

Vision wellness in occupational safety and health

World Sight Day features as an annual day of awareness of vision wellness, which is coordinated by the International Agency for Prevention of Blindness (IAPB) on the second Thursday in the month of October. This year's key theme centers on "Love your eyes at work," focusing on eye health in the workplace. Close to half of the estimated population suffer from preventable vision impairment or blindness or unaddressed vision impairment, according to the World Health Organization (WHO) data (WHO 2019).^[1] Vision impairment due to eye diseases, such as presbyopia, age-related macular degeneration, and glaucoma, will influence the workers' ability to work safely and accurately during the later stages of work life. Work-related open globe trauma and other ocular injuries are a global cause of concern.^[2-10] Temporary employment, poor education (<10 years), inefficient management practices of industrial health and workplace safety coupled with poor attitude toward prevention of accidents related to occupational hazards have been identified as some of the significant reasons for continued occurrences of workplace accidents.^[11] Visual acuity at presentation, hyphema, central corneal tears, and retinal detachment are noted to be significant associated prognostic factors predicting poor visual outcome in open globe injuries (OGI).^[12] Workplace-related ocular trauma results in significant morbidity in a young population of patients and is also an important cause of acquired monocular blindness in a rapidly industrializing country like India.^[2]

Fig. 1^[13] presents an overview of occupational ocular hazards. Ergonomic workplace-related ocular concerns result in computer vision syndrome or digital strain due to static computer or digital device use for long hours. Dry eye disease, headaches, neck pain, and circadian interruption resulting from prolonged screen time are the workplace-related ocular concerns that occur due to prolonged deskwork at workplace. The rule of 20–20–20 of looking for 20 seconds at 20 feet away every 20 minutes of screen time is commonly advised to relieve the eye strain. Trivial eye and vision problems tend to adversely impact long-term health and productivity of the workers.

Industrial workplace hazards regarding debris, chemicals, radiation, or bloodborne/droplet-borne pathogens mandate the need to use custom eye safety personal protective eyewear (PPE). Use of PPE and, more importantly, optimal-sized and proper fitting PPE is essential in such scenarios. Chemicals or foreign objects or debris can result in corneal abrasion, intracorneal foreign body, and related concerns. Other common ocular traumas include those due to chemicals/fluids inadvertently splashing into the eye, burns from steam, and ultraviolet or infrared radiation exposure. Health-care workers and laboratory and janitorial staff are also at risk of acquiring infectious diseases that can be transmitted through the mucus membranes of the eye. Direct contact with biological fluids, respiratory droplets from coughing/sneezing, or touching the eyes with contaminated fingers or other objects are all common modes of infections transmitted to health-care personnel and related staff. PPE, such as goggles, face shields, safety glasses, or full-face respirators, is strongly recommended when an eye hazard exists.

Some of the common occupations with a high risk for eye injuries include construction, manufacturing, mining, carpentry, automobile repair, electrical work, plumbing, welding, and maintenance work. The recommended type of safety eye protection depends on the hazards faced in the workplace and ranges from simple safety glasses with side protection (side shields) and eye protection goggles to special purpose safety glasses, goggles, face shields, or specially designed helmets for those in near-hazardous radiation (welding, lasers, or fiber optics) producing problems including photokeratitis, photoconjunctivitis, photophthalmia (welder's flash), photoretinitis, and keratoconjunctivitis.

About 13 million people are estimated to be affected with vision impairment due to workplace injury as per the International Labor Organization (ILO) and IAPB, with an estimated 3.5 million eye injuries occurring in the workplace every year.^[14] Occupational safety and eye health programs need to be designed to safeguard the vision of workers, with a primary focus on prevention from exposure to workplace hazards, protection of the ocular health of the workers, and provision of insurance coverage packages to include

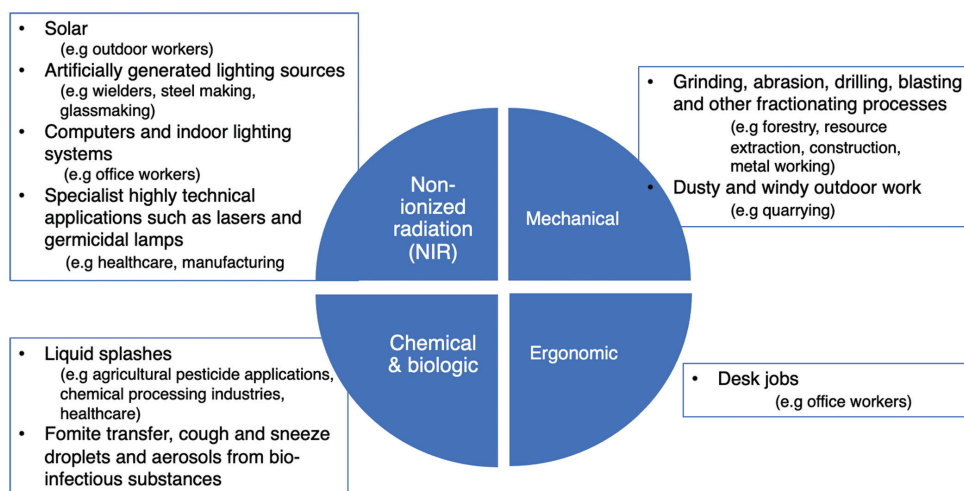


Figure 1: Overview of workplace ocular hazards. (Adaption of an original work by the ILO. Eye health and the world of work Fig. 4. Page 25 www.ilo.org/publns. Responsibility for the views and opinions expressed in the adaptation rests solely with the author or authors of the adaptation and are not endorsed by ILO. ILO = International Labor Organization)

workers' naturally occurring vision impairment in risk assessments. Industrial managements/employers can make the work environment as safe as possible by conducting assessment of the workplace for eye hazard, reducing or removing eye hazards wherever possible, providing appropriate safety eyewear, and making it mandatory for employees to wear it.

Recommended elements of an effective occupational safety and ocular health program include policy and planning, identification, risk assessment and control of ocular hazard, emergency prevention, preparedness and response, procurement of ocular safety devices, workers' training and information, medical surveillance, record-keeping, program evaluation, and action for improvement.

Increasing eye care interventions to address vision impairment in workplaces is the need of the hour to decrease the burden of preventable blindness. The two main interventions that can be of significant effectiveness to avoid workplace trauma include mandatory use of the various types of eye protection devices along with environmental controls in the workplace and behavioral interventions which emphasize on the adoption of best workplace practices of use of eye protection gear.^[15] The wellness of vision in workplace pivots around blindness prevention programs that serve to educate supervising personnel and workers on adoption of PPE and provision of PPE to workers at risk by the industry management.^[16]

Key feature of adopting preventive eye health care is to create state-of-the-art vision centers to help detect other ocular concerns before they can worsen. Hence, besides optimal insurance coverage package plans and routine ocular examinations, ease of availing ocular examinations will encourage all to undergo regular annual examinations. This will go a long way in designing treatment interventions of workplace-related ocular concerns and detection of other associated ocular problems.

State-of-the-art onsite vision centers, with the ability to integrate primary ocular care health services and with occupational health programs to provide workplace eye protection and immediate care in the event of a worksite injury, will lead the road to best practices in workplace ocular health programs. Bringing into existence a national ocular trauma registry and occupational eye injury surveillance system will enable monitoring the incidence of eye injuries, performing risk assessment, and identifying preventable occupational eye injuries that have been improperly addressed.

Murugesan Vanathi

Prof of Ophthalmology, Cornea & Ocular Surface, Cataract & Refractive Services, Dr. R. P. Centre for Ophthalmic Sciences, All India Institute of Medical Sciences, New Delhi, India.
E-mail: mvanathi.rpc@gmail.com

References

1. Technical brief, World Health Organisation – February 2023. Available from: https://cdn.who.int/media/docs/default-source/universal-health-coverage/who-uhl-technical-brief-vision.pdf?sfvrsn=9fd2fa9c_3&download=true. [Last accessed on 2023 Sep 10].
2. Vasu U, Vasnaik A, Battu RR, Kurian M, George S. Occupational open globe injuries. *Indian J Ophthalmol* 2001;49:43-7.
3. Kanoff JM, Turalba AV, Andreoli MT, Andreoli CM. Characteristics and outcomes of work-related open globe injuries. *Am J Ophthalmol* 2010;150:265-269.e2.
4. Peate WF. Work-related eye injuries and illnesses. *Am Fam Physician* 2007;75:1017-22.
5. Ho CK, Yen YL, Chang CH, Chiang HC, Shen YY, Chang PY. Epidemiologic study on work-related eye injuries in Kaohsiung, Taiwan. *Kaohsiung J Med Sci* 2007;23:463-9.
6. Gobba F, Dall'Olio E, Modenese A, De Maria M, Campi L, Cavallini GM. Work-related eye injuries: A relevant health problem. Main epidemiological data from a highly-industrialized area of northern Italy. *Int J Environ Res Public Health* 2017;14:604. doi: 10.3390/ijerph14060604.
7. Chaikitmongkol V, Leeungurasatien T, Sengupta S. Work-related eye injuries: Important occupational health problem in northern Thailand. *Asia Pac J Ophthalmol (Phila)* 2015;4:155-60.
8. Lipscomb HJ, Dement JM, McDougall V, Kalat J. Work-related eye injuries among union carpenters. *Appl Occup Environ Hyg* 1999;14:665-76.
9. Martín Prieto S, Alvarez Peregrina C, Thuissard Vassallo I, Catalina Romero C, Calvo Bonacho E, Villa Collar C, *et al.* Trends in work-related eye injuries in Spanish Autonomous Communities during 2008-2018. *Arch Prev Riesgos Labor* 2021;24:17-29.
10. Ahn JY, Ryoo HW, Park JB, Moon S, Cho JW, Park DH, *et al.* Epidemiologic characteristics of work-related eye injuries and risk factors associated with severe eye injuries: A registry-based multicentre study. *Ophthalmic Epidemiol* 2020;27:105-14.
11. Ho CK, Yen YL, Chang CH, Chiang HC, Shen YY, Chang PY. Case-control study on the prevention of occupational eye injuries. *Kaohsiung J Med Sci* 2008;24:10-6.
12. Toh ZH, Agrawal S, Raje D, Hoskin A, Agrawal R, Khandelwal R. International globe and adnexal trauma epidemiology study (IGATES): A report from Central India on visual outcome in open globe injuries and correlation with ocular trauma score. *Int Ophthalmol* 2020;40:2797-806.
13. Eye health and the world of work. International Labour Organization (ILO). Available from: https://www.ilo.org/wcmsp5/groups/public/---ed_protect/---protrav/---safework/documents/publication/wcms_892937.pdf.
14. Occupational Safety and Health – ILO Press release | 05 September 2023. Available from: https://www.ilo.org/global/about-the-ilo/newsroom/news/WCMS_892779/lang-en/index.htm.
15. Lipscomb HJ. Effectiveness of interventions to prevent work-related eye injuries. *Am J Prev Med* 2000;18(4 Suppl):27-32.
16. Ramos MF. Prevention of work related injuries: A look at eye protection use and suggested prevention strategies. *J Ophthalmic Nurs Technol* 1999;18:117-9.

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

Access this article online

Quick Response Code:



Website:

<https://journals.lww.com/ijo>

DOI:

10.4103/IJO.IJO_2474_23

Cite this article as: Vanathi M. Vision wellness in occupational safety and health. *Indian J Ophthalmol* 2023;71:3273-4.