



Original Research Article

COVID -19 lockdown and its impact on orthodontic patients

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ABSTRACT

Background: WHO declared COVID-19 as a worldwide pandemic, As a measure to control the spread of the disease, national emergencies and lockdowns have been declared in many countries. Dental appointments were suspended considering risk of transmission and orthodontic patients have been stranded with only emergency services been provided to them, unlike the scheduled appointments. This can affect the total duration of the treatment and can affect the mental attitude and tend to increase the apprehensive behaviour amongst patients undergoing orthodontic treatment.

Aim: The aim of this study is to assess the impact and attitude of COVID-19 lockdown among patients undergoing active orthodontic treatment.

Materials and Methods : A self-designed questionnaire consisting of 10 questions, was widely circulated among the orthodontic patients using communication media such as Whatsapp, messaging apps and via mails. Only 208 subjects returned the questionnaire that constituted the final study sample. Participation in the study was voluntary and identification information was not collected from the study subjects.

Results: The study revealed that the majority of female patients were apprehensive, stressed and anxious owing to increased treatment duration, discomfort during the lockdown period, financial worries and treatment outcomes due to their missed follow-ups during the period of lockdown. The overall future outlook post lockdown showed anxiety amongst orthodontic patients.

Conclusion: Proper communication with patients is a must to reassure their concerns over treatment like concerns, anxiety, fear and disturbed mental well-being.

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1. Introduction

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2; first coined as the 2019-novel coronavirus or 2019-nCoV by WHO)¹ has rapidly spread throughout the world and has led to major health and financial concerns. As a measure to control the spread of the disease, national emergencies and lockdowns have been declared in many countries.

COVID-19 was first reported in Wuhan, Hubei province, central China in December 2019,² where bats are suspected to be the primary host.³⁻⁵ Currently, COVID-19 are spread within cities through local or community transmission.

Human transmission is predominantly through the respiratory tract via droplets, respiratory secretions (cough, sneeze), and or direct contact, where the virus enters the mucous membrane of the mouth, nose, and eyes.⁶⁻⁸ An adequate management of the oral health of patients becomes crucially important during the COVID-19 epidemic period.¹

The entire country is in a state of 'Lockdown' and the government is issuing advisories on daily basis for its citizens particularly regarding delivery of essential health services and various protective measures to be taken to guard oneself from getting infected; the most important being staying at home (Isolation and Social-Distancing). Although most of the dental clinics are closed during these times, orthodontic patients

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have been stranded with only emergency services been provided to them, unlike the scheduled appointments. The regular scheduled appointments have been affected due to travelling restrictions since this is a communicable disease and that it can only be prevented with social distancing norms. The knowledge about impact of such emergency lockdown during COVID-19 on patients undergoing orthodontic treatment is lacking. The effects of unsupervised orthodontic treatment during lockdown of COVID-19 could create unintended detrimental effects which are undesirable. This can affect the total duration of the treatment and can affect the mental attitude and tend to increase the apprehensive behaviour amongst patients undergoing orthodontic treatment. Information and guidelines for the clinical orthodontic management of patients during the COVID-19 pandemic are lacking.² The aim of this study is to assess the impact of COVID-19 lockdown among patients undergoing active orthodontic treatment.

2. Materials and Methods

2.1. Ethical clearance and informed consent

Informed consent was taken from the subjects for their participation in the study. The study was conducted in May 2020. Participation in the study was voluntary and identification information was not collected from the study subjects.

2.2. Study population and study sample

The present study was a descriptive cross-sectional (questionnaire) study conducted in School of Dental Sciences, Karad. The study population consisted of orthodontic patients undergoing treatment before the lockdown and that their treatment had been suspended since the onset of COVID-19 lockdown. The questionnaire was widely circulated among the 350 orthodontic patients using communication media such as WhatsApp, messaging apps and via mails since 'Lockdown' was implemented by the government to prevent the spread of the virus. However, only 208 subjects returned the questionnaire that constituted the final study sample.

A self-designed questionnaire consisting of 10 questions written in English language was created specifically for the study. The questionnaire was made keeping in mind the anxiety, level of apprehensive and concerns of patients undergoing orthodontic treatment. The questionnaire was assessed for validity and reliability from orthodontists. The questionnaire consisted of demographic such as gender, age followed by questions and the subjects were given 10 days time to fill the questionnaire.

2.3. Statistical analysis

Calculations were done using descriptive statistical analysis. Number and percentages were used to tabulate results. SPSS package version 19.0 (SPSS, Chicago, IL, USA) was used to statistically analyze the results. Chi square test was used to compare the samples.

3. Results

Demographic data of study subjects is depicted in Tables 1 and 2. The present study included a total of 208 subjects consisting of male subjects (90, 43.3%) and female subjects (118, 56.7%). The subjects were grouped into three groups according to their age. The majority of patients included in age group of 21-25years (72.6%).

Table 3 depicts the responses from orthodontic patients to the question asked for their views on their orthodontic treatment during the period of lockdown. The study subjects were asked questions under common encountered domains during the impact of COVID-19 lockdown. The questions compromised the common apprehensive behaviour encountered by the subjects 49% of the subjects responded as anxious and worried for their orthodontic treatment during the period of lockdown and female subjects (71) were apprehensive regarding the lockdown. Around 16.1% of the subjects were less apprehensive and anxious and the rest 13.9% subjects were not sure but were quite less or more anxious regarding their suspended orthodontic treatment during the lockdown.

But the period of lockdown has not affected the compliance domain, of which females have showed their maximum compliance for orthodontic treatment regarding oral hygiene instructions and diet instructions. As compared to males (Table 4). Females are most apprehensive regarding the missed scheduled appointments (Table 5) during the period of lockdown. Since the missing of appointments have impact on undesirable effects of tooth movement females 86 (72.9%) have expressed their concern on it as compared to males 43 (47.8%). (Tables 6 and 8). Subjects reported their maximum responses for the discomfort from orthodontic appliances (115 (55.3%)) (Table 9), because regular appointments and follow-ups of their treatments were not possible considering the lockdown. Concerns for financial aspect of the treatment was minimal (151 (72.6%)) (Table 7). The overall outlook for orthodontic patients in pandemic period included, their Worry for increased treatment charges post lockdown, disinfectant measures practised in dental office since they had fear of transmission of the disease and followed by the concerns for their treatment duration which they missed during the period of lockdown. (Table 10)

Table 1: Distribution of sample population based on age distribution

Age	Frequency	Percentage
16-20 years	48	23.1%
21-25 years	151	72.6%
25+ years	9	4.3%
Total	208	100%

Table 2: Distribution of sample population based on gender distribution

Gender	Frequency	Percentage
Male	90	43.3%
Female	118	56.7%
Total	208	100%

Table 3: Current stress attitude

Feeling anxious about the orthodontic treatment after the beginning of this lockdown	Male n (%)	Female n (%)	Total (n=208)	p value, Significance (M vs F)
Yes	31 (34.4%)	71 (60.2%)	102 (49%)	p <0.001**
No	49 (54.4%)	28 (23.7%)	77 (37%)	
Maybe	10 (11%)	19 (16.1%)	29 (13.9%)	
Find it stressful to continue orthodontic treatment during lockdown	Male n (%)	Female n (%)	Total (n=208)	p value, Significance (M vs F)
Yes	27 (30%)	70 (59.3%)	97 (46.6%)	p <0.001**
No	63 (70%)	48 (40.7%)	111 (53.4%)	
Current outlook for orthodontic treatment in lockdown	Male n (%)	Female n (%)	Total (n=208)	p value, Significance (M vs F)
Worried, even after assurance	33 (36.7%)	39 (33.1%)	72 (34.6%)	p =0.587
Fine, since orthodontist assurance	57 (63.3%)	79 (66.9%)	136 (65.4%)	

p >0.05 – no significant difference *p<0.05 – significant **p<0.001 – highly significant

Table 4: Treatment compliance during lockdown

Compliant to removable appliance during lockdown	Male n (%)	Female n (%)	Total (n=208)	p value, Significance (M vs F)
Yes, wearing it regularly	35 (38.9%)	64 (54.2%)	99 (47.6%)	p =0.027*
Wear only when I remember	23 (25.6%)	15 (12.7%)	38 (18.3%)	
Don't wear it at all	32 (35.6%)	39 (33.1%)	71 (34.1%)	
Maintain oral hygiene instructions during lockdown	Male n (%)	Female n (%)	Total (n=208)	p value, Significance (M vs F)
Follow it as instructed by orthodontist	67 (74.4%)	89 (75.4%)	156 (75%)	p = 0.872
Not being able to follow it	23 (25.6%)	29 (24.6%)	52 (25%)	
Follow orthodontic diet instructions during lockdown	Male n (%)	Female n (%)	Total (n=208)	p value, Significance (M vs F)
Follow it as instructed by orthodontist	75 (83.3%)	84 (71.2%)	159 (76.4%)	p =0.041*
Not being able to follow it	15 (16.7%)	34 (28.8%)	49 (23.6%)	

p >0.05 – no significant difference *p<0.05 – significant **p<0.001 – highly significant

Table 5: Current outlook for monthly appointments during lockdown

Current outlook	Male n (%)	Female n (%)	Total (n=208)	p value, Significance (M vs F)
Worried for duration of treatment	28 (31.1%)	57 (48.3%)	85 (40.9%)	p =0.001*
Worried for final outcome of treatment	14 (15.6%)	19 (16.1%)	33 (15.9%)	
Hope to resume my treatment soon	43 (47.8%)	27 (22.9%)	70 (33.7%)	
Fine, as long as no complications are seen	5 (5.6%)	15 (12.7%)	20 (9.6%)	

p >0.05 – no significant difference *p<0.05 – significant **p<0.001 – highly significant

Table 6: Lockdown affect your treatment

Treatment Affected	Male n (%)	Female n (%)	Total (n=208)	p value, Significance (M vs F)
Yes, I am worried for it	43 (47.8%)	86 (72.9%)	129 (62%)	p =0.001*
No, I do not think so	18 (20%)	15 (12.7%)	33 (15.9%)	
Maybe, Not sure	29 (32.2%)	17 (14.4%)	46 (22.1%)	

p >0.05 – no significant difference *p<0.05 – significant **p<0.001 – highly significant

Table 7: Lockdown affect your finances/cost of orthodontic treatment

Finances Affected	Male n (%)	Female n (%)	Total (n=208)	p value, Significance (M vs F)
Yes, I am worried for it	10 (11.1%)	15 (12.7%)	25 (12%)	P = 0.272
No, I do not think so	62 (68.9%)	89 (75.4%)	151 (72.6%)	
Maybe	18 (20%)	14 (11.9%)	32 (15.4%)	

p >0.05 – no significant difference *p<0.05 – significant **p<0.001 – highly significant

Table 8: follow regular appointments post this lockdown

Regular Appointment post lockdown	Male n (%)	Female n (%)	Total (n=208)	p value, Significance (M vs F)
Yes, I will follow	54 (60%)	85 (72%)	139 (66.8%)	p =0.015*
No, I do not think so	31 (34.4%)	33 (28%)	64 (30.8%)	
Maybe	5 (5.6%)	0 (0%)	5 (2.4%)	

p >0.05 – no significant difference *p<0.05 – significant **p<0.001 – highly significant

Table 9: Faced any orthodontic discomfort/complications

Discomfort/Complications	Male n (%)	Female n (%)	Total (n=208)	p value, Significance (M vs F)
Yes	50 (55.6%)	65 (55.1%)	115 (55.3%)	p =0.946
No	40 (44.4%)	53 (44.9%)	93 (44.7%)	

p >0.05 – no significant difference *p<0.05 – significant **p<0.001 – highly significant

Table 10: Future outlook for orthodontic treatment in period of lockdown

Future outlook	Male n (%)	Female n (%)	Total (n=208)	p value, Significance (M vs F)
Worried for increased treatment charges post lockdown	10 (11.1%)	5 (4.2%)	15 (7.2%)	p =0.005*
Worried for disinfectant measures	19 (21.1%)	9 (7.6%)	28 (13.5%)	
Speedup my treatment time missed during Lockdown	31 (34.4%)	51 (43.2%)	82 (39.4%)	
All of above	30 (33.3%)	53 (44.9%)	53 (44.9%)	

p >0.05 – no significant difference *p<0.05 – significant **p<0.001 – highly significant

4. Discussion

The current study evaluated the most common domains encountered by orthodontic patients like their monthly appointment, their concerns for their treatment outcomes along with financial outlook towards the treatment, their compliance towards the treatment, their experience for any discomfort they faced during the lockdown period and their outlook towards orthodontic treatment during the lockdown period and post the COVID-19 lockdown era. As a measure to prevent further spread of the disease, national emergencies like lockdowns have been implemented in many countries. The efforts taken by the health organizations include lockdowns, with restrictive travel movements and emergency healthcare services with social distancing norms, owing to spread of infection and the difficulty in its containment. The suspension of orthodontic treatment has affected the various domains of concerns and anxiety amongst these patients. Aerosols and air droplets spread of infection are more common in a dental office, hence patients who are willing to go about orthodontic appointments might fear to visit an orthodontist. Due to its high mortality and infection rate, the severe acute respiratory syndrome (SARS) epidemic caused anxiety and panic in the affected countries. The majority of the patients treatment were suspended due to travel restrictions and lockdown implementation.

In this study, we found that female patients were more likely to have mental distress, which might be attributed to the biologic nature of their responses to stress and risk factor as well as transportation difficulties were encountered for their regular monthly visits for rural patients as most dental clinics and hospitals were located in cities.^{9,10} Therefore, they were apt to have mental distress and anxiety about treatment outcomes, for missing of their regular appointments and were concerned about the delay in finishing treatment, which were similar to study by Shenoj et al and Sayers et al.^{11,12} Beckwith et al reported that each missed appointment added 1.09 months to treatment time, and 40.9% of the patients held the view that the pandemic would extend the entire treatment. A prolonged delay during a lockdown could potentially lead to a further increase in the severity and number of patients who developed anxiety and mental distress.¹³ This proves the awareness of the need for regular follow-ups, which is in accordance with 66.8% of patients post lockdown they would follow regular follow-ups.

Bartsch et al stated that compliance is a major problem in orthodontics, but around 75% of our patients showed good compliance towards their treatment. Communication is the key with the patient, and a timely reassurance provides patient satisfaction and patient cooperation for adequate compliance towards the treatment.^{12,14} Gyawali et al reported that the most common reason for orthodontic emergencies included the loosening of brackets or bondable

buccal tubes, loosening of bands, soft tissue trauma by the overextension of distal wire, loosening of ligature ties, and dislodgement of elastomeric chains.¹⁵ Around 55.3% of our subjects showed similar complaints of discomfort. 12% of subjects expressed fear of increased treatment costs which were similar to results to study by Shenoj et al.¹¹ The orthodontist must assure that if any additional cost is charged to the patient, it would be for the protection equipments to provide safety for both, the health care professional as well as the patient. The severity and seriousness of the transmission of disease must be properly explained to all patients, making them aware of the importance of social distancing and the need for personal protection even after the lockdown has been lifted. The possible explanation (Table 10) of patients having concern to visit their orthodontist post the lockdown, shows their future outlook towards orthodontic treatment. The use of telehealth consultations to support long distance health care has been a good option over face-to-face service, especially in disasters and public health emergencies.^{16,17} Technologies include phone calls, live video/teleconferencing, texting messages via WhatsApp or social medias and e-mails, allowing orthodontists and dental staff to communicate 24/7 with patients.¹⁸ Our study helps us to assess the impact of COVID-19 lockdown among orthodontics patients.

5. Conclusion

Proper communication with patients is a must to reassure their concerns over orthodontic treatment. This study, identifies the significant impact of COVID-19 lockdown on patients undergoing orthodontic treatment like concerns, anxiety, fear and disturbed mental well-being. The end of the lockdown period will mark 'the beginning of new approach and management in orthodontic treatment.

6. Conflict of Interest

None declared.

7. Source of Funding

None.

References

1. WHO Director-General's opening remarks at the media briefing on COVID-19; 2020. Available from: <https://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020>.
2. Suri S, Vandersluis YR, Kochhar AS, Bhasin R. Mohamed-Nur Abdallah; Clinical orthodontic management during the COVID-19 pandemic. *Angle Orthod.* 2020;90(4):473–84.
3. Guo YR, Cao QD, Hong ZS. The origin, transmission and clinical therapies on coronavirus disease 2019 (COVID19) outbreak - an update on the status. *Mil Med Res.* 2020;7(1):11.
4. Giovanetti M, Benvenuto D, Angeletti S, Ciccozzi M. The first two cases of 2019-nCoV in Italy: Where they come from? *J Med Virol.*

- 2020;92(5):518–21. doi:10.1002/jmv.25699.
5. Paraskevis D, Kostaki EG, Magiorkinis G, Panayiotakopoulos G, Sourvinos G, Tsiodras S, et al. Full-genome evolutionary analysis of the novel corona virus (2019-nCoV) rejects the hypothesis of emergence as a result of a recent recombination event. *Infect Genet Evol.* 2020;79:104212. doi:10.1016/j.meegid.2020.104212.
 6. Li Q, Guan X, Wu P. Early transmission dynamics in Wuhan, China, of novel coronavirus-infected pneumonia. *N Engl J Med.* 2020;382(13):1199–207.
 7. Fehr AR, Perlman S. Coronaviruses: an overview of their replication and pathogenesis. *Methods Mol Biol.* 2015;1282:1–23.
 8. Zhu N, Zhang D, Wang W. A novel coronavirus from patients with pneumonia in China. *N Engl J Med.* 2019;382(8):727–33.
 9. Tesfahunegn TB, Gebremariam EH. Mental distress and associated factors among Aksum University students, Ethiopia: a cross-sectional study. *BMC Psychiatry.* 2019;19(1):71. doi:10.1186/s12888-019-2051-5.
 10. da Silva S, Pitchika V, Baumert U, Wehrbein H, Schwestka-Polly R, Drescher D, et al. Oral health-related quality of life in orthodontics: a cross-sectional multicentre study on patients in orthodontic treatment. *Eur J Orthod.* 2020;42(3):270–80. doi:10.1093/ejo/cjz064.
 11. Sheno SB, Deshpande S, Jatti R. Impact of COVID-19 Lockdown on Patients Undergoing Orthodontic Treatment: A Questionnaire Study. *J Indian Orthod Soc.* 2020;54(3):195–202. doi:10.1177/0301574220942233.
 12. Sayers MS, Newton JT. Patients' expectations of orthodontic treatment: Part 2—findings from a questionnaire survey. *J Orthod.* 2007;34(1):25–35. doi:10.1179/146531207225021888.
 13. Beckwith FR, Ackerman RJ, Cobb CM, Tira DE. An evaluation of factors affecting duration of orthodontic treatment. *Am J Orthod Dentofac Orthop.* 1999;115(4):439–47. doi:10.1016/s0889-5406(99)70265-9.
 14. Bartsch A, Witt E, Sahn G, Schneider S. Correlates of objective patient compliance with removable appliance wear. *Am J Orthod Dentofac Orthop.* 1993;104(4):378–86. doi:10.1016/s0889-5406(05)81337-x.
 15. Gyawali R, Pokharel PR, Giri J. Emergency appointments in orthodontics. *APOS Trends Orthod.* 2019;9(1):40–3. doi:10.25259/apos-9-1-7.
 16. Kravitz ND, Burriss B, Butler D, Dabney CW. Teledentistry, do-it yourself orthodontics, and remote treatment monitoring. *J Clin Orthod.* 2016;50:718–26.
 17. Lurie N, Carr BG. The Role of Telehealth in the Medical Response to Disasters. *JAMA Internal Med.* 2018;178(6):745–6. doi:10.1001/jamainternmed.2018.1314.
 18. Hollander JE, Carr BG. Virtually Perfect? Telemedicine for Covid-19. *New Engl J Med.* 2020;382(18):1679–81. doi:10.1056/nejmp2003539.

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