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INCIDENCE OF OCULAR SURFACE FOREIGN BODY AMONG SPECIFIC OCCUPATIONAL GROUPS AND PREVENTIVE MEASURES USED

Ophthalmology

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ABSTRACT

Purpose- Ocular surface foreign body is the commonest preventable form of eye trauma, causing significant discomfort and if not properly managed may lead to visual morbidity. Our aim is to study the incidence of ocular surface foreign body among specific occupation and its association with preventive measures taken at work place. **Materials And Methods-** This cross-sectional study was conducted in the Ophthalmology Department, Sree Gokulam Medical College, Thiruvananthapuram among patients aged above 18 years who presented with history of foreign body in the eye. Age, gender, occupation, time between injury and presentation to hospital, symptoms and preventive measures taken were recorded for all patients. Detailed slit lamp examination was performed. Location and nature of the foreign body was noted. Data was entered into MS Excel worksheet and analyzed using SPSS statistical software. **Results-** Out of the total 58 patients included in our study, 20 patients were in the age group of 18-30 years. Ocular surface foreign body was more among industrial workers(41.4%) followed by construction site workers(20.7%).45patients(77.6%)were at worksite and among them only 13(28.8%)used protective eyewear at the time of injury. 17 patients(70.8%) among the 24industrial workers and 7(29.2%) among the 12 construction site workers didn't use protective eyewear.24patients(41.4%)developed defective vision due to foreign body. Central corneal foreign body was seen in 17patients(29.3%). Only 2 patients(15.4%) developed defective vision among those using protective eyewear which was statistically significant($p < 0.05$). **Conclusion** - Incidence of ocular surface foreign body is high among industrial and construction site workers. Visual morbidity was significantly less in those who used protective eyewear. An awareness campaign is required to educate the people about the importance of using protective eye wear at the work site.

KEYWORDS

ocular surface, foreign body, occupation

AIM

Ocular surface foreign body due to occupational exposure is greatly ignored among Indian population. Our study looks at a broad range of occupations and settings that contribute to ocular foreign body. Ocular surface foreign body (OSFB) is the commonest preventable form of eye trauma, causing significant discomfort and if not properly managed may lead to visual morbidity. Our aim is to study the incidence of ocular surface foreign body among specific occupation and its association with preventive measures taken at work place.

MATERIALS AND METHOD

This hospital based cross-sectional study was done at Sree Gokulam Medical College in Thiruvananthapuram. All patients aged above 18years who presented with ocular surface foreign body (OSFB) during the period of March 2021 to May 2021 were included in the study. Patients with history of foreign body fall, but no foreign body seen on clinical examination and patients with intraocular foreign body were excluded from the study. Informed consent was taken from all the patients and the details were noted.

The demographic information which included age and gender were noted .In order to know the settings in which the injury occurred we enquired about the occupation, activity at the time ofinjury and whether they were wearing protective eyewear at the time of injury. Immediate measures taken at the site of injury including eyewash and attempted self removal of FB was asked. Ocular symptoms related to the injury was also noted. Data was obtained about similar injuries in the past and use of protective eyewear in the past. To evaluate the awareness of occupational eye safety we enquired about the time between the injury and the visit to OPD. Visual acuity and slit lamp evaluation of each patient was done. The site and type of foreign body, presence of a rust ring and any evidence of superadded infection due to foreign body were noted. Ocular surface foreign bodies were removed under sterile precautions and appropriate treatment was given. The data was entered into a Microsoft Excel Worksheet and analyzed using SPSS Statistical Software.

RESULT

Out of the total 58 patients with OSFB included in our study, majority of patients were in the age group of 18-30 years (34.5%) and only 8 patients were females. Industrial workers were most commonly affected (41.4%) followed by construction site workers (29.3%)(Table 1).

Table 1 - INCIDENCE OF OSFB AMONG VARIOUS OCCUPATIONS

	Frequency (No:)	Percentage (%)
Industrial worker	24	41.4
Construction workers	12	20.7
Agricultural workers	7	12.1
Domestic workers	4	6.9
Others	11	19.0
Total	58	100.0

77.6 % of the OSFB were occupation related while 22.4% were not related to any work site injury. 46.6% of patients reported on the same day of incident but 18 patients came after 1 day and 13 patients came only after 2 days of injury. Among the 58patients only 13(22.4%) were using protective eyewear during the time of incident (Table 2)

Table 2 - PROTECTIVE EYE WEAR USE DURING PRESENT INCIDENT

	Frequency (No:)	Percentage (%)
Not used	45	77.6
used	13	22.4
Total	58	100.

17patients(70.8%) among the 24 industrial workers and 7(29.2%) among the 12 construction site workers were not using protective eyewear .65.5% patients washed their eyes immediately after the incident, 20.7% of patients attempted self removal of foreign body and 13.8% did not take any immediate measures(Table 3).

Table 3 – IMMEDIATE MEASURES TAKEN

	Frequency (No:)	Percentage (%)
Attempted self removal	12	20.7
Eyewash	38	65.5
No measures taken	8	13.8
Total	58	100.0

About 25patients (43.1%) had history of previous similar injuries but only 2 pateints among them were using protective eyewear at that time. 24 patients(41.4%)developed defective vision due to foreign body. Among those using protective eyewear only 2 patients (15.4%) developed defective vision which was statistically significant(p <0.05)(Table 4).

Table 4 – ASSOCIATION BETWEEN PROTECTIVE EYEWEAR USE AND DEFECTIVE VISION

			DEFECTIVE VISION		Total
			0	1	
PROTECTIVE EYE WEAR USE	NO	Count	23	22	45
		% within PROTECTIVE EYE WEAR USE	51.1%	48.9%	100.0%
	YES	Count	11	2	13
		% within PROTECTIVE EYE WEAR USE	84.6%	15.4%	100.0%
Total		Count	34	24	58
		% within PROTECTIVE EYE WEAR USE	58.6%	41.4%	100.0%

Our study majority of OSFBs were found in peripheral cornea(39.7%) followed by conjunctiva (32.8%) and central cornea(29.3%)(Table 5) .

Table 5- LOCATION OF VARIOUS OSFB

	Frequency (No)	Percentage (%)
Conjunctiva	19	32.8
Central cornea	17	29.3
Peripheral cornea	22	37.9
Total	58	100.0

About 58.6% of OSFB were metallic in nature (Table 6).

TABLE 6-FOREIGN BODY NATURE

	Frequency (No:)	Percentage (%)
Metallic	34	58.6
Wooden	3	5.2
Vegetative	6	10.3
Insect	7	12.1
Others	8	13.8
Total	58	100.0

DISCUSSION

Ocular surface foreign bodies are a common occupationl hazard leading to ocular morbidity and significant loss of work hours. Visual morbidity due to OSFB can be considerably reduced by the use of protective eyewear. In our study 34.5% of OSFB were seen in younger age group (18-30 years) followed by 29.3% in 30-40 years age group.. A study done by Agarwal C et al (1) showed that 66% of corneal foreign body was among the 14-30 yrs age group. In our study OSFB was found more in males(86.2%) with a male to female ratio of 6.25:1.In most of the studies there was a male preponderance with ratios ranging from 2.5:1(2) to 14:1(3)The male predominance might be due to the fact that men are employed more in industrial and construction works.

In our study industrial workers were most commonly affected (41.4%) followed by construction workers(20.7%). This was similar to the study done by Reddy etal (2). The study by Yiğit Ozlem et al(4) and by Reddy et al(2) showed the majority of FB to be metal fragments. Our study revealed similar results where 58.6% patients had metallic FB in their eyes. The second most common occupational exposure was of construction workers which included sand, metal, dust, cement, paint particles. The agricultural workers mostly get injured by vegetative matter like wood and thorns .The domestic injuries resulted from house/office cleaning work. The mean duration between the injury and the first visit to an ophthalmologist was 2.16 days according to a study done by Kar AS et al (5). In our study 46.6% patients presented to the hospital on the same day.

In 71.9% cases cornea was more frequently involved in the study done by Reddy et al (2) and in 28.03% OSFB was in conjunctiva and fornices . In our study, in 67.2% cases cornea was involved and majority of corneal foreign body(CFBs) were found in peripheral cornea(39.7%) and 29.3% in central cornea. 32.8% were seen in conjunctiva. This was similar to the study done by Agarwal C etal where central cornea was involved in 24%. Central cornea was involved in 20% cases in a study done by Kar AS et al (5). The study by Ozkurt et al(6) found out that 52% patients attempted FB removal by themselves. In our study 20.7 % patients attempted self removal of foreign body. In the study by Ozkurt et al (6) previous similar injuries were present in 58 % patients and our study showed similar injuries in the past in 43.1% patients.

In the study by Reddy et al (2) over 73.83% of the OSFB were preventable by protective devices. Similar results were seen in study done by Thehmina Jahangir et al (7). In our study 66.6% of the foreign bodies could have been prevented by using protective eye wear. Only 2 patients in our study had used protective eye wear during the past and present incidents. Workplace standards should be revised to increase the protective capacity of the protective eye wears. 24 patients (41.4%)developed defective vision due to corneal foreign body in our study. But only 2 patients (15.4%) developed defective vision among those using protective eyewear which was statistically significant (p <0.05).

One of the limitations of our study was that we did not determine the association of the educational status of the worker and the use of protective eye wear. Another limitation is that we did not enquire about the availability of protective eye wear at the work site and if available, the reasons for not using it. We did not find out whether they had any previous eye health safety training classes from the employers. These would have helped in creating an awareness among the employers about the problems faced by the workers.

Most of the ocular surface foreign body injuries are superficial, but they account for significant ocular morbidity and loss of productive time attending hospitals and also cause economic burden to the workers.

CONCLUSION

Incidence of ocular surface foreign body was high among industrial and construction site workers. Visual morbidity was significantly less in those who used protective eyewear. It was observed that most of these OSFB could have been prevented if proper precautions were taken and protective eye wears were used. An awareness campaign is required to educate the people about eye safety measures to be adopted and the importance of using protective eye wear at the work site This will help in improving healthcare among workers and in reducing their economic burden.

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