



## IMPACT OF COVID 19 PANDEMIC ON ORAL & MAXILLOFACIAL TRAUMA

Dinesh Pilania., Vikas Deo and Chattopadhyay C S

Department of Dentistry MDM Hospital, Dr S N Medical College, Jodhpur, Rajasthan

### ARTICLE INFO

**Article History:**

Received 10<sup>th</sup> September, 2021

Received in revised form 2<sup>nd</sup>

October, 2021

Accepted 26<sup>th</sup> November, 2021

Published online 28<sup>th</sup> December, 2021

**Key words:**

COVID, Maxillofacial fractures

### ABSTRACT

**Purpose:** The purpose of this study was to understand the impact COVID-19 pandemic on the epidemiology of oral and maxillofacial fractures.

**Materials and Methods:** We designed a retrospective study and enrolled a sample of 554 subjects who presented for oral and maxillofacial fractures (OMF) between April 1, 2019 to March 31, 2020 and April 1, 2020 to March 31, 2021. The primary variable was the evaluation of OMF before COVID 19 (2019-20: **Control group**) & during the period of COVID 19 (2020-21: **Experimental group**). The primary outcome variables were the facial fracture diagnosis, the abbreviated injury scale (AIS), injury severity score (ISS), and the mechanism of injury.

**Results:** The number of subjects presenting with OMF was lower during the period of pandemic (n = 147 in 2020-21) than during the periods before (n = 407 in 2019-20). During the period of social distancing, there were more individuals who presented secondary to assault, whereas fewer secondary to Road traffic accidents & falls. On average, those who presented in 2020-21 had more severe oral and maxillofacial injuries.

**Conclusions:** Our study found that during the period of the COVID-19 pandemic, the number of OMF cases decreased but the severity of oral and maxillofacial and overall injuries was higher.

Copyright©2021 *Dinesh Pilania et al.* This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

## INTRODUCTION

Oral and maxillofacial fractures (OMF) are a significant cause of morbidity for individuals in the India and around the world.<sup>1</sup> While the cause of facial trauma varies by geographical region, globally, Road traffic accidents are the most common cause, with assault, Interpersonal violence, falls and sports-related injuries being the other common causes in India.<sup>1,2,3</sup> In general, individuals with facial fractures are initially evaluated by providers in an emergency or urgent care facility. However, given that facial fractures often occur in the setting of multisystem trauma, trauma centres often see a larger number of individuals with these injuries.<sup>4,5</sup>

Social distancing is a community mitigation measure, or nonpharmaceutical intervention, used to mitigate the burden and spread of an infectious disease.<sup>6,7</sup> Social distancing during COVID 19 has been discussed previously in the literature as it relates to the reduction of respiratory virus transmission, and most recently, as part of the worldwide response to the SARS-CoV-2 (COVID-19) pandemic.<sup>6,8</sup>

Community mitigation measures differ by geographic region and can be enacted at the town/ city, county, state/province, or national level. During the COVID-19 pandemic, the India

enacted a series of policies aimed at reducing the community transmission of the novel coronavirus. These policies included the closure of nonessential services, & a stay-at-home order. Apart from mitigating the rapid and widespread transmission of this disease, it is unclear how changes in behaviour related to these policies affect the incidence and etiology of facial fractures.

The purpose of this study was to understand the impact of social distancing policies enacted during the COVID-19 pandemic on the epidemiology of facial fractures. We hypothesized that the number of facial fracture cases, in general, would decrease as the result of social distancing policies during the COVID-19 pandemic. We also hypothesized that the mean severity of injury would increase, and the etiologic distribution of injuries would change.

The specific aims were to:

Measure and compare the frequency of facial fractures sustained by individuals who presented during a period with COVID19 vs those before.

Estimate and compare the severity of facial fractures between the 2 groups; and Estimate and compare the etiology of facial fractures between the 2 groups.

\*Corresponding author: **Vikas Deo**

Department of Dentistry MDM Hospital, Dr S N Medical College, Jodhpur, Rajasthan

**METHODS**

The study sample was composed of patients who presented to our trauma centre of tertiary care facility for the evaluation and management of injuries. The inclusion criteria were: Patients who presented between April 1 and March 31 in the years 2019-20 and 2020-21. The exclusion criteria were: 1) cause of facial fracture not documented or unclear, 2) inadequate or unclear documentation otherwise.

The time periods were selected to capture patients who presented during the period of COVID 19 (*Experimental group*) and before the period pf pandemic (*Control group*).

The primary predictor variable was the period during which the subject presented for evaluation of their facial fracture. The control groups included those who presented between April 1 - March 31 in the year 2019-2020. The experimental group included those who presented during the period of COVID 19 between April 1-March 31 in 2020-21. The primary outcome variables were the facial fracture diagnosis, the abbreviated injury scale (AIS), injury severity score (ISS), and the mechanism of injury. The AIS and ISS have been used previously in the literature to aid in our understanding of the epidemiology of oral and maxillofacial injuries.<sup>12,13</sup>

Demographic study variables included age at injury, gender, fracture type, mechanism of injury and socioeconomic status. Other study variables included alcohol level (positive, negative).

**RESULTS**

The study sample was composed of 554 subjects who presented for the evaluation and management of OMF from April 1 to March 31 in the years 2019-20 & 2020-21. The number of subjects in the 2020-21 (n = 147) was lower than the number in the 2019-20 (n = 407).

Table describes the subject’s demographics. Most subjects were male (93.61% in 2019-20, & 94.55% in 2020-21). 60 (41%) subjects recorded a positive blood alcohol level. More subjects presented with a positive alcohol level in the 2020-21 than in the 2019-20 (41% in 2020-21 vs 29% in 2019-20). The most common injuries included malar/maxillary/zygomatic, orbital fractures followed by pan facial injuries. Most subjects presented with more than one OMF.

Characteristics	2019-2020 n=407	2020-2021 n=147
<b>Gender:</b>		
• Male	381 (94%)	139 (95%)
• Female	26 (6%)	8 (5%)
<b>Age:</b>		
• <18	77 (19%)	16 (11%)
• 18-34	126 (31%)	43 (29%)
• 35-65	143 (35%)	73 (50%)
• >65	61 (15%)	15 (10%)
<b>Fracture type:</b>		
• ZMC	122 (30%)	56 (38%)
• Orbit	90 (22%)	34 (23%)
• Pan facial	82 (20%)	30 (21%)
• Mandible	69 (17%)	12 (8%)
• Tooth	32 (8%)	10 (7%)
• Others	12 (3%)	5 (3%)
<b>Mechanism of injury:</b>		
• Road traffic accidents	256 (63%)	48 (33%)
• Assaults		
• Falls	61 (15%)	56 (38%)
• Domestic abuse	86 (21%)	41 (28%)
	4 (1%)	2 (1%)

Alcohol level:		
• Positive	118 (29%)	60 (41%)
• Negative	289 (71%)	87 (59%)

The 2020-21 showed a significant increased proportion of fractures from assault (39% in 2020-21 vs 15% in 2019-20), falls (28% in 2020-21 vs 22% in 2019-20) and a decrease in fractures from road traffic accidents (63% in 2019-20 vs 33% in 2020-21). reported domestic abuse, all of which were investigated further by emergency room social workers and providers. 1% patients in both the groups reported domestic abuse.

**DISCUSSION**

Oral and maxillofacial fractures contribute to significant morbidity for individuals, and their management contributes to a consequential use of healthcare resources. The purpose of this study was to understand the impact of social distancing policies enacted during the COVID-19 pandemic on the epidemiology of individuals presenting with OMF.

Our study found that the number of individuals presenting for the evaluation of OMF was lower during the COVID-19 pandemic while social distancing policies were in place (n = 147 in 2020-21, n = 407 in 2019-20). This was not unexpected when we consider that after COVID 19 pandemic, typical mobility was consistently lower than average. As the result of the pandemic and restrictions put in place (e.g., ‘‘Stay at Home Order’’), people are moving around less and staying at home more, making them less likely to sustain oral and maxillofacial injuries in the process. Our study found that most individuals who sustained OMF were male of all subjects, which is consistent with prior literature on the topic.<sup>9,10-12</sup>

The frequency of OMF in our study, from highest to lowest was: malar/maxilla/ zygoma, orbit, pan facial fractures, mandible and tooth. This distribution, when it comes to facial fractures only, with malar/maxillary/zygomatic fractures being the most common, has been seen previously in the literature.<sup>10,12-13</sup>

Although this study does not explain what contributed to the increased severity, there was a trend during the COVID-19 pandemic of more individuals presenting with positive alcohol results. Research has shown that injury severity may increase secondary to alcohol or drug use but that this varies by the mechanism of injury.<sup>14-15</sup> Finally, it is unclear if triage behaviour for trauma patients in the catchment area changed during the pandemic as the result of differential allocation of healthcare resources.

Our study found that a greater proportion of individuals were injured secondary to assault and less were injured secondary to road traffic accidents. The distribution of the motor vehicle, motorcycle, and bicycle-related injuries was largely changed. Less individual mobility and more people staying at home may explain the decreased proportion of accident-related injuries. The rise in interpersonal violence and subsequent oral and maxillofacial trauma may be explained by economic and overall stressors, social isolation, and socio-political conflict during the COVID-19 pandemic.<sup>16</sup> Interestingly, there was no change in our study to the number of individuals, specifically reporting domestic abuse. Regardless, communities should continue to make available services to those who are at risk of abuse during times of social distancing.

There are several limitations to our study that was performed at a single centre. It is unclear if a different proportion of trauma patients were transported to our institution or if patients were selected for transfer/transport that had sustained more severe injury. The period of inclusion for our study was during the early phase of the COVID-19 pandemic. It is unclear how the results would change during shorter or longer periods of social distancing or if they would change based on geography or local politics. However, as mentioned before, mobility and highway traffic remained lower than average during the selected duration.<sup>17,18</sup> Regardless, it is important to understand burden of oral and maxillofacial trauma and how social distancing policies may result in fewer patients with more severe injuries that individually may require more healthcare resources.

In conclusion, the number of OMF cases decreased, but the severity of oral and maxillofacial and overall injuries was higher during the COVID-19 pandemic when social distancing policies were in place.

## References

1. Lalloo R, Lucchesi LR, Bisignano C, *et al*: Epidemiology of facial fractures: Incidence, prevalence and years lived with disability estimates from the global burden of disease 2017 study. *Inj Prev* 26(Supp 1):i27, 2020.
2. Allareddy V, Allareddy V, Nalliah R: Epidemiology of facial fracture injuries. *J Oral MaxillofacSurg* 69:2613, 2011.
3. Boffano P, Kommers SC, Karagozoglu KH, Forouzanfar T: Aetiology of maxillofacial fractures: A review of published studies during the last 30 years. *Br J Oral MaxillofacSurg* 52:901, 2014.
4. Thoren H, Schaller B, Suominen AL, Lindqvist C: Occurrence and severity of concomitant injuries in other areas than the face in children with mandibular and midfacial fractures. *J Oral MaxillofacSurg* 70:92, 2012.
5. Wasicek PJ, Gebran SG, Ngaage LM, *et al*: Contemporary Characterization of injury patterns, initial management, and Disparities in treatment of facial fractures using the national trauma data bank. *J CraniofacSurg* 30:2052, 2019.
6. Ahmed F, Zviedrite N, Uzicanin A: Effectiveness of workplace social distancing measures in reducing influenza transmission: A systematic review. *BMC Public Health* 18:518, 2018.
7. Nonpharmaceutical interventions (NPIs). (27 April 2020). Centers for disease control and Prevention, centers for disease control and Prevention. Available at: <http://www.cdc.gov/nonpharmaceutical-interventions/index.html>. Accessed November 12, 2020.
8. Jefferson T, Del Mar CB, Dooley L, *et al*: Physical interventions to interrupt or reduce the spread of respiratory viruses. *Cochrane Database Syst Rev* 2011:CD006207, 2011.
9. Dillon JK, Christensen B, McDonald T, *et al*: The financial burden of mandibular trauma. *J Oral MaxillofacSurg* 70:2124, 2012.
10. Patiguli W, Maimaitituexun B, Saimaiti A, *et al*: Epidemiology and pattern of oral and maxillofacial trauma. *J CraniofacSurg* 31:e517, 2020.
11. Zhou HH, Ongodia D, Liu Q, *et al*: Changing pattern in the characteristics of maxillofacial injuries. *J CraniofacSurg* May 24:929, 2013.
12. Gassner R, Tuli T, H€achl O, *et al*: Cranio-maxillofacial trauma: A 10 year review of 9,543 cases with 21,067 injuries. *J CraniomaxillofacSurg* 31:51, 2003.
13. Jin KS, Lee H, Sohn JB, *et al*: Fracture patterns and causes in the craniofacial region: An 8-year review of 2076 patients. *Maxillofac Plast Reconstr Surg* 40:29, 2018.
14. Valdez C, Radomski M, Renne C, *et al*: Alcohol level and injury severity: Is the floppy patient myth true? *J Surg Res* 200:664, 2016.
15. Socie E, Duffy RE, Erskine T: Substance use and type and severity of injury among hospitalized trauma cases: Ohio, 2004-2007. *J Stud Alcohol Drugs* 73:260, 2012.
16. Mazza M, Marano G, Lai C, *et al*: Danger in danger: Interpersonal violence during COVID-19 quarantine. *Psychiatry Res* 289: 113046, 2020.
17. . COVID-19 Projections - Washington state. (29 Oct 2020). IHME, University of Washington. Available at: <https://covid19.healthdata.org/united-states-of-america/washington?view=social-distancing&tab=trend>. Accessed November 12, 2020.
18. COVID-19 Multimodal Transportation system performance Dashboard. (5 Nov 2020). Washington state department of Transportation. Available at: <https://www.wsdot.wa.gov/about/covid-19-transportation-report/>. Accessed November 12, 2020.

### How to cite this article:

Dinesh Pilania *et al* (2021) 'Impact Of Covid 19 Pandemic On Oral & Maxillofacial Trauma', *International Journal of Current Advanced Research*, 10(12), pp. 25648-25650. DOI: <http://dx.doi.org/10.24327/ijcar.2021.25650.5123>

\*\*\*\*\*