Research Article

# The effect of coronavirus disease-19 lockdown on the incidence and profile of penetrating ocular injuries

**Aakanksha Gupta, Jaishree Murli Manoher**

Department of Ophthalmology, PBM Eye Hospital, Sarder Patel Medical College, Bikaner, Rajasthan, India

**Correspondence to:** Aakanksha Gupta, E-mail: aakankshagupta3536@gmail.com

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## ABSTRACT

**Background:** Perforating ocular injuries in particular carry a high risk of visual morbidity in all age groups. Risk factors associated with ocular trauma include gender, age, occupation, and lower socioeconomic status. Eye injuries are causing a major concern to the general ophthalmologists both in the developed and developing countries. **Objective:** The objective of this article is to study the profile of penetrating ocular injuries before and during the period of lockdown. **Materials and Methods:** A study was done to make a comparative analysis of the penetrating ocular injuries occurring during the period of lockdown of 3 months (April 1, 2020–June 30, 2020) and 3 months (January 1, 2020–March 31, 2020) before lockdown. **Results:** The study included 33 patients hospitalized before lockdown and 45 hospitalizations during the lockdown in all age groups. Injuries were more common in males. The injuries reported in the age group of 0–15 years before lockdown were 36.36% while during lockdown 60% injuries were observed. Modes of injuries reported before lockdown were indoor injuries (36.36%) and road traffic accidents (36.36%) while during lockdown, the major mode of injuries were indoor injuries (76.6%) whereas the road traffic accidents (10.0%) declined. **Conclusion:** During the lockdown, indoor injuries were more common in comparison to the outdoor injuries such as road traffic accidents, the latter being more prevalent before lockdown. During lockdown, increase in the indoor leisure activities of children led to a rise in the cases of eye injuries and an increase of almost double the number was observed. In addition to this, immobilization led to a decrease in the injuries due to road traffic accidents. The coronavirus disease-19 lockdown did have an impact on the profile of penetrating ocular injuries.

**KEY WORDS:** Coronavirus Disease-19; Penetrating Ocular Injury; Lockdown Period

## INTRODUCTION

Ocular injuries are increasingly becoming a permanent yet avoidable cause of blindness.[1] Trauma is an important cause of serious ocular morbidity. Each year there are 55 million ocular injuries globally that "restrict activities for more than 1 day," 19 million have at least unilateral reduction in vision and 1.6 million people are blinded by injury.[4] Trauma is often the most important cause of unilateral loss of vision, particularly in developing countries.[2] Perforating ocular injuries in particular carry a high risk of visual morbidity in all age groups. Risk factors associated with ocular trauma include gender, age, occupation, and lower socioeconomic status.[3] Eye injuries are causing a major concern to the general ophthalmologists both in the developed and developing countries.

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## MATERIALS AND METHODS

The study was conducted in PBM Eye Hospital, Bikaner. It is a retrospective comparative study based on the data

collected from the hospital records. The data were collected for all the hospitalizations due to penetrating eye injuries during the period of lockdown of 3 months (April 1, 2020–June 30, 2020) and 3 months before the lockdown (January 1, 2020–March 31, 2020). Patients from all the age groups with penetrating eye injuries were included in the study. The demographic details of the patients such as age, sex, mode of injury, and objects of injury were documented. The injuries in both the genders were listed separately before and during the lockdown. The patients have been divided in age groups of 15 years beginning from birth till 90 years of age. The injuries excluded from the study are blunt trauma injuries, blast injuries except those causing open globe injuries, corneal foreign body, and perforating ulcers.

## RESULTS

A comparative study of the penetrating eye injuries for the patients hospitalized during the period of lockdown from April 1, 2020, to June 30, 2020, and hospitalizations before the period of lockdown from January 1, 2020, to March 31, 2020, was done.

Patients with all age groups were admitted. Thirty-three patients were hospitalized before lockdown while 45 patients during lockdown. Majority of the patients were male with 72.7% of injuries before and 73.3% of injuries during lockdown [Table 1].

Among all these injuries, majority of the injuries were in the age group below 15 years of age which almost doubled during the lockdown period from 36.36% to 60.0% [Table 2].

The most common modes of injuries before lockdown were while playing at home (36.36%) followed by road traffic accidents (36.36%) and occupational injuries such as wood cutting (18.18%) and assaults (9.09%). According to the data, during lockdown, there was a marked rise in the number of indoor injuries (77.77%) like injuries while playing with wooden stick (24.44%), barbed wire injuries (20%), and injuries with utensils such as knife or glass (13.33%), fall on stone (8.88%), and rope (6.66%). During lockdown, a decline in the injuries due to occupational hazards (13.33%) and road accidents (8.88%) has been noticed [Table 3].

A subgroup analysis of different modes of injuries before and during the lockdown showed a significant difference in certain age groups [Table 4].

**Table 1:** Distribution according to gender

| Variables | Before lockdown | During lockdown |
|---|---|---|
| Males injured | 24 | 33 |
| Females injured | 9 | 12 |

## DISCUSSION

Ocular injury is a well-established cause of preventable visual loss. The epidemiology of ocular injuries varies in community, regions, and with time. In the study, we found that before lockdown, there has been an equal incidence of indoor injuries as well as road traffic accidents. During lockdown, a marked increment was observed in indoor injuries, with a vast decline in the accidental cases, occupational injuries, and assaults.

An analysis of patients hospitalized for penetrating eye injuries shows that males are more often afflicted in all the age groups. Similar results were seen in different studies on penetrating ocular injuries conducted in India, where the injuries in male population was more as opposed to the females.[1,11] Of all the cases, 36.36% of cases before lockdown, while 60% of patients during lockdown were under the age group of 15 years, emphasizing the vulnerability of younger age group to the injuries.

This study is limited by a small sample size, no assessment of visual acuity, and severity of injuries. The study is strengthened by the fact that analysis has been done after authentic collection of data.

**Table 2:** Distribution according to age

| Range(in years) | Before lockdown | During lockdown |
|---|---|---|
| 0–15 | 12 | 27 |
| 16–30 | 8 | 5 |
| 31–45 | 6 | 7 |
| 46–60 | 4 | 3 |
| 61–75 | 3 | - |
| 76–90 | - | 3 |

**Table 3:** Type of injuries

| Type of injuries | Before lockdown | During lockdown |
|---|---|---|
| Outdoor injuries | | |
| RTA | 12 | 4 |
| Occupational | | |
| Fields | 6 | 6 |
| Factories | 0 | 0 |
| Assaults | 3 | 0 |
| Indoor injuries | | |
| Playing | | |
| Wooden stick | 6 | 11 |
| Utensils | 5 | 6 |
| Stone | 1 | 5 |
| Barbed wire | 0 | 9 |
| Rope | 0 | 3 |
| Self-inflicted/assault | 0 | 1 |

**Table 4:** Distribution of different types of injuries according to age

| Age group (years) | Road accidents | | Assaults | | Occupational | | Wooden stick | | Stone | | Knife/ Glass | | Barbed wire | | Rope | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | B | D | B | D | B | D | B | D | B | D | B | D | B | D | B | D |
| 0–10 | - | - | - | - | - | - | 4 | 7 | 1 | 3 | 3 | 3 | - | 6 | - | 2 |
| 11–20 | - | - | - | - | - | - | 2 | 4 | - | 1 | 2 | 3 | - | 3 | - | 1 |
| 21–30 | 3 | 1 | - | - | 3 | 2 | - | - | - | - | - | - | - | - | - | - |
| 31–40 | 5 | 2 | 1 | - | 2 | 1 | - | - | - | - | - | - | - | - | - | - |
| 41–50 | 3 | - | 1 | - | - | 2 | - | - | - | - | - | - | - | - | - | - |
| 51–60 | - | 1 | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - |
| 61–70 | - | - | 1 | - | 1 | - | - | - | - | - | - | - | - | - | - | - |
| 71–80 | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 81–90 | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - |

*B: Before lockdown *D: During lockdown

Majority of the penetrating eye injuries occurred in males. Of these maximum injuries were in the younger age group below 15 years of age which has shown a significant rise in the number of injuries. Due to the coronavirus disease (COVID-19) pandemic, the people were forced to stay at home and the effect of this is seen as increase in the number of indoor injuries among children. Along with this, the road traffic accidents have declined as the transportation was completely prohibited. A decline in the number of cases of assault is also seen during the lockdown period as there were no gatherings.

Eye trauma occurs fairly frequently in developing countries and constitutes a major health problem. Efforts to prevent ocular injuries, especially among the younger age group, should be made by increasing awareness of the environment in which the children play and also the objects with which they play. The necessity to seek professional medical helps soon after the injury and the danger of delaying treatment should also be stressed upon.

Since prevention plays a very key role in the management of penetrating eye injuries, greater attention should be paid to the potential causes of injury. From our analysis, we concluded that majority of injuries particularly during lockdown occurred in domestic settings. Thus, adequate supervision of children must be emphasized and playing with sharp objects should be discouraged.[3] The public should be encouraged to wear protective gears, especially while performing dangerous tasks. This communication is an attempt to present a comparative analysis of penetrating eye injuries.

## CONCLUSION

During the lockdown, indoor injuries were more common in comparison to the outdoor injuries such as road traffic accidents, the latter being more prevalent before lockdown. During lockdown, increase in the indoor leisure activities of children led to a rise in the cases of eye injuries and an increase of almost double the number was observed. In addition to this, immobilization led to a decrease in the injuries due to road traffic accidents. The COVID-19 lockdown did have an impact on the profile of penetrating ocular injuries.

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