

A Record-Based Comparative Study of the Impact of Covid-19 Lockdown Measures on the Burden of Maxillofacial Trauma Cases

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Abstract-

Background: The Covid-19 pandemic had a complicated effect on the number of cases of maxillofacial trauma around the world. The precise impact of lockdown interventions on the number of cases of maxillofacial trauma in India is unclear.

Aim and Objectives: The aim of this study was to see how Covid-19 lockdown steps affected the number of maxillofacial trauma cases reported to the emergency department.

Methodology: From March 25 to May 31, 2020, a record-based comparative study was conducted to determine maxillofacial trauma cases among patients reported (Lockdown group/Study group) to the emergency department of Eklavya dental college & hospital. The results were compared to two control groups (pre-lockdown groups).

Results: During the lockdown period, 170 (10.4 %) maxillofacial trauma cases were presented, 723 (44.1 %) cases during the pre-lockdown period, and 745 (45.5 %) cases the previous year (2019 period). As compared to the respective predecessors, the number of maxillofacial trauma cases decreased by 35.1 % and 33.7 % during the lockdown time.

Conclusion: This study's findings will be used to prepare and enforce alternative procedures, define areas for development, and re-allocate resources and manpower in the event of potential epidemics or pandemics.

Keywords: Pandemic, Covid-19, Maxillofacial trauma, Lockdown.

Introduction-

COVID-19, a disease caused by a novel coronavirus strain in 2019, is the most recent infectious disease to spread rapidly across the world. In late 2019, a viral outbreak was discovered in Wuhan, China, and the World Health Organization (WHO) declared it a global pandemic in March 2020. As a result, by the end of March, many countries' governments had placed their countries on lockdown as a containment policy. [1]

The first confirmed case of the novel coronavirus in India was identified in Kerala, and it later spread to other parts of the world. As the number of COVID-19 cases increased, the Indian government imposed a full nationwide lockdown for 21 days, beginning at midnight on March 24, 2020. To deal with the pandemic's worsening in India, the government has urged Indian states and people to strictly adhere to social distancing steps as a preventive strategy. [2]

All places of social gathering, such as restaurants, cinemas, colleges, shopping malls, and educational institutions, were closed during the nationwide lockdown. To stop crowds, employees and students were asked to work from home. With the exception of critical services, all modes of transportation, including rail, road, and air, were suspended. In addition, almost all production and industrial operations were halted. The COVID -19 outbreaks resulted in abandoned streets and empty roads as everyone was asked to remain indoors during the lockdown, with the exception of those providing basic services. There was also a full prohibition on the selling of alcoholic beverages. [3]

Maxillofacial trauma is becoming a burden and a leading medical concern in emergency rooms around the world as a result of increased industrialization and urbanization. [4-6] Because of the heavy dependence on road transportation and the population's growing socioeconomic activities, according to Adekeye[7], maxillofacial injuries are increasing in frequency and severity. The COVID-19 pandemic had a complicated effect on the number of cases of maxillofacial trauma around the world. [8]The precise impact of lockdown interventions on the number of cases of maxillofacial trauma in India is unclear. As a result, this research was conducted to determine the effect of Covid-19 lockdown steps on the number of maxillofacial trauma cases reported to the Eklavya dental college & hospital's emergency department.

Methodology-

From March 25 to May 31, 2020, a record-based comparative study was conducted to determine maxillofacial trauma cases among patients reported (Lockdown group/Study group) to the emergency department. The results were compared to two control groups (pre-lockdown groups).

Control group 1: During the 10 weeks prior to India's lockdown (16 January to 24 March 2020), patients reported;

Control Group 2: Patients recorded during the previous year's corresponding 10-week period (25 March 2019 to 31 May 2019).

Sample size: During the above-mentioned time periods, all patients with maxillofacial injuries presented to the emergency department of Eklavya dental college & hospital.

Inclusion criteria: During the above-mentioned time periods, all maxillofacial trauma cases were registered to the emergency department of Eklavya dental college & hospital.

Exclusion criteria:

1. Patients with insufficient data for analysis;
2. Maxillofacial trauma cases not seen by the OMFS team.

Self-presentations, cases referred from other specialties, cases referred from outlying hospitals, and cases presented by trauma volunteers are among the cases. The only source of information was the OMFS casualty file.

Study procedure: The Head of the Emergency Department from Eklavya dental college & hospital, granted permission to access register data. Ethics Committee provided ethical approval. Patient demographics, number and percentage of trauma, severity of injury, and mechanism of injury were all data variables in this analysis. Under the variable "nature of injury," contusions, soft tissue injuries, dento-alveolar injuries, mandible fractures, midface fractures, and multiple facial fractures were evaluated. Motor vehicle crashes, falls, attacks, sports incidents, work site injuries, animal bites, and miscellaneous were all classified as mechanisms of injury.

Statistical analysis:The statistical package for social sciences (SPSS) Version 23.0, was used to analyze the data. Each variable had its own set of descriptive measures and a χ^2 test.

Results-

During the lockdown period, 170 (10.4 %) maxillofacial trauma cases were presented, 723 (44.1 %) cases during the pre-lockdown period, and 745 (45.5 %) cases the previous year (2019 period). As compared to the respective predecessors, the number of maxillofacial trauma cases decreased by 35.1 % and 33.7 % during the lockdown time. As seen in Table 1 and Figure 1, there was a minor male predominance in all three classes, which was considered to be statistically insignificant (p -value =0.95).

Table 1:Distribution of gender among the study group and control groups

Gender	Frequency	2019	Pre-lockdown	Lockdown	Total
Male	Count	530	513	119	1162
	% within group	71.1	71	70	100
Female	Count	215	210	51	476
	% within group	28.8	29	30	100
Total	Count	745	723	170	1638
	Total %	45.5	44.1	10.4	100

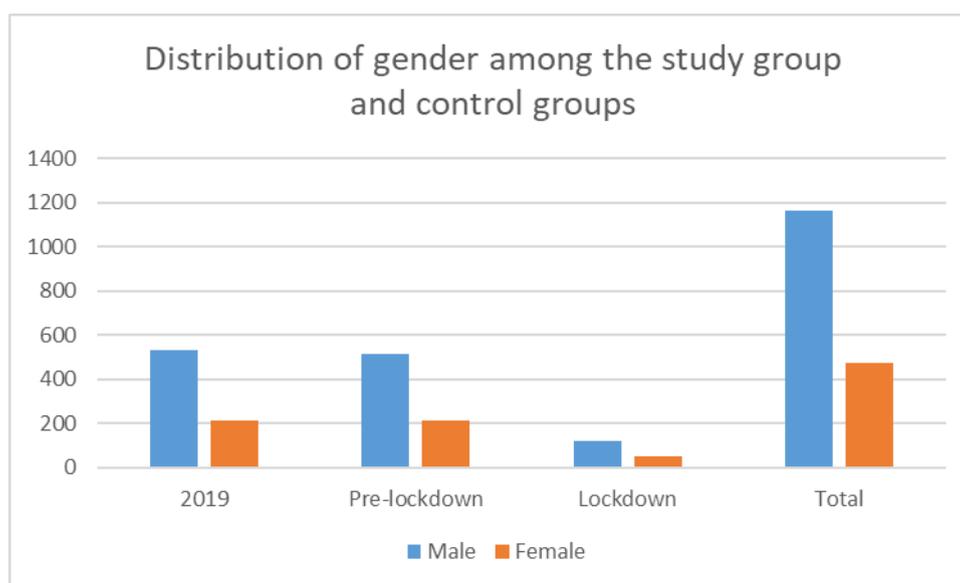


Figure 1: Distribution of gender among the study group and control groups

In both test groups, motor vehicle collisions were the most common cause of maxillofacial trauma, while in the research group, the most common cause of trauma was a fall. In the year 2019, there were 297 cases (44.5%) registered in motor vehicle collisions, 321 cases (48.1%) in the pre-lockdown period, and 50 cases (7.5%) in the lockdown period. As compared to the control groups, there was a statistically significant reduction (p -value =0.001) in all sub-categories of process of injury during the lockdown era. Animal bites caused the least number of trauma cases in all three categories, as seen in Table 2 and Figure 2.

Table 2: Distribution of mechanism of injury among the study group and control groups

Mechanism of injury	Frequency	2019	Pre-lockdown	Lockdown	Total
Motor vehicle	Count	297	321	50	668
	% within type of injury	44.5	48.1	7.5	100

accidents					
Fall	Count	209	196	66	471
	% within type of injury	44.4	41.6	14.0	100
Assault	Count	74	102	9	185
	% within type of injury	40.0	55.1	4.9	100
Sports injuries	Count	29	29	1	59
	% within type of injury	49.2	49.2	1.7	100
Worksite injuries	Count	21	13	6	40
	% within type of injury	52.5	32.5	15.0	100
Animal bites	Count	9	3	3	15
	% within type of injury	60.0	20.0	20.0	100
Others	Count	106	59	35	200
	% within type of injury	53.0	29.5	17.5	100
Total	Count	745	723	170	1638
	Total %	45.5	44.1	10.4	100

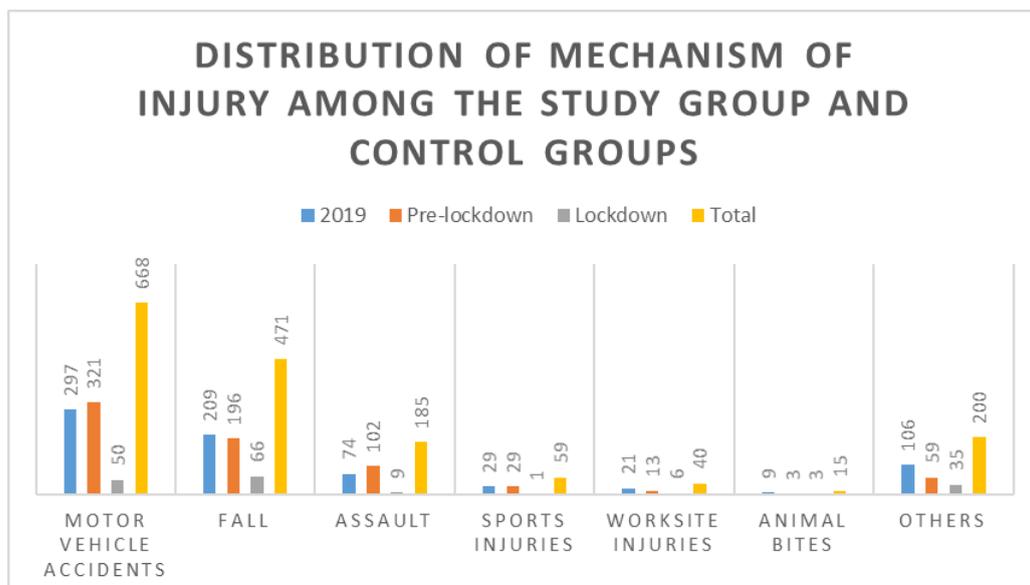


Figure 2: Distribution of mechanism of injury among the study group and control groups

The most common form of maxillofacial trauma identified in all three groups was laceration, according to an analysis of injury types. In the year 2019, there were 247 cases (43.6%) of laceration registered, with 263 cases (46.5%) in the pre-lockdown period and 56 cases (9.9%) in the lockdown period. As compared to the control groups, there was a statistically significant decrease (p -value =0.001) in all forms of injuries during the lockdown era, with pan facial fracture being the least common form of injury recorded in all three groups [Table 3 and Figure 3].

Table 3: Distribution of type of injury among the study group and control groups

Type of injury	Frequency	2019	Pre-lockdown	Lockdown	Total
Contusions and abrasions	Count	205	228	26	459
	% within type of injury	44.7	49.7	5.7	100
Lacerations	Count	247	263	56	566

	% within type of injury	43.6	46.5	9.9	100
Dento-alveolar injuries	Count	94	1.3	24	221
	% within type of injury	42.5	46.6	10.9	100
Mandible fracture	Count	31	24	5	60
	% within type of injury	51.7	40.0	8.3	100
Midface fracture	Count	48	41	21	110
	% within type of injury	43.6	37.3	19.1	100
Pan facial fracture	Count	14	4	2	20
	% within type of injury	70.0	20.0	10.0	100
Others	Count	1.6	60	36	202
	% within type of injury	52.5	29.7	17.8	100
Total	Count	745	723	170	1638
	Total %	45.5	44.1	10.4	100

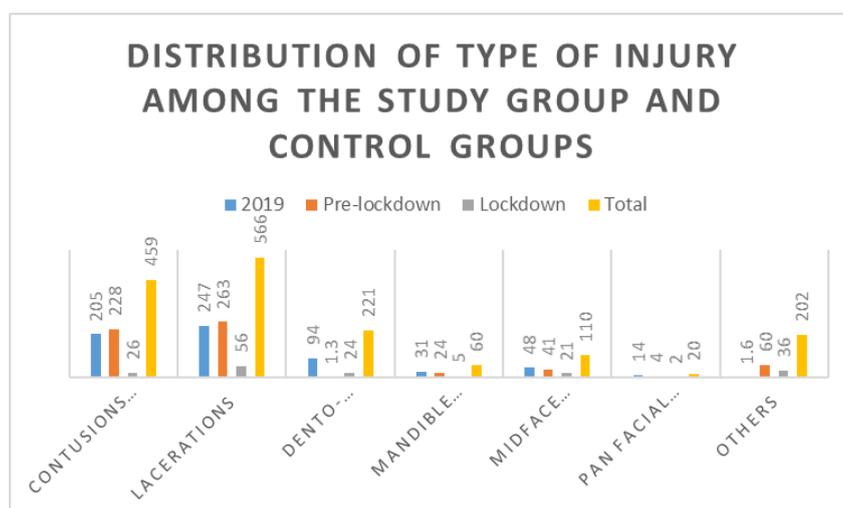


Figure 3: Distribution of type of injury among the study group and control groups

Discussion-

The Indian government imposed a nationwide curfew on March 24, 2020, in an effort to “flatten the curve” of Covid-19 spread. While the intention of the lockdown was to stop the spread of the deadly virus, it appears to be having an impact on the number of cases of maxillofacial trauma. To our knowledge, this was the first study in India to look at the total burden of maxillofacial trauma cases at three separate times: lockdown, pre-lockdown, and the previous year.

According to the findings of our research, there was a significant decrease in the number of maxillofacial fracture cases during the lockdown era as compared to pre-lockdown periods. According to Rajput *et al*, [9] report, public adherence to lockdown instructions is likely the primary contributing factor to the substantial reduction in the number of major traumatic presentations during lockdown. Furthermore, widespread fear of contracting Covid-19 has likely decreased traumagenic activity, resulting in 35.1 % and 33.7 % reductions in total maxillofacial trauma cases, respectively, as compared to the year 2019 and pre-lockdown periods.

When comparing data from 2019 and pre-lockdown periods, there was variation in the mechanism of injury. Our research found a significant reduction in road traffic collisions, injuries from sports and leisure, and smaller reductions in attacks, work site injuries, and animal bites, which was consistent with Fahy *et al.*, [10] study, which found a similar presentation of trauma cases during

the lockdown time. In our research, we discovered that the lockdown category had the highest number of trauma cases due to "dropping," indicating an increased incidence of domestic accidents due to mechanical falls, falls downstairs, and falls from ladders, which is consistent with the findings of Fahy et al. [10]

The short research time and single-center experience are both drawbacks of this study. The research will be strengthened by a broader, multi-center study that includes trauma patterns during lockdown. Due to social isolation during lockdown, there is a risk of increased, unreported, non-presenting self-harm and cases, which can affect a person's mental health. This research, however, has not been expanded to determine this.

Conclusion-

This study's results have significant public health consequences. The study group had a disproportionately high rate of injuries caused by falls, implying that the most common site of injury is still the house, and falls from less than 2 m in height are the most common injurious mechanism. The Indian government needs to introduce a public health program to reduce the danger of falling at home. As a result, the findings of this study will be used to prepare and enforce alternative procedures, define areas for development, and re-allocate resources and manpower in the event of potential epidemics or pandemics.

References-

1. Prakash O, Prajapati VK, Shahi AK, Khaitan T. Incidence of maxillofacial trauma amid CoViD-19: A comparative study. *J Maxillofac Oral Surg* 2020;1-6. doi: 10.1007/s12663-020-01484-y.
2. Kumari P, Toshniwal D. Impact of lockdown measures during COVID-19 on air quality – A case study of India. *Int J Environ Health Res* 2020;1-8. doi: 10.1080/09603123.2020.1778646.
3. Gautam S. The influence of COVID-19 on air quality in India: A boon or inutility. *Bull Environ Contam Toxicol* 2020;104:724-6.
4. Ajike SO, Adebayo ET, Amanyiewe EU, Ononiwun CN. An epidemiologic survey of maxillofacial fractures and concomitant injuries in Kaduna, Nigeria. *J Surg Res* 2005;7:251-5.
5. Sojot AJ, Meisami T, Sandor GK, Clokie CM. The epidemiology of mandibular fractures treated at the Toronto General Hospital: A review of 246 cases. *J Can Dent Assoc* 2001;67:640-4.
6. Majumder B, Karmakar R, Bose T, Dasgupta S, Basu R. Some host factors and seasonal variations in the fatal road traffic accidents occurring in eastern suburban Calcutta. *Indian J Public Health* 1996;40:46-9.
7. Adekeye EO. The pattern of fractures of the facial skeleton in Kaduna, Nigeria. A survey of 1,447 cases. *Oral Surg Oral Med Oral Pathol* 1980;49:491-5.
8. Morris D, Rogers M, Kissmer N, Du Preez A, Dufourq N. Impact of lockdown measures implemented during the Covid-19 pandemic on the burden of trauma presentations to a regional emergency department in KwaZulu-Natal, South Africa. *Af J Emerg Med* 2020;10:193-6.
9. Rajput K, Sud A, Rees M, Rutka O. Epidemiology of trauma presentations to a major trauma centre in the North West of England during the COVID-19 level 4 lockdown. *Eur J Trauma Emerg Surg* 2020;1-6. doi: 10.1007/s00068-020-01507-w.
10. Fahy S, Moore J, Kelly M, Flannery O, Kenny P. Analysing the variation in volume and nature of trauma presentations during COVID-19 lockdown in Ireland. *Bone Jt Open* 2020;1:261-6.