

Awareness and use of protective eye devices among auto mechanic technicians and auto spare parts traders in Uyo, Nigeria

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Received May 5, 2015. Accepted May 12, 2015

Abstract

Background: Job-related injuries are common among artisans in developing countries. In Uyo, Nigeria, data on ocular injuries at workplace are not available to guide regulatory government agencies.

Objective: To determine the awareness level and protective eye devices use profile among workers in the Uyo Mechanic Village.

Materials and Methods: A cross-sectional study was conducted among artisans in a state-owned mechanics' village in 2013.

Result: Of the 109 subjects, 107 (98.2%) were men and two (1.8%) were women with a mean of 37.6 ± 9.2 years, and the age range was 18–62 years. Ninety-five subjects (87.2%) were not wearing any form of eye protection at work, 85 (78%) have never heard about protective eye wear at work, while 91 (83.5%) were not trained for using protective eye wear. Eleven cases (73.3%) had occupation-related ocular injury.

Conclusion: Job-related eye injuries are common in our cohorts largely because of ignorance or nonuse of protective eye devices.

KEY WORDS: Awareness, artisans, protective eye device

Introduction

Auto mechanic technicians form an important occupational group, especially in developing countries. In Nigeria, as in most other developing countries, most auto mechanic technicians are in the informal sector. They are involved in the maintenance and repair of motor vehicles, welding, vehicle spraying, and general services among others. These activities

are not without job-related hazards. It is, thus, necessary to apply safety rules and regulations. Their training is usually apprenticed based, lasting between 1 and 3 years. Most the auto mechanic shops are owned by a single individual, and they are generally not careful about protective devices. The few owned by big companies are located in Federal Capital and other commercial cities in Nigeria.

In Uyo, the state capital of Akwa-Ibom, the local authority has carved out a section of the town called "Mechanic Village," where most of the technicians come together along with the auto spare parts dealers to practice their trade. This arrangement makes it very convenient for their customers to access the services of different specialty of auto mechanic technicians and auto spare parts dealers.

Adopting health promotional measures at workplace is an important step toward ensuring a healthy work environment, especially in developing countries where such measures are commonly not well considered.^[1] The use of protective eye

Access this article online

Website: <http://www.ijmsph.com>

DOI: 10.5455/ijmsph.2015.05052015254

Quick Response Code:



devices (PEDs) while working on automobile helps to reduce the harmful effects of ultraviolet, visible, and infrared radiation produced during welding.^[2] It also provides mechanical protection for the eyes from weld splatter and chemical splash into the eyes from exploded battery. Eye injuries account for a substantial proportion of all work-related injuries.^[3,4] They are considered to be largely preventable, especially with adequate eye protection.^[5] The low level of education among practitioners of this trade and the lack of institutionalized training in the profession are likely to impart negatively on the awareness and use of PEDs.

In the United States, a 2-year study on eye injury among workers in automobile manufacturing reported that 15% of the most types of injuries (foreign body, corneal abrasion, and chemical injury) were welding related.^[6] Uyo has auto mechanic shops in different parts of the city besides the designated Mechanic Village. Despite this large workforce, there has been no deliberate epidemiological survey on awareness and use of PEDs. Hence, this study aimed to achieve with a view to providing data that will guide work-related policies by government and evidenced-based health information to these artisans and people involved in similar activities.

Materials and Methods

This is a cross-sectional study of auto mechanic workers and auto spare parts traders in the Mechanic Village in Uyo. Interviewer-administered structured questionnaire was used, which included sociodemographic profile of subjects and ocular history. Vision screening, using standard Snellen's and illiterate E charts at 6 m, was done in a well-lit meeting hall of the workers by ophthalmic nurses. Ocular examination was carried out by three ophthalmologists. Details of the methodology have already been given in another publication.^[7]

Informed verbal and written consents were obtained from the Chairman of Automobile Technicians and Traders Association of Nigeria, Akwa Ibom, and individual subjects.

Statistical Package for Social Sciences (version 20.0; SPSS, Chicago, IL) was used for analysis of data after being coded. Measure of central tendency used was mean \pm standard deviation (SD). Frequencies were expressed as percentages. The relationships between categorical variables were established with χ^2 -test; $p \leq 0.05$ was considered statistically significant.

Result

A total of 109 subjects were recruited in the study, of which 107 (98.2%) were men and two (1.8%) were women. With a mean of 37.6 ± 9.2 years, the age range was 18–62 years. Tables 1 and 2 show visual acuity and sociodemographic characteristics of participants, respectively. The occupation of the subjects is shown in Table 3. Figures 1 and 2 show the awareness, training, and use of PEDs. Table 4 shows the sources of ocular injuries among 15 (13.8%) subjects

Table 1: Visual acuity

Visual acuity	Right eye		Left eye	
	Frequency	Percentage	Frequency	Percentage
>6/18	105	96.4	102	93.6
<6/18–6/36	2	1.8	3	2.8
<3/60–NPL	2	1.8	1	0.9
Total	109	100.0	109	100.0

Table 2 Sociodemographic characteristic of participants ($n = 109$)

	Frequency	Percentage
Age (years)		
<20	2	1.8
21–30	25	22.9
31–40	42	38.5
41–50	33	30.3
51–60	6	5.5
>60	1	0.9
Educational status		
Primary	52	47.7
Secondary	54	49.5
Tertiary	3	2.8

Table 3: Occupation

Occupation	Frequency	Percentage
Spray painter	6	5.5
Auto mechanic	26	23.9
Trading	39	35.8
Auto electrician	10	9.2
Panel beater	11	10.1
Upholstery	2	1.8
Food vendor	4	3.7
Arc welder	11	10.1
Total	109	100

with the history of previous ocular traumas. Ninety-five subjects (87.2%) were not wearing any form of eye protection at work, 85 (78%) have never heard about protective eye wear at work, while 91 (83.5%) were not trained for using protective eye wear. Eleven cases (73.3%) showed what could be termed occupation-related ocular injury, while in four (26.7%) cases, injuries were caused by assaults and road traffic accidents (RTAs). Of those who showed history of ocular injuries, home remedies (5), chemist (3), or hospital (7) were the modalities of intervention.

Discussion

The demographic profile of this study is consistent with similar studies across Nigeria.^[8–10] Of the 109 subjects, only 24 (22%) have heard of PEDs. This is grossly at variance with

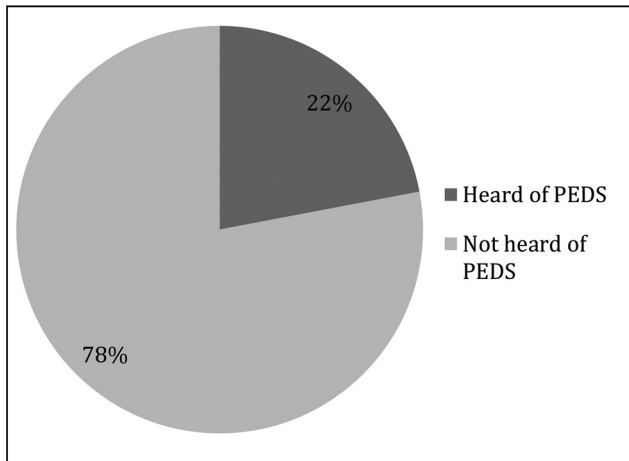


Figure 1: Awareness level on PEDs.

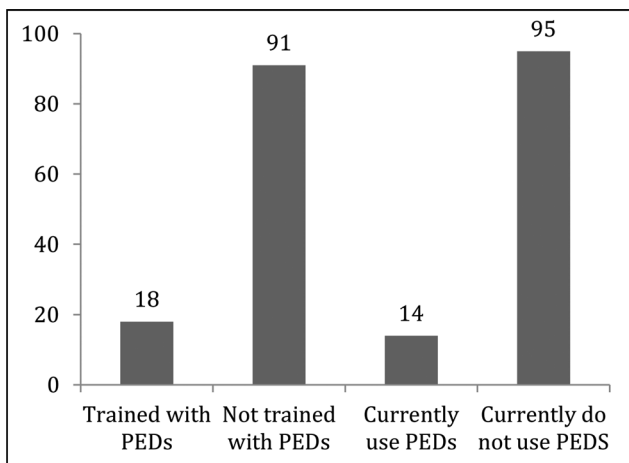


Figure 2: Training with and use of PEDs.

90.6% reported by Ajayi et al.^[10] in Ile-Ife. The latter study was solely among welders who intuitively perceived the need to protect their eyes from xenon arc. This could have significantly influenced the awareness level. The same reason could be averred for the 90.7% awareness level among welders in Nepal.^[11] Photokeratoconjunctivitis has the propensity to be more prevalent among welders, with this category of workers more likely to seek preventive measures. Some of these preventive measures are sunglasses. Unfortunately, sunglasses are not among the recommended PEDs to protect the eye from welding irradiation.^[12]

Surprisingly, there was no significant association between educational level and awareness about use of PEDs ($p = 0.33$ at 95% confidence interval [CI]: 0.24–0.42). This may be linked with low level of education, as majority had only primary or secondary education. It is expected that, at higher levels of education, especially if associated with

Table 4: Sources of injuries among 15 subjects with ocular trauma

Sources	Occupation	Frequency	Cumulative frequency (%)
Metal particles	Panel beater	3	5 (33.3)
	Auto electrician	1	
	Arc welder	1	
Metallic tool	Panel beater	1	1 (6.7)
	Petrol/hydraulic oil	2	3 (20.0)
RTA	Auto parts trader	1	2 (13.3)
	Fist/slap	2	
Hot water	Food vendor	1	1 (6.7)
	Paint	1	
Car spray painter		1	1 (6.7)
		1	
Total			15 (100)

institutionalized tutelage and apprenticeship, awareness level and usage are bound to increase. This is often not the case in our environment as skills by artisans are transferred in non-formal settings where ignorance about job safety may also be passed down to learners of the trade.

Of the 18 (16.5%) trained with PEDs, 14 (12.8%) use it at work at one point or the other. This low response is consistent with the low level of awareness already noted. Awareness may not be the only determining factor in the use of devices such as PEDs. In a study among artisans in southwestern Nigeria, although 90.6% of the cohorts were aware of existence of PEDs, only 38.3% utilized them. Reasons given for nonuse included non-availability in the markets, non-affordability, poor visibility especially in poorly lit workplace, and discomfort.^[10,13]

Fifteen (13.8%) had sustained different grades of ocular injury. Of this, 11 (73.3%) were work related, while four (26.7%) resulted from RTA. With the poor knowledge and use of PEDs, work-related ocular injury is not unexpected. In the United States, workplace eye injuries accounted for 25% of all claims for welders from insurance company, with foreign body in the form of metal particles being the commonest source of injury five (33.3%).^[14]

Conclusion

Blindness is undesirable, and the precious gift of sight should be preserved with attention focused on identified sources of avoidable blindness, especially at workplace. It is concluded that well-coordinated eye health education among the studied population remains the key to engender an urgent paradigm shift that entrenches acceptance of PEDs. The regular monthly meetings of the workers afford the opportunity to disseminate eye safety information. The Ministry of Transport with oversight function of regulating the activities of these workers can collaborate with Ministry of Health to make job-related eye health policies, which information contained in this study can guide.

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How to cite this article: Abraham EG, Megbelayin EO, Akpan SI. Awareness and use of protective eye devices among auto mechanic technicians and auto spare parts traders in Uyo, Nigeria. *Int J Med Sci Public Health* 2015;4:1227-1230

Source of Support: Nil, **Conflict of Interest:** None declared.