

Effects of Lockdown on Orthodontic Treatment Outcomes in Cleft Patients: A Retrospective Study

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Abstract:

Introduction: The COVID-19 pandemic led to significant disruptions in orthodontic treatment, including a 6–8 months gap in appointments due to regulations, travel restrictions, and a transportation strike. This study aimed to evaluate the challenges faced by patients and orthodontists during and after the lockdown, particularly regarding treatment outcomes in patients with cleft lip and palate. **Methods:** This retrospective study included 87 ongoing orthodontic patients at a single center, categorized into cleft and non-cleft groups. Data on missed appointments, appliance breakages, and treatment duration was collected from hospital records and analyzed descriptively. **Results:** Among the 87 patients, 62 had cleft deformities. Seven patients dropped out of treatment during the pandemic. A significant number of patients missed appointments, with 17 missing for 5-6 months and 31 missing for 3-4 months. Appliance breakages were reported in 48 patients. The treatment duration increased by 20% in non-cleft patients and by 50% in cleft patients who missed appointments and experienced appliance breakage. **Discussion:** Missed appointments and appliance breakages led to a significant increase in treatment duration and number of visits, particularly for cleft patients. Additionally, lockdown restrictions increased transportation costs for patients attending regular appointments. **Conclusion:** Cleft patients experienced a significantly greater burden of care due to treatment disruptions compared to non-cleft patients during the pandemic lockdown. These findings highlight the need for strategies to mitigate the impact of unforeseen circumstances on orthodontic treatment, especially for vulnerable patient populations

Keywords: Pandemic, Cleft lip and palate, Orthodontic treatment.

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INTRODUCTION

The COVID-19 pandemic, caused by the severe acute respiratory syndrome corona virus 2 (SARS-CoV-2), has significantly affected global health and economies. In late 2019, a sudden increase in pneumonia cases in central China led to the identification of a previously unknown corona virus, now known as SARS-CoV-2.¹ By January 7, 2020; scientists had isolated the virus and sequenced its genome. On March 11, 2020, the World Health Organization (WHO) declared COVID-19 a pandemic. Since then, authorities have recorded more than 458 million cases of COVID-19 worldwide, with over 6 million deaths attributed to the disease.²

The pandemic has had a profound effect on global life expectancy. Recent research indicates that it has reversed the trend, causing a decline in life expectancy across 204 countries. Orthodontists, like many other healthcare professionals, face negative impacts on their clinical activity and income due to various factors. These include national restrictions (70.1% of respondents), increased cross-infection measures (59.6%), state-imposed restrictions (55.9%), and social distancing protocols (39.4%).³

Delayed appointments were a major concern during the pandemic. Untreated orthodontic problems increased while routine services were suspended. Interestingly, patients with clear aligners reported fewer issues than those with fixed appliances.⁴ However, orthodontic treatment requires regular follow-up, which was disrupted during lockdowns. Some procedures are time-consuming and aerosol-producing, posing risks to both patients and orthodontists. For cleft lip and palate patients, multidisciplinary care involving orthodontists, surgeons, speech therapists, and other specialists is crucial. Unfortunately, lockdowns and restrictions led to delayed surgeries, affecting the overall treatment timeline for cleft patients. To adapt, healthcare providers turned to telehealth for follow-up appointments and consultations. Virtual visits allowed orthodontists to assess progress, address concerns, and provide guidance remotely. Challenges persisted for cleft patients. Disruptions in speech therapy services impacted their progress, and regular adjustments for cleft-related appliances were affected due to clinic closures. The emotional impact

of the pandemic was significant, causing stress and anxiety for cleft patients and their families. Isolation and uncertainty further affected mental well-being.⁵ In this comprehensive study, we delve into the multifaceted consequences of the pandemic on orthodontic cleft care. We explore how these professionals have adapted to the challenges posed by COVID-19, shedding light on their resilience and determination during these unprecedented times. Our findings contribute to a deeper understanding of the pandemic's impact on healthcare providers and underscore the need for continued support and flexibility in the face of global health crises.

METHODOLOGY

This is a retrospective study that included all ongoing orthodontic patients at a single center. The Institutional Board approved the study. The duration of the study was from March 2020 to June 2020. During this time there was a strict nationwide lockdown for 21 days starting 24th March. Additionally, following the pandemic lockdown, a transport strike in the state further impacted public transport availability for patients, lasting an additional three months. Many patients missed appointments during this period.

The patients were categorized into two groups: cleft and non-cleft based on the deformities observed. Among the 87 patients included in the study, 62 had cleft deformities and 25 were patients without any cleft-related deformities. The following data points were collected for each patient: appointment delays, treatment duration, appliance breakages, and complications during the treatment course, and any other relevant impacting information. All the data was collected from hospital records and analyzed descriptively.

RESULTS

Appointment delays

The hospital observed a discontinuity in appointments for all patients (lasting at least one month). Among the 87 patients, 32 regularly (less than 3 months of delay) visited the clinic, 48 patients delayed their appointments (more than 3 months of delay) due to pandemic restrictions and 7 patients discontinued their treatment.

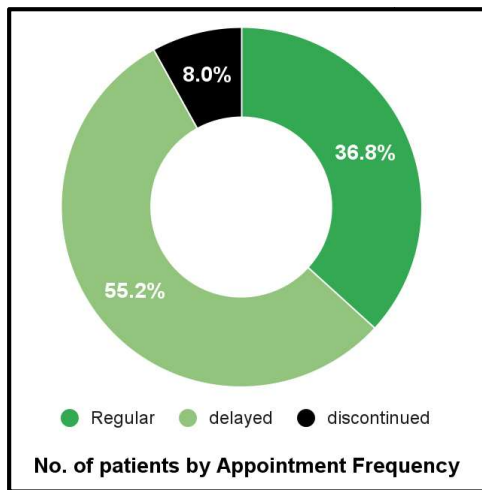


Fig.1. Distribution of Patients by Appointment Adherence during Lockdown

Treatment Duration

The treatment duration increased by 20% in non-cleft patients and by 50% in cleft patients who delayed their appointments by more than 3 months. 2 of 25 non-cleft and 5 of 62 cleft patients discontinued their treatment.

Patient type	Treatment	Planned duration (avg in years)	Actual	Difference (%)
Non-cleft (25)	Regular (10)	1.8	1.9	5.56%
	Delayed (13)	1.6	1.93	20.63%
	Discontinued (2)	2	-	-
Cleft (62)	Regular (22)	2	2.05	2.50%
	Delayed (35)	1.8	2.72	51.11%
	Discontinued (5)	1.9	-	-

Table 1: Impact of Appointment Adherence on Treatment Duration

Issues with Appliances

The appliances used in the treatment were categorized as fixed or removable appliances. The issues for each type were identified, eg. broken brackets or wires for fixed appliances, and deboned

or loose removable appliances. 48 (57%) Patients out of 87 total patients had some issue with the appliance. The most common issues were broken brackets or wires & loosening of the appliance.

Appliance type	Issues	Non-cleft group	Cleft group		
		Permanent dentition (25)	Mixed dentition (36)	Permanent dentition (18)	Retention (8)
Fixed	Broken brackets or wires	28.00%	47.22%	61.11%	
	Loose band and bite blocks or ramps	8.00%	30.56%	50.00%	12.50%
	Debonded Expansion devices		38.89%	5.56%	
Removable	Broken wire or acrylic components	12.00%			12.50%
	Loose removable appliances	8.00%			25.00%

Table 2: Issues with Orthodontic Appliances

DISCUSSION

The COVID-19 pandemic significantly disrupted orthodontic treatment, especially for patients with cleft lip and palate. Lockdowns led to missed appointments, unchecked appliance breakages, and prolonged treatment duration. In our study, 48 out of 87 patients missed appointments, with cleft patients being more affected. This aligns with other research, which reports increased treatment time and missed appointments during the pandemic. The disruption highlighted appliance breakages, particularly in cleft patients with complex appliances, further complicating treatment. Other studies similarly highlight increased appliance-related complications during the pandemic.⁶

Despite these challenges, the resilience and adaptability of patients and healthcare providers were evident. The rapid adaptation of telehealth services provided a crucial solution for continuity of care. Virtual consultations allowed orthodontists to monitor treatment progress, address urgent issues, and maintain communication with patients, mitigating some adverse effects of the lockdown. This shift towards digital healthcare solutions reflects a broader trend observed during the pandemic, where telehealth played a crucial role in maintaining healthcare services.⁷

The findings underscore the need for better preparedness and strategic planning in orthodontic care to manage future crises effectively. Developing robust telehealth protocols, ensuring access to emergency care, and creating flexible treatment plans are essential to mitigate the impact of such disruptions. Additionally, targeted support for vulnerable patient populations, like those with cleft lip and palate, can help reduce the burden of care during challenging times. These measures will enhance the resilience of orthodontic services and improve patient outcomes in the face of future health emergencies.⁸

CONCLUSION

The COVID-19 pandemic has significantly impacted orthodontic treatment outcomes, particularly for patients with cleft deformities. The study highlights delays in appointments, increased treatment durations, and unchecked appliance breakages. These findings emphasize the importance of adaptive strategies, including telehealth, to ensure continuity of care in future crises. By addressing the challenges identified in this study, healthcare providers can better support their patients and enhance the resilience of orthodontic services in the face of unforeseen disruptions.

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