



TRAUMA TRENDS DURING COVID 19 ERA AT A TERTIARY CARE CENTRE IN INDIA

Orthopedics

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ABSTRACT

Background- Covid-19 pandemic has forced governments to use lockdown as their master weapon to contain its spread. Though this decreased virus spread, it has also influenced admission patterns in the hospitals especially the trauma emergency admissions

Purpose- comparison of trauma admission patterns of the lockdown period with immediate pre lockdown period of same length at a tertiary level trauma centre in India

Material and method- Patients referred to tertiary level trauma centre and admitted for treatment constitutes the material of the study. Registry from Data centre of the institute used as a source of data. This data was divided into two groups A (from 15/02/2020 to 24/03/2020, Pre Lockdown (40 days) and group B (from 25/03/2020 to 03/05/2020, Lockdown (40 days) and includes name of the patient, age, registration number, gender, address, mode of injury and the type of injury.

Results- total admissions decreased from 2571 (Pre Lockdown) to 779 during lockdown. Proportionate and absolute decrease was observed for road traffic accidents (from 58.7% to 28.6%) and lower limb injuries (34.9% to 22.3%) was observed while proportionate increase in assault (3.5% to 11.6%), fall from height (14.9% to 24.3%) and upper limb injury (12.9% to 25%) was seen.

Conclusion- Lockdown in India to flatten the Covid- 19 curve has also decreased trauma admissions which helped in saving resources for the pandemic. Road traffic accidents are the major part of trauma injuries during routine life which decreased during lockdown but not reduced to near zero signifying involvement of other factors other than traffic congestion. There is relative increase in assault and fall from height in lockdown. There is relative increase in upper limb injuries in lockdown. Age distribution almost remained the same in both the groups

KEYWORDS

Covid-19, Lockdown, Trauma centre, Pattern of admissions, Road Traffic accidents

INTRODUCTION

The Covid-19 pandemic which is caused by SARS-CoV2 virus, started at Wuhan region of China and soon spread to the rest of the world like a wildfire¹. Number of infected people and number of deaths are still at a rise². This virus spreads from person to person in many different ways and governments throughout the world have found it difficult to contain it³. Many governments have used lockdown as their master weapon to contain it by breaking chain of transmission.

Lockdown can be applied in varying severity as per the local requirements of the respective country. But a total lockdown usually doesn't allow movements of its citizens other than for emergencies. Aviation, railways as well as road transport is prohibited. All the schools, colleges, factories, construction work, shops and restaurants are shut down. Only essential services and people working for them are allowed to work and move. This leads to break in chain of transmission as people do not come in contact with each other. This also has huge impact on economy and social life of people⁴.

India too used lockdown very early in the course of pandemic to stop spread of the virus⁵. Though this decreased virus spread, it has also influenced admission patterns in the hospitals especially the trauma emergency admissions. Definitely a decrease in admissions has been observed all over the world due to decreased movements of people and also cases which can be managed conservatively are not being admitted. But, we could not find any study which tells the demographics of this change.

In this study, we have compared the trauma admission patterns of the lockdown period with immediate pre lockdown period of same length at a tertiary level centre in India. This study includes not only difference in total number of patients between the two periods but also the demographic changes and changes in injury pattern.

MATERIAL & METHOD

All those Patients who were referred to a tertiary level trauma centre situated in Northern India, from 15th Feb 2020 to 3rd May 2020 and were

admitted in the hospital for treatment constitutes the material of the study. Registry from Data centre of the institute and admission records were used as a source of data retrieval. Patient details between 15th Feb 2020 and 3rd May 2020 were collected from the registry. This data was divided into two groups A (from 15/02/2020 to 24/03/2020, Pre Lockdown (40 days) and group B (from 25/03/2020 to 03/05/2020, Lockdown (40 days). This data included name of the patient, age, registration number, gender, address, mode of injury and the type of injury. Patients were admitted as per the standard protocol for the trauma management throughout the period.

Type of injury was divided according to the department involved. Orthopaedic injuries were divided into upper limb, lower limb and spine injuries. Chest trauma, facial trauma and abdominal trauma were included in General Surgery. Head injuries formed a separate category. Mode of injury were identified as road traffic accidents, fall from height, assault, alcohol intoxication, animal bite, burn, blast injury, Gunshot, machine injury, train accidents and miscellaneous which included slip and fall and other domestic injuries.

We used Excel and SPSS software (version 16) for statistical analysis.

RESULTS-

A total of 3350 patients were admitted in tertiary care trauma centre during the study period. Significantly more patients were admitted in Pre Lockdown period (2571, 76.7%) when compared to Lockdown period (779, 23.3%). (Table 1)

Out of the total patients admitted in Pre Lockdown period males were 2046 (79.6%) and females were 525 (20.4%). During Lockdown period males and females were 572 (73.5%) and 207 (26.5%) respectively. (Table 1) (Graph 1)

Average age of patients admitted in Pre Lockdown and Lockdown was 33.05 and 32.86 respectively. Maximum patients were young and belonged to 21-40 years of age group in both the groups. Age distribution among both the groups was quite similar. (Table 2) (Graph 2)

Most common mode of injury among both the groups was Road traffic accident with 1511 (58.7%) and 223 (28.6%) respectively, though there is a striking difference in the proportion. There was an increase in proportion of injuries due to fall from height, assault and burn incidents during the Lockdown as shown in Table 3. (Graph 3)

The total number of injuries was 2665 in Pre Lockdown and 850 during Lockdown. Number of injuries was more than the number of patients as 42 patients in Pre Lockdown group and 29 patients in Lockdown group had multiple injuries. Lower limb injury constituted the major part (34.9%) of the total injuries in Pre Lockdown period and Head injuries were major part (28.7%) in Lockdown period. Percentage of lower limb injury (22.3%) was even less than the upper limb injuries (25%) during the Lockdown period. (Table 4) (Graph 4)

DISCUSSION

Covid 19 pandemic has been a testing time for most of the nations of the world along with their governments, hospitals and healthcare workers. Countries have used lockdown as their master weapon to flatten the Covid 19 curve in their respective countries to break chain of transmission and prevent healthcare facilities from being overburdened. Lockdown has indeed helped in flattening the curve but it also had impact on pattern of trauma admissions in health facilities. As every nation has limited healthcare facilities compared to their populations, especially in a country like India, judicial use of them becomes more necessary. Thus, decreased trauma has helped hospitals to divert their infrastructure and manpower for treatment of Covid 19 patients preventing overburdening of hospitals and staff. In this study, we have tried to find out the impact of Covid 19 on the admission pattern and the demographics of these admissions in a tertiary level trauma centre in northern India.

As expected, total number of patients admitted during lockdown is far less than the patient admitted during Pre Lockdown. This is because people stayed at home and were only allowed to go out in case of emergencies and essential services. All public transports, industries and factories were closed leading to less movement of people. In a study by Grant et al, there was significant decrease in trauma cases during the lockdown period when compared to immediate pre lockdown period and during same period previous year⁶. A similar decrease has also been reported from the Italy and England^{7,8}.

The number of males is more in both the groups but their relative proportion has decreased during lockdown. In a country like India, males from a family are major working force. As they go out for work they are more likely to be injured in road traffic accidents and in industrial trauma. Even during lockdown, males are more likely to come out of their houses for essential activities. Males are more involved in assaults thus they form the major part of the patients in both the groups. In the study by Christey Grant et al, males are injured more in both the groups⁶.

Average age was similar in both the groups. There were minor changes in number of patients according to the age groups. Minor increase in children as they were at home due to closure of schools and may have sustained injuries like supracondylar humerus fractures while playing at home. Less number of cases in younger age group during lockdown can be explained due to decreased mobility and accidents. Similar observations were also seen in other studies⁶.

Road traffic accidents (RTAs) was major mode of injury in pre lockdown period with whopping 58.7% contribution among the total cases. RTAs were also major contributor in lockdown group but its contribution reduced to 28.6% but was not 0 % as people were still moving for essential services and basic necessities. One more reason can be due to careless driving on empty roads. This also draws attention towards other factors other than traffic congestion for road traffic accidents; these can be due to conditions of the roads, people not following traffic rules. A campaign from government time to time regarding road safety can be useful in this regard. As trains were not running nationwide, there were no injuries due to train accident during lockdown.

An increase in Assaults was noted from 3.5% in pre lockdown to 11.6% in lockdown. This could be due to increased domestic violence and decreased jobs. Governments can provide online psychiatric counselling and female helpline number for the same. Meditation can also help. Similarly, fall from height also increased from 14.9% to

24.3%. Kids can be a major contributor of fall from height injuries. A better guideline regarding structural designs of the houses can prevent these kind of injuries. Grant et al, reported fall as major contributor in their study⁶.

Among the injury patterns, a noticeable change was observed between upper limb and lower limb injuries between pre lockdown and lockdown. Upper limb injuries increased from 12.9% to 25% in lockdown and lower limb injuries decreased from 34.9% to 22.3%. This change can be attributed to decreased RTAs. RTAs are high velocity trauma and causes more lower limb injuries. Increase in upper limb injuries can be due to increased assaults. A similar incidence was noted in both the groups for spine, head and general surgery injuries.

This study reflects the demographics of trauma cases in lockdown period and also compares the change with immediate pre lockdown period of same length. But it should also be compared to the demographics of the patients who got injured during same interval of period during past few years. This constitutes one of the limitations of this study. A multi centre reporting of demographics across the country can be more useful and future studies can focus on that. This can be useful in preparing for future pandemics and epidemics, especially for optimizing trauma care and resources.

CONCLUSION

Lockdown in India to flatten the Covid- 19 curve has also decreased trauma admissions which helped in saving resources for the pandemic. Road traffic accidents are the major part of trauma injuries during routine life which decreased during lockdown but not reduced to near zero signifying involvement of other factors other than traffic congestion. There is relative increase in assault and fall from height in lockdown. There is relative increase in upper limb injuries in lockdown. Age distribution almost remained the same in both the groups.

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Conflict of interest - None

Table 1- Distribution of cases according to gender

Count of S. No	Gender		
Row Labels	Pre-lockdown	Lockdown	Grand Total
F	525 (20.4%)	207 (26.5%)	732
M	2046 (79.6%)	572 (73.5%)	2618
Grand Total	2571 (76.7%)	779 (23.3%)	3350

Table 2- Distribution of cases according to Age

Count of S. No	Age group		
Row Labels	Pre-lockdown	Lockdown	Grand Total
0 - 10 YRS	284 (11.1%)	99 (12.7%)	383
11 - 20 YRS	377 (14.7%)	117 (15.0%)	554
21 - 40 YRS	1170 (45.5%)	324 (41.5%)	1494
41 - 60 YRS	479 (18.6%)	173 (22.2%)	652
> 60 YRS	261 (10.1%)	66 (8.4%)	327
Grand Total	2571 (76.7%)	779 (23.3%)	3350

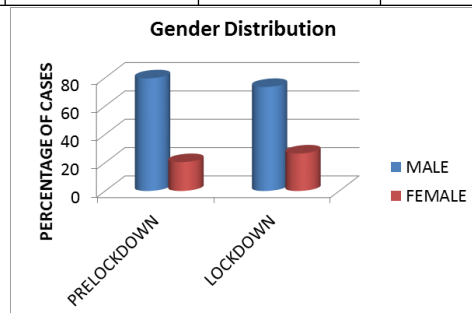
Table 3- Distribution of cases according to mode of injury

Mode of injury	Pre-lockdown	Lockdown	Grand Total
ALCOHOLIC INTXIS	5 (0.2%)	0 (0%)	5
ANIMAL BITE	8 (0.3%)	3 (0.3%)	11
ASSAULT	91 (3.5%)	91 (11.6%)	182
BURN	6 (0.2%)	34 (4.3%)	40
BLAST INJURY	8 (0.3%)	3 (0.3%)	11
FALL FROM HEIGHT	385 (14.9%)	190 (24.3%)	575
GUN SHOT	19 (0.7%)	10 (1.2%)	29
MACHINE INJURY	94 (3.6%)	58 (7.4%)	152
ROAD TRAFFIC ACCIDENT	1511 (58.7%)	223 (28.6%)	1734
TRAIN ACCIDENT	18 (0.7%)	0 (0%)	18
MISCELLANEOUS	426 (16.5%)	167 (21.4%)	593
Grand Total	2571	779	3350

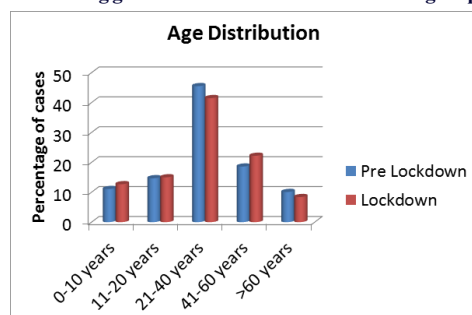
Table 4- Injury pattern among the total cases

S No.	Type of injury pattern	Pre Lockdown	Lockdown
1.	Upper Limbs	344 (12.9%)	213 (25.0%)
2.	Lower Limbs	932 (34.9%)	190 (22.3%)

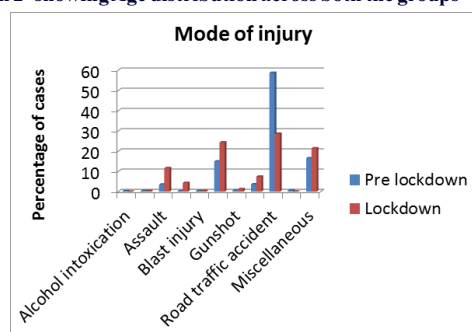
3.	Spine injury	152 (5.7%)	44 (5.17%)
4.	Head injury	805 (30.2%)	244 (28.7%)
5.	General Surgery	432 (16.2%)	159 (18.7%)
	Total	2665	850



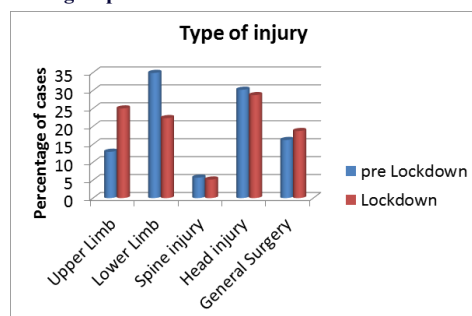
Graph 1- showing gender distribution across both the groups



Graph 2- showing Age distribution across both the groups



Graph 3- distribution of cases according to mode of injury between two groups



Graph 4- Distribution of cases according to type of injury in both the groups

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