders. Women were found to have higher levels of anxiety, depression and distress and in a study of Italian dental patients by Martina et al¹⁸. Another study on Brazilian patients by Cotrin et al¹⁵ found that female patients had a higher level of anxiety than male patients. Also, Quan et al¹⁹ conducted a study on Chinese population and revealed that during this period of no follow-up, female patients were more anxious than male patients.

Orthodontic appointment continued to be an important factor in everyday life during coronavirus pandemic as most patients (54.0%) would go to an orthodontic appointment for their regular treatment, 34.7% preferred to go to an orthodontic appointment only in case of urgency/emergency, whereas 11.3% would not go to their appointments. These results were in accordance with the

study conducted by Salgarello et al²⁰ in which 60.2% of the patients would go to dental appointments and only 25.1% of them would go unless it was absolutely necessary. About 15 percent of the people polled said they would avoid going to the dentist because they were afraid of contracting an infection.

The present study showed a significant association between gender and ($p=0.001$), there is a fear that quarantine could impact orthodontic therapy. Males were more perturbed by the delay in service than women in dental treatments and impaired final results due to COVID-19 restrictions. These results were similar to the Salgarello et al²⁰ who found that males were more likely than females to attend a dentist visit and were more concerned about the length of time that would elapse owing to COVID-19 constraints. This was reinforced by the results of Peloso et al²¹ study, where females reported to be males are more concerned about dental treatment delays than women. Perhaps this is because females were more concerned about the COVID-19 epidemic than males were? Confidence in dental care was similarly linked to sentiments of quarantine and the COVID-19 pandemic by Peloso and colleagues²¹. When asked about their willingness to attend an appointment, individuals who reported feelings of calmness or indifference responded that they would only do so if it was an emergency.

The majority of patients were clear about the precautions they were taking to avoid infection that dentists should use disposable laboratory coat, N95 mask, face shield and disposable headcap. Less than half of the respondents gave importance to other precautionary measures like PPE for patients, avoid crossing with other patients in waiting area and alcohol hand sanitizer for patients at reception.

CONCLUSION

The COVID-19 pandemic's recommended quarantine was found to have an impact on orthodontic appointments and patients' concerns and anxiety, because a statistically significant association was found between the feelings reported concerning quarantine and coronavirus, and the willingness to go to an orthodontic appointment. To avoid cross-contamination, the most important precautionary measure in orthodontic practice according to the patients was the use of disposable laboratory coats by the dentists that should be changed after every patient. Usage of N95 mask and face shield by the orthodontist was also given immense importance by the patients.

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