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Effects of Occupational Accidents on the Job Performance of Construction Firm Workers.

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Afia Agyemang-Beniako
Technical Operations Department, Food and Drug Authority, Kumasi Ghana.

Sabastian Samuel Kwesi
Department of Public Health Education, University of Education Winneba, Winneba Ghana.

Nicholas Kojo Njada
Department of Public Health Education, University of Education Winneba, Winneba Ghana.

Claudia Andoh Mensah
Technical Operations Department, Ghana Standards Authority, Kumasi Ghana

Abstract: Study background: Incidents of accidents at construction sites are higher in developing countries than in developed countries. The construction industry comprises several people with different backgrounds and different tasks performed by them. This study examined the effect of the occupational accidents on job performance of a construction firm.

Materials and methods: Structured questionnaires enclosing questions on demographic characteristics, general knowledge of safety and legalities, accident occurrence, safety management systems were administered to 110 workers of the construction firm. Computed data were subjected to some statistical analyses such as Chi-square and Pearson's Correlation Coefficient (r) and visualised in tables, graph and scatter plot.

Results: The results of the study revealed that males dominated with 84.5 % while females were estimatedly 15 %. Majority (40%) possessed secondary school qualification whereas 6 % had no formal education. It was revealed that, a higher knowledge of safety

legalities whereas low records of accidents were recorded among the construction workers of the firm indicating a good safety management system. The result established a weak negative correlation (r= **-0.164**) between accident and job performance (labor productivity) and a statistically not significant association between the accident occurrence and absenteeism as (**$\chi 2 = 0.4291, p > 0.512$**) and a significant association between nature of accident and absenteeism (**$\chi 2 = 6.7360, p < 0.009$**).

Conclusion and recommendation: The study concludes that a good safety management system and a positive employee attitude would reduce absenteeism, and occupational accidents and further increase labor productivity as demonstrated in the conceptual framework.

Keywords: Job performance, accident, health and safety, occupation.

1. Background Of the Study

One critical challenge, across the entire globe in the various sectors of the economy includes accidents. Occupational accidents, also known as work accidents include a sudden incident happening at work premises or as a result of uncertain external factors resulting in fatalities or injuries whilst executing a task. Similarly, an unanticipated and unplanned event that causes a certain damage or injury to an individual is termed accident (Gulhan, Ilhan and Civil, 2012).

It is worth understanding work conditions by examining the work area to locate and define hazards posed by machines, as emphasized by Hudson (2010). In some high risk category of jobs, safety inspections are designed by management with the advice of a health and safety officer (HSO) to examine, identify potential hazards alongside ensure enhance productivity and reduce probable accidents and injuiries by work tools. The construction arena was the focus of this study since it holds a relatively large workforce, continuously offer services in pretty high demand and encompasses both literate and non-literates working together, thus presents a dynamic environment worth investigating. Incidents of accidents at the construction sites are more higher in developing countries than in developed countries (Idoro, 2008). Vis–a-vis, safety at construction sited remain one of the poorest of all when compared with other manufacturing industries like the furniture and fixtures and fashion industries among others. (Mohamed, 2011). The construction industry comprises several people with different backgrounds assigned to varying tasks but working simultaneously. These workers are gathered at the site at different periods of a construction process making the construction industry more complex; hence presents some manner of difficulty while controlling resoures and human behaviour. Due to the different backgrounds and tasks carried out by the workers as compared to factories and industries, accidents are inevitable. It is well noted that the frequent changes in tasks carried out by workers in the construction industry, makes construction industry mainly dynamic (Okoye *et al.*, 2016).

An accident is said to be spontaneous and unanticipated and disrupts the normal routine of one's duties (Arachchige and Ranasinghe, 2015). For accidents to be mitigated in the construction industry, it means that proper safety measures must be put in place by management or supervisors. For safety to exist in the construction industry, leading members must show high commitment to the safety of workers (Granson, 2014). Recent times, OHS educators are of sincere view for safety to be observed and made a culture instead of as being management decision or strategy. The World Health Organization (1995) states that, while Occupational Health and Safety is not properly observed, it drastically has a toll on the work output of the worker and this may in turn affect the economic turnout by significant proportions and subsequently will affect a nation's Gross National Product. Research by Takala (2002) estimates that occupational deaths, diseases and illnesses constitute roughly a 4% loss of the Gross Domestic Product globally.

Construction workers face conditions that pose severe danger to them. OHS legislation in Ghana is not comprehensive and the reported accidents at construction sites are alarming due to poor regulations by industries (Puplampu and Quartey, 2012). Although some construction companies have safety policies in place, they are not effectively implemented to zero accidents and ill health conditions[Referene]. Our study sought to unveil construction workers' knowledge and undersanding of occupational health and associated safety practices in a low resource setting, Ghana.

Some previous studies [list references] have established the lack of understanding in construction site management on safety and health and the non-existence of site occupational and safety models are attributable factors of high accident rates in construction firms (Alhajeri, 2014). Kwesi (2024) argues that poor occupational health and safety practices increase the risk of incidence of accidents at the workplace and ultimately affect job performance therefore institutions make improved provisions for issues of health and safety. A step to widening effort on the above requires some pretty assessment on the effect of these accidents on job/employee performance. Responses from our study may fill knowledge gaps on OSH in Ghana therefore, this study sought to assess the effects of occupational injuries and accidents on job performance in a low-resource setting.

2. MATERIALS AND METHODOLOGY

The research was carried out using a descriptive cross-sectional study design to examine the impact of occupational accidents on job performance in a construction firm. The study was conducted at Annason Company Limited, a road and building construction in Kufimasi, Ghana. The study population consisted of 150 employees, including both administrative and field staff. A simple random sampling technique was used to select a sample size of 110 employees, calculated using the Yamane formula with a 5% margin of error. Anticipating a 10% non-response rate, the final sample size was adjusted to 122 employees. Primary data was collected using questionnaires while secondary data was obtained from company's documents. The questionnaire included a section to capture accident occurrences and examine the type and nature of accidents experienced by workers. A reliability test was run to evaluate level of consistence by respondent to management systems. Quantitative data was analyzed using STATA software. Correlation analysis statistical operation applied to evaluate the relationship between occupational accidents and job performance. Data and analysed results were visualized usimg tables, matrix and scatter plots.

3. RESULTS

3.1 Demographic characteristics of respondents

Table 1 shows demographic characterisitics of respondents from the study. It reveals the number of respondents age, gender, highest qualification and work experiences. Out of the 110, 93 interviewees representing 84.5% were males whereas 17 persons representing 15.5% were females as shown in table 1. Majority of the respondents for the study were within the age range of 20-29 years whereas the least age group respondent were those within 50 years and above. The rest of the respondents within the ages of 30-39 and 40-49 years were 18.2% and 17.5% respectively. The study recorded a higher number (44) of respondents with a middle form/JHS level of education (as the highest qualification) representing 40.0%. It was preceded by SHS/Ordinary level/Advanced level and Primary education representing 28 (25.5 %) and 25 (22.7 %) respectively. However, 6 persons (5.5%) of the respondents had tertiary education as their highest qualification (table 1). In regards to marital status, 66 persons (60%) reported married whereas 44 (40%) affirmed being single,. Majority of respondents involved in the survey has a temporary working status representing 86 (78.2%) whilst 24 (21.8) respondents are permanent workers. Majority of respondents has worked with the company from within 1-4years representing 88 (80%) whereas 1 person has work less than 12 months with the company. The rest of the respondents had work for 5 years and above representing 21(19.1%) (Table 1).

Table 1: Demographic characteristics of respondents

	Frequency (N=110)	Percentage (%)
Sex		
Male	93	84.5
Female	17	15.5

Age		
20-29years	61	55.5
30-39years	20	18.2
40-49years	19	17.3
50years and above	10	9.1
Educational Level		
Non Formal	7	6.4
Primary	25	22.7
JHS/Middle form	44	40.0
SHS/O'Level/A'level	28	25.5
Tertiary	6	5.5
Marital Status		
Married	66	60.0
Single	44	40.0
Status of Work		
Permanent	24	21.8
Temporal	86	78.2
Working Years		
1-4years	88	80
5years and above	21	19.1
Less than 12months	1	0.1

3.2 Accident Occurrence Survey

Table 2 presents occurrnces of accidents and causal agent. Majority of the respondents reported hadn't had an accident whilst executing a task 66 (60%) whereas 44(40%) had experience an accident in their line of duty. The major kind of accident identified in the study was cut/bruise 24(55%), falling objects 8(18%), slips (16%) and Fall 3 (7%). 2 (4%) persons did not indicate which kind of accident experienced. Almost all recoded accidents were minor injuries 36(82%) whereas 3(7%) persons had major injuries and more than half 30(68%) of the respondents reported that the accident did not affect their attendance (Table 2)

Table 2: Accident Occurrence in the construction firm

Have you ever had an accident whilst executing a task?	**Frequencies**	**Percentages**
Yes	44	40
No	66	60
What kind of accident was it?		
Cut/Bruise	3	7
Fall	8	18
Falling object	7	16
Slip	2	4
Non- response		

What was the nature of accident experienced?		
Minor	36	82
Majority	3	7
Non-response	5	11
Did the accident affect your attendance to work?		
Yes	13	30
NO	30	68
Non-response	1	2

3.3 Knowledge on Health and Safety Practices

Figure 1 presents respondents knowledge in health ans safety practices. Majority of respondent 87 (79.1%) had knowledge on practices of safety. Almost all 109 (99.1%) of the respondents admitted to the frequent visitations by the regulatory labour inspectors and fully aware of the company's policies on safety and information on safety signs. Knowledge on health hazards and the use of personal protective equipment are known by all respondents 110 (100%) (Figure 1.)

Fig. 1. Respondents Knowledge on Health and Safety Practices

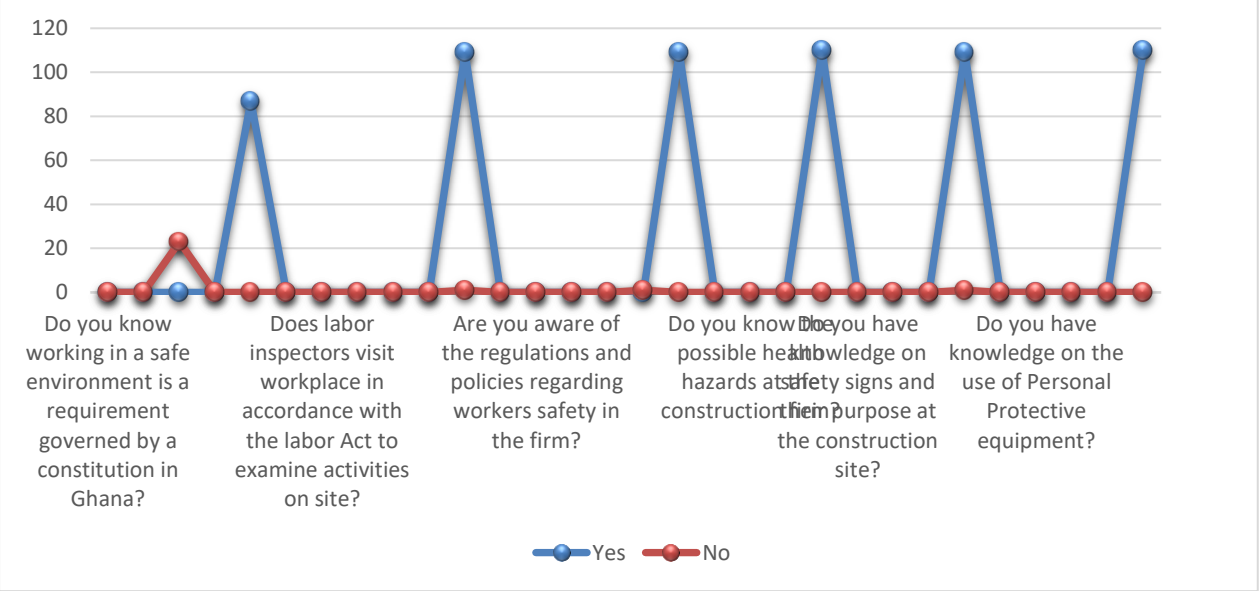


Fig. 1. Source; Primary data collected by researcher.

3.4 Safety Management Systems

Table 3 presents a summary of respondents assessment of safety management systems. The majority of respondents 103 (94%) agreed that the organization possesses a good monitoring, inspection and evaluation scheme whereas 55 (50%) strongly agreed that there are active and efficient safety reps. 59 (54%) respondents agreed that suggestions about safety are acted upon by management whilst few persons 6 (5%) weren't sure about the outcome of their suggestions. A reliability test was run on responses where the Cronbach alpha is 0.763 which is close to 1 and indicates high level of consistence.

Table 3: Respondents assessment of safety management systems

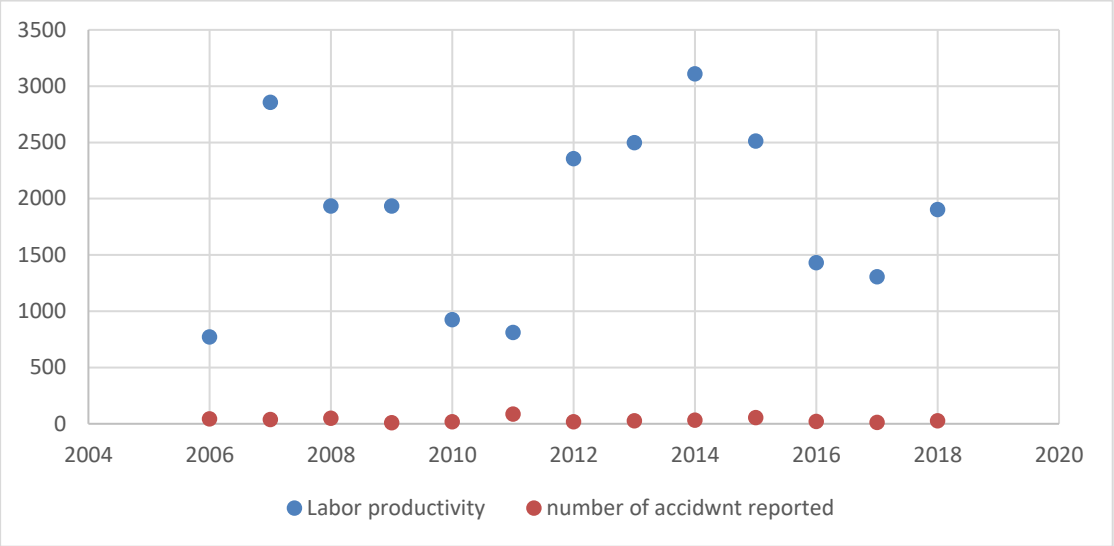
Item	Strongly Agree n (%)	Agree n (%)	Neutral n (%)	Disagree n (%)	Average score
Good monitoring, inspection and evaluation scheme	5(4%)	103(94)	2(2)	_	2.0
Daily monitoring and inspection	49(44)	60(55)	1(1)	_	1.6
Organization policies and guidelines on workers safety	36(32.7)	74(67.3)	_	_	1.7
Active and effective health and safety committee and rep	55(50)	54(49.1)	1(0.9)	_	1.5
Suggestions about safety acted upon by management	45(41)	59(54)	6(5)	_	1.6
Systems are in place to identify, prevent and deal with hazards	49(44)	60(55)	1(1)	_	1.5

Cronbach Alpha = 0.763

3.5 Effect of Occupation Accident on Job Performance

Figure 2 shows a scatter plot of accidents and labour productivity. It illustrates accidents recorded from 2006 to 2018. 2011 was observed as the year that recorded the highest number of accidents (87) whiles 2009 recorded the least (10), as shown in figure 2. Labor productivity of workers in the same duration was obtained from the safety manager as a secondary data for the study. The Pearson correlation (r) was used to estimate the impact of accident on labor productivity with a scatter diagram adopted to reveal the relationship between the two variables. The Pearson coefficient (r) shows a negative correlation (r = -0.164) between accident and labor productivity.

Fig. 2: Accident records from 2006 to 2020 and labor productivity.



Source: safety manager's record

4. DISCUSSION

This section discusses the implications of the data collected, what they suggest, infers to similar studies or existing literature that aligns with the observation or otherwise and the potential policy implications in the local setting. The study reinforces the long-standing concerns about the gender imbalance within the construction industry, with men significantly outnumbering women (84.5% and 15.2% respectively) (Table 1) (Widaningsih,l et al., 2018). This aligns with Kakad (2002) who argued that gender stereotyping and the division of labor remain entrenched issues. Despite growing female participation globally, construction continues to be perceived as physically demanding and male-dominated, thereby discouraging broader inclusion. The demographic analysis also challenges international trends regarding youth participation in construction. Contrary to concerns raised by the United States Employment and Training Administration (ETA) about youth lacking the skills for construction, the Ghanaian context showed high engagement among younger age groups (20–29 years), suggesting that younger workers in Ghana may be more prepared or more willing to enter the construction workforce. Education levels were also encouraging, with only a small fraction (6.4%) lacking formal education. This suggests that the workforce is well-positioned to understand and adhere to health and safety guidelines, supporting the assertion by Gyekye and Salminen (2009) that education significantly influences safety behavior and compliance. Temporary employment was dominant (Table 1) among the respondents, which corroborates with Forde et al. (2008) who noted that temporary labor in construction is often used to meet short-term demands. This reality has been acknowledged by the Occupational Safety and Health Administration (OSHA), which launched the Temporary Worker Initiative in 2013. Despite job instability, most workers had stayed with the firm between 1–4 years, possibly reflecting a preference for continuity or limited labor mobility. The construction sector is inherently hazardous, a fact supported by numerous studies (Fung et al., 2009, Widaningsih,l et al., 2018). In this study, however, 60% of respondents reported not having experienced a work-related accident, which may indicate the effectiveness of company-specific safety measures and accident investigations (Hinze & Wilson, 2000). The majority of recorded incidents were minor, involving bruises or cuts. These findings are consistent with trends observed in Singapore where falls, slips, and being caught between objects are common causes of workplace injuries (Al-Humaidi & Tan, 2010; Dumrak et al., 2013). Interestingly, although injury is typically associated with absenteeism in the literature (Bhosale & Biswas, 2015), this study did not find a significant relationship between accidents and worker absenteeism overall. However, when the nature of the injury (minor vs. major) was considered, a statistically significant relationship with absenteeism emerged ($\chi^2 = 6.736$, $p < 0.009$), supporting Jorgensen's

(2013) conclusion that injury severity, rather than occurrence alone, is more predictive of absenteeism.

Respondents demonstrated a high level of knowledge regarding occupational health legalities (79.1%) and safety protocols such as hazard identification, personal protective equipments (PPEs) usage, and site signage. These results relates with the work of Bust et al. (2014) and Sunindijo and Zou (2014), who emphasize that knowledge and training are critical for improving health and safety outcomes. Furthermore, this high level of awareness could be attributed to the relatively high literacy levels among workers, echoing findings by Pulisa and Mogotlane (2018) that literacy is a determinant of occupational legislation knowledge. Safety management systems were also perceived positively by the respondents. Most agreed (figure 1) that the firm had robust systems for monitoring, evaluation and hazard prevention. However, Gallagher et al. (2003) cautions that safety management systems do not always yield consistent results, a view that invites further study of context-specific implementation. Respondents also exhibited a generally positive safety attitude. Most understood the importance of reporting hazards and adhering to safety rules, with 54.1% affirming that they would not compromise their safety for productivity. This aligns with the assertions of Neal and Griffin (2004) and Smith and Wadsworth (2009), who posit that a positive safety attitude significantly enhances workplace safety performance. The findings are further supported by Runmado (2000), who suggests that organizations with strong safety cultures tend to achieve higher productivity and fewer accidents.

Finally, the relationship between accidents and job performance was explored through Pearson correlation analysis, which revealed a weak and statistically insignificant correlation ($r = -0.164$, $p > 0.05$) This contradicts general expectations but is consistent with Dwomoh, Owusu, and Addo (2013), who argued that factors such as worker fitness and resilience may mediate performance more than accident history.

5. CONCLUSION & RECOMMENDATIONS

Our study investigated the effects of occupational health on job accidents in a construction firm using [a structured] questionnaire to 110 workers in a low resource setting. From the data collected, analyzed and discussed, the study reveals that while traditional challenges such as gender disparity and job temporariness persist in the Ghanaian construction industry, there is strong evidence of improving safety knowledge, awareness, and positive attitudes among workers. Although the direct impact of accidents on productivity appears minimal, the nature of injuries does influence absenteeism. This underscores the importance of continuous safety education, strong regulatory oversight, and employee engagement to sustain improvements in occupational health and safety performance. There is however the need for safety management systems to be implemented at the work place. Further studies should be carried out, considering several variables affecting job performance as well as the influence on the occupational health and safety practices.

Declarations:

Consent to participate

All authors have read and has given their consent to participate

Data availability

All data and materials used for this study are included in the submitted manuscript and are available from the corresponding author upon request.

Ethical clearance

Ethical approval was obtained from the Committee on Human Research Publication and Ethics (CHRPE/AP/542/19) at the College of Health, KNUST. Participation of the study was voluntary and all participants gave consent.

Competing interests

The authors declare no competing interests

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Clinical trial

Not Applicable

Authors contributions

A.A.B. Conceptualisation, Manuscript drafting, Data analysis, S.S.K. Data analysis, writing of manuscript, C.A.M. Data analysis, Editing.

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