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SOCIO-ECONOMIC FACTORS ASSOCIATED WITH OCULAR PROBLEMS AMONG AUTO-MECHANICS IN SOUTHEAST NIGERIA

ESENWAH, E.C.	Department of Optometry, Federal University of Technology, Owerri, Nigeria
AMADI, A.N.	Department of Optometry, Federal University of Technology, Owerri, Nigeria
NWOKE B.E.B.	Department of Biological Sciences, Imo State University, Owerri, Nigeria
AZUAMAH, Y.C.	Department of Optometry, Federal University of Technology, Owerri, Nigeria
DANIELNWOSU E.M.	Department of Optometry, Federal University of Technology, Owerri, Nigeria
IKORO N.C.	Department of Optometry, Federal University of Technology, Owerri, Nigeria
AKPALABA R. E.	Department of Optometry, University of Benin, Benin City, Nigeria

ABSTRACT This study was carried out to determine the socio-economic factors affecting auto-mechanics and how they relate to the ocular problems seen among them in Southeast Nigeria. Six hundred subjects all of whom were males were used for this study. The ages ranged from 11years to 66years, with a mean age of 36.08 ± 11.4. Results showed that 39.8% of the auto-mechanics had primary education, 43% had secondary/vocational education while 17.2% were unable to complete either their primary or secondary/vocational education. 16.7% of the subjects made a profit of less than N1000 per week while none of the subjects made profit higher than N3000. The major ocular problems seen among the subjects were conjunctivitis (27.67%), foreign bodies (11.5%) and pterygium (7.0%). We concluded that there is high level of risk of ocular problems facing the auto-mechanics which is related to their unfavorable socio-economic condition that increase their susceptibility to diseases.

KEYWORDS : Auto-mechanics, Socio-economic, Conjunctivitis, Foreign bodies

INTRODUCTION

According to Longman Dictionary of Contemporary English[1], a mechanic is 'someone who is skilled at repairing motor vehicles and machinery.' In other words, a auto-mechanic inspects, services and repairs the engines, brakes and other parts of cars, buses and trucks. They also perform routine maintenance of these vehicles to prevent future breakdowns. Auto-mechanics have been reported to have higher rates of occupational health hazards compared to other auto-artisans such as auto-electricians and panel-beaters[2].

In Southeast Nigeria, 85% of the mechanics interviewed stated they learnt the trade through apprenticeship of about 4-6years, while 15% went through Trade/Vocational Schools. It was gratifying to note however, that they all had some form of basic primary education, though some of them did not complete the programme. Through years of experience, these mechanics developed analytical ability to diagnose auto-mobile problems fairly accurately. Indeed, many of them consider diagnosing 'hard to find problems' as one of their most challenging and satisfying duties. It was observed that virtually all the mechanics specialized in the repair and servicing of particular makes of vehicles.

There seem to be a strong and consistent finding in epidemiological researches that there is a relationship between an individual's health status and his/her socio-economic status, social support and networks, social cohesion and social capital, occupational stress, unemployment and religious belief [3]. Some of the socio-economic factors that have been reported to help shape our world include education, income and occupation, place of residence, culture, ethnicity and religion[4]. Socio-economic status by occupation can be classified as follows[5]-

Class 1- Upper upper: This includes professionals in large business concerns, e.g., bankers, manufacturers, large departmental store owners and managers, doctors, dentists, professors, engineers and lawyers.

Class 2- Lower upper: Proprietors of small business concerns, wholesale and retail dealers including some market women with big shops, contractors, spare parts sellers, accountants, junior doctors and lawyers and some bankers.

Class 3- Upper middle: White collar and semi-professional workers, nurses, salesmen, technicians, teachers, furniture makers, traders with shops, fashion designers and caterers.

Class 4- Lower middle: Skilled workers and foremen, carpenters, artists, machinists, plumbers, printers, masons/bricklayers, cooks, barbers/hairdressers, painters and photographers.

Class 5- Upper lower: Semi-skilled workers like truck drivers, machine operators, telephone operators, service station attendants, waiters and waitresses and street traders.

Class 6- Lower lower: Unskilled workers like garage laborers, sweepers, porters, street cleaners, construction laborers, farm attendants, vendors and security agents.

Lower mortality, morbidity and disability rates among socio-economically advantaged individuals have been observed for hundreds of years. They have also been replicated using various indicators of socio-economic status (SES) and multiple disease outcomes. Mortality was strongly associated with education, income and occupation [6,7]. The workshops of auto-mechanics have also been reported to be characterized by various kinds of work stressors which include the presence of both metallic and non-metallic flying objects or projectiles, falling debris, electric shocks and sparks, assorted chemicals such as acids, hydraulic, assorted types of oils, grease, carbide, electrodes, and various types of fuel and/or gaseous emissions, dust, exposure to ultra violet (UV) and thermal radiations, hot noisy environments, strenuous work postures, improperly designed and/or worn-out tools and machineries, and working generally in poor psycho-social environments, etc., each of which plays a significant part in the general health condition of the eye and the individual as a whole [6,8,9].

The eye and the cornea in particular, are frequent targets for foreign bodies. These foreign bodies comprise debris, flying objects, metals, etc., that find their way into the eye, some at very high velocity. When ocular foreign bodies are poorly or incompetently managed they can turn to sight threatening conditions as a result of septic corneal ulceration arising from secondary infection[10,11].

Studies have also shown that the occurrence of occupational ocular problems are attributable to multiple factors related to worker's

characteristics, their health and work stressors[12-14]. The worker's characteristics include gender, age, duration of employment, lifestyle, body mass index and literary level. Workers suffering from diseases or psychosomatic disorders, health complaints and musculo-skeletal discomforts have been reported as being in the higher injury risk bracket[15]. Psycho-social work characteristics and stress symptoms such as high workload, high cognitive demands, fatigue, anxiety and low job satisfaction have also been reported to significantly increase the risk of occupational ocular problems and/or injuries [16,17].

MATERIALS AND METHODS

This study was conducted in Government approved mechanic villages in southeast Nigeria. A mechanic village per se, is an approved space of open land allocated to auto-artisans to practice their trade. They are usually sited at the outskirt of urban centers with the sole aim of creating greener environments. This study was designed as an observational, descriptive and cross-sectional survey using the simple random sampling technique drawn from a defined population. Auto-mechanics who gave informed consent were interviewed and examined. The materials used for this research work included, pre-tested structured interviewer administered questionnaires, Snellen's literate and illiterate visual acuity charts for both far and near, Bjerrum tangent screen, ophthalmoscope, pen-torch, head-loupe, Schiotze tonometer, sphygmomanometer, stethoscope, diagnostic and therapeutic drugs, cotton wools, methylated spirit, wash hand basin, soap and hand towel.

Ethical clearance was obtained for the study and the exercise started with the presentation of a letter of introduction seeking permission to carry out the research project, addressed to the respective Chairmen of the various Auto-Mechanic Unions in these various mechanic villages located in the outskirt of urban centers of Southeastern Nigeria. The Unions' Chairmen offered their offices for use for the eye screening exercises and the distribution of questionnaires. The screening exercises were carried out on agreed dates with the various Auto-Unions in these mechanic villages. A total of 600 auto-mechanics were examined.

RESULTS

All 600 subjects examined were males with age range of 11years to 66years and with a mean age of 36.08 ± 11.4. The frequency distribution of the age groups is shown in Table 1. The number of working years of experience of the subjects showed that 9.3% had 1-5 years of experiences; 14% had 6-10 years of experience; 18.3%, 11-15years; 19.7%, 16-20years; 21.7%, 21-25years; and 17%, above 25 years of experience (See tab. 2). Table 3 shows that 39.8% of the auto-mechanics had primary education, 43% had secondary/vocational education while 17.2% were unable to complete either their primary or secondary/vocational education. The number of working hours of the subjects per day showed that 25.3% had 9 working hours per day, 61.2% had 10 working hours per day and 13.5% had no clear-cut number of hours they put into their work per day. The income of the auto-mechanics per week showed that 16.7% made a profit of less than N1000 (6 USD) per week; 50% made a profit of between N1001 – N2000; 33.3% made a profit of between N2001 – N3000 and none of the auto-mechanics accepted making a profit of above N3000 (18 USD). The most common ocular problems found among the subjects included conjunctivitis (27.67%), foreign bodies (11.5%), pterygium (7.0%), trauma (4.85%), cataract (2%) and uveitis (1.67%).

DISCUSSION

Indeed, the auto-mechanic trade was observed to be a male dominated sector of the economy in Nigeria. This is particularly true in Southeastern Nigeria, where males tend to venture into more demanding and tasking jobs, leaving the less physically challenging ones to the females [18,19]. The youngest workers found in this auto-mechanic business were about 11 years of age, while the oldest were about 60 years and above. The teenagers were mostly those who managed to complete their secondary school education, while others dropped out of school, due mainly, to poverty and being orphaned early in life. Most members of these trades tend to retire to the village after about the age of 60 years and above. This explains why the age group of above 60years, accounted for about just 2% of the population of the auto-mechanics' workforce in Southeast Nigeria.

The highest percentage of the productive workforce was in the age bracket of 21years to 50years. This group accounted for about 79.17% of the total workforce (Table 1). In this category, the number of workers (33.67%), peaked at about the age group 31–40years, which coincides with man's best productive age. The least workforce was found in the above 60years age group. It accounted for a mere 2% of the population as stated earlier. The workers in this category were already "tired" and "slow", probably due to the enormous physical exertion associated with the job over the years, in addition to the natural aging process that takes place during this period of our life. These categories of workers have continued to struggle, and carry on with the business because there are no younger interested family members available to take over the job from them. They were certainly worried over the future of their business, lives and family sustainability.

Table 5 showed that about 16.7% of the auto-mechanics make below N1000 (6 USD) per week as profit, 50% - between N1001 and N2000 per week and 33.3% between N2001 and N3000 per week as profit. This type of revenue is certainly below the Nigerian national minimum wage of N18000 per month, thus, agreeing with the classification of auto-artisans as lower–middle income earners[5]. Studies have shown that people with low income tend to behave poorly. Indeed, certain peculiar characteristics found among low income earners have been established to be influenced by social factors rather than by individual choice. The social environment influences behavior by shaping norms; enforcing patterns of social control, which may be health promoting or health damaging; reducing or producing stress for which engaging in specific behaviors might be an effective short-term coping strategy [20].

On the other hand, the auto-mechanics' educational attainment were unremarkable. 39.8% had primary education, 43.0% had secondary/vocational education and 17.2% were unable to complete either primary and/or secondary/vocational education (Table 3). None of them attended any tertiary institution. There was a general complaint by most senior artisans that they now find it difficult to get young ones to enroll for training as apprentices. For every 3 new enrollee apprentice, at least 2 disappear before 6 months. This behavior may not be unconnected with the frank fear of financial insecurity which most of the younger auto-artisans expressed opinion on. Besides, their low levels of education have not help matters.

Nine types of ocular problems were found prevalent among all the auto-mechanics in Southeast Nigeria (Table 6). Conjunctivitis was the most prevalent. It accounted for 27.67% of all the ocular problems seen. This is understandable because conjunctivitis had been reported to strive in dirty, unhygienic and unsanitary environment[10,21-23]. Besides, the conjunctiva is the most commonly infected ocular tissue by both infective and allergic agents. The array of infective microorganisms capable of causing conjunctivitis is large and encompasses bacteria, viruses, fungi and parasites. Most of these microorganisms are inoculated onto the conjunctiva via direct contact from air-borne sources, water-borne sources or from our hands and bodies[24-26].

In the various auto-workshops visited, it was observed that the auto-mechanics generate a lot of wastes and pollutants which contaminate their immediate environment including the atmosphere. The mechanics, vehicles (some abandoned, making them veritable sites for the cultivation of infective agents) and their customers, are all cramped within the same limited space where they ply their trade. Sometimes, no clear-cut demarcations exist between workshops and no eye-protective goggles were worn by any auto-mechanics. Even their 'innocent' customers are not spared the ordeal of these hazardous dust, flying projectiles/particles, fumes, smoke and radiations emanating from welder's arc. A study on welders in Port Harcourt, Rivers State, Nigeria, reported that only 15% of them use protective eyewear [27]. This research finding has further confirmed the WHO report that poverty underlies not only the causes of visual impairment, but also the perpetuation of ill-health, including eye-health[28].

In conclusion, unfavorable socio-economic positions increase the susceptibility to diseases and socio-economically disadvantaged groups record higher mortality, morbidity and disability as against the advantaged group. There is high level of burden/risk, of not only ocular problems, but also general health problems facing the auto-mechanics. There is a need to improve the present unsanitary conditions of their operational environment and the enforcement of the use of protective safety eye wears and/or face shields especially by those operating machines, tools, milling, filling and volatile chemicals.

TABLES

Table 1: Age distribution of subjects

Age group	Frequency	%
11-20	47	7.83
21-30	150	25.00
31-40	202	33.67
41-50	123	20.50
51-60	66	11.00
Above 60	12	2.00
Total	600	100

Table 2: Years of working experience of subjects

Years of experience	Frequency	%
1-5	56	9.3
6-10	84	14.0
11-15	110	18.3
16-20	118	19.7
21-25	130	21.7
Above 25	102	17.0
Total	600	100

Table 3: Educational attainment of subjects

Education	Frequency	%
Primary	239	39.8
Secondary/Vocational	258	43.0
Tertiary	-	-
Others	103	17.2
Total	600	100

Table 4: Working hours per day

Working hours	Frequency	%
8 hrs (8am-4pm)	0	0
9 hrs (8am-5pm)	152	25.3
10 hrs (8am-6pm)	367	61.2
No clear-cut closing hours	81	13.5
Total	600	100

Table 5: Income per week

Income (N)	F	%
Below N1000	100	16.7
N1001-N2000	300	50.0
N2001-N3000	200	33.3
Above N3000	0	0
Total	600	100

Table 6: Distribution of ocular problems among subjects

Ocular Problem	Frequency	%
Conjunctivitis	166	27.67
Foreign body	69	11.50
Pterygium	42	7.00
Injuries/ trauma	29	4.83
Pingueculum	26	4.33
Cataract	12	2.00
Uveitis	10	1.67
Glaucoma	17	2.83
Retinal degeneration	6	1.00

REFERENCES

1. Longman Dictionary of Contemporary English (2007). Harlow: Pearson Education Ltd.
2. Heer, V.Y., Subir, D.A. and Shashank, M.E. (2011). Occupational Injuries in Automobile Repair Workers. Industrial Health. 49:642-651.
3. Onwasigwe, C. (2004): Principles and Methods of Epidemiology. Institute for Development Studies, University of Nigeria, Enugu Campus, Nigeria.
4. Abanobi, O. (2010): Core Concepts in Epidemiology and Public Health Practice: A Quick Reference Manual. Owerri: Opinion Research and Communications Inc.
5. Akanmu, A.S., Abudu, O.O. and Akinsete, I. (1998). Influence of Socio-economic status on haemoglobin and haematocrit levels during pregnancy in Lagos, Nigeria. Nigerian Postgraduate Medical Journal. 3:131-135
6. Rongo, L., Barten, F., Msamanga, G., Heederick, D. and Dolmans, W. (2004). Occupational exposures and health problems in small-scale industry workers in Dar es Salaam, Tanzania: a situation analysis. Occup. Med. 54:42-46
7. Sorlie, P., Anderson, N.B., Backlund, E., Johnson, N. and Kaplan, G.A. (1997). Mortality effects of Community socio-economic Status. Epidemiology. 8:42-47.
8. Hunt, J., Cathy, C., Michael, P. and Anthony, M (2000). Occupation-related burn injuries. J. Burn. Care Rehabil. 21:358 –390.
9. ILO (2000): International data sheet on Occupation, Automobile Mechanics. ILO, Geneva.
10. Miller, S.J.H. (1996). Parsons' Disease of the Eye. 18th Edition. London: Churchill Livingstone.
11. Cotran, R.S., Kumar, V. and Collins, T. (1999). Robbins Pathologic Basics of Diseases. 6th Edition. Philadelphia: Saunders and Company.
12. Santana, V. and Loomis, D. (2002). Informal jobs and non-fatal occupational injuries. Ann. Occup. Hyg. 48:147-157
13. Benavides, F., Benach, J., Diez-Roux, A. and Roman, C. (2000). Survey on working conditions indicators? Findings from the second European how do types of employment relate to health. J. Epidemiol. Community Health, 54: 494-501.
14. Bhattacherjee, A., Chau, N., Sierra, O., Legras, B., Benmghar, L., Jean-Pierre, M.J., Ghosh, A., Guillemin, F., Ravaud, J., Mur, J. and Lorhandicap Group (2003). Relationships of job and some individual characteristics to occupational injuries in employed people: a community-based study. J. Occup. Health. 45:382-91.
15. Zweling, C., Spinnce, N., Wallace, R., Davis, C., Whitten, P. and Heeringa, S. (1996). Risk factors for occupational injuries among older workers : an analysis of the health and retirement study. Am. J. Public Health, 86: 1306-1309.
16. Leung, R. and Ng, Z. (1978). A preliminary look into the causative factors of occupational hand injuries in Hong Kong. Bulletin of Hong Kong Medical Association, 8:37-50
17. Chau, N., Bourgkard, E., Bhattacherjee, A., Ravaud, F., Choquet, M. and Mur, M. and The Lorhandicap Group (2008). Association of jobs, living conditions and lifestyle with occupational injury in working population: a a population based study. Int. Arch. Occup. Environ. Health. 81:379-89.
18. Isah E.C. and Okojie O.H. (2006): Occupational health problems of welders in Benin City, Nigeria. Journal of Medicine and Biomedical Research. 5:64-69.
19. Sabitu K., Iliyasu Z. and Dauda M.M. (2009): Awareness of occupational hazards and utilization of safety measures among welders in Kaduna metropolis, Northern Nigeria. Annals of African Medicine. Vol. 8, No. 1.
20. Berman, L. and Kawachi, I. (2000): Social Epidemiology. New York: Oxford University Press.
21. Bisley, G.G. (1980). A Handbook of Ophthalmology for Developing Countries. 2nd Edition. Nairobi: Oxford University Press.
22. Kanski, J.J. (2006). Clinical Ophthalmology. Philadephia: Elsevier Butterworth Heinemann.
23. Khurana, A.K. (2007): Comprehensive Ophthalmology . 4th Edition. New Delhi: New Age Publishers.
24. Syed, N.A. and Bohigian, G.M. (1996). Pathogenesis and Correlations in Conjunctival Infections. 2nd Edition. London: Little Brown and Coy.
25. Renu, J. (2009): Basic Ophthalmology. 4th Edition. New Delhi: Jaypee Brothers Puplishers.
26. Nema, H.V. and Nema, H. (2012): Textbook of Ophthalmology. 6th Edition. Daryaganj: Jaypee-Highlights Medical Publishers.
27. Fiebai, B. and Awoyesuku, E.A. (2011): Ocular injuries among industrial welders in Port Harcourt, Nigeria. Clinical Ophthalmology. 5:1261 - 1263
28. WHO (2011): Visual impairment and blindness. Fact Sheet No 282. WHO, Geneva.