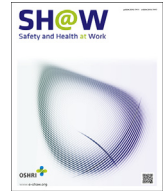




Contents lists available at ScienceDirect

## Safety and Health at Work

journal homepage: [www.e-shaw.org](http://www.e-shaw.org)

## Original Article

## Occupational Health and Safety Management and Turnover Intention in the Ghanaian Mining Sector

Kwesi Amponsah-Tawiah<sup>1,\*</sup>, Michael Akomeah Ofori Ntow<sup>2</sup>, Justice Mensah<sup>1</sup><sup>1</sup> Department of Organizational and Human Resource Management, University of Ghana Business School, Legon-Accra, Ghana, Africa<sup>2</sup> Department of Human Resource Management, Central Business School, Tema, Ghana, Africa

## ARTICLE INFO

## Article history:

Received 2 February 2015

Received in revised form

6 August 2015

Accepted 11 August 2015

Available online 28 August 2015

## Keywords:

mining

safety facilities

safety leadership

safety supervision and safety procedure

turnover intention

## ABSTRACT

**Background:** The mining industry is considered as one of the most dangerous and hazardous industries and the need for effective and efficient occupational health and safety management is critical to safeguard workers and the industry. Despite the dangers and hazards present in the mining industry, only few studies have focused on how occupational health and safety and turnover intentions in the mines. **Method:** The study using a cross-sectional survey design collected quantitative data from the 255 mine workers that were conveniently sampled from the Ghanaian mining industry. The data collection tools were standardized questionnaires that measured occupational health and safety management and turnover intentions. These scales were also pretested before their usage in actual data collection.

**Results:** The correlation coefficient showed that a negative relationship existed between dimensions of occupational health and safety management and turnover intention; safety leadership ( $r = -0.33$ ,  $p < 0.01$ ); supervision ( $r = -0.26$ ,  $p < 0.01$ ); safety facilities and equipment ( $r = -0.32$ ,  $p < 0.01$ ); safety procedure ( $r = -0.27$ ,  $p < 0.01$ ). Among these dimensions, safety leadership and safety facility were significant predictors of turnover intention, ( $\beta = -0.28$ ,  $p < 0.01$ ) and ( $\beta = -0.24$ ,  $p < 0.01$ ) respectively. The study also found that turnover intention of employees is heavily influenced by the commitment of safety leadership in ensuring the effective formulation of policies and supervision of occupational health and safety at the workplace.

**Conclusion:** The present study demonstrates that safety leadership is crucial in the administration of occupational health and safety and reducing turnover intention in organizations.

Copyright © 2015, Occupational Safety and Health Research Institute. Published by Elsevier. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

## 1. Introduction

Workers like any human in developing countries assume their organizations will take all the necessary measures to ensure that they return home safely at the end of the work day, yet work-related injuries and deaths continue to occur at an alarming rate. There are more than 250 million work-related accidents every year [1]. Workplace hazards and exposure cause over 160 million workers to fall ill annually, while it has been estimated that more than 1.2 million workers die as a result of occupational accidents and diseases [ILO Annual report, 2011]. The United States recorded a preliminary of 4,405 fatal work injuries [Bureau of Labor Statistics, 2013] compared with 4,628 reported work injuries in 2012, resulting in an estimated 80 million production days lost for that year and

almost 60 million days in future years. This is an indication of the man commitment to work and the spate of accidents, injuries, and deaths at the workplace. Occupational health and safety management is one of the most important aspects of human concern. It aims at an adaptation of the working environment to workers for the promotion and maintenance of the highest degree of physical, mental, and social well-being of workers in all occupations [2].

Due to globalized economic trends, the subject of safety in the workplace has taken on such importance that international conventions have been instituted by the international organization for standardization to help regulate and bring about improved workplace conditions and services [3]. The subject of safety and health in the workplace covers a wide spectrum of issues like safety of employees and employers, retaining and employing the best

\* Corresponding author. Department of Organizational and Human Resource Management, University of Ghana Business School, Legon-Accra, P.O. Box LG 78, Ghana, Africa. E-mail address: [kamponsah-tawiah@ug.edu.gh](mailto:kamponsah-tawiah@ug.edu.gh) (K. Amponsah-Tawiah).

employees, and turnover of the workforce. The desire to provide a safe, productive work environment while reducing liability and the hidden bottom line losses of downtime is driving facility managers and building owners to establish comprehensive safety and health management programs [4]. Having such a program at the facility ensures a safe environment where accidents and illnesses are minimized, and where such incidents are handled properly [4]. Safety in the workplace is such a complex issue; hence managing the safety function can be a challenging process. This complexity is rooted in the fact that safety is a condition of employment and is, therefore, subject to the full spectrum of employment laws, including workers compensation law [5].

Work-related injury and disease present a serious and costly burden to all countries and a major challenge to managers, unions, governments and most especially workers themselves. Steenkamp and Van Schoor [6] rightfully mention that occupational health and safety is a complex international problem for management and society, and that it must always be a top priority. Small mistakes can have a major effect and disasters do not have borders or nationalities, which is why nations should unite and promote occupational health and safety vigorously to reach the common goal of quick warning, prevention, and protection systems for all [7]. The need to provide a safe and healthy work environment for employees has long been the responsibility of management and the company as a whole. Health and Safety measures, which protect employees from hazards in the work place, can conflict with managements' objective of containing production cost [8]. Employees must work in a sound and protected environment so that they can contribute their best to the achievement of organizational goals. Hence, it is most vital to uphold health and safety at the workplace since it develops a considerable impact on the repute of a company. It is in the interest of workers and their representative to earn a living, and also to reach old age in healthy conditions World Health Organization (WHO), 2007. These interests are not contradictory but complementary to the organization's interest. Making working conditions healthy and safe is in the interest of workers, employers, and governments, as well as the public at large. Although it seems simple and obvious, this idea has not yet gained meaningful universal recognition. Hundreds of millions of people throughout the world are employed today in conditions that breed ill health and/or are unsafe.

In Africa, Ghana specifically, employees pose a complete new set of challenges, especially in the mining sector where there is a high labor turnover and frequent accident manifestation. It has become more difficult to retain employees, as the pools of talents are tapped-out. There are new risks in the developing countries in parallel with the enlargement of the industrial or mining sector [9]. The most prominent of these risks leading to occupational illnesses are especially muscular and skeleton diseases [10]. The existence of the risks threatening employees' health in the offices leads to occupational accidents and diseases. In other words, the occupational accidents in the business cause a considerable cost of time and money because it creates job losses. Millions of workers either die, get injured, or fall ill every year as a result of workplace hazards. The suffering in terms of human life is enormous, while the economic cost of the failure to ensure occupational health and safety is so great that it may undermine national aspirations for sustainable economic and social development. Higher salaries and compensation benefits may seem the most likely way to attract employees. However, quality of the physical workplace environment may also have a strong influence on a company's ability to recruit and retain talented people. Safety and health factors in the work place affect employees' desire to remain with an organization [Leblebici, 2012]. Leblebici [X] further asserts that adverse and unsafe working conditions have been shown to affect employees' intentions to stay with the organization or quit. Turnover in the

mining industry is increasing, as employees in the sector keep recycling themselves from one company to the other. Hazards associated with the industry are well documented and hence the sector is christened "hazardous sector". Could the perceived inadequate occupational health and safety management practices among mine workers be the cause of the constant movement of mine workers – musical chairs in the sector? This makes the issue of employees leaving become a headache to employers who are striving to gain competitive advantage. To what extent should organizations suffer the problem with employees leaving for different organizations when they are not satisfied with what they do? This research focuses primarily on examining the relationship between the dimensions of occupational health and safety management systems and turnover intention in the mining sector of Ghana. This study therefore tested the following hypotheses:

- Safety leadership or managers role as a dimension of occupational health and safety management will significantly predict turnover intention.
- Supervisory dimension of occupational health and safety management will significantly predict turnover intention.
- Safety facilities or equipment as a dimension of occupational health and safety will significantly predict turnover intention of mine workers.
- Procedural dimension of occupational health and safety will significantly predict turnover intention.

## 2. Material and methods

### 2.1. Research design

The cross-sectional survey design was the design for this study. The cross-sectional nonexperimental design was used because data was collected from participants of different backgrounds by recording vital data from selected participants at a time. This design was adopted because it could lead the researchers to obtain thorough information on the topic under study and to draw meaningful conclusions from the data obtained.

### 2.2. Sample and sampling technique

The study used a convenient sampling technique to select the organizations for the study. Thus, the study collected information from organizations that were readily available and willing to participate in this study. The purposive sampling technique was then used to select operational mine workers out of the various classification of mine workers as respondents for the study. The purposive sampling technique was adopted because the study sought to collect data from a specific group of people with needed and relevant knowledge.

Participants in this study were 255 employees of three major mining companies in Ghana. These participants represented cumulatively 72.9% of the total population in these mining companies. According to the survey conducted, the majority of the respondents representing 84.3% were men, with 15.7% representing the women respondents. Response rates from each of the three mines sampled are shown in Table 1 below. This confirms the notion that the mining industry of Ghana is characterized as or is a male dominated industry as a result of the risk and hazardous nature of the work.

### 2.3. Instrumentation

The main research instrument used for the data collection was a structured questionnaire. The questionnaire had 39 structured

**Table 1**  
Distribution and response rate

Name of organization	Distributed questionnaires	Analyzed questionnaires	Response rate in percentage (%)
AngloGold Ghana Limited	150	121	80.7
Chirano Gold Mines	100	73	73
Ghana Manganese Company	100	61	61
Total	350	255	72.9

questions designed to measure and assess occupational health and safety management and turnover intention.

#### 2.4. Occupational health and safety management

Lapidus and Waite's [X] 28-item occupational health and safety management scale was used to measure the dimensions of occupational health and safety management perceptions. The scale had four dimensions that are empirically distinct from each other and measures safety leadership, facilities or equipment, supervision, and procedure with the safety management program. Responses are on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Higher scores indicate higher perception of the level of occupational health and safety management at the workplace, while lower scores indicate a perception of less safe work environment.

#### 2.5. Turnover intention

A 6-item turnover intentions scale was used to measure respondents' plans to leave or remain in their organization [11]. Respondents rated six statements on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Higher scores indicated a potentially high intention to turnover, while lower scores suggested a low likelihood of intended employee turnover.

#### 2.6. Instrument reliability

After the adopting of both the occupational health and safety management scale by Lapidus and Wait [X] and the turnover intention scale by Farrell and Rusbult [11], a pilot study was first conducted to check the reliability of the scales. The sample for the pilot study consisted of 30 employees of the Ghana Chamber of Mines. The Cronbach alpha for the reliabilities for the dimensions of occupational health and safety management were: (1) safety leadership 0.729; (2) supervision 0.586; (3) facility 0.786; and (4) procedure 0.833. The overall Cronbach alpha reliability of the occupational health and safety management scale in this study was 0.96, consistent with that found in previous research [Lapidus and Waite, 2001].

The turnover intention scale recorded a Cronbach alpha of 0.689. These Cronbach alpha's are acceptable as recommended by Lance et al [X]. Participants for this study were recruited with permission from management of assessed sampled organizations. Selected participants had to voluntarily consent to participating in the study after which standardized questionnaires were administered to them. All ethical consideration regarding the American Psychological Association's code of ethics were dully adhered to at every stage of this study.

**Table 2**  
Confirmatory factor analysis for occupation health and safety scale ( $N = 225$ )

Model	$\chi^2$	Df	RMSEA	NNFI	CFI	GFI	SRMR
Four-factor model	124.05*	71	0.068	0.91	0.93	0.90	0.066
Three-factor model	181.56*	74	0.094	0.84	0.87	0.86	0.073
Two-factor model	251.21*	77	0.12	0.79	0.82	0.82	0.084
One-factor model	332.77*	79	0.14	0.69	0.73	0.77	0.099

\* Significant at  $p < 0.001$ .

CFI, comparative fit index; Df, Degrees of freedom; GFI, goodness-of-fit index; NNFI, non-normed fit index; RMSEA, root mean square error or approximation; SRMR, standardized root means square residual.

### 3. Instrument dimensionality

In other to test for the fitness of the model, confirmatory factor analysis was conducted on the dimensions of occupational health and safety (safety leadership, facility-equipment, supervision, and procedure). LISREL was used to test and report the fitness of the model. As indicated by Hu and Bentler [X], the fitness of the confirmatory factor analysis model is evaluated based on the Chi-square ( $\chi^2$ ) goodness-of-fit test and four other fit indices. Although Hu and Bentler's [X] recommendations are a good starting point to conclude that a model fits well when the data falls within the defined parameters: root mean square error of approximation  $\leq 0.07$ , standardized root mean square residual  $\leq 0.07$ , non-normed fit index  $\geq 0.92$ , and comparative fit index  $\geq 0.95$  [Marsh, Hau & Wen 2004]. Table 2 depicts the fit statistics of the model specifications. Among the models postulated, only the four-factor model was within the threshold recommended or suggested by Hu and Beltler [X]. As depicted in Table 2, the four-factor model statistics were reported as root mean square error of approximation = 0.068, non-normed fit index = 0.91, comparative fit index = 0.93, goodness-of-fit index = 0.90, and standardized root mean square residual = 0.066, making the four-factor model appropriate in running analysis.

### 4. Results

#### 4.1. Preliminary analysis

All variables under consideration were correlated using the Pearson  $r$  test to ascertain the relationship among variables. The results from this analysis are displayed in Table 3.

#### 4.2. Assumption and test for multicollinearity

To test for collinearity, the variance inflation factor (VIF) of the various variables were analyzed (as presented in Table 4 below). Although a rule of thumb suggests that correlations exceeding 0.8 may violate the assumption of no multicollinearity [12], we analyzed the VIF for each of the regression coefficients to formally

**Table 3**  
Correlation among study variables ( $N = 255$ )

Variable	1	2	3	4	5
1. Safety leadership	1.00				
2. Facilities	0.48	1.00			
3. Supervision	0.54	0.65	1.00		
4. Procedure	0.71	0.67	0.70	1.00	
5. Turnover intention	-0.33*	-0.32*	-0.26*	-0.27*	1.00

\* $p < 0.001$  (two-tailed).

**Table 4**  
Test for multicollinearity

Variable	VIF	1/VIF
Procedure	3.25	0.307988
Supervision	2.21	0.452116
Safety Leadership	2.06	0.486401
Facility	2.05	0.487361
Mean VIF	2.39	

VIF, variance inflation factor.

assess this assumption (Table 4). The VIF recorded for the variables were Procedure 3.25, Supervision 2.21, Safety Leadership 2.06, and Facility recording the lowest with 2.05. Cumulatively, the mean VIF of the variables recorded 2.39. These VIFs reported were lower than the threshold for collinearity.

#### 4.3. Control variables

Demographic variables (gender and marital status) which are potential predictors of turnover intention were controlled [Chang, Wang & Huang, 2013, Lu, Chang & Wu, 2007, Moynihan & Landuyt, 2008]. Both Marital status and Gender were dichotomous variables, that is (0 = married, 1 = unmarried) (0 = male, 1 = female) respectively.

## 5. Discussion of research hypotheses

The research hypotheses addressed in this study relates to occupational health and safety management and turnover intention of employees within the Ghanaian mining industry.

#### Hypothesis 1:

Safety leadership or managers role as a dimension of occupational health and safety management will significantly predict turnover intention.

This hypothesis sought to establish the relationship between safety leadership and employee turnover intention. To test the hypothesis, Pearson product moment correlation coefficient and hierarchical regression analyses were conducted. The correlation coefficient proved that a negative relationship exist between safety leadership and turnover intention ( $r = -0.33, p < 0.01$ ) as indicated in Table 2. Hierarchical multiple regression analysis was further conducted to test the predictive ability of safety leadership on the dependent variable. After controlling for age, gender, and marital status, the result of the analysis showed that safety leadership was a significant predictor of turnover intention in the mining sector ( $\beta = -0.28, p < 0.01$ ) as represented in Table 5. As a result, hypothesis 1 which stated that safety leadership will significantly predict turnover intention of employees was confirmed.

**Table 5**  
Results of hierarchical regression analyses for variables predicting turnover intention

	B	Std. error	B	Sig	R	R <sup>2</sup>	$\Delta R^2$
Step 1					0.037	0.001	
Gender	-0.09	0.531	-0.011	0.711			
Marital Status	0.239	0.406	0.038	0.866			
Step 2					0.384	0.147	0.146
Safety leadership	-0.134	0.4	-0.28*	0.001			
Supervision	-0.114	0.231	-0.043	0.609			
Procedure	0.8	0.071	0.119	0.262			
Facility/equipment	-0.56	0.2	-0.238*	0.005			

\* Significant at  $p < 0.01$ .

Sig, Significant; Std. error, standard error.

#### Hypothesis 2:

Supervisory dimension of occupational health and safety management will significantly predict turnover intention.

The second hypothesis was formulated to establish the relationship between supervision and employee turnover intention. To test this hypothesis, Pearson product moment correlation coefficient, and hierarchical regression were employed. The correlation coefficient shows a negative significant relationship between supervision as a dimension of occupational health and safety management and turnover intention ( $r = -0.26, p < 0.1$ ) as indicated in Table 2. Further, hierarchical multiple regression was used to test the predictive ability of supervision on turnover intention after controlling for gender and marital status. The results of the analysis indicated that safety supervision was not a significant predictor of employee turnover intention in the mining sector ( $\beta = -0.043, p > 0.05$ ) as shown in Table 5. Thus, the findings could not lend support to the second hypothesis.

#### Hypothesis 3:

Safety facilities or equipment as a dimension of occupational health and safety will significantly predict turnover intention of mine workers.

This hypothesis sought to establish the relationship between safety facilities and turnover intention. To test this hypothesis, Pearson product moment correlation and hierarchical regression analyses were utilized. The correlation coefficient showed that a negative relationship exist between safety facilities or equipment and turnover intention ( $r = -0.32, p < 0.01$ ) represented in Table 2. Hierarchical multiple regression was further conducted to test the predictive ability of safety equipment or facilities on turnover intention. After controlling for age, gender, and marital status, the results of the regression analysis revealed that safety equipment was a significant determinant of employee turnover intention ( $\beta = -0.238, p < 0.01$ ) as indicated in Table 5. It can therefore be concluded that the findings support the hypothesis.

#### Hypothesis 4:

Procedural dimension of occupational health and safety will significantly predict turnover intention.

This hypothesis sought to establish the relationship between safety procedure and turnover intentions. In order to retain or reject this hypothesis, the researcher tested the hypothesis using the Pearson's correlation and hierarchical regression analyses. The correlation coefficient demonstrated a negative significant relationship between safety procedure as a dimension of occupational health and safety management, and turnover intention ( $r = -0.27, p < 0.01$ ) as shown Table 2. Hierarchical regression analysis was further conducted to test the effect of safety procedure on employee turnover intention. After controlling for age, gender, and marital status, the results of the analysis showed that safety procedure was a significant determinant of employee turnover intention in the mining sector ( $\beta = 0.112, p > 0.01$ ) represented in Table 3. Thus, hypothesis 4 was not supported.

In all, the independent variables explain an additional 14.6% of the variation in turnover intention (dependent variable) as indicated by the  $R^2$  value as represented in Tables 1–4.

## 6. Discussion

### 6.1. Relationship between safety leadership and turnover intention

There is a significantly negative relationship between safety leadership and turnover intention. In other words, safety leadership will predict turnover intention of employees at the workplace.

In Hypothesis 1, it is confirmed that there is a negative relationship between safety leadership and employees turnover intention, as shown in Table 3. From the hierarchical regression analysis, it was also found that safety leadership is statistically significant to predict turnover intention of workers. Thus, safety leadership will lead to the reduction of turnover intention of employees, where as poor safety leadership will lead to an increase in turnover intention. The findings are in accordance with Amponsah-Tawiah et al [13], who found that when safety leadership and coworkers articulate and enact the importance of working safely, they reinforce safe practices and teach employees the value of working safely through vicarious learning. Such practices also provide workers with social cues which they use to understand expectations about their behavior. These cues are particularly important in circumstances where there is a conflict in priorities between production and safety which eventually reduces employee turnover intention. Zohar [14] also found that the position of safety leadership in the administration of safety environment prevents accidents, ensures employees leadership commitment to employee's safety, and directly affects turnover intent of employees. Interpersonal and managerial support for safety is an important factor to consider as it is associated with lower levels of negative safety outcomes such as workplace injuries [Turner et al., 2010]. In this sense, management attitudes and behavior towards safety permeates down through the organization to the workforce. Cohen et al [15] and Smith et al [X] examined 42 matched pairs of companies. Those with lower accident rates were characterized by: (1) the presence of safety officers with high rank; (2) the presence of upper managers who were personally involved in safety activities; (3) training for new employees, with frequent retraining for existing employees; and (4) more pervasive lines of informal communication between higher management and workers, e.g., daily communication between supervisors and their teams.

Under positive group safety climate conditions, employee safety compliance behavior improves as supervisor's leadership practices increase; under nonpositive group safety compliance conditions there is no improvement in safety compliance with improvements in supervisor's leadership practices. The results provide further support to the growing literature on the value of strong group safety climates for improving safety compliance behavior, as well as the value in improving the leadership is the first step in ensuring workers safety and commitment in the organization. According to Barling et al [16], the probability that an employee will leave or stay in the organization will depend on the safety culture and safety leadership of the organization.

### 6.2. Relationship between safety supervision and turnover intention

Hypothesis 2 was formulated to test for the correlation and to determine whether or not safety supervision will predict employee turnover intention. Though a negative correlation was found to exist between supervision and employee turnover, using hierarchical regression revealed that supervision is not statistically a predictor of employee turnover intention. The finding disagree with the work of Lapidus and Waite [X] who found that safety supervision at the workplace and consistent checks on employees is the epitome in reducing accidents which will boost employees confidence in the organization. Gyekye [9], in comparing the relevance of safety supervision between Ghana and Finland, concluded that in Ghana workers pay more attention to the equipment and safety assurance than supervision, and do not appreciate the relevance of safety supervision at the workplace. O'Dea [17] also found that supervision is a predictor of worker propensity to take safety initiatives, and comply with rules. Supervisors have been shown to have other important influences regarding safety climate. From

three Spanish samples of 'high risk organizations', Tomas et al [18] found that supervisors played an important role in accident prevention process by transferring the elements of safety climate to members of the workforce. Evidence for this came from support for a tested model in which the causal chain ran from 'safety climate' to 'supervisor response' to 'coworker response' to 'worker attitude', and then to 'safety behavior', 'risk' and 'accidents'. Brown et al [19] report that supervision can have a negative impact on safety climate by applying too much pressure on workers, a conclusion based on a study in the US steel industry. The finding from this research is inconsistent with the works of Tomas et al [18] and Brown et al [19]. They based their assumption on the Pearson Product Moment correlation coefficient analysis which tested that there is a negative relationship between employees commitment to the organization, turnover intention and safety at the workplace without using the hierarchical regression analysis to test the predictive strength of the variables. It was also realized in their methodology that their test for supervision is more of the safety leadership approach in making safety leadership a proactive approach in handling safety issues at the workplace.

### 6.3. Relationship between safety procedure and turnover intention

In determining whether or not safety procedure is key in the prevention of accident and turnover intention, a negative correlation was found to exist between safety procedure and employee turnover intention. However, safety procedure is not a significant predictor of turnover intention. This finding is also in accordance with the work of Dejoy [20] who stated that the presence of safety procedures is not enough to prevent accidents and determine employee's commitment to the organization. The work of Cox and Flin [21] who explained that the existence of procedure, even with the absence of safety leaders, will not reduce accidents at the workplace. He further stated that workers have the skills and will control the occurrence of accidents without the need of supervisors, rules, and guidelines. These authors further argued that knowing the cost and danger of the accident or risk will better prevent the employee from danger.

Zohar and Luria [22] found that workers' perception of their organization's safety climate was the policy and procedural actions of top management and the supervisory actions exhibited. This contributed to the reduction of frequent accidents and fatal experiences. Pule [23] posits that frequent accident experience by employees affects employees psychology as a result of the intense physical demands of the work and lack of proper procedures on safety precautions; this was, however, not in accordance with the current findings.

### 6.4. Relationship between facilities and turnover intention

Hypothesis 3 was also formulated to determine the statistical significance of facility or equipment used by employees in predicting turnover intention of mine workers. After using the Pearson Product moment correlation coefficient, analysis revealed a negative correlation between facility and turnover intention. Also, the hierarchical regression analysis found that facility or equipment is a predictor of turnover intention. It can therefore be reported that, employees' perception on the safety, effective, and efficient nature of the facility or the equipment they are working can contribute to turnover intent after considering the effect or accidents that are likely to occur. The finding is confirmed in a study by Aidoo and Eshun [24] who found that some of the major injuries and accidents at the workplace results from faulty machinery, equipment, or facilities. And this has a significant effect on the life and tenure of employees in the mining sector. In the mining industries, the

effectiveness and efficiency of facilities, equipment, and machines contribute to the reduction of accidents and injuries at the workplace [25, Pupulampu & Quartey, 2012]. It is consistent with the study by Lapidus and Waite [X] who found that most accidents at the workplace and the mines are as a result of poor equipment and facility inspection, which eventually leads to turnover intention of employees. They further stated that employee perception on the safety of the equipment will subsequently affect the turnover intention of the worker with the fear of getting injured or death from accident.

Most accidents, injuries, and deaths at the workplace are as a result of cumulative exposure to risk, frequent misses, and equipment failure. Most often, the cost in replacing faulty machines, facilities, and equipment becomes a burden to management. Mining equipment is considered to have a negative effect on the safety experience of employees in terms of near misses. To be efficient in production and meeting mineral quotas, heavy machinery is a necessity within the modern mining sector. If not 'fit for purpose' these machines have the potential to pose a direct threat to mine workers. Within all mines types, accidents relating to the haulage system used constitutes the second greatest hazard [Dhillon 1998, 3, Sutherland, 2011].

This study provides some noteworthy implications for organizations and stakeholders on issues of occupational health and safety and turnover intention.

First and foremost, all the dimensions of occupational health and safety related negatively with turnover intention but only two, specifically safety leadership and facility or equipment, predicted turnover intention of workers. This means that supervision and procedure could not predict turnover intention of employees. Poor safety leadership in the practice of occupational health and safety will increase worker turnover intention. Specifically, procedure and supervision of occupational health and safety is a key function of the safety leader, whose task is to execute and to ensure the effectiveness of occupational health and safety in order to ensure that the turnover intention of employees is reduced. On an interpersonal level, leaders should engage in behaviors that promote organizational safety, as well as be aware of possible generational differences and adapt their management style, rewards and recognition, and development assignments to the individual in order to engender the best work and greatest contribution.

Secondly, accidents, injuries, and death as a result of poor facility or equipment will increase the rate at which employees would want to leave the organization. This will also affect productivity, reputation, and retention of employees in the organization.

Understanding occupational health and safety management and turnover intent is important because when employees choose to leave, there are multiple direct and indirect costs and other consequences on organizational efficiency. Greater comprehension of turnover intent can allow for targeted intervention.

Though occupational health and safety is a predictor of turnover intention, not all the dimensions are able to predict turnover intention. As much as safety leadership predicts turnover intentions, components of safety leadership (procedure and supervision) did not necessarily predict turnover intention but, however, showed a negative relationship with turnover intention on the zero order correlation. This implies that the actual commitment to safety

is not in the level of supervision or rules and regulations formulated but rather in the provision of safe and sound equipment as well as leadership by example. It is also important to note that occupational health and safety does not only affect the worker and the organization, but also friends, dependents, families, and the nation as well.

### Conflicts of interest

All authors have no conflicts of interest to declare.

### References

- [1] Zacharatos A, Barling J, Iverson RD. High performance work systems and occupational safety. *J Appl Psychol* 2005;90:77–93.
- [2] Armstrong M. A handbook of human resource management practice. 13th ed. London (UK): Kogan Page Publishers; 2001.
- [3] Zwetsloot G. From management system to corporate social responsibility. *J Bus Ethics* 2003;44:201–7.
- [4] Gustin JF. Safety management: A guide for facility managers. New York (NY): Up Word Publishing Inc.; 2008.
- [5] Atakora M. Assessment of workers' knowledge and views of occupational health hazards on gold mining in Obuasi municipality, Ghana. Unpublished Thesis. Umea (Sweden): Umea International School of Public Health; 2012.
- [6] Steenkamp R, Van Schoor A. The quest for quality of work life. A TQM approach. Cape Town (South Africa): Juta; 2002.
- [7] Barling J, Hutchinson I. Commitment vs. control oriented safety practices, safety reputation and perceived safety climate. *Can J Adm Sci* 2000;17:76–84.
- [8] Yankson E. The effect of health and safety standards on productivity in Ghana rubber estates limited. Ghana: Kwame Nkrumah University of Science and Technology; 2012.
- [9] Gyekye SA. Casual attributions of Ghanaian industrial workers for accident occurrence: mines and non-mines perspective. *J Safety Res* 2003;34:533–8.
- [10] Yilmaz F. Globalization process of developing countries and turkey as the occupational health and safety. *Int J Hum Sci* 2009;6:45–72.
- [11] Farrell D, Rusbult CE. Exploring the exit, voice, loyalty and neglect typology: the influence of job satisfaction, quality of alternatives, and investment size. *Employee Res Rights J* 1992;5:201–18.
- [12] Gujarati DN. Basic econometrics. Detecting multi collinearity. 4th ed. New York (NY): Tata McGraw-Hill Publishing Company Limited; 2004.
- [13] Amponsah-Tawiah K, Jain A, Leka S, Hollis D, Cox T. Examining psychosocial and physical hazards in the Ghanaian mining industry and their implications for employees' safety experience. *J Saf Res* 2013;45:75–84.
- [14] Zohar D. Modifying supervisory practices to improve submit safety: A leadership-based intervention mode. *J Appl Psychol* 2002;87:156–65.
- [15] Cohen A, Smith M, Cohen HH. Safety program practices in high vs. low accident rate companies — an interim report (questionnaire phase). OH: Department of Health, Education and Welfare Publication; 1975. p. 75–185.
- [16] Barling J, Loughlin C, Kelloway EK. Development and test of a model linking safety-specific transformational leadership and occupational safety. *J Appl Psychol* 2002;87:488–96.
- [17] O'Dea MA. Health and safety system which works for small firms. *J R Soc Promot Health* 2002;117:211–5.
- [18] Tomas JM, Melia JL, Oliver AA. Cross validation of a structural equation model of accidents: organizational and psychological variables as predictors of work safety. *Work Stress* 1999;13:49–58.
- [19] Bennett D. Health and safety management systems: liability or asset? *Journal of Public Health Policy* 2002;23:153–71.
- [20] Dejoy D. Attributional process and hazard control management in industry. *J Saf Res* 2006;16:61–71.
- [21] Cox S, Flin R. Safety culture: philosopher's stone or man of straw? *Work Stress* 1998;12:189–201.
- [22] Zohar D, Luria G. The use of supervisory practices as leverage to improve safety behavior: A cross-level intervention model. *J Saf Res* 2005;34:567–77.
- [23] Pule T. Mining activities and occupational health and safety. *Afr News* 2011;21:14–7.
- [24] Aidoo SJ, Eshun PA. Time series model of occupational injuries analysis in Ghanaian mines — a case study. *Res J Environ Earth Sci* 2012;4:162–5.
- [25] Dejoy D. Theoretical models of health behavior and workplace self-protective behavior. *J Saf Res* 2008;27:61–72.