

Mental stress among patients undergoing orthodontic treatment during coronavirus-19 global pandemic

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Abstract

Background: Coronavirus disease 2019 (COVID-19) is the most recent disease of corona virus family that impacted people all over the world. Subsequent lockdown and fear of disease transmission greatly affected the orthodontic appointments, treatments, as well as mental health.

Objectives: To assess the mental stress among patients undergoing orthodontic patients during COVID-19 pandemic.

Methods: A descriptive cross-sectional study was conducted among individuals undergoing orthodontic treatment in the department of Orthodontics and Dentofacial Orthopaedics in Dental Hospital of Kathmandu Medical College from 2020 December to 2021 February after institutional ethical approval. Data were collected from 108 participants by convenience sampling technique using questionnaire. Exclusion criteria included patients who answered <75% questions and those who did not sign the informed consent form. Data were analysed for descriptive statistics in SPSS v.22.

Results: Among all 108 patients, nine (8.3%) were very much worried that COVID-19 outbreak might cause teeth not to move as expected and 40 (37.1%) participants were very much depressed. Regarding perception of individuals concerning COVID-19 pandemic, 44 (40.7%) participants thought they had adequate knowledge about COVID-19. Almost half (48, 44.4%) patients in this study felt very much nervous that nothing could calm them. When participants were asked what were their main concerns for COVID-19 outbreak, more than half (60, 55.6%) responded risk of infection and 71 (65.7%) reported the impact on their work or study as their main concerns.

Conclusion: As Orthodontists we must be aware of similar threats in future and take measures to improve the accessibility to dental practice.

Key words: Coronavirus; Orthodontics; Pandemic; Stress.

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INTRODUCTION

Corona virus is a group of viruses that cause illness which can range from common cold to severe diseases like MERS-CoV and SARS-Cov.¹⁻³ Coronavirus disease 2019 (COVID-19) is the most recent disease of this virus family originating from Wuhan, China that impacted people all over the world.¹ The World Health Organisation (WHO) declared COVID-19, a pandemic on 11th March, 2020.⁴ With subsequent lockdown worldwide, people had no option but to stay at home. This resulted in feeling of isolation, depression, and anxiety.^{1,3,4}

Various orthodontic procedures are capable of generating aerosols. This issue poses a consequent risk of cross-infection: patient to patient, patient to dental health care provider, and dental health care provider to dental health care provider transmission.¹ Orthodontic treatment usually requires follow-up in four to eight weeks.^{1,2} The lockdown and fear of disease transmission

greatly affected the orthodontic appointments and treatments.^{4,5}

Hence this study was conducted to assess the mental stress among patients undergoing orthodontic patients during COVID-19 pandemic. Through the data collected from the Orthodontics department of Kathmandu Medical College, the status of the patients and the level of anxiety experienced by them have been analysed based on the answers to the questionnaire provided to them.

METHODOLOGY

A descriptive cross-sectional study was conducted in the department of Orthodontics and Dentofacial Orthopaedics in Dental Hospital of Kathmandu Medical College (KMC) at Duwakot, Bhaktapur, Nepal from 2020 December to 2021 February after the ethical approval from Institutional Review Committee of KMC (Ref. 0311202005). This study included all orthodontic patients who came for their follow-up treatment and also gave their informed consent to participate in the study using convenience (nonprobability) sampling technique. For patients below 18 years of age, consent was taken from their parents. Exclusion criteria included patients who answered less than 75% questions and those who did not sign the consent form. A minimum sample size of 108 was calculated using following formula:

Sample size (n) = $Z^2pq/e^2 = 92.69 \approx 93$; where, $Z = 1.96$; $p = 0.0961$ (9.61% percentage of patients whose duration of last appointment was within one month);⁶ $q = 1-p$; and $e = 0.06$ (6%). Adding 15% for loss or non-response, a minimum sample size of $106.59 \approx 108$ was taken. Data were collected using a set of questionnaires which included demographic details, participants' perception on COVID-19, their orthodontic state, and related mental state as well as psychological distress during COVID-19

pandemic.⁶ All data were then entered into a Microsoft Excel Sheet and descriptive analysis done.

RESULTS

Out of 108 total participants, when questions were asked to evaluate their mental state related to orthodontic treatment, only nine (8.3%) patients were very much worried that COVID-19 outbreak might cause teeth not to move as expected (Table 1). Similarly, only seven (6.5%) were very much anxious that this outbreak will elongate the entire treatment.

Regarding psychological distress during the COVID-19 pandemic, almost half (48, 44.4%) patients felt very much nervous that nothing could calm them (Table 2). Similarly, 46 (42.6%) felt very much hopeless, and 43 (39.8%) felt very restless that they could not sit still.

When questions were asked about their perception of COVID-19 pandemic, 44 (40.7%) thought they had adequate knowledge about COVID-19, while only 20 (18.5%) thought of it as very severe disease (Table 3). Regarding their main concerns for COVID-19 outbreak, more than half (60, 55.6%) responded risk of infection and 71 (65.7%) reported the impact on their work or study as their main concerns (Table 3).

Of all 108 patients, majority (87, 80.6%) had fixed labial appliance with most (43, 39.8%) patients undergoing treatment for one to two years duration (Table 4).

About demographics, in total there were 66 (61.1%) female participants (Table 5). Participants' ages ranged from minimum of 13 years to a maximum of 38 years with their mean age of 20.94 ± 4.60 (Median 21, Mode 23) years. Most of them were unmarried (83, 76.9%), students (72, 66.7%), and were pursuing a bachelors or above degree (64, 59.3%).

Table 1: Responses to orthodontics related mental state during the pandemic, n (%)

Parameters	Range point 1-5 from very little to very much for following items					
	No response (0)	Very little (1)	2	3	4	Very much (5)
1. This outbreak caused my teeth not to move as expected.	5 (4.6)	16 (14.8)	19 (17.6)	45 (41.7)	14 (13.0)	9 (8.3)
2. This outbreak will elongate the entire treatment.	3 (2.8)	36 (33.3)	24 (22.2)	20 (18.5)	12 (11.1)	13 (12.0)
3. This outbreak will elongate the entire treatment, and I am anxious about it.	4 (3.7)	22 (20.4)	23 (21.3)	35 (32.4)	17 (15.7)	7 (6.5)
4. This outbreak will affect the treatment result.	4 (3.7)	15 (13.9)	21 (19.4)	34 (31.5)	19 (17.6)	15 (13.9)
5. This outbreak will affect the treatment result, and I am anxious about it.	3 (2.8)	13 (12.0)	26 (24.1)	27 (25.0)	26 (24.1)	13 (12.0)

6. I would not have started orthodontic treatment if I had known the outbreak would last this long.	5 (4.6)	20 (18.5)	10 (9.3)	22 (20.4)	18 (16.7)	33 (30.6)
7. Orthodontic treatment is a long term procedure, and it does not matter that I did not go to the hospital for few months during the outbreak.	3 (2.8)	19 (17.6)	22 (20.4)	24 (22.2)	17 (15.7)	23 (21.3)
8. I am able to deal with the accidents during the outbreak, like brackets falling off, wire stabbing, etc.	3 (2.8)	23 (21.3)	22 (20.4)	27 (25.0)	20 (18.5)	13 (12.0)
9. During the outbreak, I am able to observe the teeth movement and communicate with the doctors.	3 (2.8)	37 (34.3)	24 (22.2)	23 (21.3)	16 (14.8)	5 (4.6)

Table 2: Responses to questions on psychological distress during the pandemic, n (%)

Questions	Range point 1-5 from very little to very much for following items					
	No response (0)	Very little (1)	2	3	4	Very much (5)
1. Did you feel tired for no good reason?	3 (2.8)	11 (10.2)	16 (14.8)	27 (25.0)	24 (22.2)	27 (25.0)
2. Did you feel nervous?	3 (2.8)	10 (9.3)	17 (15.7)	27 (25.0)	23 (21.3)	28 (25.9)
3. Did you feel so nervous that nothing could calm you down?	2 (1.9)	21 (19.4)	8 (7.4)	12 (11.1)	17 (15.7)	48 (44.4)
4. Did you feel hopeless?	3 (2.8)	20 (18.5)	9 (8.3)	18 (16.7)	12 (11.1)	46 (42.6)
5. Did you feel restless or fidgety?	4 (3.7)	16 (14.8)	15 (13.9)	20 (18.5)	21 (19.4)	32 (29.6)
6. Did you feel so restless that you could not sit still?	3 (2.8)	22 (20.4)	9 (8.3)	13 (12.0)	18 (16.7)	43 (39.8)
7. Did you feel depressed?	3 (2.8)	22 (20.4)	10 (9.3)	10 (9.3)	23 (21.3)	40 (37)
8. Did you feel that everything was an effort?	6 (5.6)	8 (7.4)	18 (16.7)	29 (26.9)	24 (22.2)	23 (21.3)
9. Did you feel so sad that nothing could cheer you up?	3 (2.8)	21 (19.4)	7 (6.5)	13 (12.0)	20 (18.5)	44 (40.7)
10. Did you feel worthless?	3 (2.8)	22 (20.4)	4 (3.7)	15 (13.9)	15 (13.9)	49 (45.4)

Table 3: Perception of coronavirus disease pandemic, n (%)

Independent variables	No response (0)	Very little (1)	2	3	4	Very much (5)
Range point 1-5 from very little to very much for following items						
1. How well do you think you know about COVID-19?	5 (4.6)	3 (2.8)	9 (8.3)	44 (40.7)	31 (28.7)	16 (14.8)
2. What do you think of the severity of COVID-19?	6 (5.6)	4 (3.7)	13 (12.0)	33 (30.6)	32 (29.6)	20 (18.5)
3. Do you think of the possibility that you may get infected with COVID-19?	6 (5.6)	17 (15.7)	18 (16.7)	33 (30.6)	21 (19.4)	13 (12.0)
4. Do you think of the possibility that the people around you may get infected with COVID-19?	7 (6.5)	11 (10.2)	22 (20.4)	34 (31.5)	22 (20.4)	12 (11.1)
What are your main concerns for the COVID-19 outbreak?						
a. The danger of the disease				Yes	No	
b. Risk of infection for you or your relatives				48 (44.4)	60 (55.6)	
c. Isolation from the family and/or society				60 (55.6)	48 (44.4)	
d. Impact on your work/study				26 (24.1)	82 (75.9)	
e. Impact on daily life from measures like the lockdown of the city and community				71 (65.7)	37 (34.3)	
f. Psychological barriers and distrust between people				45 (41.7)	63 (58.3)	
g. Public psychological problems caused by the outbreak				37 (34.3)	71 (65.7)	
				34 (31.5)	74 (68.5)	

Table 4: Assessment of orthodontic state

Questions	Responses, n (%)
1. What kind of appliances are you wearing?	
Fixed labial appliances	87 (80.6)
Fixed lingual appliances	3 (2.8)
Clear aligners	1 (0.9)
Removable functional appliances	11 (10.2)
No response	6 (5.6)
2. How long have you been in the procedure of the orthodontic treatment?	
≤6 months	6 (5.6)
7 months – 1 year	18 (16.7)
1 year – 2 years	43 (39.8)
>2 years	40 (37.0)
No response	1 (0.9)
3. What was the longest gap between appointments due to COVID-19?	
<1month	9 (8.3)
1- 2 months	13 (12.0)
2 – 6 months	48 (44.4)
>6 months	38 (35.2)
4. How many times did you communicate with your doctor during the outbreak?	
0 – 1 time	48 (44.4)
2 times	25 (23.1)
>2 times	34 (31.5)
No response	1 (0.9)

DISCUSSION

Coronavirus disease 2019 is the most recent disease from corona virus family to have a huge impact on people all over the world. The most common symptoms of COVID-19 are fever, dry cough, and tiredness. People of all ages can be infected with COVID-19 virus, experiencing mild to moderate respiratory illness and recover without needing any medical treatment. Older people and people with underlying medical problems are more likely to develop severe pneumonia which can be fatal.^{1,3} The WHO declared COVID-19, a public health emergency on 30th January 2020, after the outbreak of the virus from a market in Wuhan, China and later on 11th March 2020 it was declared a pandemic.^{1,2,4} Nepal detected its first case on 23rd January 2020 and second case two months later, on 23 March 2020. The

Table 5: Demographic characteristics of participants

Parameters	n (%)
Gender	
Male	42 (38.9)
Female	66 (61.1)
Education	
Bachelors and above	64 (59.3)
Grade 11-12	24 (22.2)
Grade 6-10	18 (16.7)
No response	2 (1.9)
Marital status	
Married	8 (7.4)
Unmarried/Single	83 (76.9)
No response	17 (15.7)
Occupation	
Business	2 (1.9)
Health profession	6 (5.6)
Homemaker	1 (0.9)
Manual/Skilled worker	2 (1.9)
Office worker	6 (5.6)
Student	72 (66.7)
Teacher	1 (0.9)
No response	18 (16.7)

government strategy included a countrywide lockdown from 24th March 2020.⁷ With the surge in cases and lack of proper handling and management of COVID-19 cases, lockdown was enforced until 21st July 2020. After second wave of COVID-19 hit Nepal, lockdown was reimposed on 29th April 2021, which was extended until 4th July 2021. During the lockdown period many people felt isolated, depressed, and anxious about the pandemic outcomes. The COVID-19 pandemic affected mental health of many including patients and healthworkers.^{1-3,6,8}

Orthodontics is a speciality of dentistry that deals with the management of malocclusion, with comprehensive fixed orthodontic treatment lasting approximately two to three years and regular review appointments in about four to eight weeks.^{1,2} Orthodontic therapy is not lifesaving care, but it improves patients' wellbeing, physically, socially, and psychologically.^{3,9,10} In dentistry not only dental professionals but patients are also exposed to aerosols of saliva or blood. General dentists, in almost all countries, were allowed to see patients only if it were medically urgent, while other therapies, that were deferrable, were delayed, this left orthodontic treatment, on standby.³ Since COVID-19 transmission was attributed

to close contact and droplet dental practice was deemed very risky.⁵ Orthodontic procedures such as bonding, debonding, interproximal reduction, replacement of broken brackets, etc., are capable of generating aerosols. This issue poses a consequent risk of cross-infection from patient to patient, patient to dental health care provider, and dental health care provider to dental health care provider transmission.¹ Hence, orthodontic practice was adversely affected due to COVID-19's unprecedented nature and subsequent mandatory lockdown.²

Due to prolonged lockdown, people suffered from feeling of isolation and many developed depression and anxiety.^{2,3,6,8} As the COVID-19 cases were steadily rising, there was an increase in psychological distress among the orthodontic patients regarding their ongoing treatment.² In the current study, when questions were asked to evaluate their mental state related to orthodontic treatment, only nine (8.3%) patients were very much worried that COVID-19 outbreak might cause teeth not to move as expected (Table 1). Ghosh et al. reported that 56 (21%) participants worried that their treatment can go wrong.² Similarly when asked if you felt depressed, 40 (37%) participants in the present study responded that they were very much depressed. Al-Gunaid et al. study observed that 54% felt depressed.¹¹

As a result of COVID-19 pandemic, routine orthodontic treatments were abruptly disturbed and patients realised that this would prolong the treatment duration.⁴ For a successful orthodontic treatment, regular monthly reviews are very important. This was delayed during and post lockdown leading to an increased concern among the patients regarding their treatment.² It was observed that only seven (6.5%) in current study were very much anxious that this outbreak will elongate the entire treatment. Whereas Ghosh et al. reported that 204 (76.7%) patients and Al-Assiry et al. observed that 72% were worried that their treatment will take longer duration.^{2, 12} In Al-Gunaid et al. study, 98 (38%) were stressed about extended treatment time.¹¹ While 29 (18.83%) participants in Arqub et al. expected the delay in treatment time due to COVID-19 pandemic.⁸ The less anxiety levels in participants of this study regarding treatment going wrong or worry over prolonged treatment duration could be because they were in regular contact with their treating doctors who tried their best to alleviate anxiety and worry.

Regarding the perception of individuals concerning COVID-19 pandemic, 44 (40.7%) participants thought they had adequate knowledge about COVID-19. This was in contrast with Nigerian study where 98% participants

considered their knowledge of COVID-19 to be moderate to high.¹ The difference could be because of younger patients in current study (mean age of 20.94 ± 4.60 years), compared to the Nigerian study (mean age of 35.6 years).¹ The older individuals, with responsibilities to families and children, usually tend to equip with more information.

Anxiety and fear are the most common traits found in most dental patients.⁹ Orthodontic treatment is mostly completed in two to three years.¹ This helps allay the fear and anxiety level among orthodontic patients. Regarding psychological distress due to COVID-19 pandemic, almost half (48, 44.4%) patients in this study felt very much nervous that nothing could calm them (Table 2). Similarly, 46 (42.6%) patients felt very much hopeless, and 43 (39.8%) felt very restless that they could not sit still. In total, 48 (44.4%) participants were concerned regarding the danger of disease while only 20 (18.5%) thought of it as very severe disease (Table 3). This was similar to Al-Gunaid et al. study in Saudi Arabic population where 124 (47.7%) reported to be terrified of coronavirus.¹¹ This was in contrast with Nigerian study where 95% participants considered COVID-19 infection as dangerous.¹ The lower percent regarding severity in Nepali participants can be attributed to inadequate knowledge of the participants.

When participants were asked what were their main concerns for COVID-19 outbreak, more than half (60, 55.6%) responded risk of infection and 71 (65.7%) reported the impact on their work or study as their main concerns (Table 3). Similarly, in Xiong et al.⁶ 372 (81.22%) reported risk of infection as main concern while prolonged treatment duration was the main concern in Shahroudi et al. study (113, 62.8%).⁵

This COVID-19 pandemic has brought our deficiencies in health system onto surface and offered opportunity to review, revise and reform them.⁷ Because of the difficulties faced by both patients as well Orthodontists during COVID-19, Sycinska-Dziarnowska et al. suggest that Orthodontists must be aware of new threats and be better prepared for future changes in the epidemiological situation that may rapidly affect the accessibility to dental management.¹³

The limitations of this study are: it was a single-centre study with small sample size, descriptive cross-sectional study design, convenience (nonprobability) sampling technique, lack of usage of any standard scale for mental stress. However, this study does try to fill the research gap of impact of COVID-19 global pandemic on mental status of patients undergoing orthodontic treatment.

CONCLUSION

Thus, COVID-19 pandemic though a very stressful situation impacted human at numerous levels. From health care perspective, it made people face few ground realities regarding not only the weak health system but also made individuals look for various ways to cope and manage such situations in future. Orthodontists must be aware of new threats and become better prepared for

future changes in the epidemiological situation that may rapidly change the accessibility to dental offices.

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REFERENCES

- Umeh OD, Utomi IL, Isiekwe IG, Aladenika ET. Impact of the coronavirus disease 2019 pandemic on orthodontic patients and their attitude to orthodontic treatment. *Am J Orthod Dentofacial Orthop.* 2021;159(5):e399-e409. [[PubMed](#) | [Full Text](#) | [DOI](#)]
- Ghosh P, Sarika K, Jayaprakash N, Varma NKS, Ajith VV. Anxiety and perceptions on the impact of COVID-19 pandemic among orthodontic patients visiting a tertiary care center: A Cross-sectional study. *Int J Res Pharm Sci.* 2020;11(SPL)(1):1487-93. [[Full Text](#) | [DOI](#)]
- Saccomanno S, Saran S, Guercio E, Mastrapasqua RF, Pirino A, Scoppa F. The influence of the COVID-19 pandemic on orthodontic treatments: A survey analysis. *Dent J (Basel).* 2022;10(2):15. [[PubMed](#) | [Full Text](#) | [DOI](#)]
- Dhanasekaran M, Shaga IB, Ponniah H, Sankaranarayanan P, Nagappan N, Parameswaran TM. The pandemic impact of COVID 19 on orthodontic practice: A cross-sectional study. *J Pharm Bioallied Sci.* 2021;13(Suppl 2):S1024-8. [[PubMed](#) | [Full Text](#) | [DOI](#)]
- Shahroudi A, Sodagar A, Shamshiri A, Rahimpour S, Samimi S. Concerns and problems of orthodontic patients during the COVID-19 pandemic. *Front Dent.* 2022;19(18):11. [[Full Text](#) | [DOI](#)]
- Xiong X, Wu Y, Fang X, Sun W, Ding Q, Yi Y, et al. Mental distress in orthodontic patients during the coronavirus disease 2019 pandemic. *Am J Orthod Dentofacial Orthop.* 2020;158(6):824-33 e1. [[PubMed](#) | [Full Text](#) | [DOI](#)]
- Shakya DR, Mishra DR, Gyawali R, Rimal SP, Lama S, Yadav AK, et al. COVID-19 Pandemic and BPKIHS: Our situation, endeavours and future direction. 2020;3(1):39-49. [[Full Text](#) | [DOI](#)]
- Arqub SA, Voldman R, Ahmida A, Kuo CL, Godoy LDC, Nasrawi Y, et al. Patients' perceptions of orthodontic treatment experiences during COVID-19: A cross-sectional study. *Prog Orthod.* 2021;22(1):17. [[PubMed](#) | [Full Text](#) | [DOI](#)]
- Curto A, Alvarado-Lorenzo A, Albaladejo A, Alvarado-Lorenzo A. Oral-health-related quality of life and anxiety in orthodontic patients with conventional brackets. *Int J Environ Res Public Health.* 2022;19(17):10767. [[PubMed](#) | [Full Text](#) | [DOI](#)]
- Ben Gasseem AA, Aldweesh AH, Alsagob EI, Alanazi AM, Hafiz AM, Aljohani RS, et al. Psychosocial impact of malocclusion and self-perceived orthodontic treatment need among young adult dental patients. *Eur J Dent.* 2022. [[PubMed](#) | [Full Text](#) | [DOI](#)]
- Al-Gunaid TH, Hammad MM, Shahada MO, Allam HS, Abuanq AZ, Zakour GS, et al. Impact of COVID-19 pandemic on orthodontic patient's inflow in daily orthodontic practice: A cross-sectional study. *J Int Oral Health.* 2022;14(4):409-15. [[Full Text](#) | [DOI](#)]
- Alassiry AM, Hakami Z. The attitude, perception, and mental health of patients receiving orthodontic treatment during COVID-19 pandemic in Saudi Arabia. *Patient Prefer Adherence.* 2022;16:363-72. [[PubMed](#) | [Full Text](#) | [DOI](#)]
- Sycinska-Dziarnowska M, Bielawska-Victorini H, Budzynska A, Wozniak K. The implications of the COVID-19 pandemic on the interest in orthodontic treatment and perspectives for the future. Real-time surveillance using google trends. *Int J Environ Res Public Health.* 2021;18(11):5647. [[PubMed](#) | [Full Text](#) | [DOI](#)]