

## ***Presidential Address – 2023***

### **“Ocular trauma – The forgotten pandemic”**

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*The Journal of the College of Ophthalmologists of Sri Lanka 2024; 30: 2-13*

It is with great honor, pride, and pleasure that I stand here today to deliver the Presidential Address as the 31<sup>st</sup> President of the College of Ophthalmologists of Sri Lanka and the 11<sup>th</sup> President of the Association of Vitreoretinal Specialists of Sri Lanka. Once again, I warmly welcome you and express my heartfelt gratitude for your presence.

As we approach October, we stand on the threshold of two significant occasions in the field of ophthalmology. In the coming month, we have the privilege of marking World Sight Day celebrated annually on the second Thursday of October, which this year falls on the 12<sup>th</sup> and World Trauma Day, highlighting the prevention of traumatic injuries, especially those affecting the eyes.

These observances remind us of the vital importance of vision and eye health. They also compel us to reflect on the challenges faced in the past, such as the Central Bank bomb blast of January 31, 1996. Though the memory of that tragic day has faded for many, its impact continues to resonate, particularly among eye surgeons who witness the lingering effects of ocular trauma even today.

#### **Stories of Resilience**

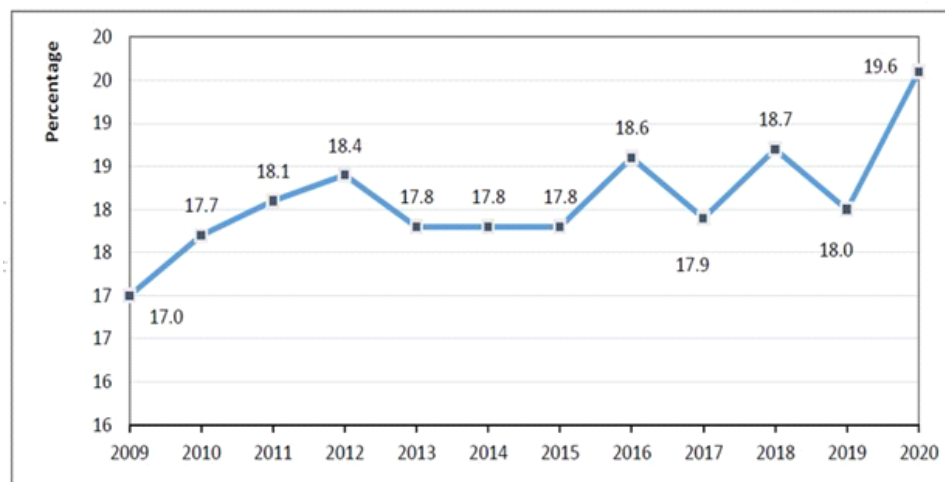
Amid the adversities, there are stories of courage and triumph. One such story is of a blind, disabled soldier who found love and married despite the challenges, reminding us that love truly knows no barriers. Another inspiring tale is of a Sri Lankan fashion designer and motivational speaker who, despite losing her sight in a suicide bomb blast in 2000, turned her tragedy into a stepping stone for success. Her journey epitomizes resilience and the indomitable human spirit.

#### **A Shadowed Crisis: The Forgotten Pandemic**

In my address today, I wish to shed light on an often-overlooked crisis: trauma. The United Nations and World Health Organization have consistently highlighted that trauma is the leading cause of death globally among individuals aged 5 to 29. Alarmingly, 80-90% of these cases occur in low- and middle-income countries, disproportionately affecting the working-age population and impacting global GDP by an estimated 3% annually. Ocular injuries form a significant portion of these traumas, either as isolated incidents or as complications of broader injuries. In Sri Lanka, trauma has been the leading cause of hospital admissions for decades, accounting for 18-19% of all admissions to government hospitals (Figure 1).

<sup>1</sup>*The President, College of Ophthalmologists of Sri Lanka, 2023.*

## Sri Lankan statistics – injuries



**Figure 1.** Percentage of admissions due to injuries out of the total admissions in government hospitals, 2009-2020.

Source: Medical Statistics Unit

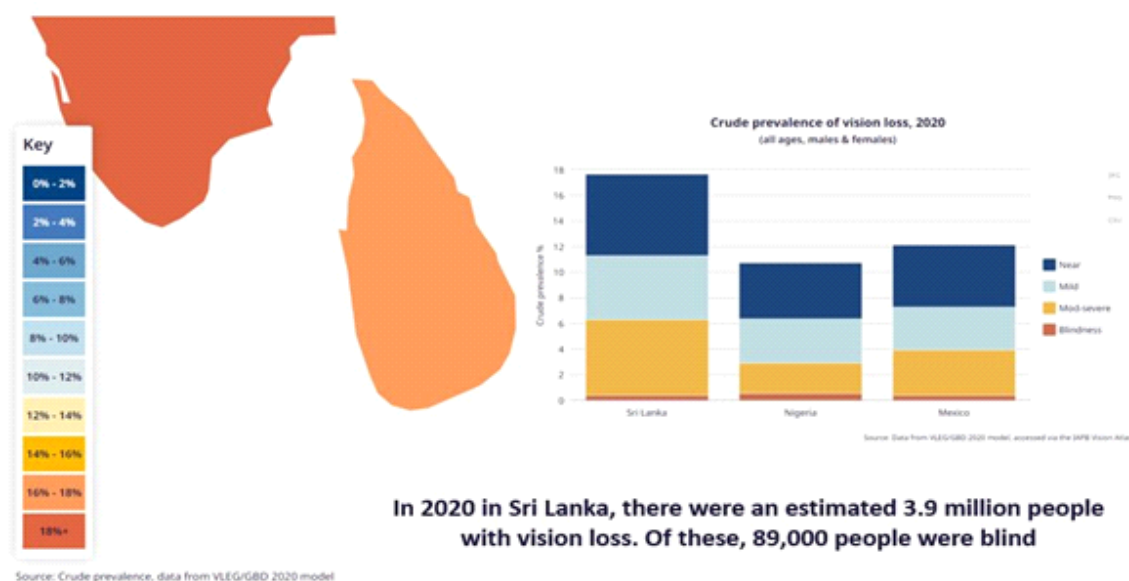
### Eye Injuries: A Global and Local Perspective

Globally, approximately 55 million injuries occur annually, with:

- 1.6 million people developing blindness,
- 2.3 million experiencing bilateral low vision, and
- 19 million suffering from unilateral blindness or low vision.

These injuries impose staggering financial costs – \$155 million annually in Australia and \$200 million in the U.S. – while data from developing countries remains scarce.

In Sri Lanka, about 3.9 million people had vision problems in 2020, with 89,000 classified as blind. Factors like diabetes and injuries, both preventable, significantly contribute to this burden.



## Patterns and Prevention of Ocular Trauma

Ocular trauma is classified as open globe or closed globe injuries, a categorization introduced by Ferenc Kuhn and the International Society of Ocular Trauma. These injuries arise from various causes, including workplace accidents, sports, and chemical exposure.

### Workplace injuries

Industrial environments like forestry, farming, and construction are significant sources of ocular injuries. Unfortunately, Sri Lanka lacks adequate safety regulations, leading to numerous preventable incidents. Cases involving penetrating injuries from metal fragments or chemical exposure highlight the urgent need for improved workplace safety.



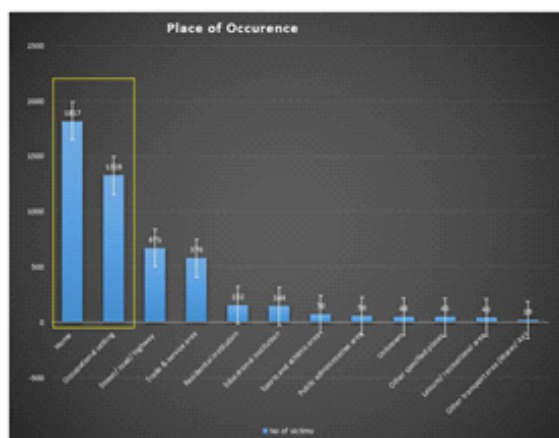
### Sports-Related Injuries

Sports pose significant risks, especially in contact sports like rugby, cricket, and hockey. The tragic cases of international cricketers like Mark Boucher and others underscore the need for protective measures.

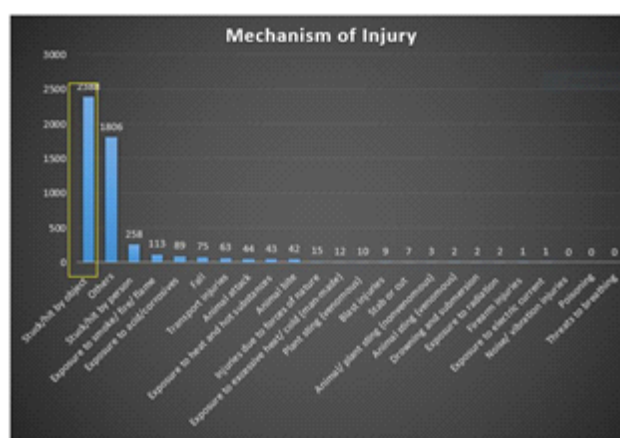
### Childhood Injuries

Children are particularly vulnerable to ocular trauma from projectiles, toys, and everyday activities, both at home and in schools.

The burden of ocular trauma is immense, impacting individuals' quality of life and economic productivity. As we advance in our fields, it is imperative to prioritize prevention through education, legislation, and innovation. Let us renew our commitment to safeguarding vision and ensuring a brighter, injury-free future for all.



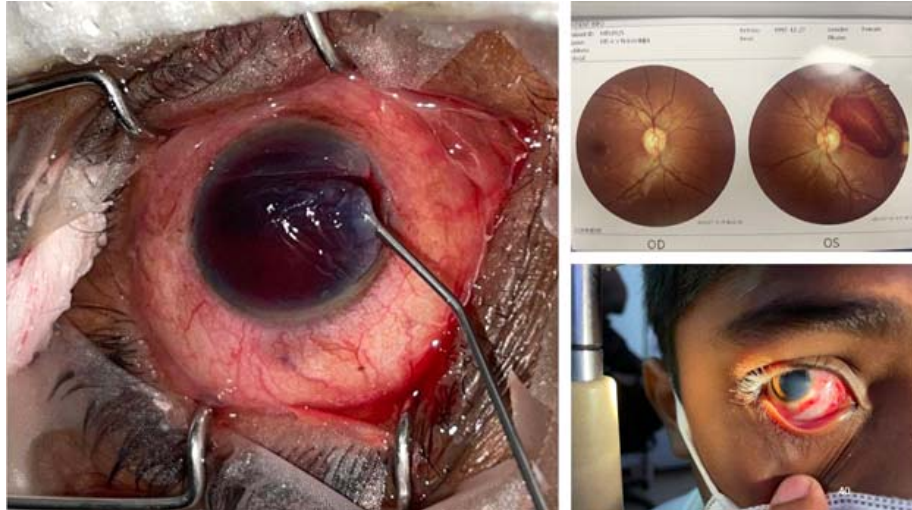
National Injury Surveillance System (NISS), Ministry of Health  
2022 until the end of 2nd Q 2023



National Injury Surveillance System (NISS), Ministry of Health  
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## Children Can Lose an Eye to Crossbows, Darts, Air Guns, and Other Projectile Toys

At home and school, seemingly safe environments can conceal unforeseen dangers for young, curious minds. Everyday objects-sharp utensils, unsecured household items, unattended chemicals, and even toys with sharp edges – can unintentionally become sources of ocular injury.



## Cases of Trauma in Children

Here are a few cases we recently encountered:

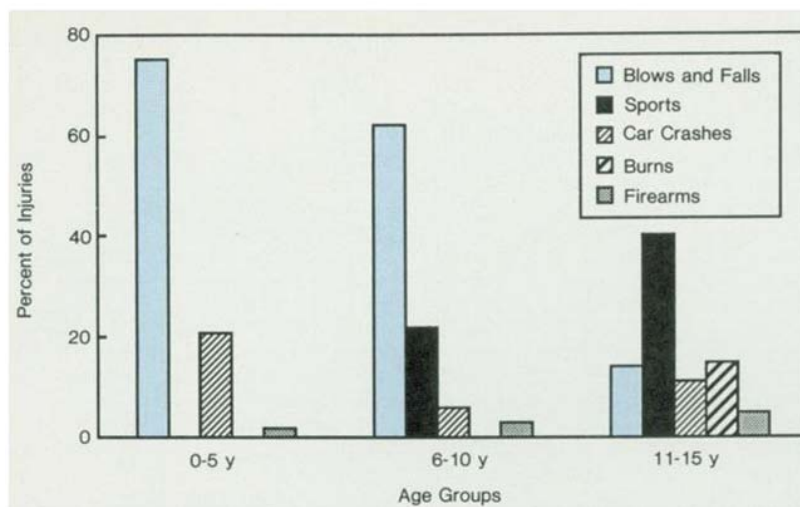
- **Pencil Injury:** An 11-year-old girl sustained an eye injury caused by a pencil.
- **Homemade Arrowheads:** A young boy crafted arrowheads from staples using his father's carpentry tools and a rubber band. One of these makeshift projectiles injured his friend's eye. Luckily, we were able to preserve vision.
- **Drawer Accident:** A child playing at home accidentally hit his eye on the sharp edge of an open drawer, resulting in a globe rupture.

## Epidemiology and Biostatistics

### Causes of Pediatric Eye Injuries

A Population-Based Study

Ellen Strahiman, MD, MHS; Michael , MD; Erich Daub; Susan Baker, MPH



**Figure 2.** Causes of eye injuries in Maryland children younger than 16 years.

## Festival-Related Injuries

Firecracker-related injuries are common in Sri Lanka, especially during festive seasons. Research published in *BMJ* reveals the following:

- Most victims were young males (77%), with 47% being bystanders.
- 3.9% of cases resulted in enucleation (removal of the eye).

A demonstration of firecracker blasts reveals how objects are propelled outward, highlighting the unseen dangers associated with these seemingly celebratory activities.

One story involves a young inventor who experimented with a homemade explosive in a glass bottle. The explosion caused severe damage to his left eye.

As a child, even I conducted a similar experiment that injured a bystander's hand – an incident that underscores the risks associated with youthful curiosity and experimentation.

## Road Traffic Accidents and Ocular Injuries

Road traffic accidents are another major contributor to ocular trauma. Annually, 1.25 million people worldwide lose their lives in such accidents, with 50 million more sustaining injuries. Sri Lanka experiences an average of 38,000 crashes per year.

Statistics show that road crash fatalities per capita in Sri Lanka are twice the average of high-income countries and five times that of the best-performing nations globally. Ocular injuries frequently accompany these incidents as part of broader bodily trauma.



**A Sobering Image**



I captured a photo recently that illustrates the risks: five individuals riding a small scooter, with only two wearing helmets. Such unsafe practices are common and contribute significantly to injury statistics.

### Combat-Related Eye Injuries

Combat-related ocular injuries were not uncommon during Sri Lanka's conflict years, and their long-term complications persist. Both soldiers and civilians have been affected.

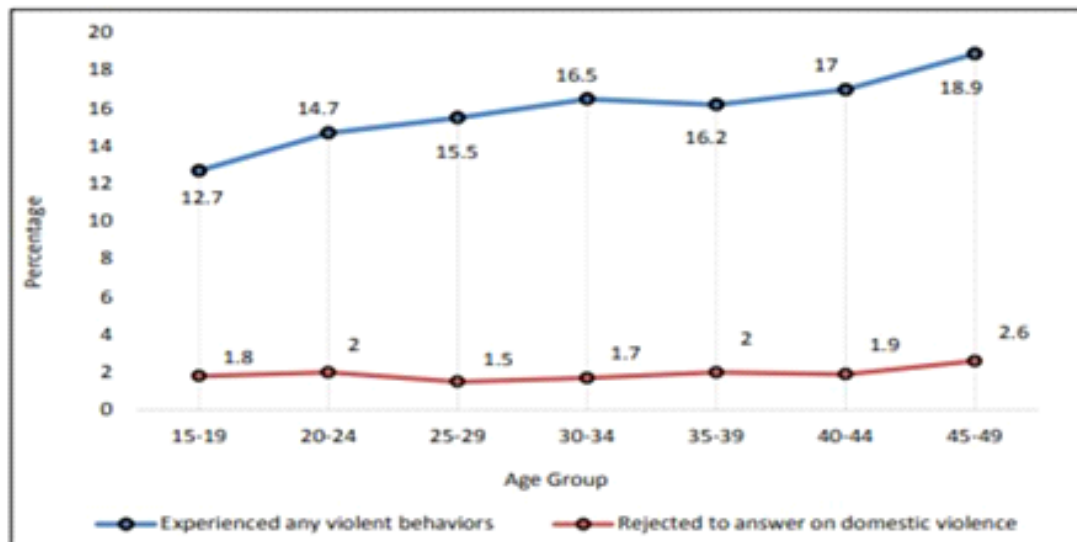
For instance:

- Soldiers exposed to landmines often sustain eye injuries, particularly while advancing in a crawling position.
- Civilians, including journalists, are not exempt. The renowned British war correspondent, Marie Colvin, lost her eye in an ambush in a war zone, a stark reminder of the risks inherent in conflict zones.

### Assault-Related Eye Injuries

Globally, assault is a leading cause of serious ocular injuries. Studies from India and Martinique report that 50% and 32.7% of assault-related eye injuries, respectively, are severe.

A 2016 study revealed a 19% prevalence of domestic violence among individuals aged 15-45, with many incidents resulting in facial and ocular injuries. In Sri Lanka, acid assaults are a particularly egregious example, often leading to permanent vision loss and disfigurement.



This chart presents the percentage of ever-married women age 15-49 by experience of domestic violence by their intimate partner, experience of daily domestic violence, and percent who requested help for domestic violence according to background characteristics.

### Demographic and Health Survey – 2016, Sri Lanka

**Figure 3.** Level of domestic violence.

## Evolving Patterns of Ocular Trauma

The pattern of ocular injuries has changed over time due to shifts in socio-economic dynamics.

### Historical Context:

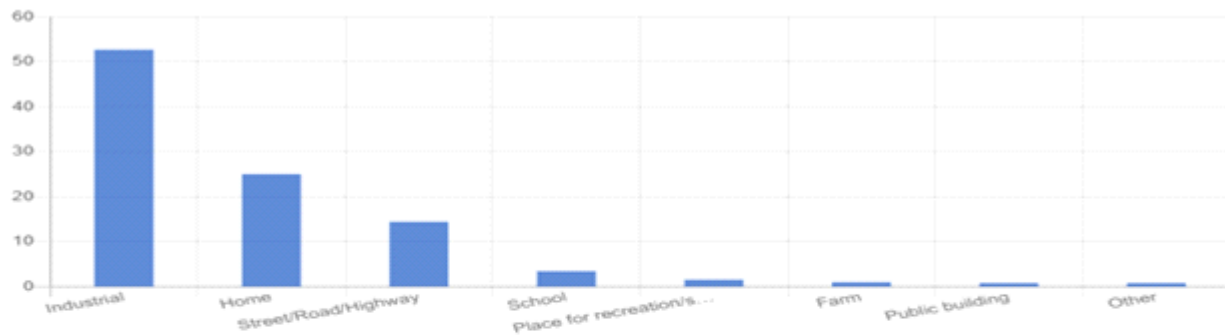
- A study by Dr. Lloyd Weerakoon published in the *British Journal of Ophthalmology* in 1964 highlighted that agriculture-related activities, including incidents involving tea branches, were major causes of eye injuries.
- In 1967, Dr. Ruby Pararajasegeram's presidential address noted that ocular injuries and corneal ulcerations – largely agriculture-related – were the leading causes of monocular blindness in children.

### Contemporary Trends:

With Sri Lanka's transition from an agriculture-based economy to one dominated by industry and services, the causes of ocular trauma have diversified. Workplace and domestic injuries now outnumber agriculture-related cases.

### Ongoing Research

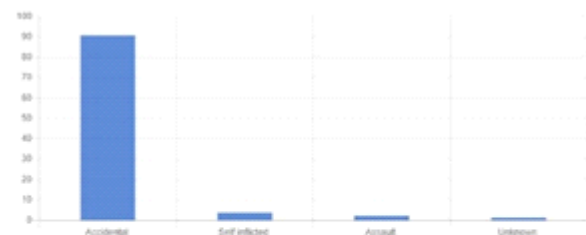
To better understand the epidemiology of ocular trauma, I initiated a study at the National Eye Hospital, Colombo, between June and August 2023.



| Value                      | Frequency | Percentage |
|----------------------------|-----------|------------|
| Industrial                 | 278       | 52.65      |
| Home                       | 132       | 25         |
| Street/Road/Highway        | 76        | 14.39      |
| School                     | 18        | 3.41       |
| Place for recreation/sport | 8         | 1.52       |
| Farm                       | 5         | 0.95       |
| Public building            | 4         | 0.76       |
| Other                      | 4         | 0.76       |

#### Key Findings (Preliminary Data):

- 525 victims were analyzed, with the majority being males.
- Both eyes were affected in 8 patients.
- Most injuries occurred at workplaces and homes.
- A significant number of individuals were not wearing protective gear, though some sustained injuries despite using safety equipment.



| Value          | Frequency | Percentage |
|----------------|-----------|------------|
| Accidental     | 479       | 90.72      |
| Self-inflicted | 20        | 3.79       |
| Assault        | 12        | 2.27       |
| Unknown        | 7         | 1.33       |

#### Questions for Reflection

1. Why are protective measures not consistently enforced or accessible?
2. How can awareness campaigns be tailored to address these hidden dangers effectively?

By addressing these questions, we can take meaningful steps toward reducing ocular trauma and safeguarding vision for future generations.

#### Addressing Protective Gear and Its Standards

On questioning patients about not wearing protective gear, the responses were enlightening. Some were simply not provided with any, while others had personal reasons for not using them. These reasons ranged from discomfort to the perception that the gear was unnecessary.

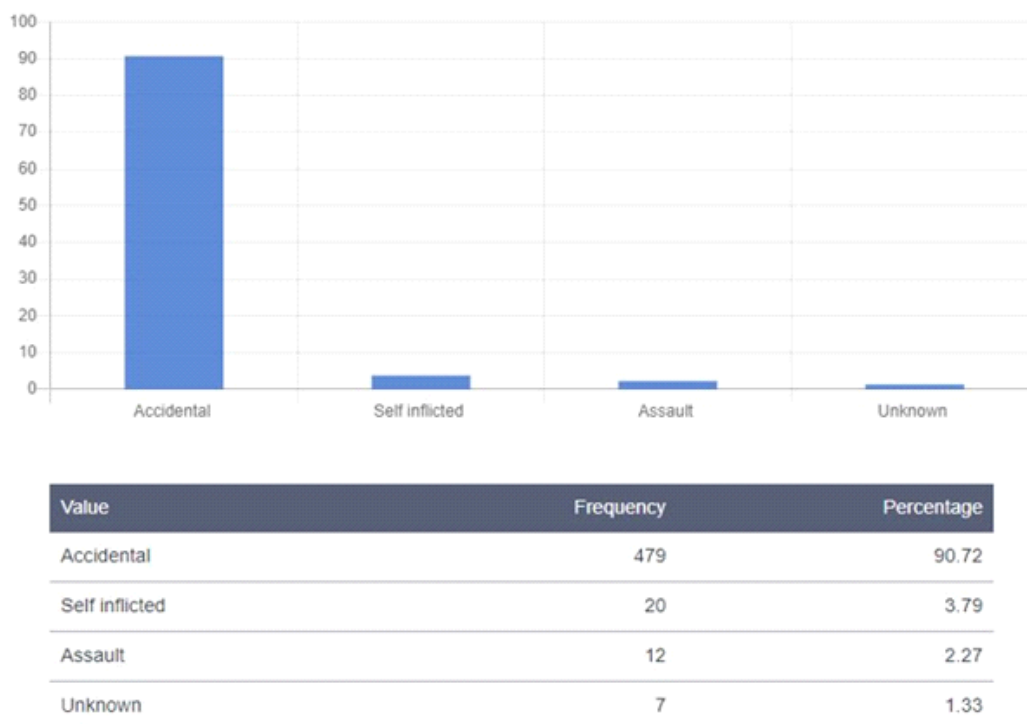
The consequences of these decisions were stark. Patients often recounted how their injuries disrupted their routines, causing hospital stays that affected their jobs and, by extension, their families. Beyond the physical pain, the psychological and economic burdens were equally profound.

### Impact of Ocular Trauma

The consequences of ocular trauma extend beyond the immediate injury. Both short- and long-term effects influence individuals, families, and society at large.

- **Personal Impact:** For children, the psychological toll is particularly severe, affecting their development and well-being. Adults often face a loss of productivity and worry about the financial strain on their families.
- **Economic Impact:** The U.S. Bureau of Labor Statistics reports over 20,000 workplace eye injuries annually, costing an estimated \$300 million lost in productivity, medical expenses, and compensation. In Finland, the economic burden of eye injuries amounts to €1.8 million per 1 million population annually, with a productivity loss period of 19 years per annum.

In Sri Lanka, where the economic burden is significantly higher due to limited resources, these injuries impose an immense societal cost. A World Bank report from 2017 highlighted that reducing fatalities in road accidents by 50% could result in a 7-22% increase in GDP. Preventing ocular trauma must be a priority.

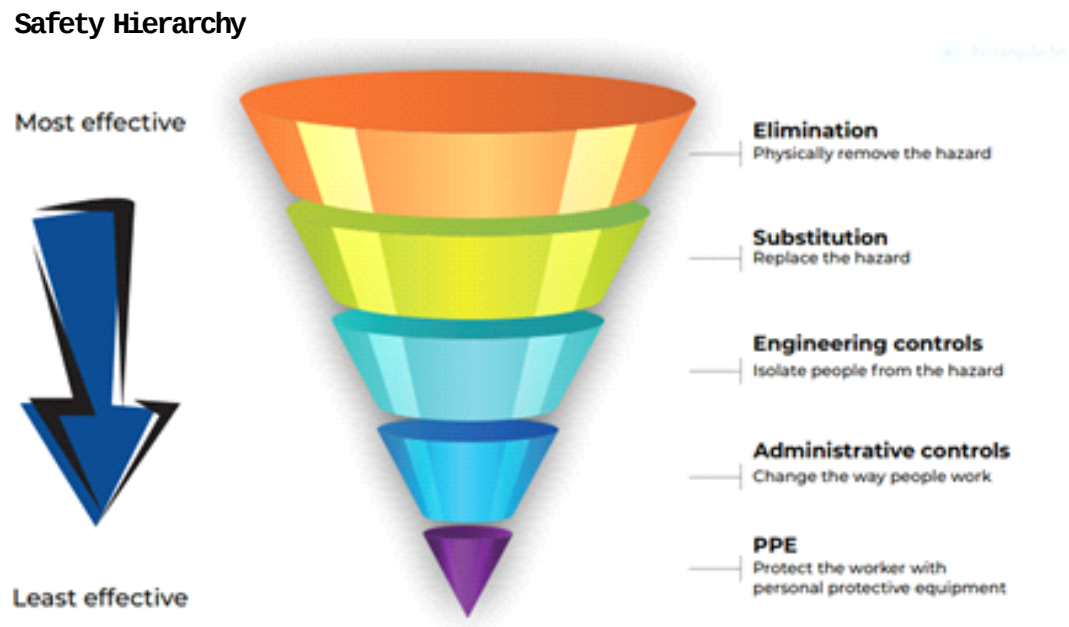


### The Hierarchy of Control (HOC) in Prevention

Preventing 90% of ocular injuries is achievable by addressing hazards systematically:

1. **Eliminate the Hazard:** Remove the source of the injury altogether.
2. **Substitute:** Replace harmful practices or materials with safer alternatives.
3. **Engineering Controls:** Redesign environments to minimize exposure.

4. **Administrative Controls:** Change work patterns and ensure safety protocols are followed.
5. **Personal Protective Equipment (PPE):** A last resort, focusing on minimizing harm when exposure is unavoidable.



## Legislation, Standards, and Awareness

### Legislation:

Strong laws and regulations play a pivotal role in reducing injuries. Countries with stricter firework regulations have seen up to an 87% reduction in eye trauma cases. Clear labeling and product safety standards, as well as proper enforcement, are essential.

In Sri Lanka, the 1934 *Workmen's Compensation Ordinance* remains a foundational legal framework, but it is overdue for updates to address modern occupational risks. Workers often lack awareness of their rights, such as the compensation for losing one eye (50% of earning capacity) or both eyes (100%). They are also unaware that failing to adhere to safety protocols, including PPE use, can void their claims.

### Protective Gear Standards:

National and international standards ensure the adequacy of PPE. However, in my study, even individuals wearing protective eyewear sustained injuries, often due to substandard equipment. Issues like discomfort and obstructed vision deter compliance, underscoring the need for improved design and manufacturing standards.

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*WORKMEN'S COMPENSATION*

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**WORKMEN'S COMPENSATION**

Ordinances  
Nos: 19 of 1934,

**AN ORDINANCE TO PROVIDE FOR THE PAYMENT OF COMPENSATION TO WORKMEN WHO ARE INJURED IN THE COURSE OF THEIR EMPLOYMENT.**

Acts  
Nos: 31 of 1957,  
22 of 1959,  
4 of 1966,  
15 of 1990,  
10 of 2005.

[1st August, 1935.]

**PART II  
LIABILITY TO PAY COMPENSATION**

Employer's liability  
to pay compensation  
for injury suffered  
by a workman.

3. If personal injury is caused to a workman by accident arising out of and in the course of his employment his employer shall be liable to pay compensation in accordance with the provisions of this Ordinance:

Provided that the employer shall not be so liable-

[§ 3, 15 of 1990.]

(a) in respect of any injury which does not result in the total or partial disablement of the workman for a period exceeding three days;

(b) in respect of any injury, not resulting in death, caused by an accident which is directly attributable to -

- (i) the workman having been at the time thereof under the influence of drink or drugs, or
- (ii) the wilful disobedience of the workman to an order expressly given, or to a rule expressly framed, for the purpose of securing the safety of workmen, or
- (iii) the wilful removal or disregard by the workman of any safety guard or other device which he knew to have been provided for the purpose of securing the safety of workmen.

## Education: A Key Pillar

Public education is vital to reducing ocular trauma. Tailored campaigns for children, parents, workers, and employers can foster a culture of safety.

- **For Parents:** Emphasize securing hazardous materials at home.
- **For Workers:** Correct misconceptions, such as believing regular spectacles provide sufficient protection.
- **For Schools and Factories:** Use posters, demonstrations, and media to promote awareness.

Historical campaigns, such as those in Sri Lanka during the 1980s, successfully reduced injuries from lime used in betel chewing. Similar efforts could target modern hazards like firecrackers and unsafe toys.

## **Towards a National Strategy**

Building a robust strategy for ocular trauma prevention requires collaboration across multiple sectors:

1. **Data Collection:** Reliable statistics to guide interventions.
2. **Advocacy:** Engaging stakeholders to prioritize eye safety.
3. **Education:** Multi-level campaigns to raise awareness.
4. **Standards and Legislation:** Ensuring stringent safety measures are in place and enforced.

On *World Sight Day*, themed “Your Eye at Work”, we focus on outreach campaigns in schools, factories, and industries, using posters and media to drive change.

## **Conclusion**

Ocular trauma robs our nation of its future – our children and our workforce – while draining public funds and straining healthcare resources. It is our responsibility to lead with vision, advocating for better laws, standards, and education.

Together, we can build a safer world, where every child and adult is free from preventable injuries. Let us act decisively and with purpose.