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Original Research Article

Is COVID-19 pandemics lock-down affecting orthodontic treatment follow ups, treatment mechanics, results and economics: A questionnaire survey

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ABSTRACT

Aim: This article aims to evaluate “orthodontic treatment follow ups, treatment mechanics, results and economics during COVID -19 pandemics lock-down.

Objective: To evaluate whether covid -19 pandemics lock-down affecting orthodontic treatment follow ups, treatment mechanics, results and economics through questionnaire survey.

Materials and Methods : A descriptive, cross-sectional survey conducted through a web-based self-administered questionnaire with 20 questions addressing various aspects of orthodontic treatment follow ups, treatment mechanics results and economics. This study included all professional orthodontists, Consulting orthodontists, Post graduate orthodontic students.

Conclusion and Results: A total of 221 participants were there in the study. Orthodontists were influenced by many factors such as treatment timing, irregular follow-ups, treatment mechanics, treatment timing, patients discomfort and economics during covid -19 pandemics.

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1. Introduction

A number of countries around the world responded to the COVID-19 outbreak by implementing travel bans, placing many cities under total lockdown, and closing schools, universities, and private hospitals for an extended period of time. The global outbreak of coronavirus disease 2019 (COVID-19) has dramatically changed the world in all aspects. This has led the World Health Organization (WHO) to declare this disease outbreak as a global pandemic. In the dental profession; it is well known that dental procedures produce aerosols and droplets that pose real risk of disease transmission.¹⁻⁶

All dental governing bodies around the world have reduced or discontinued routine/elective dental care and restricted services to only acute emergency situations due to the fact that dental practises are focal points for cross-infection.

Despite the recent introduction of numerous vaccinations, it is unknown how long COVID-19 will be effective due to the lack of information regarding its properties.

Thus, orthodontic appointments were temporarily stopped without notice or anticipation. Treatment in the field of orthodontics is typically not seen as an emergency. What is not appreciated, however, is the significance of routine examinations or monthly appointments, as well as the effects of limitations placed on patients with regard

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to seeing their orthodontists when necessary. Grey areas that remain unexplored include determining whether patients understand the value of routine check-ups, believe orthodontic treatment needs to be treated as an emergency, or evaluate the causes of fear or inconveniences in the minds of patients undergoing orthodontic treatment during a time when they are completely confined to the walls of their homes. With this context, a survey was distributed in order to check the effect of the COVID-19-related lockdown on patients receiving orthodontic care across the country.

2. Materials and Methods

With or without knowing a participant’s name, Google Forms, a fantastic tool for online data collection, was used to conduct this survey. To draw a conclusion, these Google Forms analyse data and deliver immediate statistical results. Participants could fill out this virtual form in the privacy of their own homes, free from peer pressure or criticism. Additionally, they have the option to complete the form on their laptops, smartphones, or other smart devices, giving them complete privacy and allowing them to think freely without being constrained by earlier assumptions. Additionally, the Participants are unafraid of being found out for their responses.

With the assistance of orthodontists, a pilot survey was carried out to determine whether the covid-19 pandemics lock-down had an impact on orthodontic treatment follow-ups, treatment mechanics, results, and economics. There were 221 participants in this study. They were asked to complete a structured questionnaire with 19 questions addressing various areas of orthodontic treatment follow-ups, treatment mechanics results, and economics in order to provide the data for this study using Google Forms. All practising orthodontists, consulting orthodontists, and postgraduate orthodontic students were included in this study.

The questions were prepared as follows, the first six questions are based on demographic information, and then there are 20 questions about perception and practices. Each question received a variety of responses, both positive and negative. The questions ascertain how orthodontic therapy, follow-ups, treatment mechanics, outcomes, and economics are affected by the COVID-19 pandemic lockdown.

3. Results

In total 221 orthodontists took part in the research. The participants came from all around India and were either consulting orthodontists, Post graduate orthodontics student, Professors in respective orthodontic department and practicing orthodontists.

Below Fig Shows that the majority of orthodontists wants to participate in the survey out of which 55.7% of people actually wanted to participate in the research.

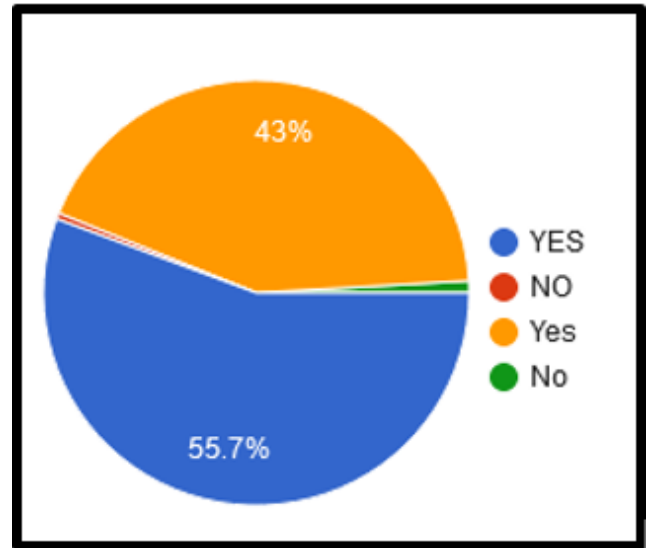


Fig. 1: The first question was –Do you want to participate in the research?

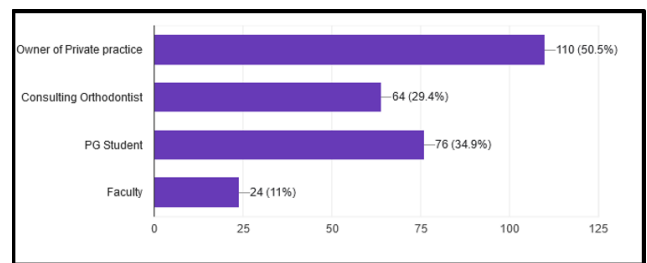


Fig. 2: The second question was on professional setting and the responses are shown in below image.

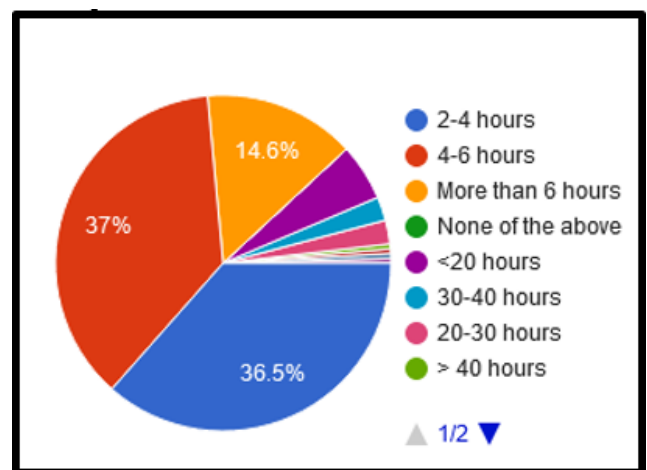


Fig. 3: Daily average working time? 219 responses

3.1. Perception and practice questions

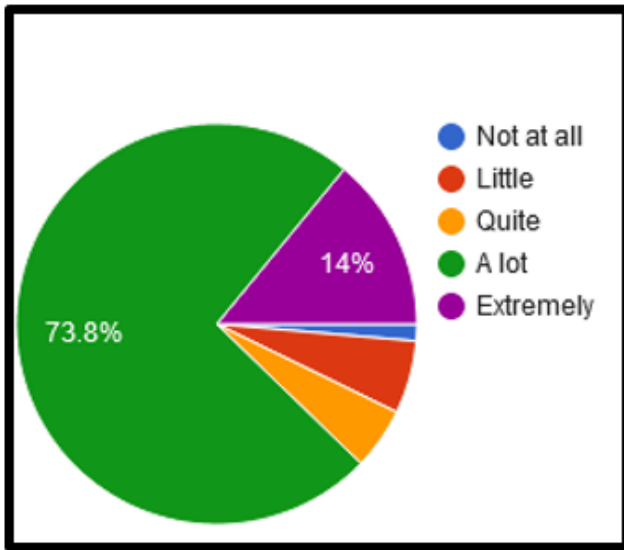


Fig. 4: Did COVID-19 pandemic lock-down condition negatively affects your professional activity?

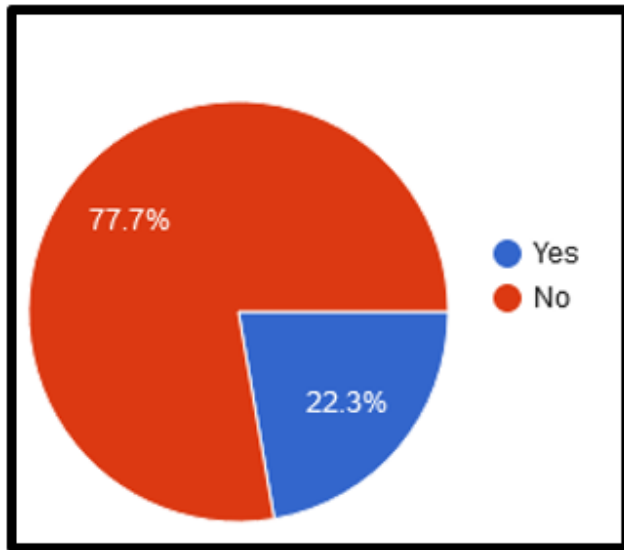


Fig. 5: Monthly visits of patients at your dental clinic or institute are regular during this lock-down?

4. Discussion

The findings showed that the majority of patients having treatment were concerned with their restriction to orthodontic clinic appointments, which was intended to get insight into how this lockdown influenced the treatment process as well as the challenges experienced. No study, to our knowledge, has taken into account the orthodontic patient’s perspective in these challenging times.

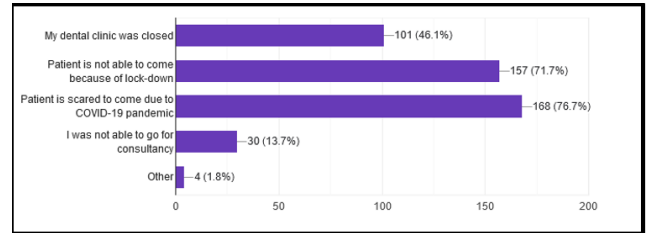


Fig. 6: If No, What is the reason for missed follow-ups/appointments?

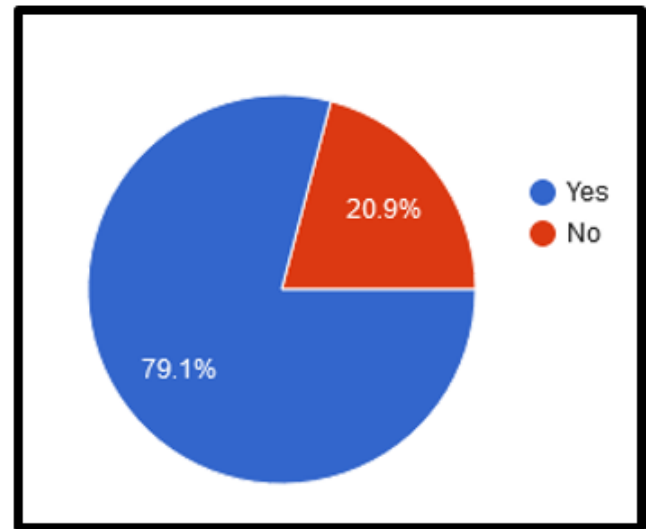


Fig. 7: Have you started new patients for orthodontic treatment during this lock-down?

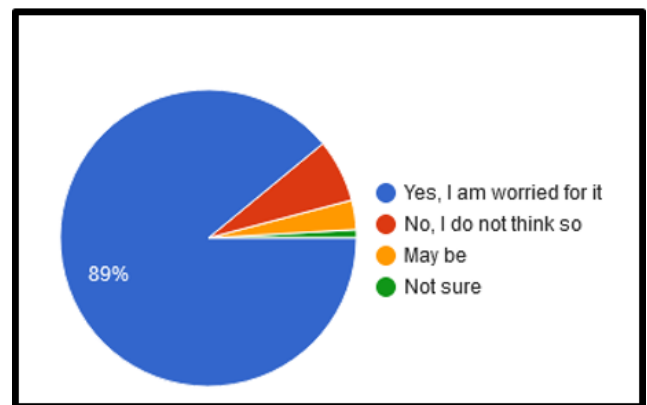


Fig. 8: Do you think this lock-down affects your treatment plan?

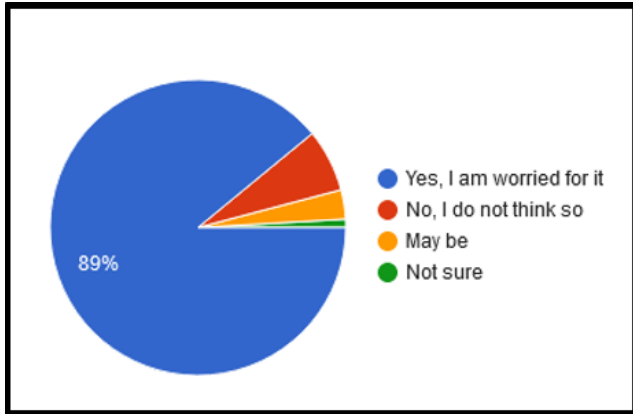


Fig. 9: Do you think this lock-down affects your treatment plan?

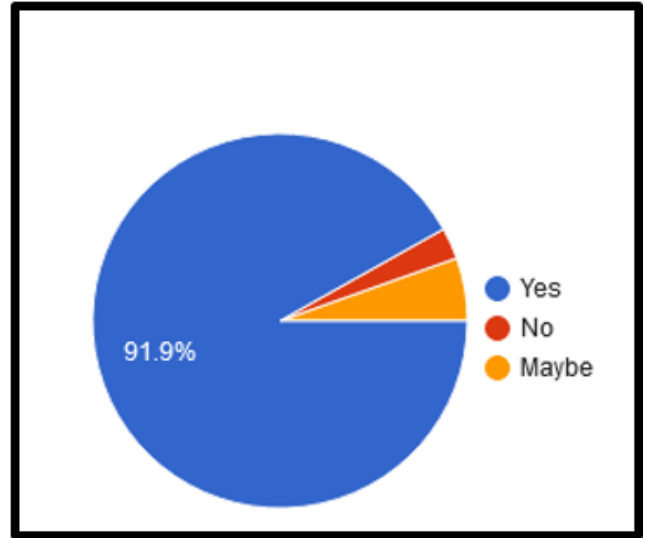


Fig. 12: Does your patients faced any orthodontic discomfort/complications during this lock-down?

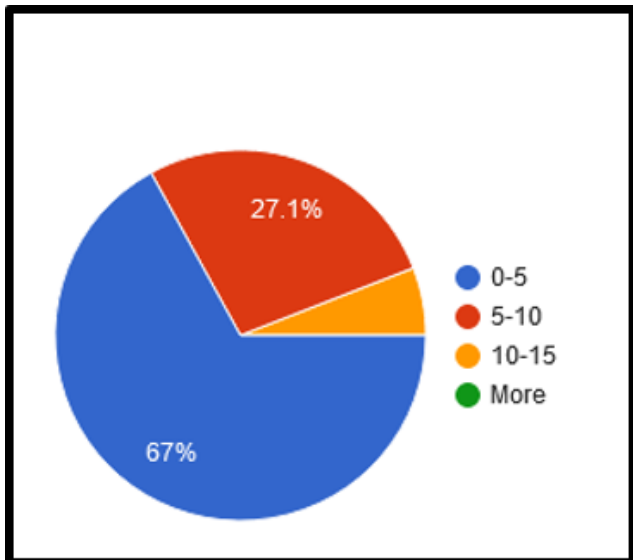


Fig. 10: If Yes, What is the monthly frequency of new patients undergoing orthodontic treatment?

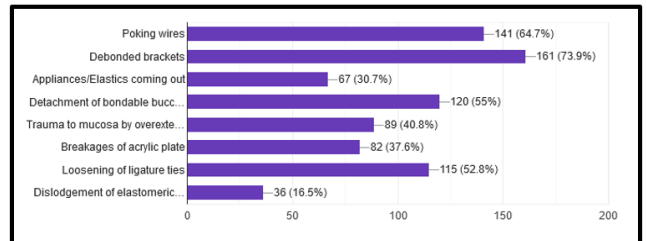


Fig. 13: If Yes, What kind of discomfort faced by patient during this lock-down?

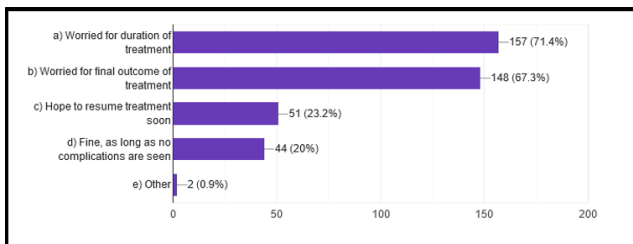


Fig. 11: Current outlook for monthly appointments during lock-down? Current Outlook:

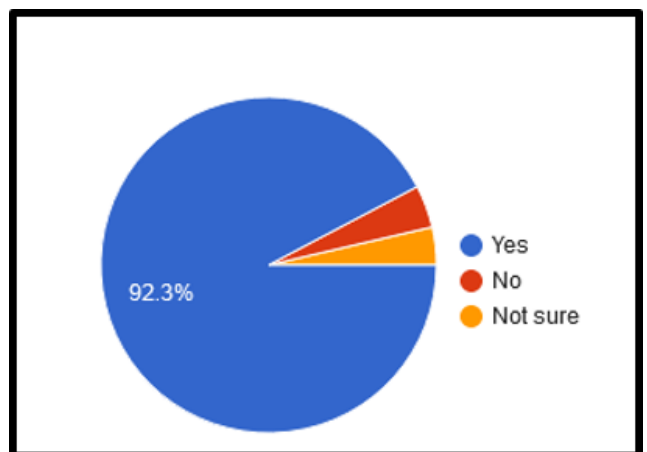


Fig. 14: As the orthodontic treatment is more based on mechanics do you feel because of missed follow-ups it has affected your treatment mechanics?

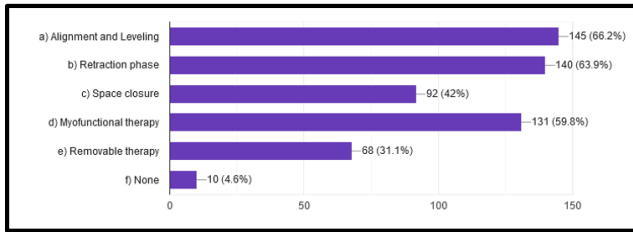


Fig. 15: Which phase of orthodontic treatment affects more during this lock-down?

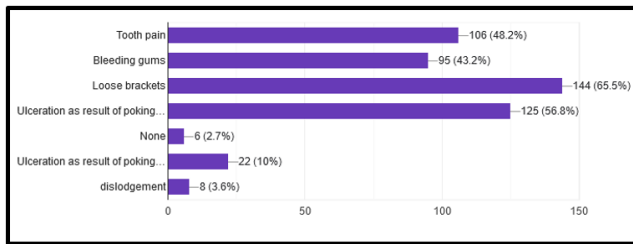


Fig. 16: Does any one of your patient complains of any of below emergency?

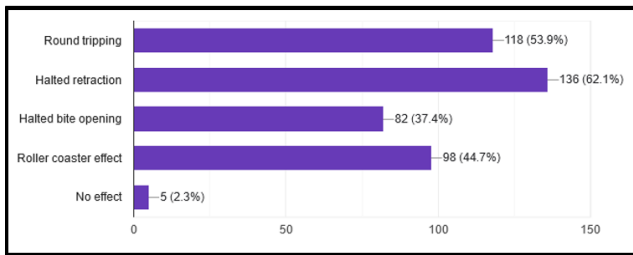


Fig. 17: If the patient is in middle of ongoing orthodontic treatment how it is affecting the treatment mechanics?

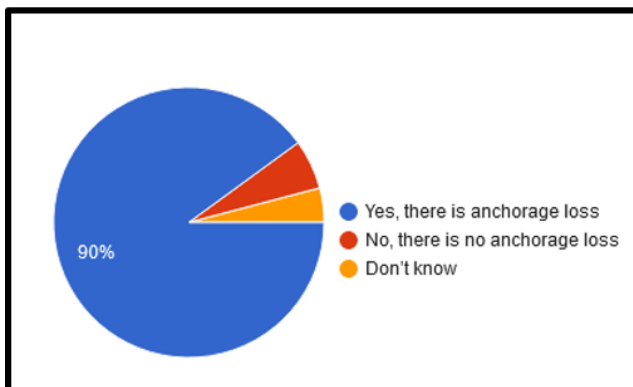


Fig. 18: Do you feel that missed appointments affect anchorage?

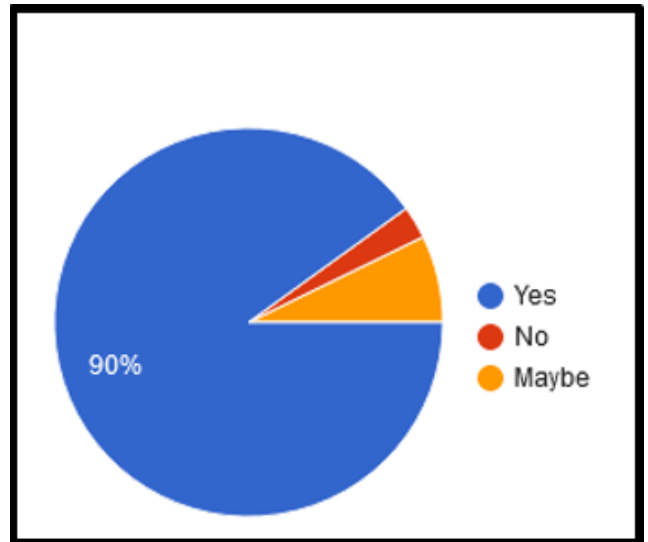


Fig. 19: Does the lock-down affect the outcome of treatment results?

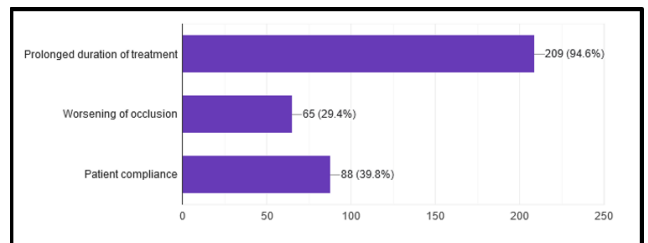


Fig. 20: If Yes, How does it affecting?

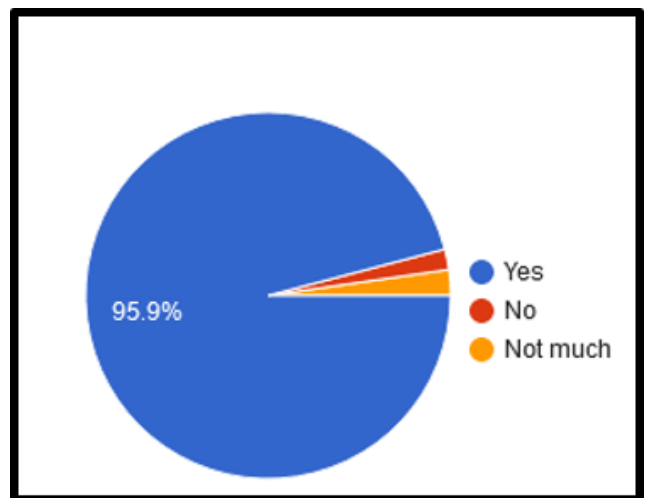


Fig. 21: Do you feel that this COVID -19 lock-down affects your daily income of dental clinic?

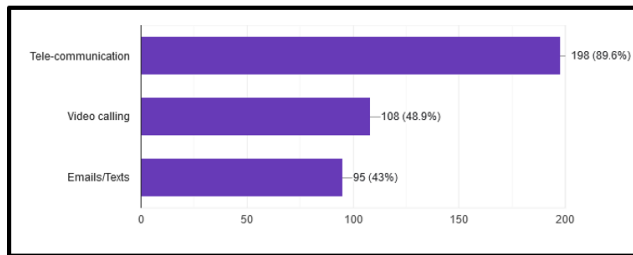


Fig. 22: How you are dealing with orthodontic emergency?

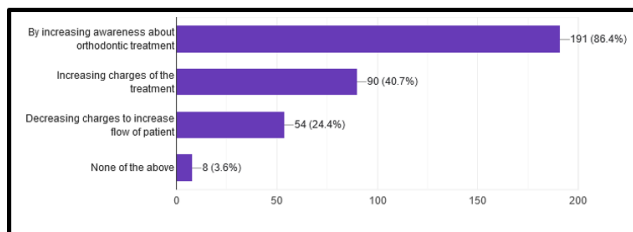


Fig. 23: How will you recover your financial condition after COVID-19 pandemic lock-down?

The majority of respondents—48%—replied that their most recent follow-up had been more than two months ago. Plaque will inevitably accumulate as a result of orthodontic therapy since brackets or other appliances are typically cemented into the patient's mouth.

According to a research by Huser et al.,⁷ "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." According to Bartsch et al.,⁴ compliance is a significant issue in orthodontics. Because plaque buildup is unavoidable and patients might become less compliant with oral hygiene instructions as a result of their prolonged treatment duration, careful inspection of the appliances at each visit and appropriate prophylactic therapy are crucial.

To improve the subsequent oral health, disclosing tablets 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 instance, wire bending with loops left in the patient's mouth for an extended period of time, sunken or loose orthodontic bands, broken fixed functional appliances, and weak temporary anchorage devices might negatively

impact the course of treatment, which had been proceeding normally up until that point. Although it was discovered that the majority of patients did not experience appliance-related problems during the lockdown, among those who did, there was a nearly equal response with poking wires, brackets debonding, appliances and elastics coming out. This demonstrates that while patients did have problems like those listed previously, no individual condition in the research served as the primary reason for an inconvenience or emergency.

According to a research by Rajesh Gyawali et al.,⁸ the loosening of brackets or bondable buccal tubes was the most frequent cause of orthodontic emergency or appointments, followed by the loosening of bands. The overextended distal wire might have injured the mucosa, buccal tubes could have detached from the band, bands could have torn, acrylic plates could have broken, ligature ties could have become loose, and elastomeric chains could have come loose. In their study, Caprioglio et al.⁹ and Suri et al.¹⁰ discuss potential orthodontic emergencies with straightforward do-it-yourself treatments including cutting the distal ends of wires with nail cutters, using over-the-counter disclosing wax for relief, and the significance of virtual support in such circumstances. According to the study, 71.4% of patients were concerned that they wouldn't be able to attend routine follow-up appointments, with a longer course of treatment being the main reason for this concern (73.5%).

According to Rokyo et al.,¹¹ follow-ups and the length of orthodontic treatment are indirectly inversely linked to one another, meaning that compliance is higher when treatment times are shorter. Although in the current study, during the period of data collection, 77.7% of patients missed their appointments because of patients was unable to come due to lockdown, 77.7% are afraid to come to dental clinic due to covid-19 Pandemic. This also explains a possible chance for the reduction in compliance of patients during the lockdown.

89% of orthodontists said they were concerned that their treatment would go wrong. According to patients who claimed that the lock downs had made them realise the significance of routine follow-ups, this demonstrates awareness of the need for regular follow-ups. It should be noted that numerous treatment mechanics, including Begg's mechanotherapy, Tip Edge mechanotherapy, and the latter stages of settling the occlusion, frequently call for the use of elastics that must be changed by the patient on a daily basis. A total of 73.9% of patients reported discomfort from things like loosening of the ligature wire, debonded brackets (64.7%), poking wires (74.9%), appliances elastics coming out, and debonded brackets (64.7%). Both the orthodontist and the patients are helpless in the absence of such materials for compliant patients. Unwanted dental effects emerge from this, such as opening up of spaces or movement of teeth that leads to round-tripping, lengthening the treatment

period and lowering compliance.¹²⁻¹⁶

The running force in treatment mechanics like Begg's mechanotherapy is the patient's elastic wear. The mechanics of one-point contact brackets make free tipping inevitable. When combined with improper elastic usage, this can have a negative impact on the course of treatment. However, the majority of mechanotherapy treatments today use edgewise appliances that have already been adjusted. The fact that patients didn't have the supplies they required during the lockdown may be one cause for this. In situations where patients run out of settling elastics, improving chewing efficiency (e.g., with chewing gum) and encouraging patients to chew bilaterally may help settle the occlusion a little bit better than with no stimulation at all.

Patients who had no issues during the lock down due to contact (89.6%), video calling (48.9%), and emails (43%), can definitely be blamed for patients not worrying about their therapy. This, however, does not encompass the vast majority of impacted patients. But according to 81.4% of orthodontists, the lock-down has an impact on treatment outcomes because it prolongs treatment time (94.6%), worsens occlusion (29.4%), and reduces patient compliance (39.8%). Results showed conflicting opinions.

Orthodontists are likewise experiencing a decrease in dental clinic daily income (94.9%). When asked How would you recoup your financial situation after the COVID-19 pandemic lock-down, 86.4% responded that they would do so by raising knowledge of orthodontic treatment, 40.7% said by raising treatment costs, and 24.4% by lowering costs to attract more patients. The definition of "emergency" in the Merriam-Webster Dictionary (<https://www.merriam-webster.com/dictionary/emergency>) is "an unforeseen combination of circumstances or the resulting state that calls for immediate action" or "an urgent need for assistance or relief." According to the definition, even though they are not always life-threatening, certain inconveniences, as previously noted, may require rapid attention to lessen the likelihood of subsequent issues.

It also goes without saying that potential life-threatening circumstances should be taken into account when dealing with abrupt swellings, aspiration, or the accidentally ingestion of gadgets. Though only a small portion of patients expressed concern about higher treatment costs, it is still important for the orthodontist to reassure them that, provided no additional treatment is required (with patients' consent), the cost of treatment will remain the same even after the lockdown period. In addition, if any extra fees are ever charged to the patient, they will be for the personal protective equipment that ensures both the patient's and the healthcare provider's safety. All patients should be given a thorough explanation of the severity and danger of the illness outbreak, emphasising the necessity for social isolation and personal protection even after the lockdown has been lifted. If at all possible, patients should make

sure they are symptom-free and only attending hospitals in an emergency before rushing to the dentist. The lack of knowledge¹⁷ of the different routes of potential disease transmission at a dental office, such as aerosols, doctors' close closeness to patients, etc., is one explanation for 52.9% of patients not having any anxiety to visit their orthodontist after the lockdown.

Finally, it should be noted that the Covid-19 pandemic lockdown has an impact on the economics, results, and mechanics of orthodontic treatment.

5. Limitation

There was an 18.4% non-response rate because the study was a self-designed online questionnaire distributed to orthodontists via numerous platforms, including texts, emails, Facebook, etc. Regardless of the nonresponse rate, the study's major goal was to understand the issues faced by orthodontists and raise awareness of them. Thus, this study can be viewed as an exploratory study to gain a broad understanding of the lockdown's effects on patients, which will aid in future research to better understand particular patient-related issues. This will also help to strengthen the relationship between the patient and the doctor and will improve practise management abilities.

6. Conclusion

The study was conducted to determine how the lockdown affected orthodontic treatment follow-ups, treatment mechanics, results, and economics. It also provided insight into how these issues may have an impact on how quickly patients receive treatment. The majority of orthodontists were observed to be experiencing one type of issue or another with the lockdown in relation to their orthodontic care. It is vitally important to comprehend the psychology of patients receiving orthodontic treatment. All the previously described criteria should be taken into account in any circumstance when patients lack access to seek care, regardless of the reason for the limitation. In conclusion, the key takeaway from this survey emphasises the significance of orthodontic professionals making sure that their patients are taken care of mentally, if not physically, in any way possible at such trying times. Additionally, when regular follow-ups are not feasible, proper patient communication and explanations of how to maintain proper self-care are essential. In the end, this would reassure the patient that they are receiving quality care.

7. Conflicting Interests

No potential conflicts of interest with respect to the research, authorship, and/or publication of this article.


8. Source of Funding

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