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MINI-REVIEW

Strategies to Reduce the Burden of Visual Impairment and Blindness Secondary to Ocular Trauma in Nigeria

Monsudi Kehinde F[1], Osayande-Osawe Osa[2], Owoeye Joshua Foluso A[3], Salahu Ishaq A[4], Oyediji Funmilayo J[5]

[1]Department of Ophthalmology, Federal Teaching Hospital, Birnin Kebbi, Kebbi State, Nigeria
[2]Department of Ophthalmology, Federal Teaching Hospital, Lokoja, Kogi State, Nigeria
[3]Department of Ophthalmology, University of Ilorin Teaching Hospital, Ilorin, Kwara State, Nigeria
[4]Department of Ophthalmology, Federal Medical Centre, Abeokuta, Ogun State, Nigeria
[5]Department of Ophthalmology, Abubakar Tafawa Balewa University Teaching Hospital, Bauchi, Nigeria

Correspondence: Dr Monsudi Kehinde F., Federal Teaching Hospital, P.M.B. 1126, Birnin Kebbi, Kebbi State, Nigeria. E-mail: kfmoshood@yahoo.com ; ORCID – https://orcid.org/0000-0002-6872-2689.

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Summary

Ocular trauma is a cause of visual impairment and blindness worldwide. The epidemiological patterns of ocular trauma in Nigeria differ from those of developed countries, despite some similarities. However, literature talks about 90% of ocular trauma cases being preventable; hence, it is essential to develop strategies for eye injury prevention. This study aimed to highlight approaches to reduce the incidence of visual impairment and blindness due to ocular trauma in Nigeria. This is an explanatory review article. The importance of improving surveillance systems, advocacy, health promotion, legislative and stakeholder meetings, well-equipped tertiary eye care hospitals, and the training and retraining of eye care workers in public health interventions to prevent blindness due to ocular trauma in Nigeria is underscored.

Keywords: Eye Injury, Banditry, Ocular trauma, Public Health Intervention, Road Traffic Injuries, Nigeria.

Introduction

Ocular trauma remains a significant cause of visual impairment and blindness worldwide.[1-3] Globally, eye injuries account for 1.6 million cases of total blindness, 19 million monocular blindness, and 2.3 million bilateral blindness.[2] Similarly, various studies from Nigeria and other African countries reported that ocular trauma was responsible for 3.2% to 5.5% of bilateral blindness and 20% to 50% of monocular blindness. [2, 4]

The pattern of ocular trauma varies from developed to developing countries and also in different regions of Nigeria. In developed countries, work-related and entertainment-related injuries dominate, whereas in developing countries, including Nigeria, assault, violence, and road traffic incidents (RTI) were the leading causes of eye trauma. [5-8] The epidemiological patterns of ocular trauma in Nigeria differ from those of developed countries, despite some similarities. In Nigeria, the causes of eye injury vary from one geopolitical zone to another. The causes range from RTI, domestic injuries, workplace hazards, blasts and gunshots, rural occupational hazards, industrial accidents, assaults, and violence. [7, 9, 10] In recent times, the banditry attack in the Northwest, the insurgency in the Northeast zone, and the conflicts between herders and farmers in the north central zone have increased the number of eye injuries from gunshot and armed assaults. In the southern part of Nigeria, the pockets of banditry, kidnapping, and RTI have recently increased the incidence of ocular injuries. It has also been reported that occupational hazards and RTI ocular trauma are more common in the urban areas of Nigeria. [7]

Most ocular traumas in Nigeria occur at home and on the roads. [9] The prevalence of ocular injury in Nigeria ranges between 24.3% and 31.1%. [2, 10] Nigeria's national blindness survey reported that 1.1% of blindness was due to ocular injury and 11.1% of corneal scars were secondary to ocular trauma. [11] There is a high prevalence of eye injury among primary school children in Nigeria, according to Okpala *et al.* [12] Furthermore, it was also reported that the school environment is an important place of eye injury among children. This concurs with other studies. [12, 13]

It is difficult to provide the exact numbers of eye injury cases in Nigeria related explicitly to fireworks or chemicals. However, a study in Eastern Nigeria found that 94 of 230 patients had firework-related eye injuries over three years, [14] and another study reported five cases of ocular firework injuries between 2022 and 2023, compared with almost 2,000 eye injuries annually reported in the United States. [15] A study in Benin City, Nigeria, found that 12 patients were seen with chemical eye injuries over five years. [16] Another study reported that chemical burns accounted for 3.5% of ocular trauma cases in Gusau, Nigeria.[17]

Ocular trauma results in high economic costs to the patient, the family, and the country through out-of-pocket expenses for care, rehabilitation, and significant interference with labour and productivity. [18] However, since 90% of cases of ocular trauma are preventable, [19] it is important to develop strategies for their prevention. Therefore, the objective of this review is to highlight the various ways to reduce and prevent ocular injuries in Nigeria.

Strategies to Prevent Ocular Trauma

Surveillance

Surveillance remains one of the essential tools for collecting health information, whether through hospital electronic medical records, community surveys, or audit of registry records. It has been used and accepted worldwide as one of the best practical methods for planning and strategizing to formulate policies to prevent and reduce injuries in developed countries. [20-22]

A crucial goal is to improve surveillance systems in each state of the country with central control from the Federal Ministry of Health, using a system similar to that used during the COVID-19 pandemic. Surveillance will help improve the paucity of accurate data on the prevalence and causes of ocular trauma in Nigeria. These data will help health managers formulate a health policy that will lead to a reduction in blindness due to ocular trauma in the country.

Integrating ocular injury into the ongoing eye care services delivery

The integration of ocular trauma management into the ongoing delivery of eye care services in Nigeria across primary, secondary, and tertiary care is laudable. This will go a long way toward reducing blindness and visual impairment from ocular injuries.

Integrating ocular injury into the school eye health program

Integrating ocular injury prevention strategies into school eye health programs is an effective way to prevent ocular trauma. The principle of "catching them young" remains one of the most effective ways to spread information about health conditions.

Health promotion

Raising awareness of ocular trauma prevention through mass and electronic media, including health posters in the community and clinic, newspapers, TV, radio, and social networks such as WhatsApp, YouTube, Facebook, Instagram, TikTok, Twitter, and Snapchat, can help improve prevention and reduce trauma-related visual impairments and blindness. Health promotion is generally accepted as an effective means of preventing and reducing eye trauma. [23-25]

Advocacy

Advocacy to policymakers, politicians, government functionaries at the local, state and federal levels, Non-Governmental Organisations (NGO), and executives of private companies on the need to fund and support strategies to prevent and manage ocular trauma-related blindness is essential. Organising stakeholders meetings and conferences at the national, state, and local government areas levels is important. The targeted participants should include personnel from the health, education, and social welfare sectors, women's organisations, religious and traditional institutions, youth forums, healthcare workers, and both local and international NGOs. The objective is to formulate national strategies to prevent and manage ocular trauma as advocacy has been noted to be the best option for achieving a larger function of ocular trauma prevention. [26]

Provision of high-quality eye services

Providing high-quality services for the treatment of ocular trauma will encourage early hospital presentation. Using the principle of good quality service rendered to an ocular trauma patient, who will become an ambassador to bring/encourage other patients to come to the same health facility for care, will play an essential role in preventing visual impairment from ocular trauma.

Establish a first-class tertiary eye hospital.

The establishment of a well-equipped tertiary eye hospital in each of the six zones of Nigeria will enhance high-quality services to eye trauma patients. This is particularly important in the areas of corneal transplantation and corneal refractive surgery, as treatments of complications of ocular trauma. Furthermore, improving and upgrading of eye health training institutions for ophthalmic nursing, ophthalmology, and optometry will increase the population and quality of eye care workers in the country, thereby mitigating the brain drain that has nearly collapsed health services in the country.

Training eye care workers

Training and retraining of eye care providers could be carried out using the platform of the Ophthalmological Society of Nigeria (OSN) and focus should be on the latest modalities of management of ocular trauma.

Inter-professional team monitoring

Clinical meetings should be held regularly to audit, evaluate and discuss cases of patients with ocular trauma for the purpose of enhancing quality of care. Each team member of the team is

expected to understand their role in the prevention and patient care in ocular trauma. [27]

Collaboration with a well-established ocular eye training institute

Collaborations with tertiary and specialised eye care centres, including leading eye care hospitals in the Western world, will go a long way toward transferring high-quality skills of treating patients with ocular trauma. [28]

Providing a good working environment for eye care workers

A good working environment for eye care workers should be encouraged to prevent brain drain. The movement of highly specialised eye specialists, such as oculoplastic surgeons, vitreoretinal surgeons, anterior segment surgeons, trauma ocular surgeons, and anaesthetists, to developed countries will, in the long run, impair the effective provision of quality ocular trauma care services. The provision of a good working environment is an effective method of preventing brain drain. [28]

Legislation

Enacting legislation to ban fireworks, regulate the sale and possession of chemicals by unauthorised individuals, and mandate the use of protective eyewear at work can enhance safety. Empowering and strengthening road safety marshals to enforce road safety precautions such as seatbelt use and speed limits will reduce ocular trauma from road traffic incidents. Legislation has been successfully used in the USA and Australia to mitigate ophthalmic trauma. [29]

Strengthened national health insurance scheme

The national health insurance scheme should be strengthened to cater for patients with ocular injuries, as this will reduce the financial burden of care and encourage early presentation of the eye-injured in hospitals with the required skill and equipment.

Possible challenges that may militate against achieving the above strategies

Honesty should be displayed at all levels of the health sector. The civil servants/hospital managers collaborate with contractors to use misappropriate funds allocated to specific services in the hospitals and thus, substandard materials are used in constructions and sub-standard equipment are supplied in place of high-quality specifications. The lack of infrastructures, especially electricity, in most hospitals, and the high electricity bill charges, affect the availability of power and provision of clinical care in hospitals to the maximum. This makes the use of electronic medical records difficult due to the loss of or inability to retrieve patients' medical information, thereby adversely affecting the surveillance of eye trauma data.

The emigration of eye care workers, due to poor remuneration and insecurity of life and property, results in a reduction in the population and spread of Eye Care Workers (ECWs) available to provide services to eye-injured patients. The low activity at the Primary Healthcare level in the country, due to the poor state of Primary Health Centres, results in poor health service delivery to large populations in rural areas of the country.

Conclusion

Advocacy, health promotion, legislation, stakeholder meetings, the establishment of well-equipped tertiary eye care hospitals, and the training and retraining of eye care workers are effective public health interventions required to prevent ocular trauma blindness in Nigeria.

Recommendations and future directions

The political will to eradicate corruption at all levels of government, by strengthening oversight, effective hospital management, monitoring and evaluation for optimal delivery of effective services to the population in need, is essential. The provision of infrastructural

support, especially electricity and pipe-borne water, to all hospitals is also essential. The remuneration of eye care workers needs to be increased to discourage emigration. Further, Primary Health Centres need to be revamped and equipped to be able to give first aid care, such as copious eye irrigation to chemical eye injury, application of an eye shield and a sound referral system to secondary/tertiary level of eye care as necessary.

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