

COMMUNITY OPHTHALMOLOGY

An Ophthalmic Survey of the Occupational Problems of Stone Quarry and Stone Processing Industry Workers in Abakaliki, South-Eastern Nigeria

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Introduction: Quarrying has been defined as the process of open, or surface excavation of rock used for various purposes, including construction, ornamentation, road building, and as industrial raw material.^[1] Despite increasing hazards in this industry,^[2,3] there is paucity of information on the types, frequency, causes and factors affecting the occurrence of ocular disorders in stone quarry workers particularly in African countries such as Nigeria. There is no documented or published investigation on the effect of quarrying on eye health and safety in Abakaliki, thus this study.

Aim: To determine the ocular problems of stone quarry and stone processing industry workers in Abakaliki with a view to improving the eye health care practices of these workers.

Methods/Patients/Participants: This is a cross sectional study done between March and April 2011.

Study population: Quarry workers - Technical workers: Crushers, drillers, breakers, blasters. Casual workers: Laborers.

Sampling technique: Stratified sampling - **Sample size:** 384, **Ethical clearance:** Health Research Ethics Committee of the University of Nigeria Teaching Hospital, Enugu **Interviewer administered questionnaires** were used and eye examinations carried out. Minor ailments were treated on the field while others were referred to Ebonyi State Teaching Hospital Abakaliki. Data analysis was carried out using SPSS.

Results: The modal age group was 31–40 years (31.8%). Females (58.9%). A greater percentage had no form of education (38.9% mainly laborers). Job specifications: Blasters (4.7%), breakers (5.7%), crushers (12.0%), drillers (1.8%), laborers (75.8%). Work duration experience: 1–5 years (68.2%). The highest incident of work related accidents was among breakers (46.7%), blasters (46.6%) and crushers (57.1%) with least work experience (1–5 years). An overwhelming 98.7% of the workers did not use personal protective eye devices (PPED). All workers had never had health talks organized by employers or ever had PPED enforced. 77.60% of the workers had ocular disorders. Foreign body 58.2% was the commonest type of injury, blunt trauma 32.4%. Pterygium-37.9%, refractive error-19.5%, and conjunctivitis-13.7% constituted the commonest eye disorders seen.

Discussion/Conclusion: Despite the potential hazards found in the quarrying industry, 98.7% of the workers did not use PPED. Quandt *et al.*^[4] reported 98.4% did not use eye protection at work. Workers in the two studies had low enlightenment level; thus the apparent unimportance attached to the use of PPEDs. The apparent neglect of eye health of these workers by lack of regular health education

on potential ocular hazards, agents of injury and the importance of utilization of eye protection is brought to fore. Edmonds observed that enlightenment of workers on best practices for eye health is prevalent in developing countries while the converse is the case in developed countries.^[5] There is need for government to be committed in enforcing regulatory measures to prevent work related accidents and associated ocular disorders.^[2,3,5,6] In conclusion, the overwhelming lack of use of eye protective devices by these workers has the tendency of predisposing them to environmental insults and occupational eye injuries, and this may thus be a pointer to the relatively high frequency of conjunctivitis, pterygium and eye injuries among them. Legislated supervision of Quarry sites should be enforced.^[3,5,6]

REFERENCES

1. Definition of quarrying. Available from: <http://www.encyclopaedia.thefreedictionary.com-the>. [Last accessed on 2014 Jul 07].
2. Aliyu AA, Shehu AU. Occupational hazards and safety measures among stone quarry workers in northern Nigeria. *Niger Med Pract* 2006;50:42-7.
3. Okoye OI, Umeh RE. Eye health of industrial workers in Southeastern Nigeria. *West Afr J Med* 2002;21:132-7.
4. Quandt SA, Elmore RC, Arcury TA, Norton D. Eye symptoms and use of eye protection among seasonal and migrant farmworkers. *South Med J* 2001;94:603-7.
5. Edmonds DJ, Nicholas J. The state of health and safety in the UK construction industry with a focus on plant operators. *Struct Survey* 2002;20:78-87.
6. Ayoyemi AA. A Study of the Health Problems and Working Conditions of Workers in the Stone Quarry Industry- Surveys in Britain and Nigeria. Fellowship Dissertation. National Postgraduate College of Nigeria; 1987.

Is There a Role for Patent Medicine Vendors in Eye Care?

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Background: Eye diseases and blindness are very common amongst all ages in developing countries affecting up to 25% of the population.^[1] Primary Eye Care (PEC) is essential for blindness control and integration into Primary Health Care (PHC) is the preferred approach.^[2] However, in Nigeria PHC is poorly developed.^[3] Patent medicine vendors (PMVs) are licensed, informal sellers of drugs who often fill the service delivery gap, being common in urban and rural settings throughout Africa.^[4]

Objective: To explore whether Patent medicine vendors (PMVs) could provide PEC in Nigeria.

Methods: Six LGAs in Cross River State were selected by simple random sampling. Semi-structured interviews were held with 31 PMVs whose outlets were assessed by observation using a check list. Interviews were held with 30 community leaders and 30 PHC workers. Key informant interviews were conducted with relevant dignitaries. Five focus group discussions (FGD) were conducted in communities.

Results: Most PMVs were educated, had learnt their trade through apprenticeship, and were open all day. Reasons for the high patronage were accessibility, cost, reliability and responsiveness. The common eye complaints they saw (red eyes, visual loss, itching, injuries) were treated with available medications. Their diagnostic skills for eye conditions were poor, but they referred often. None stocked anti-glaucoma treatments. All groups in the study recognized the important

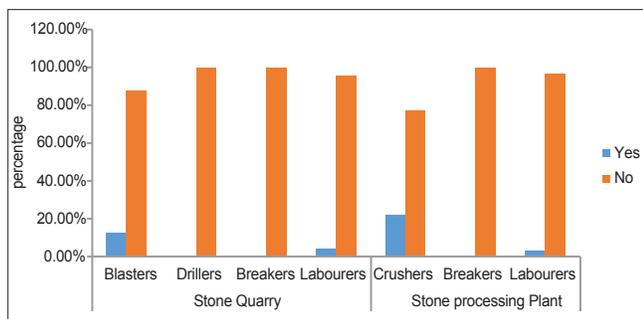


Figure 1: Utilization of PPE by workers

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role of PMVs and most would support PMVs being trained to provide PEC, providing they were supported and better regulated.

Discussion/Conclusions: The first port of call or first contact for most illnesses including eye complaints in the communities are the PMVs and the notion that health facilities are reserved for “serious” illness is upheld in other studies.^[4-7] Reasons for high patronage of PMVs in this study is similar to findings in other studies and these include high responsiveness, accessibility, cost, “stock-out” of drugs in government hospitals.^[4-7] The knowledge and management of eye diseases is poor which is in agreement with studies for general diseases.^[3,7] The enthusiasm of PMVs in being trained in PEC is not unusual as studies involving training of PMVs in general diseases have elicited similar response.^[4] Patent medicine vendors are willing to be trained and community members and elders are positively disposed because they provide a responsive and accessible service in addition to being the only source of medications as government facilities are frequently out of stock. The present role of PMVs could be expanded to include PEC as an innovation in eye health intervention. Their potential role in blindness control in Nigeria is enormous and waiting to be tapped.

REFERENCES

1. Gooding K. Strengthening eye health: A focus for health systems. *Sightsavers* 2010:1-72 Available from: http://www.sightsavers.net/in_depth/policy_and_research/health/13064_Strengthening%20eye%20health%20-%20a%20focus%20for%20health%20systems.pdf. [Last accessed on 2014 Sep 19].
2. Gilbert C. The importance of primary eye care. *Community Eye Health* 1998;11:17-9.
3. The Federal Ministry of Health. National Strategic Health Development Plan (NSHDP) 2010 - 2015. Abuja, Nigeria: The Federal Ministry of Health; 2010.
4. Oshiname FO, Brieger WR. Primary care training for patent medicine vendors in rural Nigeria. *Soc Sci Med* 1992;35:1477-84. Gooding, K. Strengthening eye health: a focus for health systems: sightsavers International.
5. Brieger WR, Salako LA, Umeh RE, Agomo PU, Afolabi B, Adeneye AK. Promoting prepackaged drugs for prompt and appropriate treatment of febrile illnesses in rural Nigerian communities. *Int Q Community Health Educ* 2002;21:19-40.
6. Salako LA, Brieger WR, Afolabi BM, Umeh RE, Agomo PU, Asa S, et al. Treatment of childhood fevers and other illnesses in three rural Nigerian communities. *J Trop Pediatr* 2001;47:230-8.
7. Oladepo O, et al. Malaria Treatment and Policy in Three Regions in Nigeria: The Role of Patent Medicine Vendors. *Future Health Systems Working Paper*; 2008.

The Role of Research in Social Marketing: The Community Eye Outreach Clinic University College Hospital Ibadan Experience
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Background/Introduction: Social marketing is the process of understanding the barriers to accessing our product (eye care) and designing a service that addresses these barriers.^[1] Research is a systematic enquiry to describe, explain, predict and control observed phenomenon (poor eye care service utilization). In eye care, research is needed to define priority areas and population focus areas; also for active community participation, design and implementation of case finding, clinical service delivery strategies, assessment of barriers and patient satisfaction.^[1]

Method: Figures for blindness prevalence (National and South West Geo-Political Zone-being the location of the University College Hospital), the priority cause of blindness in the zone and the Cataract Surgical Coverage were extracted from the National Blindness and

Table 1: Barriers to surgery

Barrier	Number	Proportion (%)
Unresolved medical problems (mainly hypertension and diabetes)	21	29.0
Inability to afford total cost of care/ cost of surgery	15	21.0
Inability to afford cost of surgery	9	13.0
Cataract not mature	10	14.0

Table 2: Recommendations by 21 patients on how to improve access to the service

Recommendation	Number	Proportion (%)
Provide financial support	12	54.6
Medical treatment for underlying ailments	8	34.6
Guaranteed good outcome	1	4.6

Visual Impairment survey. An operational research paper on Barriers to uptake of cataract services at the Eye outreach clinic of the University College Hospital was then reviewed bringing out items which clearly illustrate the benefit of research in identifying factors of marketing importance to the service.

Results: Nigeria has a blindness prevalence of 4.2%.^[2] Southwest Geo Political Zone has blindness prevalence of 2.8%.^[2] Cataract accounts for 43% of all blindness in the country.^[2] National Cataract Surgical Coverage (eyes) was 22.8%.^[2] Eye Outreach Clinic U.C.H.^[3] Two hundred and thirty eligible cataract patients between January and May 2009 but only 186 (80.9%) could be traced. Of the 186 traced, 115 (61.8%) had (accepters), and 71 (38.2%) had not (non-accepters) surgery. No statistically significant sociodemographic and economic difference exist between accepters and non-accepters of surgery.

Discussion: Cataract is the major cause of poor vision and the surgical coverage for it is low nationally. This review identified some reasons for under-utilization of cataract services by patients presenting to the eye outreach (subsidized) clinic, UCH. Both groups (the traceable accepters and non-accepters of surgery) had similar sociodemographic and economic qualities implying that these were not significant barrier to service uptake as was also found by a study in Kenya which emphasized the place of rumors about poor surgical outcome instead.^[4] Cost (direct and indirect) was the main barrier to poor uptake despite the 45% subsidy to cost of care. This is similar to findings in Northern and southern Nigeria reflecting the effect of high level of poverty in the country.^[5-7] Underlying medical problems, mainly hypertension, though not popularly documented was also an important barrier. In addition, about 10% had not been operated because the cataracts were “immature”. However, the goal is blindness prevention and not only cure; with the availability of biometry/IOLs and dependable surgical techniques, patients without white cataracts could be operated early to prevent losing them to quacks and couchers.

Conclusions: Findings from the study led to the establishment of partnership with the family physicians in managing patients with comorbidities in anticipation of surgery, development of cost reduction strategies/consultation protocols and early operation of visually significant cataracts.

REFERENCES

1. Thulasiraj RD. Social Marketing for Effective Eye Care Delivery (Lecture Delivered at LSHTM in April 2012).
2. Kyari F, Gudlavalleti MV, Sivsubramaniam S, Gilbert CE, Abdull MM, Entekume G, et al. Prevalence of blindness and visual impairment in Nigeria: The National Blindness and Visual Impairment Study. *Invest Ophthalmol Vis Sci* 2009;50:2033-9.
3. Bekibele CO, Murthy GV. Barriers to cataract surgery of persons

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- screened at camps in Ibadan, Nigeria. *Afr J Med Med Sci* 2012;41:257-64.
- Briesen S, Geneau R, Roberts H, Opiyo J, Courtright P. Understanding why patients with cataract refuse free surgery: the influence of rumours in Kenya. *Trop Med Int Health* 2010;15:534-9.
 - Rabiu MM. Cataract blindness and barriers to uptake of cataract surgery in a rural community of northern Nigeria. *Br J Ophthalmol* 2001;85:776-80.
 - Mpyet C, Dineen BP, Solomon AW. Cataract surgical coverage and barriers to uptake of cataract surgery in leprosy villages of north eastern Nigeria. *Br J Ophthalmol* 2005;89:936-8.
 - Oluleye TS. Cataract blindness and barriers to cataract surgical intervention in three rural communities of Oyo State, Nigeria. *Niger J Med* 2004;13:156-60.

Extending Eye Care Services into Rural Nigeria: The Vision 2020 Eye Clinic Ukpok Experience

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Abstract

Aim: The aim was to describe incidence and pattern of eye diseases at the VISION 2020 Eye Clinic Ukpok – a rural Eye Clinic established through the cooperation of the Nnewi-South Local Government Council and the Nnamdi Azikiwe University Awka as a means of achieving the goals of Vision 2020. **Materials and Methods:** The case files of all the new patients seen at the VISION 2020 Eye Clinic Ukpok between June 2011 and May 2012 were reviewed. Information on vital statistics, presenting visual acuity, and clinical diagnosis were abstracted into a standard proforma and analyzed. **Results:** A total of 166 new patients, were reviewed, of which 64 males and 102 females. The age range was 1–88 years; mean - 48.8 ± 15.2 years. The major eye diseases were refractive errors/presbyopia, 61 (36.8%); cataract, 39 (23.5%); allergic conjunctivitis, 35 (21.1%) and glaucoma, 21 (12.7%). The incidence of blindness was 10.4%, and low vision was 17.7%. Cataract and glaucoma were the causes of blindness. Ametropia was the most common cause of low vision. **Conclusions:** Most of the cases are treatable at primary care level. This is the first direct cooperative effort at health care delivery between a university and local government council in south-eastern Nigeria. It is hoped that the success of this university-local government council partnership will encourage the establishment of many such clinics in rural Nigeria.

Keywords: Blindness, eye diseases, low vision, Nigeria, rural areas

Introduction: Eye diseases and blindness are of public health importance in Nigeria. The Nigeria's National Blindness and Low Vision Survey reported in 2008 that 42 out of every 1000 adults aged 40 years and above were blind.^[1] In Anambra State the prevalence of blindness is even higher.^[2-4] The rural-urban migration notwithstanding, majority of the populace still reside in rural areas.

Anambra State is one of the 36 states in Nigeria. Divided into 21 local government councils, it has a Ministry of Health that regulates and oversees health care delivery, especially at secondary care level throughout the state. The local governments are in-charge of primary health care activities.

Health care services are provided by both the government and the private entrepreneurs. However, the latter tend to concentrate in urban areas. In general, the rural areas are poorly served especially about eye care. There is only one publicly-owned eye hospital in Anambra State – the Guinness Eye Center, Onitsha. Two other sparsely staffed eye units exist in government hospitals. Private eye care facilities exist, but these are located in the urban cities. To ensure optimal health for the people, the government drew up the 2010–2015 strategic health development plan. However, the 74-page document has nothing on eye care.

In an attempt reduce the burden of blindness and eye diseases occasional eye care outreach services (also called eye camps) had

been organized in some communities. However, such forays are very infrequent and are also disadvantaged by poor follow-up of the patients. They are not sustainable. The people do not take ownership such programs that they often view as occasional patronage from enthusiastic urban dwellers.

Dissatisfaction with intermittent eye camp programs led to a shift in approach. Serious thought was given to the possibility of establishing static eye care facilities in rural areas and churches, town unions, influential persons, and government officials were contacted. The result of the negotiation was the collaboration between the Nnamdi Azikiwe University and the Nnewi-South Local Government Council to establish the VISION 2020 Eye Clinic at Ukpok as a means of helping the local government build capacity for primary eye care and consequently bring quality eye care to the rural dwellers in Anambra State.

The idea of establishing the clinic originated from the Department of Ophthalmology, Nnamdi Azikiwe University at the Guinness Eye Center, Onitsha. This was supported by the leadership of the Nnamdi Azikiwe University, Awka as well as the Anambra State Ministry of Local Government and Chieftaincy Matters. A memorandum of understanding (agreement) between the Nnewi-South Local Government Council and the Nnamdi Azikiwe University officially ensured the establishment of the clinic. The council provided infrastructure and equipment for the clinic while the university provided ophthalmologists, technical support including clinical services and training primary eye care workers. The community in which the clinic was located provided land and security. All parties involved in the agreement also carried out advocacy for the clinic within and outside the community.

The following programs were planned which when fully implemented will ensure stable primary eye care services throughout the local government:

- Community awareness of the clinic's existence
- Clinical services
- School eye health
- Eye health promotion and education in the community
- Self-sustaining services
- Replication of the model in other communities.

Three primary health care workers nominated by council were trained in primary eye care at the Guinness Eye Center, Onitsha. Publicity about the existence of the clinic was mounted through *de facto* leaders in churches, marketplaces, women fora, town union, village meetings, etc. Clinical services commenced in June 2011. This paper reports the experience in the 1st year of clinical services in the clinic.

Materials and Methods: The case files of all the new patients seen at the VISION 2020 Eye Clinic, Ukpok between June 2011 and May 2012 were reviewed. Information on vital statistics, presenting visual acuity, and clinical diagnosis were abstracted into a standard proforma and analyzed.

Table 1: Clinical diagnosis

Diagnosis	Number (%)*
Ametropia/presbyopia	61 (36.8)
Cataract	39 (23.5)
Allergic conjunctivitis	35 (21.1)
Glaucoma	21 (12.7)
Pterygium	13 (7.8)
Uveitis	7 (4.2)
Corneal ulcer	5 (3.0)
Purulent conjunctivitis	4 (2.4)
Corneal foreign body	2 (1.2)
Optic atrophy	2 (1.2)
Age-related macular degeneration	2 (1.2)
Diabetic retinopathy	2 (1.2)
Migraine	2 (1.2)
Traumatic hyphema	2 (1.2)
Retinal detachment	2 (1.2)
Orbital tumor	1 (0.6)

*Based on 166 patients

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Table 2: Causes of blindness and low vision

Cause	Blindness (%)	Low vision (%)
Ametropia	-	13 (44.8)
Cataract	10 (71.4)	11 (37.9)
Glaucoma	4 (28.6)	5 (17.3)
Total	14 (100.0)	29 (100.0)

Results: During the study period, 166 new patients, made up of 64 males and 102 females (male:female = 1:1.6), were seen. The age range was 1–88 years with a mean of 48.8 ± 15.2 years. Table 1 shows the clinical diagnosis. Some patients had more than one diagnosis. Ametropia (refractive errors), cataract, allergic conjunctivitis and glaucoma constituted 94.1% of the cases. Ametropia including presbyopia accounted for 36.8%. Fourteen adult patients (7 males and 7 females) were blind (presenting visual acuity $<3/60$ in the better eye); 29 other patients (11 males, 18 females) had low vision (presenting visual acuity $<6/18$ in the better eye). Thus, the incidence of blindness was 10.4%, and that for low vision was 17.7%. Table 2 shows the causes of blindness and low vision in the patients. Cataract and glaucoma were the causes of blindness with cataract accounting for 71.4% of the cases. Ametropia was the commonest cause of low vision, accounting for 44.8% of cases.

Discussion: This is the first direct cooperative effort at health care delivery between a university and Local Government Council in south-eastern Nigeria. It is the expectation that the success of this university-Local Government Council partnership will encourage the establishment of many such clinics in rural Nigeria. The establishment of the clinic took >5 -year of planning and advocacy. At initial stage patronage was low and this was aggravated by the industrial action by local government workers within the first 6 months of commencement of clinical services. However, patronage improved when the local elite was satisfied with the services-especially optical services.

The common eye diseases seen in this rural clinic are treatable at primary care level. The incidence of blindness and low vision, though hospital-based, is high. The causes of blindness and low vision are similar to those reported in previous studies in Anambra State.^[2-4] The causes of low vision are treatable especially if patients presented early. Most of the blind patients require cataract surgery. All the patients that were blind from glaucoma presented late with advanced disease. Steady, dependable clinical services as well as community health education will expectedly encourage patients to present early.

The high incidence of cataract blindness led to persuading the local government authority to provide facilities for cataract surgery in the clinic. However, implementation of decisions is delayed by government bureaucracy, unstable council leadership (frequent transfer of officials) and industrial action by council and health workers.

The sustainability of this clinic is our greatest worry and challenge. However, it is hoped that the establishment of a clinic revolving fund will ensure regular supply of drugs and other items required for running the clinic – all *sine qua non* for continued patronage of the clinic and job satisfaction of the workers. Other strategies for the sustainability of the clinic and the eventual spread of the other components of primary eye care in the local government include implementing a sliding scale of fees charged to ensure that the poor benefits; continuing advocacy with the *de facto* leaders, including government and the local elite and formulating a 5-year strategic plan for rural eye care. Hopefully this will form the nucleus of Anambra State eye care plan, which will eventually leading to the establishment of such clinics in other local government council areas.

REFERENCES

1. Kyari F, Gudlavalleti MV, Sivsubramaniam S, Gilbert CE, Abdull MM, Entekume G, *et al*. Prevalence of blindness and visual impairment in Nigeria: The National Blindness and Visual Impairment Study. *Invest Ophthalmol Vis Sci* 2009;50:2033-9.
2. Nwosu SN. Blindness and visual impairment in Anambra State, Nigeria. *Trop Geogr Med* 1994;46:346-9.
3. Nwosu SN. Low vision in persons aged 50 and above in the

onchocercal endemic communities of Anambra State, Nigeria. *West Afr J Med* 2000;19:216-9.

4. Ezepue UF. Magnitude and causes of blindness and low vision in Anambra State of Nigeria (results of 1992 point prevalence survey). *Public Health* 1997;111:305-9.

Protective Eye Wear by Artisans in Owerri, Nigeria

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Abstract

Aims: To determine the knowledge and factors affecting the use of protective eye devices (PEDs) by artisans in Owerri, Nigeria.

Materials and Methods: Artisans selected by stratified random sampling were studied using pretested structured questionnaire. Information obtained included vital statistics, work history, job experience, knowledge of PEDs, types of PEDs, frequency of use of protective eyewear devices and reasons for nonuse of PEDs.

Results: Four hundred and twenty-eight, all male, artisans were studied. The age range was 19–65 years with a mean of 34.8 ± 10.6 years. Two hundred and ninety-four (68.7%) were automobile mechanics. Only 117 (27.3%) used PED, although 322 (75.3%) had good knowledge of PED; 52 of the 105 artisans (49%) not using PED felt that PED use was unnecessary for their work, 22 (20.8%) had no specific reason and 10 (9.3%) lacked training on PED use. Technical education, being married and having been on the job for 16 or more years were associated with better knowledge and utilization of PED ($P = 0.007$). **Conclusions:** Artisans need be constantly reminded of the need to use PED during work through both awareness campaign and strict enforcement of the relevant laws. PED need be made available at affordable costs.

Keywords: Artisans, Nigeria, protective eye-wear devices

Introduction: The eyelids, bony orbit, tear film and reflex mechanisms provide natural protection against injury to the eyeball.^[1] None-the-less the eye is still at risk of injury. The risk is more with some occupations such as artisans. Artisans (tradesmen) are skilled manual workers who fabricate, repair or mend devices. They include welders, mechanics, drivers, blacksmiths, carpenters, bricklayers, etc. Artisans' work involves grinding, welding, cutting, hammering, plastering, fitting, etc. The agents of injury at work include dust, lyle, flying particles and shrapnels, among others.^[2] Ocular safety at work is, therefore, most important for artisans. Protective eyewear devices (protective eye device [PED]) ensure ocular safety. But the extent of knowledge and use of protective eyewear devices by Nigerian artisans are unknown. Such information is vital for policy, planning, and education of artisans. This study was, therefore, embarked upon in an effort to fill this information gap. We, therefore, report on knowledge and use of protective eyewear devices by artisans in Owerri, Imo State, Nigeria.

Materials and Methods: Artisans including automobile mechanics, iron welders, gas welders, aluminum workers, carpenters, bricklayers, blacksmiths, and automobile electricians were selected by stratified random sampling using the proportion to size technique [Table 1]. A pretested structured questionnaire was administered to each participant. Information obtained included vital statistics, work history, job experience, knowledge of PEDs, types of PEDs, frequency of use of protective eyewear devices and reasons for nonuse of the devices. The results were analyzed using descriptive and inferential statistics with the alpha level at 0.05.

Results: Four hundred and twenty-eight, all male, artisans were studied. Table 2 shows the age distribution of the participants. The age range was 19–65 years with a mean of 34.8 ± 10.6 years. Two hundred and thirty-one (54.0%) participants were married and 14 (3.2%) were widowed or divorced. The experience on the job ranged from 1 to 20 years with a mean of 12.5 ± 9.3 years. Two hundred and seventy-three (63.8%) had secondary school education; 126 (29.4%) had primary school education; 15 (3.5%) technical education and

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Table 1: Selecting the artisans (proportion to size)

Artisan	Number in Owerri	Sampling fraction	Number required	Sampling interval
Automobile mechanic	2000	0.147	294	7
Iron welder	250	0.147	37	7
Gas welder	200	0.147	29	7
Aluminum worker	200	0.147	29	7
Carpenter	80	0.147	12	7
Bricklayer	70	0.147	10	7
Blacksmith	50	0.147	7	7
Automobile electrician	50	0.147	7	7

Table 2: Age distribution

Age (years)	Number (%)
<20	10 (2.3)
20-29	148 (34.6)
30-39	136 (31.8)
40-49	93 (21.7)
50-59	33 (7.7)
60+	8 (1.9)

Table 3: Reasons for not using PED

Reason	Number (%)
Unnecessary	52 (49.0)
No specific reason	22 (20.8)
Not trained with it	10 (9.3)
Dislikes them	9 (8.8)
Cause discomfort	5 (4.8)
Expensive	3 (3.2)
Does not know how to use	3 (3.2)
Not available	1 (1.0)
Total	105 (100.0)

PED: Protective eye device

14 (3.3) never had any formal education. Only 117 (27.3%) used PED, although 322 (75.3%) had good knowledge of PED. Technical education, being married and having been on the job for 16 or more years were associated with better knowledge and utilization of PED. The PED known by the artisans were safety goggles, sunglasses, welding goggles, and face shields. Artisans with technical education and those who had been on the job for at least 16 years had better knowledge of PED ($P = 0.007$). Of the 117 artisans that utilize PED, 37 (31.6%) use them always; 73 (62.4%) used them sometimes and 7 (6.0%) very occasionally. The reasons for nonutilization of PED in spite of being knowledgeable about the devices are shown in Table 3. While 52 of the 105 artisans (49%) not using PED felt that PED use was unnecessary for their work while 22 (20.8%) had no specific reason and 10 (9.3%) lacked training on PED use.

Discussion: The results of this study suggest that while 75.3% of the artisans had good knowledge of the importance of protective eye wear devices (PED), only 27.3% actually use them during work. It is indeed of

concern that more than 90% of the artisans expose themselves unduly to work-related eye injuries since only 8.6% in this cohort regularly use PED during work. The findings are similar to those of Yassin *et al.*^[3] who reported that only 21.7% of farmers in Gaza Strip utilized PED. On the other hand, in the United States of America, the Bureau of Labor Statistics^[4] reported that 60% of workers did not utilize PED while at work. However, a study among welders, in south-western Nigeria reported that 96.8% utilized PED.^[5]

Ocular injuries at work occur commonly in Nigeria. Okoye and Umeh^[6] in a study of industrial technical workers in Enugu reported that 28.5% had occupational eye injury; Aigbotsua^[7] in similar study of industrial technical workers in Ughelli reported a prevalence of 25% for occupational ocular trauma. Work-related eye diseases, some of which lead to blindness, among the artisans can be avoided if protective devices are constantly worn while at work. Most of the artisans in the present study gave no serious reason for not using the PED at work although 9.3% gave lack of training on the use of the devices as a reason for not using them. Up to 95.1% of the 500 welders studied in south-western Nigeria had formal education, and this was adduced as a reason for the high compliance with PED use reported in the study.^[5] However, 97.7% of the participants in the present had at least primary education. All the artisans in this cohort were of male gender, and more than 90% were aged <50 years. Conceivably, the youthfulness of most of the participants and the male penchant for risk-taking may be the dominant, even if unstated, reasons for nonutilization of PED. It is, therefore, important to mount persistent health education campaign for the artisans on the importance of PED use and how to correctly use them.

Conclusion: Artisans need to be constantly reminded of the need to use PED during work through both awareness campaign and strict enforcement of the relevant laws. PED also need to be made available at affordable costs.

REFERENCES

1. American Academy of Ophthalmology. Basic and Clinical Science Course. Fundamentals and Principles of Ophthalmology. Vol. 2. San Francisco: American Academy of Ophthalmology; 2010. p. 5.
2. Welch LS, Hunting KL, Mawudeku A. Injury surveillance in construction: Eye injuries. *Appl Occup Environ Hyg* 2001;16:755-62.
3. Yassin MM, Abu Mourad TA, Safi JM. Knowledge, attitude, practice, and toxicity symptoms associated with pesticide use among farm workers in the Gaza Strip. *Occup Environ Med* 2002;59:387-93.
4. Bureau of Labour Statistics. Number of non-fatal occupational injuries and illnesses involving days away from work by selected injury or illness characteristics and industry. Available from: <http://www.bls.gov/opub/mlr/2004/12/art2full.pdf>. [Last accessed on 2012 Feb 10].
5. Ajayi IA, Adeoye AO, Bekibele CO, Onakpoya OH, Omotoye OJ. Awareness and utilization of protective eye device among welders in a southwestern Nigeria community. *Ann Afr Med* 2011;10:294-9.
6. Okoye OI, Umeh RE. Eye health of industrial workers in Southeastern Nigeria. *West Afr J Med* 2002;21:132-7.
7. Aigbotsua P. Pattern of Ocular Disorders among Industrial Technical Workers in Ughelli North Local Government Area Delta State. Lagos: National Postgraduate Medical College of Nigeria. FMCOPh Dissertation (Unpublished); 2003.