

# OCULAR TRAUMA KNOWLEDGE AND PREVENTION PRACTICE AMONG PUBLIC PRIMARY SCHOOL TEACHERS IN EGOR LOCAL GOVERNMENT AREA, BENIN CITY, EDO STATE

Okafor, F. U; Omorogbe Christe. E.; Osian, E. A. & Aniekan J. E.

## ABSTRACT

*This study examines the knowledge of ocular trauma among public primary school teachers in Egor Local Government Area in Benin City, Edo State. The study adopts a cross-sectional survey design and a simple random sampling method was used to select Two hundred and Nine (209) public primary school teachers. A pretested, self-well-structured questionnaire was used as instruments of data collection based on the research objectives; before administration, it was subjected to validity and reliability testing. Data generated were coded, entered and analysed using IBM Statistical Package for Social Sciences (SPSS) 24.0 for windows. Data were presented descriptively using frequency and percentage tables and charts. Chi-square Analysis was used to establish the relationship between variables. The level of significance was set at  $p < 0.05$ . The finding shows that respondents are knowledgeable about ocular trauma and ocular trauma prevention, Further findings revealed that the leading source of information about ocular trauma was hospital (50.7%), television (22.9%) and the level of respondents practice of ocular trauma prevention is high. Two hypotheses were tested and the result observed that there is a significant association between sex of public primary school teachers and the practice of prevention of ocular trauma and lastly, there is a significant association between the level of knowledge of ocular trauma and practice of prevention of ocular trauma The study, therefore, recommends the need to increase knowledge of causes of ocular trauma, prevention, early treatment, and regarding access to available eye care services in the location under study. This may*

*enable minimisation of visual impairment and cost of eye care.*

**Keywords:** Trauma: Ocular Trauma: Knowledge and Prevention.

## INTRODUCTION

Globally, approximately 1.6 million people are blind majorly owing to ocular trauma, 2.3 million have a low bilateral vision, and 19 million have a unilateral visual loss (visual acuity less than 6/60) (Lipscomb, 2015). The incidence of eye trauma appears to have a bimodal trend with peaks in the people aged 15 to 29 years and those over 70 years (Peate, 2017). The morbidity appears to coincide with the age of maximal youthful activity and the age of the elderly, respectively. Hence, Cai and Zhang, (2015) stress that ocular trauma consists of all damages to the eye and its adnexa caused by direct contact with fixed, mobile; blunt; sharp; hot objects; chemical substances; electrical power, and different types of radiations (ultraviolet rays, x-rays, microwave). Ocular trauma is responsible for a significant fraction of disabling ocular morbidity that affects all groups, especially workers, including teachers. It is a significant cause of preventable monocular blindness and visual impairment in the world. Despite its public health importance, there is relatively less population-based data on the magnitude and risk factors for ocular trauma, especially from developing countries (Yu & Liu & Hui, 2014).

More than 65,000 work-related ocular injuries and illness are reported in the United States annually (Johnston & Armstrong, 2014). In less developed countries like Nigeria, it accounts for 8% of all occupational injuries as

recorded in selected hospitals (National Occupational Research Agenda (NORA), 2015). A study in China (Chen, Fong & Lin, 2017) indicates that male workers with low education levels, lack of safety trainings, without machine guarding and eye protections are significant risk factors for occupational injuries. However, many developing countries, including Nigeria, do not require employers or health care providers to report preventable injuries. Ocular injuries are mostly avoidable, mainly if adequate eye protection is used, and appropriate machine securities are placed over obvious hazards (Nordber, 2016). The eye protection devices could reduce the risk of work-related eye injury by up to 60%, however, only 18.4% of workers are wearing eye protection devices when injured (Xiang, Stallones & Chen, 2015). Therefore, an awareness of the prevention of ocular trauma is necessary for workers of all groups.

Saxena, Sinha, Purohit, Dada, Vajpayee & Azad, (2016) opines that unfortunately, approximately half of all patients that present to an eye emergency department present with ocular trauma. The spectrum of injuries ranges from very mild, non-sight threatening to extremely serious with potentially blinding consequence affecting peri-orbital structures, ocular surfaces such as corneal abrasions and superficial foreign bodies. The work places, home, recreational activities, road traffic accidents and physical assaults are the common causes of ocular trauma for all age groups. Another important cause of ocular trauma is toys and fireworks. Firework related injuries are common, especially during national holidays or religious feasts. Besides, a seemingly infinite number of objects, such as wooden objects around the workplace are reported in literature.

Nevertheless, most ocular injuries are preventable (Peate, 2017), irrespective of causative agents or the site of occurrence.

Therefore, common sense and general safety are essential in the prevention of different causes of ocular injuries (Saxena et al., 2016). Often with such injuries, occupational education or adequate work supervision seems to be an essential means of preventative medicine. To provide such education to adults who are at risk, health professionals must remind themselves as to the several factors that are most pertinent to the prevention of ocular trauma. One of such factors is the awareness of the prevention of ocular trauma. Awareness of the causes of ocular trauma can aid in guiding preventative strategies and optimising management capacity. This study, therefore, examines the knowledge of the ocular trauma and prevention practice among public primary school teachers in Egor Local Government Area.

## RESEARCH QUESTIONS

1. What is the level of knowledge of ocular trauma among public primary school teachers in Egor Local Government Area?
2. What is the level of knowledge about the prevention of ocular trauma among the public primary school teachers in Egor Local Government Area?
3. What is the leading source of information about ocular trauma?
4. What is the practice level of ocular trauma prevention among public primary school teachers in Egor Local Government Area?

## HYPOTHESES

1. There is no significant relationship between the sex of public primary school teachers in Egor Local Government Area and their practice of the prevention of ocular trauma.
2. There is no significant association between the level of knowledge of ocular trauma and practice of prevention of ocular trauma

## METHODOLOGY

The study adopts a cross-sectional survey method which is considered the most appropriate design because it is cheap and most suitable. The survey is used to obtain information concerning the current status of the phenomena and to describe "what exists" concerning variables or conditions under investigation. This research was carried out in Egor Local Government Area, Benin City. Egor Local Government Area is one of the eighteen (18) local government areas in Edo State. It is located in the State Capital, Benin City. Egor Local Government Area is semi-urban, and the postal code for this area is 3002. Egor Local Government Area is bounded to the north by Ovia North-East Local Government Area, to the south by Oredo Local Government Area, and to the west by Ovia North-West Local Government Area. The local government secretariat is located at Uselu, just behind the Edaiken market along Uselu-Lagos road. The geographical area is 93km with a population of 339,899 at the 2006 census. Egor Local Government Area forms a federal constituency alongside Ikpoba Local Government Area. Egor Local Government Area has a total of 134 primary schools, consisting of 30 public and 104 private schools.

Egor legislative council make laws governing Egor Local Government Area, and it consists of 10 councillors representing the ten geopolitical wards of the Local government area. Egor Local Government Area falls within the southern senatorial district, and it is cosmopolitan comprising of people of different ethnic background, people of different strata of the society as well as different works of life but the dominant tribe in Egor Local Government Area is the Binis. The target population included all public primary school teachers in Egor Local Government Area of Edo State. According to the Department of Planning, Budgeting, Statistics and Research, (2019),

Egor Local Government Area public primary schools have 438 teachers in the randomly selected 13 schools that is 43% of the total schools. The population of this study therefore comprises of 438 public primary school teachers in Egor Local Government Area. The sample size of 209 public primary school teachers in Egor Local Government Area of Edo State was derived using (Taro Yamen, 1967). Simple random technique was used to select a sample size of 209 for the study, from the public primary schools in Egor Local Government Area.

The instrument for this study was a self-structured questionnaire, which was chosen because it enhanced the collection of data from a large number of respondents within a limited period (Chinweuba, Iheanacho & Agbapuonwu, 2014). The research instrument consists of four (4) sections such as Section A covered the demographic data, Section B covered the knowledge of ocular trauma, and Section C covered the awareness of the prevention of ocular trauma. In contrast, section D covered the practice of prevention of ocular trauma. The questionnaire contained closed-ended questions and was constructed using the dichotomous stem, Yes/No, True/False and Likert scale response system. The instrument was validated by subjecting it to health, Social Scientist and Ophthalmic experts that scrutinising for content and face validity.

The due corrections were made before it was distributed. In this study, the reliability testing was carried out with fifteen (15) questionnaires distributed to fifteen (15) teachers in the two (2) public primary schools at Egor Local Government Area, and responses were analysed for reliability. The reliability of the instrument was established using split-half test for the dichotomous stem, while the Cronbach's alpha reliability coefficient for Likert Scale with reliability values of 0.7 and 0.872, respectively, these were considered as

significant for the instrument to be used for the study. All data were coded, entered and analysed using Statistical Package for Social Sciences (SPSS) version 21.0 spreadsheet. Frequency and percentages tables were used to presented the data. Hypothesis testing was done using Chi-square statistics to test if significant relationships exist at the significance level of 0.05.

**RESULTS**

Table 1 shows the bio-data of teachers. Ninety-seven (46.4%) are males, majority 112(53.6%) are females. Twenty-five (12%) are < 25 years, 56(26.8%) are within 26-32 years, 98(46.9%) are within 33-39 years, 23(11%) are within 40-

46 years, 7(3.3%) are within 47-53 years. Seventy-eight (37.3%) are single, majority 117(56%) are married, 6(2.9%) are divorced, 8(3.8%) are separated. Majority 134(64.1%) are Christians, 68(32.5%) are Muslims, 7(3.3%) were traditionalist. Majority 106(50.7%) have NCE, 77(36.8%) have B.Sc/B.Ed, 23(11%) have M.Sc/M. Ed, 3(1.4%) have PhD Twenty-five (12%) have less than ten years in service, 72(34.4%) have 10-20 years in service, 97(46.4%) have 20-29 years in service, 15(7.2%) have above 30 years in service. The biodata of this study reveals that majority of the respondents are females, between 33 to 39years, married and are Christians. The respondents' highest qualification is NCE with 20 to 29years in service.

**TABLE 1**  
Biodata of teachers

Variable		N	%
Gender	Male	97	46.4
	Female	112	53.6
	Total	209	100
Age (years)	<25	25	12.0
	26-32	56	26.8
	33 – 39	98	46.9
	40 – 46	23	11.0
	47 – 53	7	3.3
	Total	209	100
Marital status	Single	78	37.3
	Married	117	56.0
	Divorce	6	2.9
	Separated	8	3.8
	Total	209	100
Religion	Christianity	134	64.1
	Islam	68	32.5
	Traditional	7	3.3
	Total	209	100
Highest Educational level	NCE	106	50.7
	B.Sc./B. Ed	77	36.8
	M.Sc./M.Ed.	23	11.0
	Ph.D.	3	1.4
	Total	209	100
Years in service	Less than 10years	25	12.0
	10-20years	72	34.4
	20-29years	97	46.4
	Above 30years	15	7.2
	Total	209	100

**Research question one**

What is the level of knowledge of ocular trauma among public primary school teachers in Egor Local Government Area? Frequency and percentages was used to answer this research question and the results are presented in Table 2, 3 and figure 1.

Table 2 shows knowledge of ocular trauma. It is reported by 132(63.2%) that ocular trauma consists of all damages to the eye while 77(36.8%) disagree. It is reported by 34(25.8%) that its adnexa are caused by chemical substances, 27(20.5%) report that it is caused by hot objects, 59(44.7%) report that it is caused by electrical power while 12(9.1%) report that it is caused by different radiations. Majority 142(67.9%) understand ocular

trauma to mean injury to the eye, 34(16.3%) report it means injury to the head, 5(2.4%) report it means damage to the nose, 6(2.9%) reports it means trauma to the mouth. It is reported by 33(15.8%) that ocular trauma could be caused by the following except ultraviolet ray, 47(22.5%) report except chalk particles, 43(20.6%) report except direct blow to the eye, 86(41.1%) report except hypertension. It is reported 179(85.6%) that ocular trauma can lead to vision loss, 30(14.44%) disagree. It is reported by 75(35.9%) that ocular trauma could be classified as the following except blunt, 98(46.9%) report except penetrating, 82(39.2%) report except intense. The result in table 2b concludes that that the respondents are knowledgeable on ocular trauma

**TABLE 2**  
**Knowledge of ocular trauma**

	Frequency	Percentage
Ocular trauma consists of all damages to the eye		
Yes	132	63.2
No	77	36.8
Its adnexa caused by		
Chemical substances		
Hot objects	34	25.8
Electrical power	59	44.7
Different types of radiations	12	9.1
What do respondents understand by ocular trauma		
Injury to the eye	142	67.9
Injury to the head	34	16.3
Damage to the nose	5	2.4
Trauma to the mouth	6	2.9
Ocular trauma can be caused by the following except		
Ultraviolet ray	33	15.8
Chalk particles	47	22.5
A direct blow to the eye	43	20.6
Hypertension	86	41.1
Ocular trauma can lead to vision loss.		
True	179	85.6
False	30	14.4
Ocular trauma can be classified as the following except		
Blunt	75	35.9
Penetrating	98	46.9
Intense	82	39.2
Mechanical	51	24.4

**TABLE 2b**  
**Key of Level of Knowledge of Ocular Trauma**

	Frequency	Percentage
Poor	44	21.1
Fair	61	29.2
Good	104	49.8
Total	209	100.0

**Research question two**

What is the level of knowledge about the prevention of ocular trauma among the public primary school teachers in Egor Local Government Area?

From Table 3, the result of this study shows that 77.5% of the respondents agree that they are expected to use common sense in the prevention of ocular trauma while 22.5% disagree. 57.9% of the respondents agree that ocular trauma is higher in males than in females while 42.1% of the respondents disagree. 76.1% of the respondents agree that using

markers when writing on the board instead of chalk helps prevent ocular trauma while 23.9% disagree. Also, 46.9% of the respondents agree that an individual must be aware of the causes of ocular trauma in order to guide preventive strategies while 53.1% disagree. 48.8% of the respondents agree that the impact of ocular trauma can have profound social implications regarding the loss of productivity while 51.2% of the respondents disagree. This study observes that the knowledge level of respondents practice on the prevention of ocular trauma is high (61.44%)

**TABLE 3**  
**Knowledge of the Prevention of Ocular Trauma**

	Frequency	Percentage
Respondents are expected to use common sense in the prevention of ocular trauma		
Yes	162	77.5
No	47	22.5
Ocular trauma is higher in males than in females		
True	121	57.9
False	88	42.1
Using markers when writing on the board instead of chalk helps prevent ocular trauma		
True	159	76.1
False	50	23.9
Respondents must be aware of the causes ocular trauma in order to guide preventive strategies.		
True	98	46.9
False	111	53.1
The impact of ocular trauma can have profound social implications regarding the loss of productivity.		
True	102	48.8
False	107	51.2

**Research question three**

What is the leading source of information about ocular trauma? From Table 4, 67% of the respondents have heard about ocular trauma while 33% have not. 22.9% heard about ocular

trauma from the television, 17.9% heard from family members, 50.7% heard from the hospital while 8.5% heard from other sources. Therefore, this study reveals that the main source of information of the respondents is through the hospital.

**TABLE 4**  
**Sources of information about Ocular Trauma**

	Frequency	Percentage
Have the respondents heard of ocular trauma		
Yes	140	67
No	69	33
If yes, where did respondents hear it		
Television	32	22.9
Family members	25	17.9
Hospitals	71	50.7
Others	12	8.5

**Research question four**

What is the practice level of ocular trauma prevention among public primary school teachers in Egor Local Government Area? Frequency and percentages was used to answer this research question and the results are presented in Table 5a, 5b and figure 2.

From Table 5, the result reveals that 27 of the respondents strongly disagree that improved work environment could prevent ocular trauma and 54 disagree while 65 respondents agree and 63 strongly agree with the mean score of 2.78. 16 of the respondents strongly disagree that the higher educational level of workers helps prevent the occurrence of ocular trauma and 35 disagree while 97 respondents agree and 61 strongly agree with the mean score of 2.97. 19

of the respondents strongly disagree that adequate work supervision is an essential means of preventing ocular trauma and 48 disagree while 107 respondents agree and 35 strongly agree with the mean score of 2.76. Also, 28 of the respondents strongly disagree that the practice of regular eye check could prevent ocular trauma and 59 disagree while 70 respondents agree and 52 strongly agree with the mean score of 2.70. 54 of the respondents strongly disagree that local government media campaign on dangers of ocular trauma could lead to awareness and prevention and 47 disagree while 75 respondents agree and 33 strongly agree with the mean score of 2.42. The above-stated means are significant ( $p > 2.5$ ) this indicates that these are right practices of prevention of ocular trauma.

**TABLE 5**  
Measures used to Prevent Ocular Trauma

	SD	D	A	SA	Mean	Remark
Improved work environment could prevent ocular trauma.	27	54	65	63	2.78	Good
The higher educational level of worker helps prevent the occurrence of ocular trauma	16	35	97	61	2.97	Good
Adequate work supervision is an essential means of preventing ocular trauma	19	48	107	35	2.76	Good
The practice of regular eye check could prevent ocular trauma.	28	59	70	52	2.70	Good
Local government media campaign on dangers of ocular trauma could lead to awareness and prevention.	54	47	75	33	2.42	Poor
Grand mean					2.73	Good

**TABLE 5b**  
Key of Measures used to Prevent Ocular Trauma

	Frequency	Percentage
Poor practice	44	21.1
Good practice	165	78.9

**Hypothesis One**

There is no significant association between sex of public primary school teachers and practice of prevention of ocular trauma

Table 6 shows the association between sex of public primary school teachers and the practice

of prevention of ocular trauma. The table shows a significant association between sex of public primary school teachers and the practice of prevention of ocular trauma. We, therefore, reject the null hypothesis.

**TABLE 6**  
**Association between Sex Teachers and Practice of Prevention of Ocular Trauma**

	Poor	Good	$\chi^2$	P
Sex				
Male	29	68	8.519	0.004
Female	15	97		

$\chi^2 = 8.519$ ;  $p = 0.004$

**Hypothesis Two**

There is no significant association between the level of knowledge of ocular trauma and practice of prevention of ocular trauma.

Table 7 shows the association between the level of knowledge of ocular trauma and practice of prevention of ocular trauma. It shows that those

with good knowledge report the highest proportion with the right practice. This association is statistically significant; therefore, the null hypothesis was rejected. This study therefore reveals that there is a significant association between the level of knowledge of ocular trauma and practice of prevention of ocular trauma.

**TABLE 7**  
**Association between Level of Knowledge and Practice of Prevention of Ocular Trauma**

Knowledge	Practice		$\chi^2$	P
	Poor	Good		
Poor	22(50.0)	22(50.0)	37.783	0.000
Fair	16(26.2)	45(73.8)		
Good	6(5.8)	98(94.2)		

## DISCUSSION

Since ocular trauma can be prevented and effectively treated, the knowledge of its prevalence, associated risk factors and prognostic markers become essential for any step aimed at reducing the trauma-related visual morbidity in primary school teachers who are still using chalk to teach in the classrooms. This study assesses the knowledge of the ocular trauma and prevention practice among public primary school teachers in Egor Local Government Area. The biodata of this study reveals that majority of the respondents are females, between 33 to 39 years, married and are Christians. The respondents' highest qualification is NCE with 20 to 29 years in service. Our study observes that the respondents are knowledgeable about ocular trauma. This is in support of Gurung, Rai, Pandey, Gurung and Ruit (2017) reports a very high level of knowledge of 88.5% on ocular trauma, which is about twice the proportion of our study. This high proportion is among those who already report they are aware of ocular trauma.

This study shows that the knowledge level of respondents is high on the prevention of ocular trauma. This study is consistent with Usgaonkar and Sharvani Pai, (2018) who reports high knowledge on the prevention of ocular trauma from majority of the care givers in their study and they further opine that a balanced diet, Vitamin A rich diet, routine eye check-ups, use of spectacles play a vital role in the prevention of blindness. The finding of this study is in contrast to studies conducted by Jain, Sudhan & Pinto, (2005) that ascertain that traditional practices, home-based medical treatment and poor economic conditions are the main barriers preventing parents from accessing eye care services for their children. Our study shows that the majority of the respondents perform right practices of prevention of ocular trauma. The writers opine

that this may be as a result of their knowledge about ocular trauma and its prevention.

In this study, the leading source of information about ocular trauma is the hospital. The other sources are not found to be an influential source of information. This finding is, however, not consistent with the study conducted in Tehran by Katibeh, Marzieh, Hossain & Elnaz (2014) who report family/friends as the primary source of information about the eye. The finding however found similarity with a Switzerland study that reports that ophthalmologists are the primary source of information for patients (Mansouri, Orgül, Meier-Gibbons & Mermoud, 2006). The result of the first hypothesis tested shows that there is significant association between sex of public primary school teachers and the practice of prevention of ocular trauma, therefore the null hypothesis is rejected.

This second hypothesis in this study also reveals that there is a significant association between the level of knowledge of ocular trauma and practice of prevention of ocular trauma, therefore, the null hypothesis is rejected.

### Implications for Nursing Practice

The nurse can create a better awareness of ocular trauma among primary school teachers by conducting planned health programmes with the use of a variety of audio-visual aids. The nursing curriculum should focus on the impact of ocular trauma as well as other eye diseases on blindness on society as well as National Health Strategies. It should also consist of knowledge related to teaching strategies and various modalities so that nursing students can use different teaching methods to impart the appropriate knowledge on eye diseases to the focus group.

Nurse administrators should motivate the health care professional to organise the

awareness campaigns to public primary schools' teachers by providing adequate information on eye trauma and its prevention, which may lead to blindness.

### CONCLUSION AND RECOMMENDATIONS

The awareness of the prevention of ocular trauma is an important topic, but it is often a neglected part of the discussion. This study has shown very poor awareness among public primary school teachers, and hence there is the need for mass awareness, trauma-related education not just to the teachers who are supposed to be more enlightened by their educational level; but also to the pupil, parents, factory workers, and farmers. This will go a long way in the prevention of catastrophic effect of trauma to the eye and reduction of ocular morbidity and prevalence of blindness.

It is recommended that, there is the need to incorporate teacher training programs into school vision screening programs; this becomes necessary to educate the teachers as well as their pupils about childhood eye diseases and their early detection. In addition, there is a need to increase awareness and knowledge of causes of ocular trauma, prevention, early treatment, and regarding access to available eye care services in the location under study. This may enable minimisation of visual impairment and cost of eye care.

### REFERENCES

Cai, M. & Zhang, J. (2015). Epidemiological Characteristics of Work-Related Ocular Trauma in the Southwest Region of China. *Int. J. Environ. Res. Public Health*, 12: 9864-9875

Chen, S. Y., Fong, P. C. & Lin, S. F. (2017). A case-crossover study on transient risk factors of work-related eye injuries. *Occup. Environ. Med*, 66: 517–522.

Chinweuba A., Iheanacho P. & Agbapuonwu N., (2014) *Research & Statistics in Nursing & Related Professions: Beginner's Guide*,

Gurung, Khim & Rai, Nabin & Pandey, Srijana & Gurung, Reeta & Ruit, Sanduk. (2017). Awareness and knowledge of mountainous people on major blinding diseases in Nepal. *Journal of Ophthalmology*.

Jain B. K., Sudhan A, Pinto S. (2005) Community participation in addressing the challenges of childhood blindness. *Community Eye Health Journal*;18(56):69-72.

<https://www.who.int/news-room/fact-sheets/detail/blindness-and-visual-impairment?>

Johnston, P. B. & Armstrong, M. F. (2014). Eye injuries in Northern Ireland two years after seat belt. *Br J Ophthalmol*, 70:460-2.

Katibeh, Marzieh & Ziaei, Hossein & Panah, Elnaz & Moein, Hamid-Reza & Hosseini, Sara & Kalantarion, Masumeh & Eskandari, Armen & Yaseri, Mehdi. (2014). Knowledge and Awareness of Age-Related Eye Diseases: a Population-Based Survey. *Journal of ophthalmic & vision research*. 9. 223-31

Lipscomb, H. J. (2015). Effectiveness of interventions to prevent work-related eye injuries. *Am J Prev Med*, 18:27–33.

Mansouri K. Orgül S. Meier-Gibbons F. Mermoud A. (2006) Awareness about Glaucoma and Related Eye Health Attitudes in Switzerland: A Survey of the General Public. *Ophthalmologica* 220:101–108

National Occupational Research Agenda (NORA) (2015). Report on traumatic occupational injury research needs and priorities. US Department of Health and Human Services, Public Health Service, CDC, DHHS publication no 98–134.

- Nordber, E. (2016). Ocular injuries as a public health problem in sub-Saharan Africa: Epidemiology and prospect for control. *East Afr Med J*, 77:1–43.
- Okpala, N. E., Umeh, R. E. & Onwasigwe, E. N. (2015). Eye injuries among primary school children in Enugu, Nigeria: Rural vs Urban. *Ophthalmology and Eye Diseases* 2015:7 13–19 DOI: 10.4137/OEd.s18659.
- Peate, WF (2017). Work-related eye injuries and illness. *Am. Fam. Physician*. 75: 1017–1022.
- Saxena, R., Sinha, R., Purohit, A., Dada, T., Vajpayee, R. B. & Azad, R. V. (2016). The pattern of pediatric ocular trauma in India. *Indian J Pediatr*, 69 (10):863-7.
- Usgaonkar, U. P. & Sharvani P. S. (2018). Awareness of childhood blindness in caregivers of children attending ophthalmology OPD in a tertiary care hospital in Genoa J. *Evolution Med. Dent. Sci.*, Vol. 7(13): 31-35
- Xiang, H., Stallones, L. & Chen, G. (2015). Work-related eye injuries treated in hospital emergency departments in the US. *Am. J. Ind. Med*, 24: 57–62.
- Yu, TSI & Liu, H. J. & Hui, K. (2014). A Case-Control Study of Eye Injuries in the Workplace in Hong Kong. *Ophthalmology*. 111: 70–74.