

PREVALENCE OF OCULAR INJURIES AMONG WELDERS: A CROSS-SECTIONAL STUDY

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Introduction: Workers in welding face a high-risk environment, where they are exposed to a range of hazards, notably severe and common eye injuries. Regularly, welders must contend with strong UV and IR radiation, bright light, and metal particles in the air. This exposure can cause lasting eye conditions, including photokeratitis, conjunctivitis, cataracts, retinal burns, and corneal abrasion. Acute effects include photokeratitis (a painful, sunburn-like condition of the cornea), conjunctivitis (inflammation of the membrane covering the eye), and corneal abrasions from flying debris. Over time, repeated exposure can contribute to the development of cataracts, retinal burns, and permanent vision impairment. These occupational hazards underscore the critical importance of proper eye and face protection, adherence to safety protocols, and regular training. Ensuring a safe working environment not only preserves workers' vision but also reduces the risk of workplace accidents related to impaired sight. **["EYE AND FACE PROTECTION SHALL BE PROVIDED TO PROTECT AGAINST PHYSICAL, CHEMICAL, OR RADIATION AGENTS."]**

--- OCCUPATIONAL SAFETY AND HEALTH
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Aim: The aim of this study is to investigate the prevalence, causes and impact of ocular injuries among welders with a focus on identifying risk factors and preventive measures.

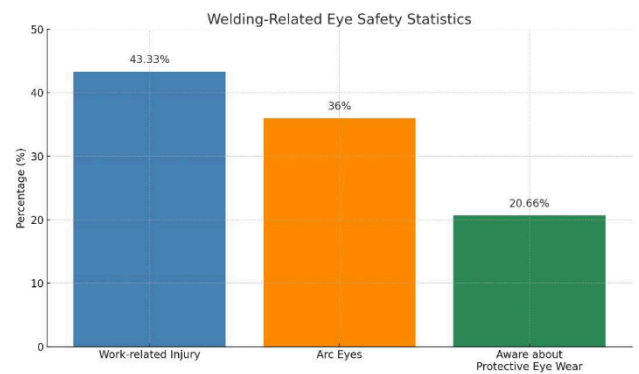
Method: The study was carried out among **150 welders** in the Maheshtala area of south 24 PGS between the period of September to December 2024. A pretested semi-structured **questionnaire** was used to collect demographic information, history of eye injuries, and use of eye protective equipment and workplace characteristics. Bivariate and multivariate logistic regressions at 5% level of significance were used to determine factors influencing eye injuries. All participants gave their permission before being part of the study, and the research followed ethical guidelines. The collected data were entered into a computer and analysed using statistical software. First, basic summaries of the data were made. Then, to find out which factors were linked to eye injuries, the researchers used two types of analysis: bivariate and multivariate logistic regression. Any factor that showed a significant link with eye injuries in the first analysis (with a p-value less than 0.05) was included in the second, more detailed analysis. The results were considered meaningful if they were statistically significant at the 5% level.

Results: The study found that flying metal chips were the most common cause of eye injuries among welders, reported by 65 out of the 150 participants, which accounts for 43.33% of those who had experienced work-related eye injuries. These injuries often occurred during tasks such as grinding, cutting, or chipping, where small, sharp particles were released into the air. The second most common cause was exposure to the intense light and radiation from the welding arc—commonly known as “arc eye” or photokeratitis—which affected 54 workers, making up 36% of the injury cases. Arc eye usually results from direct or indirect exposure to ultraviolet (UV) radiation without adequate eye protection and often causes pain, redness, tearing, and temporary vision issues.

Although most workers were aware of the risks involved in welding, the use of protective eyewear remained very low. At the time of their injuries, only 31 welders (20.66%) reported wearing any form of eye protection. This suggests a significant gap between risk awareness and the actual practice of safety measures. Reasons for not using eye protection included discomfort, reduced visibility while working, lack of availability, and underestimation of risk. These findings highlight a serious occupational safety concern, indicating the need for increased enforcement of safety protocols, improved access to quality protective gear, and regular safety training to promote consistent and correct use of personal protective equipment (PPE) among welders.

TOTAL EXAMINED WELDERS NUMBER – 150

ASPECT	NO OF WELDERS	PERCENTAGE
WORK – RELATED INJURY	65	43.33%
ARC EYES	54	36%
AWARE ABOUT PROTECTIVE EYE WARE	31	20.66%



Conclusions: A significant portion of welders experience eye injuries. To reduce these injuries and improve eye health, it is recommended to implement safety intervention programs. These programs should include awareness campaigns and encourage the consistent use of eye protection.