



**BEHAVIORAL ASSESSMENT OF PATIENTS UNDERGOING
ORTHODONTIC TREATMENT DURING COVID-19 PANDEMIC FROM CENTRAL
INDIA-A QUESTIONNAIRE STUDY**

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ABSTRACT

Background: Lockdown was imposed overnight during Covid19 pandemic. As Orthodontic Treatment being selective, appointments were restricted to emergencies. Awareness regarding importance of regular checkups on Treatment outcome and final finishing was limited. Patients were concerned about the duration, timing, final outcome and undesired effects. So, this study was conducted to assess the psychological behavior of patients undergoing orthodontic treatment.

Methodology: A self-designed online exploratory questionnaire consisting 11 questions was distributed amongst 300 samples undergoing orthodontic treatment of which 250 responded back through email and message. All the patients were made aware about the fact that answering all the questions was mandatory. The survey was anonymized and did not contain

any identifying information. Online consent was taken before participation in the study. The obtained data were evaluated using descriptive and inferential statistics.

Result: 26 % were highly anxious and concerned about increased treatment duration. 52.4 % participants wanted that the orthodontic treatment should be considered emergency. 76.8 % participants were ready to visit their orthodontist following sanitization and disinfection protocol as per guidelines. 1/4th participants faced different situation like debonding of brackets and breaking of appliance. Also, more than 50% of the population experienced injuries and discomfort. Patients were mostly concerned about delay in treatment duration and worsening of malocclusion.

Conclusion: Understanding patients' psychology regarding Orthodontic treatment is essential. Patients were concerned about delay in treatment due to pandemic. Anxiety level of most of the participants was moderate with regards to the delay in orthodontic treatment. Patients were also ready to visit their orthodontist, if proper sanitization and disinfection protocol are followed as per the laid guidelines.

Keywords Orthodontic treatment, Covid-19 Pandemic

Introduction: In late 2019, Wuhan, City of China had reported an outbreak of Covid-19 (2019 Novel Coronavirus) which caused atypical pneumonia. It was exported in different parts of worlds which triggered global outbreak. World Health Organization (WHO) labelled it as a pandemic on 30th January, 2020.¹ Many cases of death due to Covid-19 pandemic have been reported all around the world. Rapid rise in the number of cases, forced the administrative authorities to impose lock down with several restrictions, to control the pandemic situation. Complete lockdown resulted in travel bans, and closure of school, colleges, universities, private clinics, and Dental colleges, crippling life like never before.

India forced lockdown overnight on 30th March 2020³; initially for 21 days, but it kept extending with continued rise in incidence rate. Orthodontic treatment being selective, appointments were restricted to emergencies in cases already having appliance fixed in oral cavity⁴. Though orthodontic treatment was not an emergency, the effect of delayed and irregular appointments led to unwanted and unplanned changes. Awareness regarding importance of regular checkups on final finishing and treatment outcome was limited in patient/parent. Prolonged periods of uncertainty, incorporated the feeling of anxiety amongst Orthodontic patients. Patient/Parents were concerned about the duration, timing, final outcome and undesired effects of appliance wear.^{5,6}

With this observation in view, the present study was planned to assess the behavior of patients undergoing orthodontic treatment during the pandemic situation.

Methodology:

Data for this questionnaire-based survey was obtained by distributing the questionnaire to the patients undergoing orthodontic treatment through message and email, and the patients' consent to participate in the said Survey was taken.

Selection Criteria

Patient undergoing orthodontic treatment of any form (fixed/removeable appliances) and in whom treatment was started before the implementation of lockdown.

Study Design

A self-designed closed-ended online questionnaire study.

Study Duration

The data was collected between Dec 10, 2020 and Feb 3, 2021. A total of filled questionnaires was reverted, and the data was assessed.

Data Collection

The samples were designated by random sampling methods, based on the collection of a list of those patients receiving orthodontic treatment from various practitioners, clinics, and institutions across the nation.

The questionnaire consisting of 11 questions was developed on Google Forms which was validated by four professionals, link for the questionnaire was distributed to 300 potential responders through email and messages. Out of the 300 patients who received mail, 250 patients responded. All the patients were made aware about the fact that answering all the questions was mandatory. The survey was anonymized and did not contain any identifying information. Online consent was taken before participation in the study.

Statistical Analysis

Statistical Package for Social Sciences [SPSS] for Windows, Version 22.0, released 2013, IBM Corp., Armonk, NY, was used to perform statistical analyses.

Results:

A total of 83.3% (250 individuals) of the participants responded to the survey. The questions were categorized into three domains as given

(Table 1-2) Patients general information Age/Gender were recorded.

(Table 3-4) Patients psychological distress about Covid-19 situation was recorded.

(Table 5-9) Patient general perspective on the importance of regular check-ups/monthly appointments during Covid-19.

(Table 10-13) Patients psychological distress about delay in orthodontic treatment during COVID-19 and importance of orthodontic treatment were recorded.

Overall, 250 (83.3%) responses were received. On estimation 30.5% were from the age group of 13-18, 66.5% were from age group of 19-24 and 3% were from age group of 24-30. Among them 55.2% were Male and 44.8% were female.

First question was about their feeling of anxiety during lockdown. Among, 250 participants, 34% of participants were anxious/panicking, 31.2% were calm, 19.2 were feeling angry and 15.6% were feeling indifferent about the situation.

Participants were asked to rate anxiety level on scale from 0-5, where 5 was highest and 0 was lowest. 6.4% rated 5 and 5.6% rated 0. 36% marked 3 which is moderate and rest of others were in-between.

Participants were asked if they were punctual about their regular dental visits. 42% visited regularly and 58% marked no.

About personal Oral hygiene practice, 60% were taking good care of oral hygiene, 16.4% was not sure and for 23.6% of patients it was difficult to take care of their oral hygiene.

16.8% did visit their orthodontist within last month, 33.2% had not visited for more than one month and 50% of the participants had not visited for more than 2 months because of the lockdown.

43.2% participants were in contact with their orthodontist during lockdown, rest of others marked no (56.8%).

23.2% were ready to visit their orthodontic during the lockdown, 60% were ready to visit in case of emergency and 16.8% were not ready to visit even in case of emergency.

Participants were asked about the difficulties they were facing during lockdown with ongoing orthodontic treatment .23.6% were worried about delay in treatment, issues with debonding of bracket was with 28.8%, orthodontic appliance were breaking with (25.6%), 56.8% had discomfort or injury and 9.6% participants were worried about worsening of malocclusion.

Most of the participants wanted to follow the guidelines in Dental clinic. 76.8% marked there should be social distancing in waiting area, 52.4% patients believed in the fact that disinfectant at reception should be available, PPE kit should be made available for patients was the opinion of (48.8%) and 84.8% marked dentist should take all the precautions wearing PPE kit, N95 Mask, face shield, etc.

Anxiety level due to delay in treatment was assessed on scale of 0-5, where 5 indicated highly anxious and 0 represented no anxiety at all. Almost 26 % were highly anxious with 4 and 5, marking on scale between 0-5, around 20 % were not anxious and 50% of participants marked moderate anxiety.

52.4 % participants marked yes that the orthodontic treatment should be considered emergency as delay in treatment will cause worsening of malocclusion, 21.6% also marked yes because if laceration, cuts or injury occurs it should be taken care off. 26% marked no its not emergency because orthodontic treatment is not life threatening.

Table 1: Age distribution of study population

	Frequency (n)	Percentage (%)
13-18 years	76	30.5 %
19-24 years	166	66.5 %
25-30 years	08	33 %
Total	250	100%

Table 2: Gender distribution of study population

	Frequency (n)	Percentage (%)
Male	112	44.8%
Female	138	55.2%
Total	250	100%

Table 3: Feeling about this Covid-19 pandemic situation

	Frequency (n)	Percentage (%)
Anxious/Panic	85	34%
Angry	48	19.2%
Calm	78	31.2%
Indifferent	39	15.6%
Total	250	100%

Table 4: Rating of Anxiety level on scale of 0-5 in Covid-19 pandemic situation

	Frequency (n)	Percentage (%)
0 (low)	14	5.6%
1	38	15.2%
2	50	20%

3	90	36%
4	42	16.8%
5(highest)	16	6.4%
Total	250	100%

Table 5: Do you regularly visit your Orthodontist

	Frequency (n)	Percentage (%)
Yes	105	42%
No	145	58%
Total	250	100%

Table 6: Are you taking care of your oral cavity as guided by your Orthodontist

	Frequency (n)	Percentage (%)
Yes	150	60
No	59	23.6%
Maybe	41	16.4%
Total	250	100%

Table 7 : How long it has been since you visited your Orthodontist

	Frequency (n)	Percentage (%)
< 1 month	42	16.8%
> 1 month & <2 month	83	33.2%
> 2 month	125	50%
Total	250	100%

Table 8: Have you been in touch with your Orthodontist during lockdown

	Frequency (n)	Percentage (%)
Yes	108	43.2 %
No	142	56.8 %
Total	250	100%

Table 9: If your Orthodontist asks you to visit in the period of lockdown, would you be willing to go

	Frequency (n)	Percentage (%)
Yes	58	23.2 %
Only in emergency	150	60 %
No	42	16.8 %
Total	250	100%

Table 10: What difficulties are you facing in your orthodontic treatment in this Covid19 pandemic situation (multiple option)

	Frequency (n)	Percentage (%)
Delay in treatment	59	23.6%
Debonding of brackets	72	28.8%
Breaking of Orthodontic Appliance	64	25.6%
Discomfort/Injury	142	56.8%
Worsening the malocclusion	24	9.6%

Table 11: Expectations when you visit your orthodontist in this Covid19 pandemic situation? (multiple option)

	Frequency (n)	Percentage (%)
Social distancing in waiting room	192	76.8%
Disinfectant at reception	131	52.4%
PPE kit for patients	122	48.8%
Dentist should take all precautions –PPEkit, N95 mask, Face shield	212	84.8%

Table 12: Rating of Anxiety level on scale of 0-5 due to impact of Covid-19 on orthodontic treatment

	Frequency (n)	Percentage (%)
0 (low)	17	6.8 %
1	34	13.6 %

2	58	23.2 %
3	76	30.4 %
4	50	20 %
5(highest)	15	6%
Total	250	100%

Table 13: In your consideration is Orthodontic treatment an emergency

	Frequency (n)	Percentage (%)
Yes, if anything goes wrong with my treatment, it will affect later	131	52.4 %
Yes, because lacerations, cuts or injuries should be taken care off	54	21.6 %
No, because it is not life threatening	65	26%
Total	250	100%

Discussion:

Entire population of the world is affected due to Covid-19 pandemic. Orthodontic treatment was restricted to emergencies during lockdown period. Even today patients are concerned about delay in treatment, injuries, breaking of appliances and worsening of malocclusion. Many of the cases having emergencies found it difficult to visit their dentist during lockdown period.

The present study aims at evaluating the patients concern and anxiety toward orthodontic treatment during the pandemic situation.

A study by Huser et al,⁷ concluded that “the demineralization associated with orthodontic therapy is an extremely rapid process caused by a high and continuous cariogenic challenge in the plaque developed around brackets and underneath ill-fitting bands.”

Bartsch et al⁸ stated that patient compliance is a major problem in orthodontics. Because there is going to be inevitable plaque accumulation, along with patients’ reduction in adherence to oral hygiene instructions (due to prolonged treatment duration⁹) initially explained to them, careful inspection of the appliances at every visit and proper prophylactic therapy is very essential.

To improve the subsequent oral health, disclosing tablets¹⁰ can be administered to patients after instructions on how to use them for improving oral health is properly understood. Apart from caries and oral hygiene assessments, certain treatment mechanics require regular follow-ups.

The elastics used for retraction or space closure mechanics decay over time, add to the accumulation of plaque and deterioration of oral hygiene. This often goes unnoticed by patients as they are unaware of the same. Until there are evident inconveniences such as poking distal

wires, loose brackets, or lacerations, most teeth-related problems are overlooked. For example, wire bending with loops left in patient's mouth for a long time, sunken or loose orthodontic bands, broken fixed functional appliances, and loose temporary anchorage devices, can cause deleterious effects in the treatment progress, which was until then going smoothly.

Most of them did not face any issues with appliances during the lockdown. However, from those who did, they experienced an almost equal amount of pain as they did during the lockdown. This shows that in the study, no single problem, in particular, was the sole cause for an inconvenience or emergency, however, patients did face problems such as the ones stated earlier.

A study by Rajesh Gyawali et al¹¹ stated that the most common reason for orthodontic emergencies or appointments was the loosening of brackets or bondable buccal tubes, followed by the loosening of bands. The other possible reasons were trauma to the mucosa by the overextended distal wire, detachment of buccal tubes from the band, tearing of bands, breakage of acrylic plates, loosening of ligature ties, and dislodgement of elastomeric chains.

Caprioglio et al¹² and Suri et al¹³ in their article mention the possible orthodontic emergencies with simple do-it-yourself solutions such as cutting of distal ends of wires with nail cutters, use of over the counter disclosing wax for relief, and the importance of virtual assistance in such times.

The survey revealed that 56.6% of the patients were worried about not being able to go for regular follow-ups, the most common cause being an increase in the treatment duration. 43.2% participants were in contact with their orthodontist during lockdown and remaining 56.8% did not received any call or appointment from the dentist. This result reflects the very fact that many times the orthodontists themselves forget to realize the fact that their patients too are in helpless situations, and might be worried about their treatment. In such instances, small gestures such as regular check-up calls boost confidence, reduces the worry, and give patients a sense of comfort. This helps the patient understand that their orthodontist cares for their treatment as much as they do. It emphasizes the need for the study.

Conclusion:

Based on our results, it was analyzed that the participants were concerned about their orthodontic treatment and also were aware of Covid19 pandemic situation. They were concerned about delay in treatment due to pandemic. They were also ready to visit their orthodontist if proper sanitization and disinfection protocol as per guidelines from the authorities were followed by the dentist. They were more concerned about emergencies like injuries, breaking of brackets and debonding of the bracket. Most of the participants think that the orthodontic treatment should be considered as an emergency in cases of injuries, laceration and cuts.

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