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Assessment of Hazards, Health Consciousness and Health Seeking Behavior of Automobile Mechanics in Cape Coast Metropolis, Ghana

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Abstract

Objective: Automobile mechanics are exposed to a wide range of chemicals contained in brake fluids, detergents, lubricants, paints, metal cleaners, solvents and fluids. Constant exposure to these chemicals puts mechanics at risk. This study aimed to assess the diverse hazards in working environment of automobile mechanics in Cape Coast Metropolis, Ghana. **Method:** A questionnaire-based survey was conducted among 225 automobile mechanics in Cape Coast Metropolis. The questionnaire sought information on possible hazards, health problems associated with work, use of personal protective equipment and where workers seek help when they fall ill. The interview was followed by measurement of blood pressure, hematological profile and liver function test. **Results:** Most auto-mechanics, welders, car sprayers and electricians were exposed to diesel, electrodes, paints and soldering iron respectively. Productive cough, abdominal pain, nausea and breathlessness were common clinical conditions reported by these mechanics. Blood pressure and haematological parameters were all in their normal ranges when compared to bench reference ranges. **Conclusion:** Most mechanics were conscious about their health, however, showed poor health seeking behavior and poor use of protective measures against possible hazards. Proper education of this economically viable group on workplace hazards, the types and properties of the different protective devices in order to safeguard their health is needed.

Keywords: Hazards; Health; Mechanics; Exposure; Risk; Cape coast.

1. Introduction

Hazards in the workplace are a huge problem worldwide, but particularly in developing countries. According to World Congress on Safety and Health at Work, globally each year, 2.78 million workers die from work-related accidents or diseases, while 374 million suffer from non-fatal work-related accidents [1]. Mechanics are exposed to diverse hazards in their work place. Such hazards may either be an exposure to a wide range of industrial abrasive chemicals such as heavy metals, exposure to hand-arm vibration from power-driven hand tools, exposure to excessive noise especially during engine testing, injury to the eye from splinters, flying objects, grinding, machining operations and exposure to microbial contamination from some adhesives [2]. These hazards impose health risks leading to signs and symptoms of chronic poisoning such as asbestosis, mesothelioma, gastrointestinal disturbances, brain damage and skin infections such as eczema [3]. Are the mechanics in the metropolis aware about these hazards and their effects on their health status? Although vehicle repair and maintenance is an important global economic activity, this sector has been the target of far fewer studies on workplace health and safety. Health consciousness refers to the extent to which participants are concerned, involved and interested in information about their physical, mental, emotional, and social health [4].

Job-related health problems are common among mechanics largely because of ignorance or failure to use protective devices in the course of work. In the last five years there have been over 8000 work related injuries in the United Kingdom and 24 deaths [5]. In another study it was reported that 18% of workers experience one form of injury or the other [6]. In Ghana, Eye injuries have been reported to be common among automobile mechanics and

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welders [7, 8]. Reduced hematopoietic output has been reported to be common among automobile mechanics and sprayers [9]. In a similar study to assess occupational health and safety among vehicle repair artisans, it was noted that about 64% of these artisans have sustained work-related injuries mostly resulting from cuts and burns [10]. What then is the behavior of the mechanics on seeking for health care? It is important to note that there are socioeconomic and cultural dynamics that come to play within such an informal work environment and these can be burdensome for individuals involved in such work activities, their families and the community health as a whole. In addition, there are issues of poor living arrangements and hazardous working conditions. Dangers associated with these types of informal work, the high job demands and the associated low wages result in an effort-reward imbalance that creates dissatisfaction among these workers [11]. It is crucial that occupational safety issues in this sector is brought to the limelight in order to attract the needed attention and recognition in the development of social protection policies. This paper assessed hazards, health-seeking behavior, and social and other factors affecting this behavior, among mechanics at Cape Coast Metropolis, Ghana.

2. Materials and Methods

2.1. Study Area

This study was conducted in the Cape Coast Metropolis of the Central region of Ghana. The Central Region of Ghana occupies an area of 9,826 km², which is approximately 6.6% of the total land area of Ghana. The region consists of 20 administrative districts and has an estimated population of 2,201,863 with an annual growth rate of 3.1%. The Cape Coast Metropolis covers an area of 122 km² with an estimated population of 169,894 including 82,810 (48.74%) males and 87,084 (51.26%) females [12]. The population of artisans in the metropolis was estimated at 1,200 of whom 550 are mechanics. Cape Coast Metropolis is made up of numerous workshops belonging to auto mechanics, auto electricians, auto welders, sprayers, key cutters, blacksmiths and spare parts dealers [7].

2.2. Study Participants

Using the formula, $n = z^2pqD/d^2$ previously determined by Fisher [13], (n = desired minimal sample size, p = anticipated prevalence [assumed to be 50%], z = the standard score at 95% CI [1.96]), a sample size of 225 was determined to be a fair representation of the study population and were therefore recruited for this descriptive cross-sectional study. The study participants were mechanics randomly drawn from mechanic shops and garages within Cape Coast Metropolis, including Siwdu Artisan Village, UCC Transport Unit, Aggrey Memorial School stretch, OLA behind Latter Day Saint Church, Abura and Asaquah Motors. The mechanics were grouped into areas specialized such as auto mechanics, car spraying and welding. A simple convenience sampling technique was employed where all consecutive individuals who gave informed consent were recruited for the study.

2.3. Use of Questionnaire

Primary data were collected from March to April, 2017 through interviews with selected artisans by means of a semi-structured questionnaires, key informant interviews and extensive field observations. Background information of mechanics such as employment information, safety measures and ill health symptoms suffered due to hazard exposure were obtained by use of a structured questionnaire. Symptoms of ill health such as dry cough, productive cough, breathlessness, wheezing, sore throat, runny nose, irritating eyes, abdominal pain, itching, dark urine, nausea and severe headache were assessed. For the purposes of this study, and with help of health professionals and literature review, the above symptoms were grouped into four major areas. These groups were; dry cough and productive cough to make bronchitis symptoms. Sore throat, runny nose, breathlessness, and wheezing of chest to make asthmatic symptoms and irritating eyes problems. Abdominal pain, itching, dark urine, nausea and headache to make symptoms of hepatic and haematological abnormalities. Checklists were used to collect data on dermatitis. This was done through observation of the condition of exposed skin of mechanics.

2.4. Blood Pressure, Biochemical and Haematological Assessments

Blood pressure of individual mechanics were measured using an aneroid sphygmomanometer and a stethoscope in the morning before they start working. About 5mls of venous blood was taken in the morning before they start working and divided into two vacutainers containing K₂EDTA anticoagulant and chemistry gel separator tubes. Blood samples were analysed for haematological profile and liver function parameters using an automated haematology analyzer (URIT-3000 Plus, China) and fully automated chemistry analyzer at Cape Coast Teaching Hospital. Red blood cells, white blood cells and platelets of participants were measured by using sysmex automated haematology analyzer. For the purpose of this study, liver enzymes that were measured were Alanine aminotransferase (ALT), Aspartate aminotransferase (AST), Alkaline phosphatase (ALP) and Gamma-glutamyl transferase (GGT).

2.5. Statistical Analysis

Data was analyzed using IBM SPSS version 26.0 (SPSS Inc., Chicago, IL, USA) and GraphPad Prism version 6 (GraphPad Software, San Diego, CA, USA). Descriptive statistics such as percentage and charts were used. Descriptive data was analyzed and expressed as frequencies and percentages. Chi square test was used to test associations between variables where necessary. P-values ≤ 0.05 was considered statistically significant in all analyses.

2.6. Ethical Clearance

Ethical approval for the study was obtained from the Institutional Review Board of College of Health and Allied Science (CoHAS) and Ethics Review Committee of the University of Cape Coast and was issued ethical clearance ID; UCCIRB/CHAS/2016/19. The study was done according to the Helsinki Declaration on Research Regarding Human Subjects. A detailed rationale for the study was explained to respondents and individuals who agreed to participate signed a consent form.

3. Results

3.1. Socio-demographic Data and Categorization of Mechanics

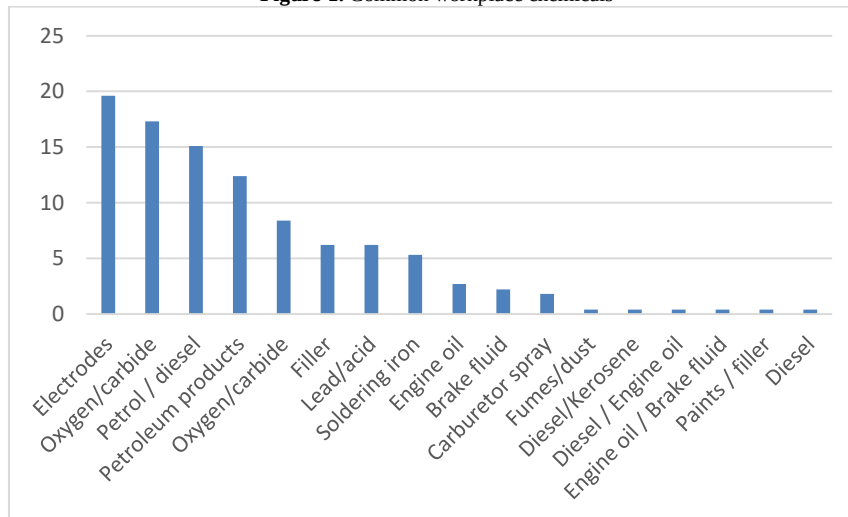
A total of 225 automobile mechanics, made up of 87 auto-mechanics, 64 welders, 53 sprayers and 21 electricians, gave consent to participate in the study. They were all males with a mean age of 32.70 ± 10.43 . Of this number, 41.8% ($n = 94$) belonged to age group between 20 and 29 years and 28.9% ($n = 65$) belonging to age group between 30 and 39 years. They were almost equally split up in terms of marital status. However, most (85.1%) of the mechanics ended their education at secondary level. From the study it was found that majority (90.7%) of the mechanics worked within 1 to 3 working days in a week. It was also found that 58.7% of them worked between 5 to 8 hours per day and 41.3% worked between 9-12hours per day. Most (69.3%) of the participants have spent 1-10 years on the job. 27.6% of them had been in the occupation for 11 to 30 years (Table 1).

Table-1. Socio-demographic characteristics of mechanics (N=225)

Parameter	Frequency, n (%)	Percentage (%)
Age		
10-19	12	5.3
20-29	94	41.8
30-39	65	28.9
40-49	38	16.9
50-59	12	5.3
60-69	4	1.8
Marital status		
Married	106	47.1
Single	103	45.8
Separated	16	7.1
Educational background		
Primary	45	20.0
Secondary	169	75.1
Tertiary	7	3.1
Informal	4	1.8
Number of working days per week		
1	64	28.4
2	53	23.6
3	87	38.7
4	21	9.3
Working experience (years)		
1-10	156	69.3
11-20	45	20.0
21-30	17	7.6
31-40	6	2.7
41-50	1	0.4
Daily working hours		
5-8	132	58.7
9-12	93	41.3

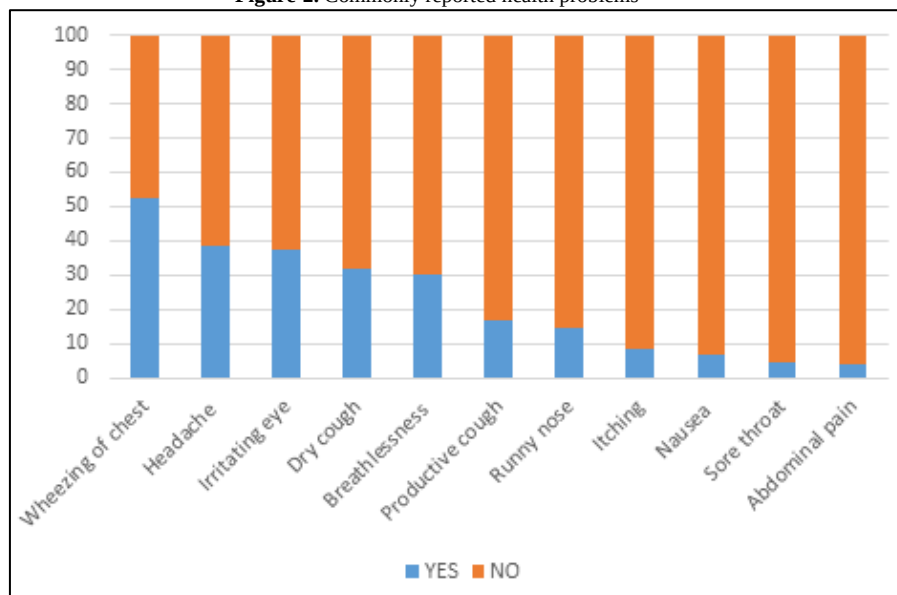
3.2. Chemical Hazards Identified in the Working Environments of Mechanics

Some of the most common hazardous chemicals the respondents were exposed to were Electrodes, Oxygen/carbide, Petrol/Diesel, Petroleum, Filler and Lead/Acid which represent 19.6%, 17.3%, 15.1%, 12.4% 6.2%, and 6.2% respectively. Categorically, most (56.4%) of the chemicals were liquid in nature. The solids and gases represented 34.2% and 8.4% respectively (Figure1).

Figure-1. Common workplace chemicals

3.3. Health-Related Conditions Reported by Mechanics

From assessment made on their health and well-being, the most commonly reported health problems among the mechanics were wheezing of the chest (52.4%), headache (38.7%), irritating eye (37.3%), dry cough (32%) and breathlessness (30.2%). Other health problems reported among the respondents were runny nose, itching of body parts, sore throat, productive cough and nausea (Figure 2). From further interaction, 63.1% of the respondents believed their predicaments could be directly associated with the hazardous nature of their work. More than half (64%) of them complained that they normally developed wheezing of the chest after a strenuous day work while 21.3% of them had their voice or speech affected by this laborious work in a day.

Figure-2. Commonly reported health problems

3.4. Observance of Safety Precautions and Use of Personal Protective Equipments by Mechanics

From the assessment of safety precautions among the mechanics, only (37.8%) of them use goggles for eye protection among whom only 36.5% of them use goggles always and hence are said to be protected from getting eye injury while majority (62.2%) of them use it once in a while. We found a significant association between the use of PPEs and the level of education (Table 2) 42.7% of those who do not wear goggles were people with SHS (education). Only 24% of the participants owned hand gloves among whom only 33.3% always wear them, but the remaining 66.7% often or once in a while put on hand gloves, hence have their hands randomly exposed to hazardous chemicals. Majority (53.3%) of those without hand gloves were people with secondary education. We noted that 67.1% of the respondents who own protective safety overalls always wear them while 34.2% of them neither have nor wear safety overalls at all. More than two-thirds (76.4%) of mechanics own safety boots/shoes and only 39% of them are committed to wearing them always while 23.6% of them neither own nor wear safety boots. It was also found that only 3.1% of them own new personal protective equipment (PPEs) and the remaining (93%) either have old or torn PPEs. (Table 3)

Table-2. Association between educational level and use of Personal Protective Equipments

Personal protective Equipments	Educational Level				p-value
	Primary	Secondary	Tertiary	Informal	
Goggles					0.004
Yes	8(3.6)	73(32.4)	4(1.8)	0(0.0)	
No	37(16.4)	96(42.7)	3(1.3)	4(1.8)	
Gloves					0.023
Yes	4(1.8)	49(21.8)	1(0.4)	0(0.0)	
No	41(18.2)	120(53.3)	6(2.7)	4(1.8)	
Overalls					<0.001
Yes	0(0.0)	141(62.7)	7(3.1)	0(0.0)	
No	45(20.0)	28(12.4)	0(0.0)	4(1.8)	
Shoes and boots					<0.001
Yes	38(16.9)	130(57.8)	4(1.8)	0(0.0)	
No	7(3.1)	39(17.3)	3(1.3)	4(1.8)	
Face shield					<0.001
Yes	2(0.9)	55(24.4)	3(1.3)	0(0.0)	
No	43(19.1)	114(50.7)	4(1.8)	4(1.8)	
Ear protector					0.003
Yes	0(0.0)	23(10.2)	3(1.3)	0(0.0)	
No	45(20)	146(64.9)	4(1.8)	4(1.8)	

Table-3. Observance of safety precautions by the various sub-specialist of mechanics

Personal protective equipment	Work specialization				Total
	Auto-mechanics (n=87)	Welders (n = 64)	Car sprayers (n = 53)	Electricians (n = 21)	
Goggles					
Yes	15 (17.2)	52 (81.2)	9 (17.0)	9 (42.9)	85 (37.8)
No	72 (82.8)	12 (18.8)	44 (83.0)	12 (57.1)	140 (62.2)
Gloves					
Yes	13 (14.9)	24 (37.5)	15 (28.3)	2 (9.5)	54 (24.0)
No	74 (85.1)	40 (62.5)	38 (71.7)	19 (90.5)	171 (76.0)
Overalls					
Yes	65 (74.7)	42 (65.6)	25 (47.2)	16 (76.2)	148 (65.8)
No	22 (25.3)	22 (34.4)	28 (52.8)	5 (23.8)	77 (34.2)
Boots					
Yes	70 (80.5)	51 (79.7)	33 (62.3)	18 (85.7)	172 (76.4)
No	17 (19.5)	13 (20.3)	20 (37.7)	3 (14.3)	53 (23.6)
Face shield					
Yes	8 (9.2)	43 (67.2)	9 (17.0)	0 (0.0)	60 (26.7)
No	79 (90.8)	21 (32.8)	44 (83.0)	21 (100)	165 (73.3)
Ear protector					
Yes	2 (2.3)	21 (32.8)	3 (5.7)	0 (0.0)	26 (11.6)
No	85 (97.7)	43 (67.2)	50 (94.3)	21 (100)	199 (88.4)

3.5. Health Consciousness and Health Seeking Behaviours of Mechanics

From Table 4 only 26.2% of the mechanics have sought for medical attention with respect to the various health problems earlier mentioned but the remaining (73.4%) have not as at the time the study was conducted. About two-thirds (75.1%) of them were taking medications to manage their health problems among them only 27.1% dwell on prescribed drugs while the remaining resorted to self-medication. 74.7% of the participants have never gone for any medical examination in view of their health problems. Without proper PPEs for skin protection, majority (66.2%) of the respondents had suffered dermatitis of different sorts and 81.3% also have had some sort of musculoskeletal problems which wasn't specified.

Table-4. Health consciousness and health seeking behaviours of Mechanics

	Total	Auto-mechanics	Welders	Car sprayers	Electricians
Have you consulted a health professional about the above problems?					
Yes	59 (26.2)	32 (36.8)	15 (23.4)	9 (17.0)	3 (14.3)
No	166 (73.8)	55 (63.2)	49 (76.6)	44 (83.0)	18 (85.7)
How often do you go to hospital for medical check-ups?					
Never	168 (74.7)	59 (67.8)	47 (73.4)	44 (83.0)	18 (85.7)
Once a while	44 (19.6)	21 (24.1)	13 (20.3)	7 (13.2)	3 (14.3)
Always	13 (5.8)	7 (8.0)	4 (6.2)	2 (3.8)	0 (0.0)
Have you taken any medication for your problem?					
Yes	169 (75.1)	55 (63.2)	53 (82.8)	42 (79.2)	19 (90.5)
No	56 (24.9)	32 (36.8)	11 (17.2)	11 (20.8)	2 (9.5)
Was the medication prescribed by a health professional?					
Yes	61 (27.1)	30 (34.5)	15 (23.4)	13 (24.5)	3 (14.3)
No	160 (72.9)	57 (65.5)	49 (76.6)	40 (75.5)	18 (85.7)
Has anyone else in your workplace suffered from the same symptoms?					
Yes	65 (28.9)	16 (18.4)	30 (46.9)	16 (30.2)	3 (14.3)
No	160 (71.1)	71 (81.6)	34 (53.1)	37 (69.8)	18 (85.7)
Does anyone else in your family suffer from the same symptoms?					
Yes	28 (12.4)	14 (16.1)	5 (7.8)	7 (13.2)	2 (9.5)
No	197 (87.6)	73 (83.9)	59 (92.2)	46 (86.8)	19 (90.5)
Do you associate your ill health to your occupation?					
Yes	142 (63.1)	41 (47.1)	49 (76.6)	39 (73.6)	13 (61.9)
No	83 (36.9)	46 (52.9)	15 (23.4)	14 (26.4)	8 (38.1)
Do you ever suffer from musculoskeletal disorder?					
Yes	183 (81.3)	67 (77.0)	57 (89.1)	41 (77.4)	18 (85.7)
No	42 (18.7)	20 (23.0)	7 (10.9)	12 (22.6)	3 (14.3)
How often?					
Once a while	135 (60.0)	20 (23.0)	7 (10.9)	12 (22.6)	3 (14.3)
Always	48 (21.3)	47 (54)	43 (67.2)	31 (58.5)	14 (66.7)
Presence of dermatitis (inflammation and sores) on the exposed areas of the body					
Yes	149 (66.2)	59 (67.8)	47 (73.4)	29 (54.7)	14 (66.7)
No	76 (33.8)	28 (32.2)	17 (26.6)	24 (45.3)	7 (33.3)
Do you drink Alcohol?					
Yes	39 (22.3)	15 (21.4)	8 (18.0)	13 (31.0)	3 (23.1)
No	136 (77.7)	55 (78.6)	42 (84.0)	29 (69.0)	10 (76.9)

3.6. Mean Age, Blood Pressure, Liver Function and Full Blood Count of Mechanics

As shown in Table 5 a mean systolic blood pressure of 116.49 ± 12.99 mmHg and a mean diastolic pressure of 74.54 ± 10.61 mmHg was recorded. Haematological parameters were all in their normal ranges when compared to bench reference ranges and they were all not statistically significance. However, the liver function parameters were also in their normal ranges except GGT which was slightly elevated

Table-5. Mean Age, Blood pressure, Liver function and complete blood count of mechanics

Parameters	Mean $\pm$ SD	Auto-mechanics	Welders	Car sprayers	Electricians	P-value
AGE	32.70 $\pm$ 10.43	32.42 $\pm$ 1.49	35.70 $\pm$ 1.77	31.57 $\pm$ 1.46	33.19 $\pm$ 1.48	0.453
Blood pressure (mmHg)						
SBP	116.49 $\pm$ 12.99	114.90 $\pm$ 9.57	117.72 $\pm$ 14.83	117.50 $\pm$ 15.25	117.08 $\pm$ 14.30	0.624
DBP	74.54 $\pm$ 10.61	73.71 $\pm$ 9.26	75.64 $\pm$ 12.63	74.43 $\pm$ 10.62	75.08 $\pm$ 9.61	0.804
Liver function parameters						
AST	39.98 $\pm$ 5.76	34.75 $\pm$ 24.46	39.16 $\pm$ 5.78	55.76 $\pm$ 22.46	20.27 $\pm$ 1.78	0.393
ALT	32.69 $\pm$ 2.44	29.62 $\pm$ 17.11	34.14 $\pm$ 4.62	36.34 $\pm$ 7.77	31.68 $\pm$ 17.66	0.736
ALP	115.98 $\pm$ 4.65	111.40 $\pm$ 51.00	126.57 $\pm$ 73.29	113.18 $\pm$ 71.04	108.99 $\pm$ 11.18	0.551
GGT	33.52 $\pm$ 2.10	28.32 $\pm$ 19.39	37.80 $\pm$ 33.05	40.24 $\pm$ 34.12	23.39 $\pm$ 9.62	0.048
Hematological parameters						
WBC ($\times 10^3/\mu\text{L}$)	6.30 $\pm$ 2.45	6.36 $\pm$ 2.40	5.75 $\pm$ 2.24	6.73 $\pm$ 2.70	6.62 $\pm$ 2.50	0.25
RBC ($\times 10^6/\mu\text{L}$)	4.87 $\pm$ 0.59	4.92 $\pm$ 0.61	4.79 $\pm$ 0.51	4.92 $\pm$ 0.66	4.78 $\pm$ 0.62	0.574
HB (g/dl)	13.47 $\pm$ 1.46	13.54 $\pm$ 1.48	13.52 $\pm$ 1.25	13.21 $\pm$ 1.77	13.72 $\pm$ 1.02	0.602
HCT (%)	37.21 $\pm$ 5.76	36.78 $\pm$ 5.13	37.23 $\pm$ 4.11	37.84 $\pm$ 8.45	37.35 $\pm$ 3.79	0.828
MCV (fl)	76.57 $\pm$ 10.05	76.35 $\pm$ 9.36	77.36 $\pm$ 10.44	75.22 $\pm$ 10.63	79.02 $\pm$ 10.66	0.601
MCH (pg)	28.09 $\pm$ 4.61	28.45 $\pm$ 6.04	28.18 $\pm$ 2.84	27.10 $\pm$ 3.67	29.05 $\pm$ 3.83	0.401
MCHC (g/dl)	36.23 $\pm$ 2.00	36.48 $\pm$ 1.89	36.16 $\pm$ 2.42	35.86 $\pm$ 1.56	36.29 $\pm$ 2.05	0.453
PLT ($\times 10^3/\mu\text{L}$)	215.10 $\pm$ 82.15	211.99 $\pm$ 85.17	202.50 $\pm$ 77.01	241.69 $\pm$ 83.23	194.38 $\pm$ 67.77	0.088
NEUT ($\times 10^3/\mu\text{L}$)	4.56 $\pm$ 0.69	4.55 $\pm$ 1.12	5.58 $\pm$ 1.67	3.86 $\pm$ 0.93	2.96 $\pm$ 0.40	0.741
LYMP ($\times 10^3/\mu\text{L}$)	3.75 $\pm$ 0.56	3.30 $\pm$ 0.74	4.73 $\pm$ 1.41	3.73 $\pm$ 1.07	2.96 $\pm$ 0.40	0.673
MON ($\times 10^3/\mu\text{L}$)	0.93 $\pm$ 0.13	0.86 $\pm$ 0.20	1.12 $\pm$ 0.29	0.90 $\pm$ 0.25	0.66 $\pm$ 0.12	0.792

Values are Mean $\pm$ Standard Deviation. SBP = Systolic Blood Pressure; DBP = Diastolic Blood Pressure; AST = Aspartate aminotransferase; ALT = Alanine aminotransferase; ALP = Alkaline phosphatase; GGT = Gamma-Glutamyltransferase; WBC = white blood cell; RBC = red blood cell; HB = haemoglobin; HCT = haematocrit; MCV = mean corpuscular volume; MCH = mean corpuscular haemoglobin; MCHC = mean corpuscular haemoglobin concentration; PLT = platelet; NEUT = neutrophil; LYMP = lymphocyte; MON = monocyte

4. Discussion

The right to work in a safe and healthy environment is the fundamental right of every worker. Safety and healthy practices are very important to be provided to the community as well as for employees [14]. This cross-sectional study conducted was focused on assessing the hazards, health consciousness and health seeking behavior of mechanics in Cape Coast Metropolis of Ghana using structured questionnaires, hematological and liver function test results from 225 respondents. Our respondents were men, most (70.7%) of whom belonged to age group between 20 and 39 years. Males tend to select themselves into more hazardous jobs and females are assigned less physically demanding jobs [15] especially in Africa. The automobile mechanic job is physically demanding and strenuous and therefore limits female participation [10, 16]. The finding that most of the workers are less than 50 years is in agreement with the findings from similar studies on automobile mechanics [7, 16, 17]. The study revealed that majority of the workers had basic formal education which is in line with similar studies in Ghana [18] and Nigeria [16, 17]. This confirms that the job is not only limited to only illiterates but people with basic to secondary education. Over half of the respondents work for less than 8 hours a day, however a considerable number 93 (41.3%) of them works for more than 8 hours in a day. This is not encouraging as this practice does not meet the limit of a maximum work hour of 8 hour per day as stipulated by the hours of work convention 1930 (No. 30), which is an ILO standard aimed at providing protection for workers' safety and health, thereby allowing for a fair balance between work and family life [19]. Workers who spend more than 8 hours per day may experience more stress at the end of the day, and this could increase the risk of hazards at the workplace [16].

It was observed that mechanics work with heavy equipment and caustic chemicals that increases risks in mechanic work and thus, every mechanic shop needs to have hazard prevention program that combines mechanic training with regular site inspection to ensure safety at the workplace always. These may include wearing of boots, gloves, eye protection, electrocution prevention and chemical prevention strategies such as wearing of overall and goggles [20]. The study, however observed that, goggles, overalls, gloves, ear protectors, face shields and boots were the main personal protective equipment employed by mechanics similar to what was reported in previous studies [20, 21]. We observed that, most of these overalls and boots were old and torn. Although the use of goggles, gloves and face shield was low, the use of ear protectors was significantly lower among all the mechanics and this could be due to low training on noise pollution. Contrary to the believe that higher level of education could perhaps increase the observance of personal safety at the work place, there was a gap between education and usage of PPEs as respondents with secondary education being the majority were rather found to lowly patronize personal protective equipment mentioned above. Hence it's imperative to educate most mechanics on the use of PPE at work places to minimize their exposure to toxic chemicals since PPE is reported to offer protection against chemical, physical and biological hazards [22].

The present study observed that, abdominal pain, productive cough, irritating eyes, sore throat and musculoskeletal disorders were experienced most by mechanics similar to what was reported previously [23]. More than half the number of the mechanics had experienced wheezing of the chest. 81% complained of musculoskeletal disorders which were not specified and a similar trend was reported by Monney, et al. [10] where 57/100 also

reported the same health threat. Risky occupational behavior such as siphoning of fuel into the mouth by auto-mechanics, not putting on PPEs in the work place was very prevalent in our study population. This is not surprising considering that majority of the respondents had never received any training in occupational safety.

In the present study, it was observed that greater number of mechanics were aware of their health but have low level of safety measures which disagreed with what was reported previously [23]. This study also revealed that very few numbers of mechanics sought health professionals' advice and majority of them do not go for medical check-ups. This may be due to low level of educational talks on health matters as reported earlier [20] but most of them resorted to self-medication after they become ill, similarly as earlier reported [9, 10]. This study found that the level of awareness of occupational hazards was high with sub optimal utilization of protective measures against the hazards.

Adverse effects on the functional integrity of different tissues in biological systems have been reported to be caused by exposure to different organic solvents [24]. As many workers in this sector do not consult physicians except when they are ill, we took the opportunity of this survey to check their blood pressure, hematological and liver function tests. The values for blood pressure and liver function parameters of most mechanics were normal when compared with bench reference ranges except high GGT levels and low AST levels among the mechanics. There seem to be some relationship between duration of exposure and effect on liver function as reported previously [24]. Increased GGT results may reflect liver damage as a result of heavy use of alcohol or toxic substances like drugs. Reports of haematological profiles in mechanics just like those of liver widely varied from one study to another. The study result of FBC for most mechanics were all in their normal ranges (except hematocrit) when compared with standard bench reference ranges which agrees with the results of a previous study [25] but in contrast with what was observed in another study [26] which reported decreased levels of WBC, RBC and platelets among mechanics. Reduced hematopoietic activity has earlier been reported among Ghanaian mechanics [9]. This is most likely as a result of exposure to heavy metals in aromatic compounds found in chemicals used by these mechanics leading to ineffective erythropoiesis as a consequence of its suppressive activity on the bone marrow [27].

5. Conclusion

Automobile mechanics were exposed to various health related hazards ranging from physical, biological, to chemical specimen. Even though majority of the respondents were people with basic formal education, the level of education did not influence the poor safety measures in various workshops per the study. Mechanics play a key role in national and economic development since individual car owners, companies and public cars receive servicing from them. It is therefore unproductive if they are ignored when it comes to occupational health and safety issues. There is an urgent need to increase and strengthen health education and occupational safety campaigns through programs such as safety training workshops to promote work place safety among automobile workers. In addition, there is the need for collaboration between the Automobile Mechanics Associations, the Ghana Health Service and the Department of Factories Inspectorate to train the former on occupational health and safety and also intensify the need to use personal protective equipment and other personal protective equipment. Workplace safety should be made an integral part of the public health agenda in the Cape Coast Metropolis and Ghana as a country.

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