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## Impact of Covid-19 lock down period on ocular trauma in pediatric population

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### Abstract

**Introduction:** This study investigated the effect of coronavirus disease 2019 (COVID-19) lockdown on the incidence of ocular trauma in children.

**Methods:** In this retrospective cohort study, we collected data of pediatric patients who presented with ocular trauma in the emergency department during the lockdown period (from 22 March, 2020, to 30 May, 2020). In addition, we collected data of patients presenting with ocular trauma during the same period in the previous year. We compared the number of patients who underwent ocular surgery and the number of paediatric patients with ocular trauma between these two periods. A confounding factor may be the absence of patients from different districts who could not travel to the centre due to travel restrictions.

**Results:** Between 22 March, 2019, and May 2019, a total of 156 (17%) of total opd patients presented with ocular trauma, of whom 28(27.8%) required surgery. By contrast, between 22 March, 2020, and May 2020, a total of 92(33.9%) of total outdoor patients presented with ocular trauma, of whom 25(65.7) % required surgery.

**Conclusions:** Covid-19 lockdown exerted a significant effect on the incidence of ocular trauma in pediatric population.

**Keywords:** Lockdown, incidence of ocular trauma, Covid-19

### 1. Introduction

Coronavirus disease 2019 (Covid-19) pandemic is disrupting the world and representing the most significant stress test for many national healthcare systems and services since their foundation. The supply-chain disruption and the unprecedented request for intensive care unit beds have created conditions typical of low-resource settings in Europe. The Covid-19 epidemic, which originated in Wuhan, Hubei Province, China, and has been rapidly spreading to other provinces in China and 190 countries worldwide, was declared a global pandemic by the World Health Organization on March 9, 2020, becoming a 'public health emergency of international concern'. Patients who are positive for Covid-19 infection are the main source of infection. Asymptomatic Covid-19 patients are extremely contagious, with a strong infectivity in the incubation period ranging from 1 to 14 days. The person-to-person transmission routes of 2019-nCoV include direct transmission, such as through coughing, sneezing, and droplet inhalation transmission, and contact transmission, such as through contact with oral, nasal, and eye mucous membranes. Whether Covid-19 transmission occurs through the faecal-oral route remains to be determined. Infection control measures are mandatory to prevent the virus from spreading and to help control the epidemic situation<sup>[1]</sup>. Because of the rapid identification of infection during the diagnosis and treatment of ocular diseases, non-urgent outpatient ocular treatments were suspended, maintaining only crucial emergency situations.

The imposition of lockdown and social distancing measures are major actions implemented by many governments to prevent community spread<sup>[2, 3]</sup>. The current study investigated the effect of Covid-19 lockdown on the incidence of ocular trauma.

**Method:** This retrospective cohort study was conducted after obtaining approval from the hospital's ethics committee. In India, since the imposition of Covid-19 lockdown from 22 March, 2020, travel restrictions have been implemented and interdistrict transportation has been stopped. Accordingly, for this study, we retrieved data of pediatric patients who

presented with ocular trauma to our emergency department between 22 March, 2020, and 30 May 2020, from the electronic medical system of our hospital and. In addition, we collected data of patients presenting with ocular trauma during the same period in the previous year. We determined the number of pediatric patients who presented with ocular trauma, the number of pediatric patients who required surgery.

**Results:** During the study period in 2020, we found that 278 patients presented in the emergency department. Of these patients, 92(33.9%) experienced ocular trauma. Of these 23 pediatric patients with ocular trauma out of 35 children operated makes (65.7%) of pediatric patients during this period, we compared these data with those during 2019 and found considerable differences. In 2019, a total of 913 pediatric patients presented to the pediatric ophthalmology department. Of these pediatric patients, 156 (17%) had ocular trauma. Of patients with ocular trauma, 25 cases operated makes 26.8% of total pediatric surgery during this period. (Table-1)

Because our hospital is a tertiary eye care centre, patients from surrounding districts visit our hospital. However, because of Covid-19 lockdown, patients only from one district in which the hospital is located visited the centre. Despite this confounding fact, many patients with ocular trauma presented, with most of them being paediatric patients.

**Discussion**

Covid-19 can have an ophthalmic manifestation and thus can be secreted in tears [3-6]. Coronaviruses can cause a wide spectrum of ocular diseases, including anterior segment diseases, such as conjunctivitis and anterior uveitis, and posterior segment diseases, such as retinitis and optic neuritis [51]. The current understanding regarding how SARS-CoV-2 spreads is largely based on what is known about other similar coronaviruses. Currently, two types of SARS-CoV-2 (L and S) have been detected [2]. The

lockdown was imposed to reduce human-to-human transmission of Covid-19.

Many studies have examined the effect of COVID-19 lockdown in terms of disease prevention, [3-6] environment, and emotional and psychological conditions [7-10].

The current study focused on the effect of Covid-19 lockdown on the incidence of ocular trauma. We found an increased incidence of ocular trauma, particularly in children.

We could not find any study reporting similar findings.

Hamroush *et al* reported similar findings; however, they did not compare their findings with previous data and did not study surgical intervention and ocular trauma in the paediatric age group [11].

Christine *et al* reported a decreased incidence of general trauma and admission, as well as about few cases who required faciomaxillary services during the lockdown period [12].

Ida *et al* indicated that many patients presented with faciomaxillary injury during the lockdown period [13].

Furthermore, Nair and Honaver reported that the majority of ophthalmic surgeons in India are not performing elective surgery during the lockdown period; thus, all emergency cases are diverted to institutions [14, 15].

The increase incidence of ocular trauma observed in the current study may be attributed to children being at home and limited mobility during the lockdown period. The incidence of ocular trauma and underlying reasons may not be the same in other countries because only a study from Britain has been published.

Because Covid-19 lockdown is being lifted from different countries, we may observe a reversal of this effect. Currently, we have minimal evidence of this Covid-19 effect on ocular trauma incidence, and we might observe additional data from multiple centres.

**Conclusion**

Covid-19 lockdown exerted a direct effect on the incidence of ocular trauma in children.

**Table 1:** Comparative study of emergencies and ocular trauma cases during consecutive years.

Year	Pediatric OPD	Pediatric INJ	Ped Surg for trauma	Ped surgery
2019	913	156(17%)	25(26.8%)	93
2020	278	92(33.9%)	23(65.7%)	35

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