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HAZARD PERCEPTIONS AND SELF-REPORTED NON-INJURY OCCUPATIONAL AILMENTS AMONG ROAD CONSTRUCTION WORKERS IN THREE MIDDLE ZONE REGIONS OF GHANA

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ABSTRACT

Road construction activities are hazardous. Workers are exposed to hazards with high probability of illness, injury, disability or death. The objective was to determine road workers' perceptions of occupational hazards, ailments experienced and health seeking behaviour. This was an institution-based descriptive cross-sectional study using open-ended questions. A total of 353 road workers from Ashanti, Ahafo and Western North regions reported work-related hazards and ranked the top-3. Workers in each craft/stratum who gave consent were included in the study and interviewed. They also reported work-related ailments and health-seeking behaviour. The workers were primarily young (mean age 32.4 years) and male (97.7%). Most (70.2%) workers were contract/casual staff. Thirty eight hazards were reported, with the top five being dust (91.5% of workers reported this), extreme temperatures (72.0%), noise (40.5%), fumes (21.8%) and vehicles/trucks (21.1%). Most (86.8%) workers reported a work-related ailment, with the most common being cough (41.1%) and headache (18.9%). Most (87.8%) workers with ailments sought treatment of any kind. Road construction workers in these regions of Ghana have good appreciation of hazards at work and the dangers they pose. Works supervisors should encourage workers on PPE use against dust, noise, fumes and good housekeeping. Regular worker-training on hazards is recommended.

Keywords: Occupational hazards, hazard perceptions, road construction workers, non-injury occupational ailments, health seeking behaviour.

Introduction

Construction is generally hazardous and workers are exposed to hazards which may lead to ill-health, injuries, disabilities and even death. During construction, materials and equipment are constantly being lifted and moved around either manually or with machinery. Whichever way it is done, risk is associated with handling materials and equipment. The constantly changing worksites also have marked effects on safety and health as construction requires extensive movement by the worker from place to place. Globally, poor performance in the construction industry accounts for more than 100,000 fatalities annually, equating to approximately 30-40%

of the world's work-related fatal injuries (Jill & John, 2010; ILO, 2010).

There are several specific hazards in the construction industry, including working at high altitude, working with power transmission equipment, employing contract workers instead of permanent employees, the presence of several uncoordinated contractors at a construction site and exposure to harmful factors such as noise, vibration, and aerosols, among others (Jazari *et al*., 2018; Pinto *et al.*, 2011; Carter & Smith, 2006; Tam *et al.*, 2001). In addition to potential injuries and exposure to hazardous substances, construction workers face long-term risks from the stress of on- and off-again employment, with the fear of not having a pay cheque. For example, in a study among construction workers in New England, 16% reported mental distress (Jacobson et al., 2013). Besides, the physical and mental state of the worker play an important role in the occurrence of incidents (Gurav *et al.,* 2005).

Each type of construction has its own unique set of hazards. For example, working on hilly and curved roads with restricted escape paths, setting up signage, working close to the traffic stream (which was increased by several factors, such as working during dawn or dusk hours), working in wet weather (which caused reduced visibility) and slippery road surfaces were reported as hazards for road construction in Queensland-Australia. Highway work was also identified as more unsafe than local street work (Debnath *et al*., 2015).

Hazards in construction in general, and especially in the building industry, have been addressed to some extent in Africa, as reported by studies in Ethiopia, Uganda, and Egypt (Gebremeskel & Yimer, 2019; Berhanu *et al*., 2019; Kiconco *et al*., 2019; Adane *et al*., 2013; Alazab, 2004). However, safety issues for road construction workers in Africa have been minimally addressed. One study did report injuries, ailments, and workers' general impression of safety issues at road construction sites in Uganda (Nyende-Byakika, 2016).

Similarly in Ghana, occupational safety issues at construction sites have been studied to some extent. For example, a study in Kumasi looked at injuries and their risk factors among construction workers in general (Amissah *et al*., 2019). Another study obtained the input of construction industry professionals as to factors that affect health and safety in construction, such as lack of skilled and educated workforce, lack of a single regulatory authority and reliance on manual labour (Boadu *et al*., 2020).

However, minimal attention has been directed to hazards in the road construction sub-sector in Ghana. What is considered to be most hazardous by Ghanaian road construction workers in their working environment is yet to be explored. In the course of work, road construction workers experience a number of health conditions other than injuries and these also are yet to be studied. The objective of the current study was to address this gap and to determine what Ghanaian road construction workers perceive as occupational hazards at construction sites. The study also explored non-injury occupational ailments experienced as well as the health seeking behaviours of the road workers.

Experimental

Materials and methods

The setting

An institution-based descriptive cross-sectional study was conducted between 27th January and 29th February, 2020. The study was conducted in Ghana, a West African country of approximately 30 million people with an annual Gross National Income of US$2,220 per capita

(World Bank, 2020). Eighteen construction companies (out of 26) actively working on 19 different roads were purposively selected from three administrative regions, namely, Ashanti, Ahafo and Western North. These 18 companies (14 out of 21 from Ashanti, 1 out of 2 from Ahafo and 3 out of 3 from Western North) were purposively selected on the basis that they were in ful operation at the time of the study. The eight companies which were not selected had either skeletal number of workers on site (3), were on temporary break (3) or did not allow the study to be conducted at all (2). The study sites selected were mostly unpaved roads with the dominant activities being construction of drains and bridges, excavation works, steel cutting and bending as well as fixing, surveying activities, grading of road, hauling of laterite and boulders, road surfacing and compaction, demolition works, watering of roads and bituminous surfacing-related activities among others. The distribution of study sites are shown in Table 1.

TABLE 1
Study sites.

Road Visited (Company Name)	Road Type	Ghana Post GPS Location (District)	Type of Works
Foreign-Owned Construction Company Sites			
Ahensan to Chirapatre (CHICO Ltd.)	Urban road	AK-375-8750 (Asokwa Municipal)	Rehabilitation and upgrading
Terchire to Adrobaa (WBHO)	Feeder road	B2-1062-1928 (Tano North Municipal)	Gravel to bitumen
Mpasatia to Bedaabour (Sino-hydro)	Feeder road	AI-7536-8926 (Atwima Nwabiagya)	Gravel to bitumen
Kentinkrono/Ayigya townships (Contracta Construction)	Urban road	AK-513-7693/AK-194-6573 (Oforikrom Municipal)	Gravel to bitumen
Onwe-Achinakrom-Dedu-ako-Kwaso- to Donyina (gic)	Urban road	AE-0476-1435 (Ejisu Municipal)	Gravel to bitumen
Locally-Owned Construction Company Sites			
Airport roundabout-Buokrom (Attachy Construction)	Urban road	AK-044-1506 (Kumasi Metropolitan)	Rehabilitation
Fumesua township (Knapo)	Urban road	AE-0315-1010 (Ejisu Municipal)	Gravel to bitumen
Sefwi Wiawso township (Facol)	Urban road	(Sefwi Wiawso Municipal)	Rehabilitation
Chirano to Akoti Junction (Volta Impex)	Feeder road	WB-1813-6712 (Bibiani-Anwiaso-Bekwai)	Gravel to bitumen
Wiawso College of Education area roads	Urban road	WG-0040-9001 (Sefwi Wiawso Municipal)	Gravel to bitumen
Daban to Ampeyoo (Kofi Job Construction)	Urban road	AK-490-6815 (Kumasi Metropolitan)	Rehabilitation

Pemenase-Asaman-Ankaase (Erdmac Construction)	Feeder road	A4-1454-7017 (Bosome-Freho)	Gravel to bitumen
Kokofu through Amakom to Lake Bosomtwe (Syndicated)	Feeder road	AT-1593-5596 (Bekwai Municipal)	Gravel to bitumen
Ahenkro to Tetrem (Syndicated)	Feeder road	AF-1332-5691 (Afigya Kwabre	Gravel to bitumen
Bekwai township (Attachy Construction)	Urban road	AB-0006-4644 (Bekwai Municipal)	Upgrading
Krapa township (Syndicated)	Urban road	AE-0067-9893 (Ejisu Municipal)	Gravel to bitumen
Mpasatia Town roads (Memphis Construction Ltd)	Feeder road	AI-7536-8926 (Atwima Nwabiagya South)	Gravel to bitumen
Main Nyinahin road to Adobe-wura (A. Kanin Co. Ltd.)	Feeder road	AI-2215-7900 (Atwima Mponua)	Gravel to bitumen
KNUST Police Station area roads (Joshop Construction)	Urban road	AK-452-6165 (Oforikrom Municipal)	Rehabilitation

Profile of Study Subjects

Workers at each construction company's sites who were working in the following crafts were selected: excavation/earth works, steel bending/erection/fixing, masons, carpenters, welders/electricians,drivers/operators, mechanics, daily labourers, site supervisors, safety officers, architects, quantity surveyors, land surveyors and civil engineers. All workers in each craft who gave consent were included in the study and subsequently interviewed.

Study Population and Sample Size

The desired sample size, n, was estimated based on the following assumptions:

Population size: Total number of road construction workers actively on site in Ghana between January and March, 2020 was about 1000 (based on the staff strength of the few companies that were actively on site, according to the Ministry of Roads and Highways).

Anticipated proportion of workers who have had an injury in the past year: 3% (Based on prior study of occupational injuries in Ghana by Mock et al., 2005).

Acceptable margin of error: 1.5 %

Confidence level: 95%

The estimated minimum sample size needed to detect the above proportion at 95% confidence was then determined using the raosoft software (Raosoft Inc., 2004) and it was given as 333. A total of 353 road construction workers were interviewed.

Data Collection Procedure and Data Analysis

Quantitative data were collected with the aid of a structured questionnaire that had both open-ended and closed questions. The questionnaire was pre-tested on workers at a construction site on the Lake Road of Ashanti Region and the feedback used to modify the tool to suit the objectives of the study. Respondents were asked to mention what they perceived to be hazards in their day-to-day work activities. A follow-up question then requested each respondent to list the top-3 hazards found at the work site. A question on non-injury ailments they thought were work-related that they had experienced in the past one year followed and the workers' word was taken as such, since there was no way we could cross-check. Finally, the health-seeking behaviour of the respondents was also solicited. Depending on the respondents' preference, they could

fill out the questionnaire themselves or could have the data collectors read the questionnaire to them while the respondents provided verbal (oral) answers. Data were collected on tablets uploaded with the questionnaire in Open Data Kit (ODK) software. Data collectors were people with bachelor's degrees who were given 3 days of training before the project. They were directly supervised on site by the principal investigator (IKY). Data collected were checked for accuracy, completeness and uniformity by the principal investigator at the end of each day's activity.

Data were analysed using Stata version 16.0 (StataCorp, College Station, Texas USA) statistical software. Descriptive statistics such as frequency distribution and percentage calculations were derived from the variables, and comparisons made as to factors associated with occurrence of ailments using chi-square.

Ethical considerations

The Kwame Nkrumah University of Science and Technology/Komfo Anokye Teaching Hospital Committee on Human Research, Publications and Ethics (CHRPE), approved the study (Ref. CHRPE/AP/510/20). Agencies under the Ministry of Roads and Highways (MRH), namely, the Ghana Highway Authority (GHA), the Department of Urban Roads (DUR) and the Department of Feeder Roads (DFR) as well as the construction companies also gave approval for the conduct of the study at their construction sites. Verbal consent was obtained from study participants. Information collected through the interviews was anonymous and did not include name or any other identifying information about the workers.

Results

Study respondents

Data were obtained from 18 sites, 13 run by locally-owned companies and five run by foreign-owned companies, but primarily hiring Ghanaian workers. A total of 353 respondents were interviewed. Their ages ranged from 16 to 66 years with mean, median and modal ages of 32.4, 30.0 and 27.0 years respectively. There were 2.3% females and 97.7% males. The leading category of workers were labourers (31.5%) followed by drivers operating trucks, excavators or bulldozers (15.6%), carpenters (11.6%) and masons (7.9%). The dominant activities at most of the construction sites were construction of drains, bridges and earth works, therefore, requiring the deployment of these workers. A lot more drivers were interviewed in some of the big construction

companies, partly because, on site managers limited opportunities for interviewing the general working body who were busily at work. In the case of drivers, the data collectors sat in the vehicles to conduct the interviews with the drivers while commuting.

Only 29.8% of respondents were permanent staff while the rest were either contract or casual workers. Workers who had junior high/middle school education were more than the rest (47.9%), followed by those with senior high school (24.4%) and tertiary level (10.8%) (Table 2).

TABLE 2

Profession, status of employment and educational status of study sample (n=353).

Profession	Frequency	Percentage (%)
Labourers	111	31.5
Drivers	55	15.6
Carpenters	41	11.6
Masons	28	7.9
Steel Benders	22	6.2
Site Supervisors	21	6.0
Civil/Materials Engineers	16	4.5
Flagsmen	10	2.8
Surveyor/Surveyor Assistants	8	2.3
Mechanics	7	2.0
Safety Officers	7	2.0
Concrete Mixer Operators	6	1.7
Quantity Surveyors	4	1.1
Welders	2	0.6
Electrician	1	0.3
Others*	14	4.0
Status of Employment		
Contract	155	43.8
Permanent	105	29.8
Casual	93	26.4
Education		
Junior High/Middle School	159	47.9
Secondary/Technical	100	28.3
Tertiary	38	10.8
No schooling	24	6.8
Primary	22	6.2
Age Distribution		
26 -35	144	40.8
16 - 25	94	26.6
36 -45	72	20.4
46 - 55	36	10.2
≥ 56	7	2.0

**Others: nurses, earthworks supervisors, fuel attendants and security*

Hazards reported

The road workers reported 38 perceived hazards at construction sites. The ten principal hazards most frequently reported were silica dust (91.5%), temperature extremes (72.0%), noise (40.5%), fumes (21.8%), trucks/ excavators and other heavy duty machinery (21.1%), cement dust (18.1%), nails (14.7%), falls (11.9%), poor housekeeping (9.9%) and power tools/equipment (7.1%), as presented in Figure 1. The category named "other hazards" included overwork, poor/awkward posture, iron rod cutting machine, lose chippings, poor ventilation, no warning signs, wooden pegs, faulty shovel, faulty head pans, binding wires, metal panels, quarry dust, work at height, welding fumes, unprotected excavations, concrete mixing machine, whole body vibrations and walking-in-transit.

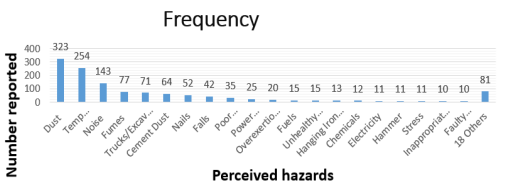

Fig. 1: Perceived hazards on construction sites among workers

Workers were also asked to rank the top-3 hazards perceived to be most harmful to them on site (Table 3). The five most harmful hazards reported were dust (68.3%), extreme temperatures (51.6%), noise (26.6%), cement dust (16.1%) and trucks and other heavy duty machinery (9.9%).

TABLE 3
Topmost health hazards reported.

Topmost Hazards Reported	Frequency
Dust	241
Temperature Extremes	182
Noise	94
Cement Dust	57
Trucks/Excavators/Bulldozers	35
Fumes	31
Nails	22
Overexertion during Lifting	19
Hammer	12
Whole Body Vibration from Rollers, Excavators, Dozers	12
Power Tools/Equipment	10
All Others	57

Non-injury ailments reported and their treatment

Eight different non-injury ailments the workers perceived to be work-related were reported to have been contracted during the past one year. The most common ailments were cough (41.1%) and headache (18.9%). A total of 87.8% of those with ailments sought treatment for these ailments. The most preferred treatment option was self-medication, followed by non-orthodox means (such as traditional/herbal medicine), hospital care and treated at construction sites being the least preferred (Table 4).

TABLE 4
Self-reported non-injury ailments experienced and treatment sought

Ailment*	Frequency	Percentage (%)
Anaemia	2	0.6
Common Colds	33	10.6
Cough	128	41.1
Diarrhoea	3	1.1
Fevers	12	3.9
Headache	59	18.9
Respiratory Problems	24	7.8
Skin Rashes/ Dermatitis	9	2.8
No Ailment	41	13.2
Total	**311**	**100**
Treatment for Ailment (n=270)		
Yes	237	87.8
No	33	12.2
Total	**270**	**100**
Type of Treatment (n=374)**		
Construction site	27	
Hospital care	78	
Non-Orthodox (herbal treatment)	125	
Self Medication	135	
Total	**374**	

**Data missing for 42 respondents. **Multiple treatment choices allowed*

In the bivariate analysis, variables such as age, gender, education, profession and employment status were considered. None of them influenced the decision by workers as to whether they sought treatment for any ailment or not (Table 5). We further evaluated treatment sought by workers, stratified by labourers vs. all other professions but there was no statistically significant difference.

TABLE 5

Bivariate analysis of treatment sought for ailment.

	N	Yes	No	P-Value
Gender	**310**			0.530
Male	300	208	92	
Female	10	6	4	
Age	**310**			0.149
26 -35	124	86	38	
16 - 25	84	52	32	
36 -45	62	45	17	
46 – 55	33	25	8	
≥ 56	7	6	1	
Education	**310**			0.099
Junior High/ Middle School	149	108	41	
Secondary/ Technical	93	61	32	
Tertiary	28	20	8	
No Schooling	22	11	11	
Primary	18	14	4	
Status of Employment	**310**			0.279
Contract	140	97	43	
Casual	84	53	31	
Permanent	86	64	22	
Profession	**310**			0.186
Labourers	100	64	36	
All Other Professions	210	150	60	

We also looked at covariates such as age, gender, education, profession and employment status to determine whether they are risk factors for any of the ailments. The bivariate analysis showed that whereas gender ($p<0.727$), age ($p<0.490$) and employment status ($p<0.087$) did not influence any of the ailments reported, education ($p<0.001$) and type of profession ($p<0.022$) were risk factors for the ailments (Table 6). For example, there was a higher percentage of labourers (60 out of 100, 60.0%) who reported cough than for other workers (68 out of 210, 32.4%).

TABLE 6

Bivariate analysis of ailments by gender, age, education, employment status and profession.

Ailment / Variable	Anaemia	Common Colds	Cough	Diarrhoea	Fevers	Headache	Respiratory Problems	Skin Rashes/ Dermatitis
N (270)	**2**	**33**	**128**	**3**	**12**	**59**	**24**	**9**
Gender								
Female	0	0	0	0	4	7	0	0
Male	2	33	128	3	8	52	24	9
P-Value =0.727								
Education								
Junior High/Middle School	0	14	52	3	3	14	4	2
Secondary/Technical	0	4	24	0	0	13	1	3
Tertiary	0	5	6	0	4	6	0	0
No Schooling	1	7	25	0	0	9	4	2
Primary	1	3	21	0	5	17	15	2
P-Value <0.001								
Age								
26 -35	0	12	22	2	5	26	11	2
16 – 25	1	13	50	1	3	14	2	3
36 -45	1	5	21	0	3	11	5	2
46 – 55	0	3	12	0	1	6	5	2

≥ 56	0	0	4	0	0	2	1	0
P-Value =0.490								
Status of Employment								
Contract	0	11	49	2	4	22	9	4
Casual	1	13	55	1	5	18	7	3
Permanent	1	9	24	0	3	19	8	2
P-Value =0.087								
Profession								
Labourers	1	10	60	1	3	19	8	7
All Other Professions	1	23	68	2	9	40	16	2
P-Value =0.022								

Discussion

This study sought to determine what some Ghanaian road construction workers perceived as occupational hazards. It also sought to determine self-reported non-injury ailments contracted during road construction works and their health-seeking behaviours. Thirty eight perceived health hazards were reported at the road construction sites. It identified almost 3-in-4 road construction workers to be either casuals or on contract. Additionally, over 3-in-4 workers mentioned silica dust and extreme temperatures as work-related hazards. Other hazards included noise, trucks/heavy duty vehicles, cement dust, nails, trips and falls, poor housekeeping, among others. Trucks/vehicles were considered as a hazard, as they can result in injuries to pedestrians, especially when passing at high speeds near workers. Five topmost hazards frequently identified by the workers were silica dust (68.3%), extreme temperatures (51.6%), noise (26.6%), cement dust (16.1%) and Trucks/heavy duty/earth moving equipment (10%) respectively. Eight work-related non-injury ailments were identified, with the most common being cough and headache.

The study identified that road construction workers in these regions were largely youthful and male. This could be as a result of the largely manual labour-intensive nature of construction works, requiring both skilled and unskilled workers. Globally, over 90% of construction workers are male (Sultana *et al.*, 2015). Conversely in the United States, the median age of highway maintenance workers was older, at 44.1 years (DataUSA, 2017).

A little over 70% of the road construction workers were either contract or casual staff. This may be partly because the financial and safety commitments of owners of construction companies towards casual and contract workers are less rigorous than to permanent staff. This subsequently implies they are less protected. In India, about 50% of workers in the construction industry are casual (Ramesh, 2009; Das, 2007; NCEUS, 2006). [India, another study reported relatively similar percent of casual workers on construction sites in Egypt (90%), Mexico (64%), and Republic of Korea (77%) (Wells, 2007).

The 38 perceived health hazards reported could be categorised into: chemical, physical, ergonomic and psychosocial factors (Abdalla *et al*., 2017).

The road construction workers studied were exposed to several chemical hazards found in materials used during construction. These hazards are silica dust, fumes, cement

dust, fuels, other poisonous chemicals and bitumen. The silica dust was frequently reported because most of the roads were unpaved and dusty. Additionally, the study was done during the dry season, when commuting traffic and earthworks generated a lot of silica dust. Airborne dusts are known for their broad effects on occupational lung ailments, including, pneumoconiosis, particularly when the exposure level is high (Germany, 2003). During the civil works where drains and bridges were constructed, cement and sand are mixed with water, generating cement dust, which is a respiratory and mucous membrane irritant in high concentrations, but chronic effects have not been observed. When it settles on the skin and mixes with sweat, cement dust can cause dermatoses. "When wet and concrete is sprayed in place, it can also cause dermatoses. These may enter the body through inhalation; ingestion - accidentally swallowed during eating, drinking or smoking; absorption through contact with the eye or skin; and finally, injection through broken or punctured skin" (OSHA, 2017).

The physical hazards identified in this study include temperature extremes, noise, non-ionising ultraviolet radiation from long exposure to the sun and electric arc welding, whole body vibrations from excavators and other equipment. Noise has been found to be a significant health hazard in construction elsewhere. Excessive noise exposure among construction workers and high rates of noise-induced hearing loss among them is well documented (Dement *et al.,* 2018; Suter, 2002; Kerr et al., 2002) and the rate of hearing loss claims is approximately five times higher than the average rate for all industries combined (Dement *et al.,* 2018; Daniell *et al.,* 2002) In terms of temperature extremes, a large proportion of construction work in Ghana is conducted while exposed to the hot sun. Heavy equipment operators may sit beside a hot engine and work in enclosed cabs with windows and without ventilation. Those working in open cabs with no roof have no protection from the sun. According to the Canadian Centre for Occupational Health and Safety (CCOHS), exposure to excessive heat could cause heat stroke, heat oedema, heat rashes, heat cramps, heat exhaustion, heat syncope, among others. As the temperature or heat burden increases, people may feel increased irritability, loss of concentration and ability to do mental tasks, loss of ability to do skilled tasks or heavy work (CCOHS, 2021).

The ergonomic hazards identified in the current study included: manual material handling (MMH) and exerting force (lifting, lowering, pushing and carrying heavy objects such as cement and metal panels), repetitive tasks, static postures, vibrations such as the use of jack hammer, and working in awkward positions. These ergonomic hazards encountered in construction work systems presents a very high risk of musculoskeletal disorders (MSDs) to the workers due to their engaged in a variety of manual material handling (MMH) activities, such as shovelling, welding, gas cutting and grinding of steel plates, pulling and pushing of wheel barrows, shuttering and deshuttering at construction sites. Exposed to several occupational risk factors, such as poor and awkward postures, repetitive movements, hand-arm vibration, heavy material handling, high physical work stress, overexertion, among others, in their routine jobs. Also, during construction work, the workplace keeps on changing and hence, the workers become unfamiliar with the workplace which may further lead to MSDs and injuries (Hsu *et al.,* 2008).

The psychosocial hazards reported were long hours of work, overwork, living in work camps away from one's family and unsociable hours. Handling of different materials required for construction and exposure to harsh

environmental conditions like sun and rain, among others, which result in accidents and adverse health conditions cause psychosocial strain. They are victims of headache, backache, joint pains, skin diseases, lung disorders like silicosis, other musculoskeletal disorders (Tiwary & Gangopathyay, 2011).). Exposure to psychosocial risks has been linked to a wide array of unhealthy behaviours (Kouvonen *et al*., 2006).

This study found eight self-reported work-related non-injury ailments, with cough as the most cited. Exposure to dust and chemicals can lead to aggravation of bronchial asthma, which is mainly an immunological mechanism provoked by exposure to specific allergens (dust or chemicals). Chronic bronchitis is aggravated by prolonged exposure to dust, which stimulates the multiplication of microorganisms and leads to the development of recurrent attacks of bronchitis (Alazab, 2004). Other studies also found that cumulative exposures to respirable dust were the most important risk factor for air flow limitation. They confirm their findings by showing an accelerated decline in FEV1 (forced expiratory volume in one second - a measure of lung function) among construction workers exposed to dust (Liao *et al.,* 2014; Ulvestad *et al.,* 2001). In this study, whereas gender, age and employment status did not influence any of the ailments reported, education and type of profession did.

Most (87.8%) workers with work-related ailments sought treatment for these in the current study. The most frequently selected treatment option was self-medication, followed by non-orthodox (herbal) care, hospital care and least of all, treatment at construction site. Several sociocultural, economic and environmental factors, guided by intrapersonal and interpersonal characteristics and behaviours, wider community norms and expectations together with available health provider services and associated characteristics, influence health-seeking behaviours (Oberoi *et al.,* 2016; Ihaji *et al.,* 2014). Differences in individual characteristics affect health-seeking behaviours differently. While individual differences are by themselves influenced by other factors such as biology and genetics, sociocultural environment, and economic factors, their implications for health-seeking behaviours cannot simply be glossed over (Maneze *et al*., 2015). In this study, however, age, gender, education, profession and employment status did not influence the decision by workers as to whether they would seek treatment for any ailment or not. A study of 140 construction workers in Myanmar discovered that 90.7% suffered some kind of health problem within 3 months before the study and 57.9% sought care. The most common types of care were self-care (40.2%), private clinics (40.2%) and public facilities (14.1%) (Htut, 2017). A study in India assessed the health seeking behaviour of 302 male construction workers and found that most (78.8%) workers sought medical care, primarily from private hospitals (87.4%), with smaller numbers getting care at the construction site (8.8%) and government hospitals (2.5%) (Mohan & Gopalakrishnan, 2020).

The current study has some limitations worth noting. First, construction sites were selected purposively, rather than using probability sampling technique. This was necessary as permission from the government road sector agencies and the construction companies was needed in advance. Second, there was the possibility of recall bias on the part of respondents. Third, reasons for treatment decisions could not be explored. Fourth, the workers' word was taken on the work-related ailments as having been experienced as a result of their occupation, even though some of them may not have been necessarily so. Finally,

drivers are over-represented, in part because on site supervisors were more likely to release drivers to be interviewed than other workers.

Conclusion

This current study found that road construction workers in Ghana have a good appreciation of the hazards they are exposed to, and know the dangers posed by them. Thirty-eight perceived hazards were reported, with the topmost being dust, extreme temperatures and noise. Most workers reported work-related ailments, with the leading ones being cough and headache. Most workers were either casuals or on contract, making safety measures more difficult to implement. Nonetheless, several feasible steps can be taken.

Works supervisors should encourage workers to practice good housekeeping to prevent trips and falls as well as on PPE use against dust, noise, fumes and other hazards identified. The Ministry of Roads and Highways and its agencies, Department of Factories Inspectorate as well as the Department of Labour should enforce the existing regulations in the Labour Act, 2003 (ACT 651) and Factories, Offices and Shops Act, 1970 (ACT 328), among others, to address the hazards reported and subsequent potential injuries, disabilities and fatalities. Since several factors affect the health-seeking behaviour of workers, a more extensive study with a complementary qualitative enquiry should be carried out to gain a more wholistic insight of the drivers of health-seeking behaviours among road construction workers is recommended.

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