Fireworks-related Legislatures: Are They Actually Followed? - An Ophthalmological Perspective

Sir,

The display of fireworks is an integral part of various celebrations worldwide. Any untoward incident can change this delightful experience into a gruesome encounter. Firework-related injuries have been reported during such commemorations on different occasions throughout the world.[1] Several legislations have been passed in various countries to regulate the sale of fireworks.[1]

Diwali is one such festival, celebrated in the months of October or November. However, due to the absence of firework-related laws in India, the number of fireworks-related ocular injuries is high.[2] In 2018, the honorable Supreme court of India restricted the permissible duration of bursting firecrackers to 2 hours on the day of Diwali. In accordance to the state government’s recommendations, the time slot fixed for the state of Tamil Nadu was 6 am–7 am in the morning and 7 pm–8 pm in the evening.

We evaluated the compliance in adhering to the time restrictions laid down by the honorable Supreme court among the patients with firecracker-related ocular injury. All the patients presenting to a tertiary-care ophthalmology hospital in Tamil Nadu with a history of fire-cracker ocular injury 1-day prior to 5 days post-Diwali in 2018 were interviewed about the timing of injury, residential location (urban or rural), proximity to home at the time of bursting crackers, presence of adult supervision in case of children, and timing of cracker injury.

Ninety-three patients with a median age of 13 years (Range, 2–60 years) presented during this period, out of which 17 suffered bilateral ocular injuries. While 76 patients (81.7%) were male, 17 (18.3%) were female. Only 24 patients (25.8%) were injured within the allotted time of using fireworks (compliant ones), while 69 (74.2%) were injured outside the allotted time (defaulters). All the defaulters and/or their attendants said that they were unaware of the new legislature. The median age of patients injured the compliant ones and defaulters was 14.5 and 13.0 years, respectively (P = 0.358). The percentage of male and female patients defaulting the rule was 77.6% (n = 59/76) and 58.8% (n = 10/17), respectively (P = 0.109). Percentage of defaulters among <18-year-old and ≥18-year-old patients was 74.5% (n = 41/55) and 73.7% (n = 28/38), respectively (P = 0.950). Among the <18-year-old patients, only 17 (30.9%) were being supervised by adults. Percentage of defaulters among supervised and unsupervised patients was 52.9% (n = 9/17) and 84.2% (n = 32/38), respectively (P = 0.012).

While 34 patients (36.6%) belonged to rural background, 59 patients (63.4%) were from urban set-up. Percentage of defaulters among rural and urban patients was 70.6% (n = 24/34) and 76.3% (n = 45/59), respectively (P = 0.546). While 63 patients (67.7%) were playing with firecrackers near their homes, 30 (32.3%) were away from their respective homes. Percentage of defaulters among patients playing with fireworks near home and away from home was 66.7% (n = 42/63) and 90.0% (n = 27/30), respectively (P = 0.016). Twelve eyes (12.9%) presented with open globe injury and underwent surgery. However, six eyes had severe ocular trauma and lost vision completely. None of the patients had orbital fractures. Five people suffered lacerations on face and required suturing. Since our hospital has an ophthalmology set-up only without a multi-specialty backup, patients sustaining injuries to other parts of the body are not expected to seek treatment here. The World Health Organization has called for strict laws regulating fireworks and a number of legislations have been made worldwide.[3] The firework-related legislations can broadly be categorized as restrictive or permissive. A decrease in the incidence of firework-related injuries has been seen after imposition of restrictive laws.[4–6] Wisse et al., in their review article, found that the countries or states imposing restrictive firewall laws showed 87% less ocular trauma.[1] On the contrary, an increase in the incidence of such injuries has been reported after relaxation of the pre-existing laws.[1,4,5] Berger et al. found a 7.3 times higher incidence of firework-related injuries in the states of the United States of America with liberal laws compared to the states using restrictive laws.[7] Awareness campaigns and use of protective eyewear have also been successful in reducing the trauma rate. D’Argenio et al. reported that broad community awareness campaign in Italy reduced the number of firework casualties by 50%,[8] Bull found that the incidence of injury in Norway decreased after protective eye glasses were distributed free of charge along with fireworks.[1]

We found that a majority of the injured patients were defaulters to the new legislature. However, as seen in other countries, compliance for such legislatures increases over years in case rigorous enforcement of law and mass awareness campaigns are continued.[1,3] Apart from strict law enforcement, the government should focus on spreading awareness regarding the serious consequences of firework injuries to deter people from using them as well as methods of safe handling of fireworks. Since majority of the patients are from the pediatric age group, the school and college going students should be specially targeted.

The main limitation of the study was that it was hospital based. However, conducting a population-based study in a large...
country like India is practically impossible. All private and public hospitals as well as the private practitioners throughout the country should work together to generate a high-quality country-wide data. Such a data will help in establishing the importance of this public health problem and guide future evidence-based planning.

This study provides a baseline data for the compliance toward the new law and can be used for future planning of the firework-related legislatures in the country. Till compliance for such laws increases, the health-care workers should expect a high volume of patients around the clock during such festivals.

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