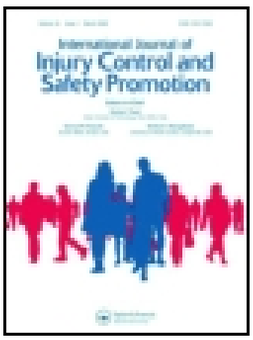

International Journal of Injury Control and Safety Promotion

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/nics20

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To cite this article: Addae Boateng Adu-Gyamfi (2020): Counting the costs: occupational injuries and illnesses among auto-artisans, International Journal of Injury Control and Safety Promotion, DOI: 10.1080/17457300.2020.1835989

To link to this article: https://doi.org/10.1080/17457300.2020.1835989

Published online: 16 Oct 2020.

INTERNATIONAL JOURNAL OF INJURY CONTROL AND SAFETY PROMOTION
https://doi.org/10.1080/17457300.2020.1835989

Counting the costs: occupational injuries and illnesses among auto-artisans

Addae Boateng Adu-Gyamfi

Department of Population and Health, University of Cape Coast, Cape Coast, Ghana

ABSTRACT

Although assessing the cost of workplace injuries and illnesses as part of occupational health and safety management is important in ensuring workplace safety, the issue is generally neglected among informal auto-artisans in Ghana. This paper examines the costs of occupational injuries and illnesses in terms of productivity, financial and social aspects of selected auto-artisans who service or fabricate auto parts in Suame 'Magazine' in Kumasi, Ghana. Employing a descriptive cross-sectional design, data were collected from 957 auto-artisans selected through a multistage cluster sampling method. The study found that the most frequent occupational illnesses and injuries experienced by the auto-artisans are those related to sharp objects (83.9%), inhalation of dust particles (45.8%), objects falling from height (35.6%) and burns (21.8%). These injuries and illnesses have led to loss of productivity and income which affects family members with no variations between the various categories of auto-artisans ($p = 0.976$). It is concluded that occupational injuries and illnesses among informal auto-artisans presents enormous financial and emotional costs to survivors and their families. It is recommended that government should lead a policy dialogue on safety in the country's informal sector, while supporting artisans to establish insurance schemes to support them in times of injuries and illnesses.

ARTICLE HISTORY
Received 5 April 2020
Revised 24 September 2020
Accepted 9 October 2020

KEYWORDS
Occupational injuries; auto-artisans; occupational costs; Suame magazine; Ghana

Introduction

Work is necessary for the survival of individuals and families across all societies but it may also have some negative effects on the health and quality of life of workers (Leppink, 2015). Concha-Barrientos et al. (2004, p. 1653) noted that "people at work face a variety of hazards owing to chemicals, biological agents, physical factors, adverse ergonomic conditions, allergens, a complex network of safety risks, and many and varied psychosocial factors". Besides tiredness, work-related accidents and diseases may cause untold "human suffering to victims and their families, impact negatively on enterprises' efficiency and productivity, and entail major economic losses for societies as a whole" (Leppink, 2015, p. 1). Occupational injuries and illnesses, as rightly described by Norton et al. (2006), broadly fall under what is classified as unintentional injuries for which there is no evidence of predetermined intent. Most deaths related to unintentional injuries (over 3.5 million) occur among people living in low- and middle-income countries (LMICs), which is noted to have accounted for 91% of all deaths resulting from unintentional injuries (Chandran et al., 2010). One of the major sources of unintentional injuries is occupational injuries and illnesses, which affects over 2.3 million workers across the world annually, with the number of annual occupational accidents estimated at over 270 million (Hamalainen et al., 2006; ILO, 2013).

Thus, occupational injuries and illness have long been associated with economic activities as unintended natural consequences and that when they inevitably occur, they become a source of suffering and economic loss to individuals, families and societies (Kharel, 2016). The indirect cost of work-related injuries and illnesses are well summarized by Leppink (2015) as follows:

> 'The total costs of an occupational accident or disease are often underestimated because certain costs are external to the enterprise and because some internal costs may be difficult to quantify or recognize; such as, compensated time, lost production, reduced work capacity and lower workforce participation. It has been estimated that the indirect costs of occupational accidents or diseases can be four to ten times greater than the direct costs'.

Therefore, occupational health and safety (OHS) management at the workplace is an important factor in ensuring the commitment of employees as well as improving the external reputation of the organization while also reducing workplace injuries and associated costs (European Commission, 2011; Eurostat, 2010). In this regard, one of the most valuable assets of individuals, communities and countries are health at work and healthy work environments, making occupational health important not only for the health of workers, but also increased productivity, improved quality of products, work motivation, job satisfaction and the overall quality of life of individuals and society (WHO, 1994).

Subsequently, the International Labor Organization (ILO) requires that all the member countries should report the number of cases of fatal and non-fatal occupational injuries

CONTACT Addae Boateng Adu-Gyamfi aadu-gyamf@ucc.edu.gh

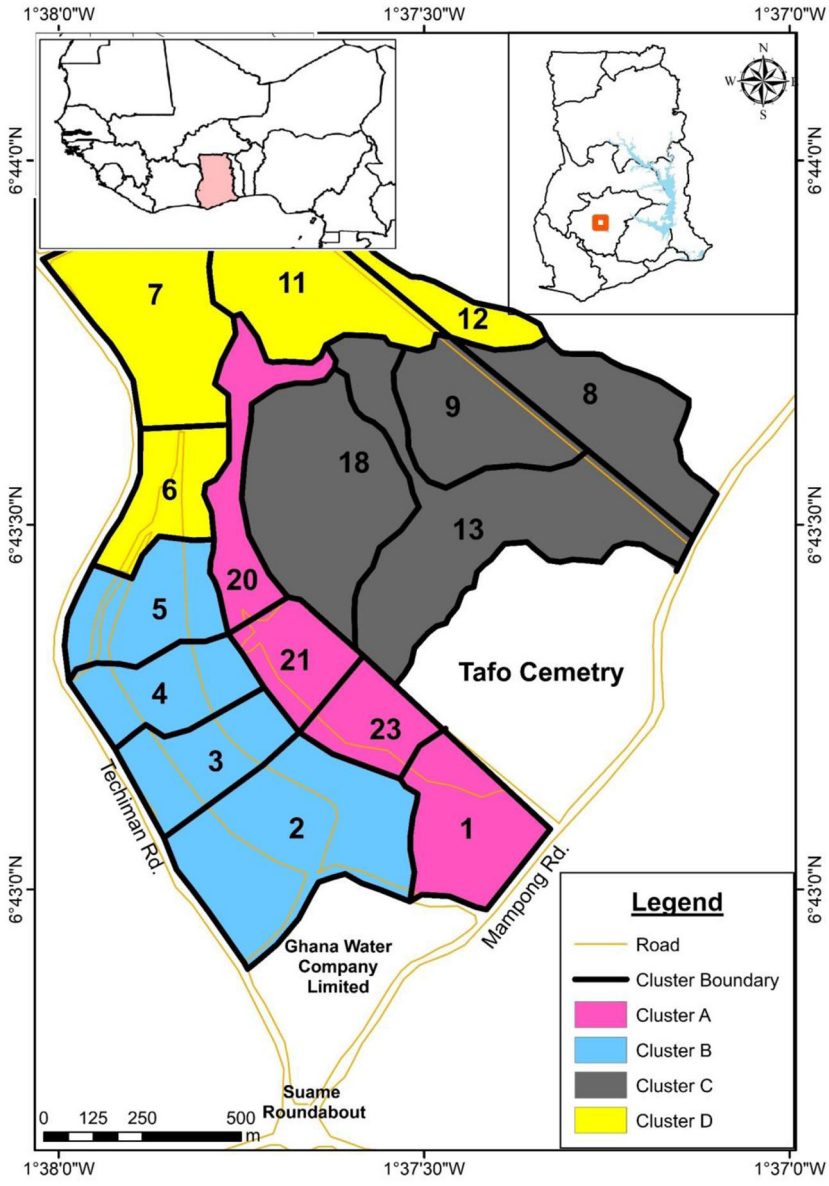

Figure 1. Map of Suame magazine.
Source: GIS and Cartography Unit, DGRP, University of Cape Coast (2020).

on an annual basis (ILO, 2005), with the view to establishing reliable estimates for planning and possible mitigations. This requirement might be very challenging for most developing countries where the informal sector dominates their economic activities. Among other things, Muchiri (2003) enumerated factors contributing to the drawbacks to the provision of effective enforcement and inspection services in most African countries as "lack of comprehensive OHS policy, poor infrastructure and funding, insufficient number of qualified occupational health and safety practitioners, and the general lack of adequate information".

In Ghana, the government has promulgated a number of Acts (e.g., Labour Act, 2003, Act 651; Ghana Workmen's Compensation Law 1987; and Factories, Shops and Offices Act 1970, Act 328) and several other policies and strategic documents to protect the health, safety and welfare of all workers. For example, the Labour Act 2003 Act 651, Article 118:1 makes it obligatory for the employer to "ensure that every worker employed in Ghana works under satisfactory, safe and healthy conditions" (Government of Ghana, 2003) while the Ghana Workmen's Compensation Law 1987 (PNDC 187) requires that "the employer pays all medical expenses related to any workplace-related accident, and in addition, pay some compensation to the accident victim" (Government of Ghana, 1987).

While occupational health and safety issues in the formal sector have received some, though limited, level of attention from governments, policy makers and researchers, the same cannot be said among informal sector workers in general and artisans in particular. As a result, there is no reliable comprehensive data or even estimates on the magnitude of occupational injuries and illnesses in the sector. Though the Labour Act of 2003 (Act 651) makes some provisions for legislations on the role of both employees and employers in ensuring

Figure 2. Auto-artisans at Suame magazine engaged in various vehicle repair activities.

health and safety at the workplace Government of Ghana (2003), there is general uncertainty of the extent to which this legislation is being adhered to even in the formal sector, much less the costs associated with the problem. Therefore, this paper examines the nature and costs of occupational injuries and illnesses in terms of productivity, financial and social aspects of the selected auto-artisans (artisans in the informal sector who service vehicles or fabricate auto/vehicle parts) in the Suame 'Magazine' enclave, within the Kumasi Metropolis, Ghana. It is believed that the findings of the study would inform policy and practice in occupational health and safety management practices in the informal sector of Ghana.

Materials and methods

The primary setting for this study is the Suame 'Magazine' enclave, a popular area for mechanics, locally called *fitters*, and spare parts dealers in the Kumasi metropolis, Ghana (See Figure 1). The 'Magazine' as it is generally referred to, is a one-stop shop for all repair works on automobiles, including manufacturing and trading in spare parts of all kinds of vehicles. The manufacturing and the repairs expose the workers and traders in the enclave to a wide range of occupational injuries and illnesses, some of which take several years to manifest (Michaels, 2015).

The main players in the auto-artisanship industry at Suame magazine are master artisans, work-and-pay artisans and apprentices. Master artisans are individual artisans with skills and have set up their enterprises to engage in specific trades, manage the enterprise and train apprentices. Work-and-pay artisans are artisans who have completed their training but have not established their own workshop due to financial or other challenges but are hired/employed by master artisans to help in the day-to-day activities of the

Table 1. Background characteristics of respondents.

Socio-demographic characteristics	Occupational status (%)			Total (N = 957)
	Master artisan	Work and pay artisan	Apprentice	
Sex				
Male	99.8	100.0	99.6	99.7
Female	0.2	0.0	0.4	0.3
Age				
Less than 20	0.2	14.3	15.0	8.2
20 – 29	10.8	39.3	58.2	35.7
30 – 39	35.4	28.6	24.3	29.6
40 – 49	34.8	17.9	2.3	17.8
50 – 59	13.3	0.0	0.2	6.3
60 +	5.4	0.0	0.0	2.5
Marital Status				
Never married	22.1	46.4	73.9	49.1
Married	72.7	35.7	19.8	44.7
Co-habitation	3.6	10.7	6.2	5.1
Separated	1.4	3.6	0.0	0.7
Divorced	0.2	3.6	0.0	0.2
Widowed	0.0	0.0	0.2	0.1
Educational level				
No formal education	7.4	10.7	5.8	6.7
Primary	9.7	10.7	12.6	11.2
JHS/Middle School	69.8	57.1	63.4	66.1
SHS/Secondary/Technical	12.0	21.4	17.9	15.3
Tertiary	1.1	0.0	0.4	0.7
Type of trade				
Auto mechanic	47.6	39.3	59.3	53.3
Autobody works	27.3	28.6	22.2	24.7
Ancillary works	25.1	32.1	18.7	22.0
Years engaged in artisanship				
1–5	3.6	25.0	53.9	29.8
6–10	13.3	32.1	23.7	19.1
11–15	21.2	21.4	14.8	18.0
16–20	21.4	7.1	3.1	11.7
21+	40.4	14.3	4.5	21.4
Membership of association				
Ghana National Association of Garages	50.6	35.7	37.9	43.7
Suame Magazine Industrial Development Organization (SMIDO)	2.7	3.6	1.0	1.9
Magazine Mechanical Association	0.5	0.0	0.0	0.2
None	46.3	60.7	61.1	54.2
Total	100	100	100	100
n(%)	443(46.3%)	28(2.9%)	486(50.8%)	957 (100%)

enterprise. Apprentices, on the other hand, are those who work for the master craftsmen to learn a trade of their choice and are paid daily stipends referred to as "chop money" by their masters. At Suame magazine, an apprentice receives training between three and five years and transforms into a master artisan when she or he believes to have acquired all the necessary skills needed to practice the trade and establishes his or her own enterprise. However, some apprentices remain with their master artisans as apprentices for many years. No formal examination or certification is required for an apprentice to become a master artisan. The master craftmen, work-and-pay artisans and the apprentices work together to service auto-vehicles (see Figure 2).

This study is part of a broader PhD study of the author but this paper draws on the aspects related to the costs of occupational injuries and illnesses. For details of occupational health and safety practices, see the PhD thesis titled, "Occupational health and safety among auto-artisans in Suame Magazine-Kumasi, Ghana".

This study adopted a descriptive cross-sectional design and collected quantitative data in order to improve the validity and reliability of the study (Creswell, 2003; Zohrabi, 2013). The population for the study included a random sample of auto-artisans (who service or fabricate auto parts), who were working in the informal economy in the Suame Magazine enclave of the Kumasi Metropolis. They comprised mechanics (locally called *fitters*), auto body straighteners, auto body sprayers, welders, vulcanizers, auto electricians, radiator repairers, bumper and headlight repairers, door and key fixers, blacksmiths and engine borers/re-borers. To be included in the study, the artisan must be aged 15 years or more, and must be working as master craftsmen or apprentices with a minimum of one-year experience. The study targeted people 15 years and above because Section 94 of the Children's Act (Act 560) of Ghana stipulates that "the minimum age at which a child may commence an apprenticeship training with a craftsman is fifteen years (15) or after completion of basic education" (Government of Ghana, 1998).

The total population of workers in the Suame magazine enclave has been estimated to be around 200,000 (Jaarsma et al., 2011). Out of this number of workers, Adu-Gyamfi and Adjei (2018) have indicated that auto-artisans constitute about 100,000. Therefore, using the Rose et al. (2015) sample size calculator, this study estimated 966 auto-artisans, which was approximated to 1000. In the view of Burns and

Table 2. Major sources of occupational injuries and illnesses.

	Occupational status (%)			
Major sources of occupational injuries and illnesses	Master artisan	Work and pay artisan	Apprentice	Total (N = 957)
Sharp object injuries				
Yes	80.7	76.9	87.3	83.9
Inhaling dust particles				
Yes	46.4	46.2	45.3	45.8
Objects falling from height				
Yes	32.7	26.9	38.8	35.6
Inhaling smoke and fumes				
Yes	30.1	34.6	25.2	27.7
General burns				
Yes	21.3	26.9	22.0	21.8
Electric shock				
Yes	20.4	23.1	16.8	18.7
Fires				
Yes	21.8	15.4	12.7	17.0
Inhaling particles from paints				
Yes	13.5	19.2	10.8	12.3
Inhaling harmful chemicals				
Yes	9.5	3.8	9.9	9.6
Falls				
Yes	7.0	7.7	6.3	6.6
Chemical burns				
Yes	7.0	19.2	5.2	6.4

Grove (2009) the sample size for a study ought to be large enough to enable the establishment of relationships among variables and to also determine differences between groups.

To select the respondents for the study, a multi-stage cluster sampling method was employed. For example, Ghana National Association of Garages has divided the Suame magazine enclave into 16 zones, under four (4) main clusters; namely A, B, C and D. The clusters had clear physical boundaries which facilitated identification and eliminated double counting during the field survey (Jawale, 2012). The next stage was the equal allocation of the sample to the various clusters (250 per cluster). Simple random sampling method was then employed to select workshops from each cluster. At each workshop, a master craftsman or work-and-pay artisan (a master artisan who is working for another master artisan) and one apprentice were sampled but where there was only one artisan, he or she is automatically selected. However, where there was more than one master artisan, one is selected through simple random. The same procedure was used for the selection of apprentices. At the end of the survey, 957 auto-artisans responded to the questionnaire, representing a response rate of 95.7%.

The study employed a structured questionnaire as the main instrument for data collection because "the questionnaire is an indispensable tool when primary data are required about people, their behaviour, attitudes and opinions and their awareness of specific issues" (Parfitt, 2005, p. 78). Again, according to Sansoni (2011), questionnaires can reach a large number of respondents in limited time and therefore makes it possible to generalize the results. Data were collected using a researcher administered questionnaire which was administered to selected auto-artisans face to face by the researcher and seven trained field assistants. The data were inputted into Statistical Package for Social Sciences (SPSS Version 23), now IBM-SPSS Statistics, and analyzed through the generation of descriptive statistics, cross-tabulations. Fisher Exact test and chi-square test of independence were employed to test significant differences between the variables. Although a multi-stage cluster sampling was used to select the artisans, the analysis of the data was done to reflect the different categories of artisans in order to gauge the costs associated with occupational injuries and illnesses affecting each category of artisans. Thus, the cluster sampling was used to ensure geographical spread of the sample rather than for the purpose of comparing the responses across the various clusters.

Table 3. Ever been absent from work due to workplace injury or illness.

	Occupational status (%)			
	Master artisan	Work and pay artisan	Apprentice	Total (N = 430)
Yes	45.1	46.4	44.7	44.9
No	54.9	53.6	55.3	55.1
Total	100.0	100.0	100.0	100.0

$X^2 = 0.049$; $p = 0.976$.

Results and discussion

Background characteristics of respondents

The majority of the respondents were males (99.7%), mostly between the ages of 20 and 49 (83.1%); almost half (49.1%) of them were single while 44.5% were married (Table 1). The respondents generally have lower levels of education, with about two-thirds of them (66.1%) completing middle or junior high school, and less than one percent having tertiary education. Moreover, most of them were either apprentices (50.8%) or master artisans (46.3%), with more than half of them (53.3%) being auto mechanics, having been in the business between one and 20 years (78.6%), and belonging to the Ghana Association of Garages (43.7%).

Sources of occupational injuries and illnesses

Occupational injuries and illnesses are a major health concern in developing countries (Concha-Barrientos et al.,

Table 4. Number of weeks absent from work due to injury.

No. of weeks absented from work due to injury	Occupational status (%)			Total (N = 394)
	Master artisan	Work and pay artisan	Apprentice	
Less than 1 week	31.1	46.2	33.8	33.0
1–4 weeks	40.4	30.8	43.4	41.6
More than 4 weeks	28.4	23.1	22.7	25.4
Total	100.0	100.0	100.0	100.0

$X^2 = 2.740$; $p = 0.602$.

2004; 2005), and that I sought to explore major risks among the auto-artisans in the Suame magazine in Kumasi. From Table 2, it could be observed that the most frequent illnesses and injuries experienced by the auto-artisans are those related to sharp objects, inhaling dust particles, falling objects, inhaling smoke and fumes, general burns and electrical shocks.

Effects of occupational injuries and illnesses on auto-artisans

Understanding the cost of occupational injuries and illness is fundamental to creating awareness and ensuring compliance. This section therefore examines the cost of occupational injuries and illness in the study area, by assessing work-related injuries and associated burdens on workers and their families. The section is organised under the following three main headings: Loss of productivity due to work place injuries, financial cost of workplace injuries, and social cost of workplace injuries or illnesses to families of auto-artisans.

Loss of productivity due to absence from work

Occupational injuries and illnesses have been implicated as a major source of high costs on employers, workers and society as a whole (European Commission, 2011; Safe Work Australia, 2012). Absence from work due to work-related injuries or illness in the form of sick leave or loss of current income represents one of the main factors used to measure the cost of occupational injuries and illness (Bradley et al., 2016; National Occupational Health & Safety Commission, 2004). When asked whether respondents have ever been absent from work due to workplace injuries or illness, more than four in ten (44.9%) of the respondents answered yes (Table 3), with virtually no variations between the various categories of auto-artisans (Master, work and pay, and apprentice) as a chi-square test of difference ($X^2 = 0.049$; $p = 0.976$) confirmed.

Of the 430 (44.9%) respondents who reported ever missing work due to work-related injuries or illness, the study sought to find out how long they stayed off work. From Table 4, it could be seen that although about a third (33.0%) of all respondents missed work for less than a week, it is worth noting that the proportion was higher for work-and-pay artisans (46.2%) than the other categories of auto-artisans. Meanwhile, about four in ten respondents (41.6%) missed work for a period between one week and four weeks due to work-related injuries. For a kind of occupation whose income depended heavily on the amount of work done or the number of days one reports for work, missing work for a week, or even a day, has serious implications for survival and wellbeing of artisans and their dependents (Gosselin, 2004).

Although auto-artisans missed work for some time and returned, there was the need to assess whether they were able to perform their work as they did prior to their injury. As revealed in Table 5, 11% reported that the injury or illness affected their ability to perform their normal activities upon returning to work. While the chi-square test of difference did not indicate a statistically significant difference between the three categories of auto-artisans ($X^2 = 1.899$; $p = 0.387$), a cursory look reveals that master artisans and apprentices were the most affected in terms of performance, after returning to work. As Gosselin (2004) rightly asserts, inability to perform normal work after injuries tends to affect productivity, and for a wage-based job like artisans, this has grave effects on income and wellbeing.

Pain and suffering sometimes referred to as intangible costs are another significant but unpriced cost of occupational injury and illnesses considered in estimates of the costs of occupational injuries (Brun & Lamarche, 2006). The study therefore sought to establish whether respondents who indicated that they have ever suffered workplace injuries or illnesses are still suffering pain resulting from the injuries. While only 11% of those who had had injuries reported that the injuries affected their work performance after return to work, more than a quarter (28.6%) of them indicated that they were still suffering from pain related to workplace injuries they suffered (Table 5). As Table 5 reveals, the proportions range from 23.1% among work-and-pay artisans to 30% among master artisans. It can be deduced from this finding that the loss of productivity might be higher than reported. As Michaels (2015), rightly puts it, "estimating the burden of work-related illnesses and injuries is complicated by the fact that many chronic illnesses occur many years after exposure".

Financial cost of workplace injuries and illnesses

The economic cost of occupational injuries and diseases is enormous, although estimates vary significantly across countries. For example, the ILO (2006) estimated that the cost associated with occupational injuries and illness is approximately four percent of annual global gross domestic product. The majority (86.6%) of those who reported workplace injury or illness, also indicated loss of income during the period of injury or illness. Though no statistically significant differences were observed ($X^2 = 2.014$; $p = 0.367$), the

Table 5. Effects of workplace injuries and illnesses on auto-artisans.

	Occupational status (%)				
Effects of injuries and illnesses	Master artisan	Work and pay artisan	Apprentice	Total (N = 957)	Test Statistic/ P-value
Able to perform normal activities upon returning to work					X^2=1.899; p = 0.387
Yes	87.9	100.0	89.4	89.0	
Currently suffering pain from previous work-related injuries					X^2=0.482; p = 0.786
Yes	30.0	23.1	27.6	28.6	

proportions range from 84.2% for master artisans to 92.3% for work-and-pay artisans.

The finding did not show significant differences between the auto-artisans due to the nature of the work of auto-artisans in the informal economy in Ghana, income is lost whenever a person is unable to work due to injuries or diseases. Loss of income due to absence from work resulting from workplace injuries and illnesses is therefore not related to the status of the worker, whether one is a master artisan or an apprentice. The loss of income may emanate from productivity losses associated with injuries and illnesses since the physical integrity of the worker may be compromised. According to Gosselin (2004), productivity losses due to workplace injuries may take various forms, such as those of the injured worker on the day of the accident, other workers who aid the injured worker as well as reduced productivity of the worker being absent from the labour market on the days he or she is sick or injured. For auto-artisans, this productivity loss translates directly into income losses, especially for those who are the only ones working in their shops.

Having identified the proportion of respondents who have lost any income because of being absent from work, the next step was to explore the amount of money lost, as estimated by the respondents (Table 6). It is observed that, out of the 371 respondents who have ever lost income due to work-related injuries or illnesses, almost three in ten (27.8%) lost GHS 500 or more, with significant variations between the three main categories of auto-artisans, ranging from 39.5% of master artisans to as low as 8% of work-and-pay artisans. This is generally expected as master artisans own the shops, and usually they attract the clients to the shops.

Similar significant variations could also be observed among auto-artisans who lost between GHS 300 and GHS 499, where 41.7% of work-and-pay artisans reported income loss compared to 18.6% master artisans and 16.1% of apprentices. Consequently, a chi-square test of difference (X^2=41.241; p = 0.000) revealed a statistically significant variation between the three categories of auto-artisans in terms of estimated loss of income.

This loss of income was associated with directly missing their jobs during the period of injury or illness. However, according to the Workplace Safety and Health Institute (2013), apart from income lost due to loss of productivity, there is also net loss future earnings, defined as "the difference between the expected future earnings had the incident not occurred and the worker's expected future earnings following a work-related injury or disease" (Workplace Safety & Health Institute, 2013, p. 15). For auto-artisans, being absent from work due to injuries or illness means that clients and potential clients might have to seek services from competitors, who might do a better job or provide a better customer service than you, and hence 'snatch' your clients forever. In addition, Mossink and De Greef (2002) proposed some possible psychological effects associated with some workplace injuries which might prevent workers from working at full capacity, thereby leading indirectly to loss of income.

Similarly, the cost borne by workers also includes additional costs of medical treatment and rehabilitation (Leigh et al., 2000; Workplace Safety & Health Institute, 2013). Therefore, this study sought to examine the cost of medical care resulting from workplace injuries or illnesses among the auto-artisans, and the results are presented in Table 6. It is revealed that about one in five auto-artisans spent GHS 500 or more on medical bills when they suffered workplace injuries, with master artisans reporting the highest proportion (27.3%). A chi-square test of difference (X^2=13.840; p = 0.031) revealed a statistically significant variation between the three categories of auto-artisans selected for the study in terms of estimated expenditure on medical bills. This significant variation was also observed at all categories of amount spent on medical bills. This finding may be due to the fact that master artisans suffer serious injuries because they are always engaged in the job as compared to apprentices. It might also be due to the fact that master artisans are able to pay medical bills as they earn higher income than work-and-pay artisans or apprentices.

The study examined the effect of workplace injuries and illness on the family. When respondents were asked whether the injuries and illnesses they suffered from the workplace affected their families, 40.8 percent said yes (see Table 7). The study further explored the relationship between socio-demographic characteristics and the effects of workplace injuries and diseases on the family of auto-artisans who get injured or fall sick. From Table 7, it is again revealed that there is a statistically significant difference between all the categories associated with the socio-demographic characteristics of interest (age, experience, marital status, occupational status and membership of association or labour union. For example, it was found that there were statistically significant differences between the three categories of auto-artisans (X^2=15.471; p = 0.000) with respect to occupational status; while only 7.7% of the work-and-pay artisans reported that the injuries affected their family, the

Table 6. Estimated income loss and expenditure on medical bills due to injury or illness.

	Occupational status (%)				
Estimated income loss	Master artisan	Work and pay artisan	Apprentice	Total (n = 371)	Test statistic/ p = value
Less than GHS 100	4.8	16.7	23.4	14.8	X^2=41.241;
GHS 100–299	37.1	33.3	41.7	39.4	$p = 0.000$
GHS 300–499	18.6	41.7	16.1	18.1	
GHS 500 and above	39.5	8.3	18.8	27.8	
Estimated expenditure on medical bills				Total (n = 369)	X^2=13. 840; p = 0.031
Less than GHS 100	22.4	8.3	30.2	26.0	
GHS 100–299	33.9	50.0	38.0	36.6	
GHS 300–499	16.4	33.3	16.7	17.1	
GHS 500 and above	27.3	8.3	15.1	20.3	

Table 7. Effect of workplace injury or illness on family members.

	Occupational status (%)			
Did the injury/illness affect your family	Master artisan	Work and pay artisan	Apprentice	Total (N = 957)
Yes	49.5	7.7	34.7	40.8
No	50.5	92.3	65.3	59.2
Total	100.0	100.0	100.0	100.0

X^2=15.471; p = 0.000

Table 8. Socio-demographic characteristics and the effect of injury/illness on family members

Socio-demographic characteristics	Yes	Total (N = 429)	Test statistic	P- value
Age				
Less than 20	4.6	7.2	F = 20.63	0.001
20 – 29	27.4	36.1		
30 – 39	37.1	31.9		
40 – 49	20.0	15.6		
50 – 59	9.7	6.8		
60 – 69	1.1	2.3		
Marital status				
Never married	40.6	49.7	F= 10.54	0.009
Married	54.9	45.7		
Co-habitation	4.0	4.0		
Separated	0.6	0.7		
Divorced	0.0	0.0		
Widowed	0.0	0.0		
Occupational status				
Master artisan	49.5	46.6	X^2=15.47	0.000
Work-and-pay	7.7	3.0		
Apprentice	34.7	50.4		
No. of years engaged in auto-artisanship				
1–10	40.6	47.6	F= 12.67	0.003
11–20	35.4	30.5		
21–30	13.7	14.0		
31–40	10.3	6.5		
41+	0.0	1.4		
Membership of association				
Yes	45.1	55.9	$\chi^2 = 13.99$	0.000
No	63.4	44.1		

proportion was 34.7% for apprentices and 49.5% for master artisans.

With respect to age, a Fisher Exact test result (F = 20.633; $p = 0$-001) indicated a statistically significant difference between age of respondents and the effect of workplace injury or disease suffered on their family. Table 8 further shows that respondents in the middle ages, from 20 years to 49 years claimed greater effect of workplace injuries on their families as compared to respondents aged below 20 years and those above 50 years. This finding may be due to the fact that respondents below 20 years are mainly apprentices who are not married and do not earn much income and so the injuries did not affect their families financially. Meanwhile, this finding corroborates the assertion of Norton et al. (2006, p. 737) that "young people accounted for the largest proportion of deaths from unintentional injuries in low-and middle-income countries".

Table 9. Nature of effects on family.

Nature of effects on family	Frequency	Percent
Financially	97	55.4
Emotionally	61	34.9
Time family spent to take care of me	17	9.7
Total	175	100.0

Again, while a Fisher Exact test showed a statistically significant difference (F = 10.543, p = 0.009) of how the injury or illness affected family members between respondents who were married and those who were not married", a Chi-square test (χ^2 = 13.991; p = 0.000) indicated that respondents who belong to workers' associations said the injuries and illnesses they suffered affected their families more than their counterparts who do not belong to any association. This finding confirms those of other researchers who found that workplace injuries impose significant burdens on the families of victims (Boden & Ozonoff, 2008; Dembe, 2001; European Commission, 2011; Safe Work Australia, 2012).

Having established that workplace injuries affect families, as reported by the respondents, the study sought to find out the nature of the effects. As presented in Table 9, out of the 175 respondents who indicated that the injuries affected their families, more than half of them mentioned financial burden (55.4%), followed by emotional challenges (34.9%) and time spent on taking care of victims (9.7%). As expected, and in conformity to the communal way of living among Ghanaians (Awuah-Nyamekye, 2012), injuries are likely to affect families financially, emotionally, as well as caring labour for the victim. This is particularly important in the country where there is difficulty in accessing formal health care, coupled with high healthcare expenditure, and weak health insurance scheme (Adisah-Atta, 2017; Alhassan et al., 2016; Blanchet et al., 2012). This finding is in line with that of Leigh and Marcin (2012), who posit that workplace injuries and illness can lead to loss of intimacy

between spouses or the breakdown of a family unit. Similarly, it supports the argument by Boden and Spieler (2015) that breakdown of relationships is an important social cost of workplace injury and disease. The finding of emotional challenges resulting from occupational injuries and illnesses again confirms Spieler and Burton (2012) assertion that a worker's experience of being injured at work can be devastating with profound emotional consequences.

Conclusion

Issues on occupational health and safety (OHS) are important for several reasons, from the benefit to the individual workers and their families, and to the rise in productivity and sustainability of organisations, and by extension to the development national economy. This paper has examined the cost of occupational injuries and illness among auto-artisans at Suame magazine in Kumasi, Ghana, by assessing work-related injuries and associated burdens the injuries and illnesses impose on workers and their families. I conclude that occupational injuries and illnesses among auto-artisans in the informal sector presents enormous financial and emotional costs to them and their families, and by extension reduces the productivity of the national economy. Though this study was conducted in Ghana, the findings reflect the situation of most artisans in particular, and among informal sectors in general, across most developing countries (Leigh & Marcin, 2012; Muchiri, 2003). Thus, this study has broader implications and importance for workers in the informal sector, who are not generally insured against such unforeseen circumstances.

The effects of injuries and illnesses occur in the form of loss of productivity resulting from absence from work and inability to perform optimally after the injury or illness, loss of income resulting from loss of productivity as well as medical treatment and rehabilitation costs, which indirectly affects family members financially, emotionally, as well as caring labour for the victim. These negative effects of occupational injuries and illnesses among auto artisans have been noted among other informal sector workers in developing countries (ILO, 2006; Leppink, 2015), and for wage-based employment among informal sector workers, these effects may be far more damning to themselves and their families. Therefore, it is recommended that the Ministry of Employment and Labour Relations in Ghana should lead a policy dialogue on the occupational health and safety in the informal sector of the country, while supporting auto-artisans to establish insurance schemes to support them in times of injuries and illnesses.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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