

# Lockdown Versus Epidemiology of Orthopedic Injuries: Our Experience at Tertiary Care Center in Central India

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## ABSTRACT

**Introduction:** COVID-19 is a global health crisis and was declared pandemic by world health organization (WHO). To stop the spread of it, Government of India declared lockdown from 24th march 2020 to 31st may 2020 which changes epidemiology of orthopedic injuries. Study aimed to evaluate the impact of lockdown on epidemiology of injuries in orthopedic patient.

**Material and methods:** We performed a longitudinal observational study on epidemiology of injuries in orthopedic patient reported to our center during lockdown period. We compared the data with the same period in year 2019.

**Results:** Number of patients reporting to the center reduced from 202 to 55 in year 2019 and 2020 respectively. Mechanism of injury during lockdown period is mostly attributed to slip and fall at home (41.8%) and injury while playing (20%) compared to 2019 in which road traffic accident (RTA) was the main cause. Age of the patient sustaining injuries is also changes from young age group during same period in 2019 as compared to older age group in lockdown period with greater number of children sustaining injuries during lockdown. There was delay of average 7 days in presentation to the hospital from the time of injury. Surgical intervention was delayed by average 6 days.

**Conclusion:** The impact of the lockdown during COVID-19 pandemic has led to a significant decline in the number of cases, change is epidemiology of injury pattern and change in orthopedic practice.

**Keywords:** COVID-19, Lockdown, Epidemiology

## INTRODUCTION

Novel Corona virus disease (COVID-19) stormed the entire world in recent past due to its novel nature and contagiousness and soon this disease was recognized as pandemic by WHO.<sup>1</sup> Governing bodies and healthcare providers over the world are trying to minimize the spread of the disease and to do so various countries imposed the strict lockdown in various time frame. Indian Government imposed lockdown in entire country from 24th of march to 31st may 2020 with resumption of services in phased manner was declared from 1st June which has been termed as “unlock 1”.

Lockdown had led to significant decrease in mobility of the general population and was assumed that it would reflect on epidemiology of injuries and patient demographics. We analyzed the data from 24th march to 31st may 2020 of the orthopedic patients and this was compared with data from same time frame in year 2019. This observational study was done to analyze the epidemiological profile of patients, type of injuries sustained, common mode of injuries, timing of

presentation to the hospital after injury and days taken for definitive surgical procedure.

## MATERIAL AND METHODS

**Patient sampling-** All orthopedics patients presenting to casualty room, inpatient medical records, operative notes and discharge summaries were accessed for same period in 2020 and 2019. Demographics including age, sex were recorded for all patients. Injury characteristics were recorded, including the anatomical location. The mechanism of injury was categorized, timing of presentation to hospital after injury and timing of surgical intervention was recorded.

**Study period** – The study period was from the start of lockdown on midnight of March 24, 2020 to May 31, 2020. This was compared with the same interval in March–May 2019 prior to any COVID-19 related measures to compare its impact 1 year apart.

**Inclusion criteria** – The study criteria comprised of all orthopedic trauma patients requiring admission presented to the casualty room of Government medical college situated in central India during the stated intervals of 1 year apart.

**Exclusion criteria** - Any patient with a postoperative complication arising in the period prior to the data collection were excluded. With respect to infections, all acute and chronic surgical site infections (SSI) and non-SSIs were excluded from the final analysis. Routine elective orthopedic cases were excluded.

## RESULTS

**Demographic data-**In accordance with inclusion and exclusion criteria, no missing data in the study was noted (Figure 1)

**Pre-lockdown era** - For the pre-lockdown period in 2019 there were 202 new patients. 164 (81.1%) were male and 38

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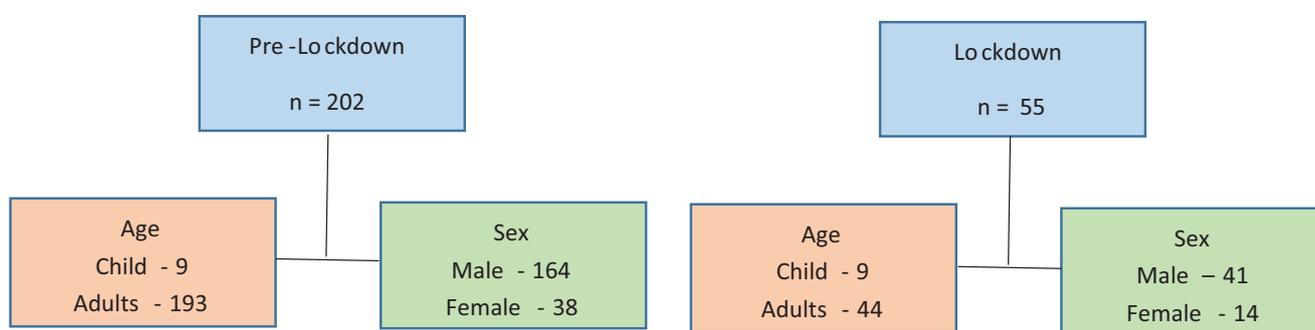
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	Pre-lockdown (n = 202)	Lockdown (n = 55)
<b>Demographic</b>		
Male	164 (81.8%)	41 (74.5%)
Female	38 (18.8%)	14 (25.41%)
<b>Mechanism</b>		
RTA	173 (85%)	19 (34%)
Slip and fall	18 (8.9%)	23 (41.8%)
Sporting	4 (1.9%)	11 (20%)
Assault	4 (1.9%)	1 (1.8%)
Railways	3 (1.4%)	0
<b>Injury pattern</b>		
Lower limb	145	30
Upper limb	57	25

**Table-1:** Table depicting epidemiology of patients during pre-lockdown and lockdown.



**Figure-1:** Demographic data pre-lockdown and lockdown.

were female (18.8%). 9 (4%) patients were children (< 18 years old) (Figure 1).

Lockdown era - For the lockdown period in 2020 there were 55 new patients (27.2% of those in 2019). 41 (74.5%) were male and 14(25.4%) were female. 9 (16.3%) patients were children (< 18 years old) (Figure 1)

**Mechanism of injury**

Road traffic accidents (RTA) account for 173 (85%) cases in pre-lockdown period as compared to 19(34%) cases in lockdown period. Slip and fall in household is drastically increased to 41.8% (23 cases) in comparison to pre-lockdown period 8.9% (18 cases). Injury due to playing the traditional games is increased to 20% (11 cases) compared to 1.9% (4 cases) in pre-lockdown period. Railway accidents cases were 1.4% in pre-lockdown to zero cases in lockdown period. Number of assault cases were comparable (1.9%) in pre-lockdown to lockdown period (1.8%). (table 1)

**Timing of presentation to the hospital**

From the time of injury to presenting to the hospital there was delay (average 7 days) in lockdown period compared to pre-lockdown period (average 2 days).

**Timing of surgical intervention**

Average 2 days used to be period from admission to surgical intervention in pre-lockdown era as compared to average 6 days during COVID-19 lockdown period.

**DISCUSSION**

**A shift in clinical practice-** Substantial amount of difference was noted between the number of acute presentations between pre-lockdown and lockdown at our center, without significant difference between sex distribution but significantly higher number of children (< 18-year-old) owing to unsupervised traditional sports being played as schools were closed completely during lockdown period as evident by a smaller number of cases of children during pre-lockdown period. This is supported by study by Räisänen et al<sup>2</sup> which shows 30% leisure time injuries as compared to school based injuries (18%). We observed that there was delay in presenting to the hospital post injury (7 days) as compared to pre-lockdown period (2 days). This may due to increased worries and apprehensions among the public regarding acquiring the COVID-19 infection<sup>3</sup> and unavailability of public transport during the same period. Various orthopedic societies came up with protocols to minimize risk of transmission<sup>4</sup>, accordingly an effort was made to reduce surgical intervention where possible. Our data showed that although operative interventions were reduced to some extent, the change was not statistically significant, reflecting again upon the complex nature of injuries, which mostly require surgical interventions and was delayed during lockdown period owing to delay in pre-operative confirmation of COVID-19 negative status of the patients

by RT-PCR,<sup>5</sup> which was not available at our center during early phase of lockdown period and samples was being sent to center for RT-PCR at nearby Nagpur and test results were delayed and so is surgical intervention. This shift in clinical practice is likely to have been a direct consequence of the lockdown measures implemented on a national scale.

**Demographic and injury pattern-** The comparison of number of trauma patients presented to our center is different between the 2 periods, as seen in Figure 1. There is a near equal split in sex in 2019 and an exact split in 2020. Similarly, in 2019, 95.5% of the patients were adults compared with 83.6% in 2020, with a higher number of children getting injured in 2020 (16.6%) as compared to 2019 (4.4%). Most common injury pattern in orthopedics is lower limb injuries.<sup>6</sup> Same is true in our study, Pre-COVID in 2019, the most common injury pattern was lower limb injuries at 71%. This was followed by upper limb injuries (28%). In lockdown, both upper and lower limb injuries are still the most common injury of which lower limb accounting for 54% and upper limb 45%.

**Mechanism of injury (MOI) -** Road traffic accidents is the most common MOI in India and worldwide.<sup>6,7</sup> Our study depicts the same in pre-lockdown era (85% cases) and was reduced to 34% cases in lockdown period. This attributed to strict regulations implemented by concerned authorities on mobility during lockdown with exception to those engaged in essential service business. It was also observed that those who met with RTA are mostly persons concerned with essential services. The New Zealand study<sup>8</sup> documented a predominance of injury at home, specifically falls in all age groups. There was a greater number of cases (41.8%) due to slip and fall in lockdown as compared to 8.9% case in pre-lockdown. This change was mostly because geriatric population was confined to household 24x7 and suffered from low energy fall and subsequent fracture.<sup>9</sup> In our study we also found that a greater number of children sustaining injury during lockdown period, this may be attributed to more time they were spending at their houses playing traditional games, which often used to be unsupervised by the parents. This injury may be called as leisure time injuries and same is supported by Räsänen et al.<sup>2</sup> Injury due to railways can be devastating<sup>10</sup> and most of the patient sustain crush injury and most of them end up in amputation. There was not a single case reported in our study during lockdown due to nationwide closure of railway services during this period. Assault as the cause of injury was comparable during both time interval in our study, showing no impact of lockdown.

#### Limitations and future studies

The limitations of this longitudinal observational study include analyzing 2x9-week snapshots 1 year apart, at a single trauma center. This may not be representative of the national profile. Further work is required to observe for trends in acute orthopedic referrals and orthopedic trauma surgical instances as a result of the structural reconfiguration due to COVID-19. Bias was kept to a minimum and the date range between the two years was dictated by the evolution

of the pandemic.

## CONCLUSION

The COVID-19 pandemic has had a unique impact on trauma and orthopedic care. Trauma cases rates have fallen, with patient presenting late to the hospital and there was delay in definitive procedure. Number of RTA has come down drastically and number of slip and fall case among the geriatric populations has increased so as children sustaining injury more often since the implementation of lockdown measures indicating a change in prevalence pre- and post-COVID. We recommend more work to investigate the phenomenon further and whether a similar pattern is seen across the India.

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