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Workers' Perceptions of Workplace Safety: An African Perspective

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This study investigated workers' perceptions of workplace safety in an African work environment, specifically in Ghanaian work places. Workers' safety perceptions were examined with Hayes et al.'s. (1998) Work Safety Scale. Comparative analyses were done between high- and low-accident groups, and t *tests were employed to test for differences of statistical significance. Relative to their colleagues in the low-accident category, workers in the high-accident category exhibited negative perceptions on safety. They had negative perceptions regarding work safety, safety programmes, supervisors, and co-workers' contributions. Besides, they expressed less job satisfaction and were less committed to safety management policies. Perceptions regarding management's attitude towards safety between the 2 groups were not of statistical significance. The analyses provided an explanation for the cause of a substantial portion of the high rate of industrial accidents in Ghana's work environment. Implications for safety management are discussed.*

organizational safety climate work environment developing nations
safety perceptions industrial accidents

1. INTRODUCTION

1.1. Industrial Accidents

Industrial accidents and injuries are a source of substantial human and economic cost. Available data reveal an alarming and extremely high rate of work-related deaths and injuries in both the developed and developing nations [1, 2]. According to the latest data from the National Safety Council (2004) [1], industrial accidents cost USA's economy a staggering sum of US $156.2 billion, and an estimated number of 3,400,000 disabling injuries. Each weekday a fatal injury occurs every 2 hrs and a disabling injury every 8 hrs. However, the period between 1912 and 2003 saw a substantial reduction in accidental deaths and workplace injuries, which in turn reduced the high rate of human and economic cost per 100,000 inhabitants. With a workforce nearly quadrupled in size, estimated deaths fell from 21,000 to 4,500. This great stride was achieved applying ergonomic methodology, and implementing risk assessment programmes and effective safety management policies.

Unfortunately, the reverse seems to be the case for workers and organizations in developing nations, where the rates of industrial and occupational injury-related deaths and disabilities are on the rise. It has been estimated that over 120 million industrial accidents with over 200,000 fatalities occur each year in these nations. This is the area which has 80% of the world's labour force, but with only 5–10% of them having access to professional ergonomics and effective safety management programmes [3, 4]. According to the latest International Labour Organization (ILO) data [5], China, an economic and industrial superpower within the developing world, loses more than 200 billion yuan (US $24.15 billion), roughly 2% of its total Gross Domestic Product (GDP), annually to industrial accidents.

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As distressing as it is, this report seems to be a small tip of a much larger iceberg, considering the high rate of under-reporting that goes on in developing nations, particularly those in Africa [6].

Despite this burgeoning problem, little attention has been paid to industrial and occupational accidents and injuries in terms of research efforts and/or organized preventive intervention programmes. Efforts to combat the problem of industrial and occupational accidents in developing countries have been hampered by limited financial resources and lack of adequate data. In light of such limitations, prevention emerges as the most cost effective strategy to decrease disability and the high death toll in the workplace. It is therefore critical that the conventional antecedents of industrial mishaps, as well as the organizational factors that may affect worker safety at the workplace, are carefully examined. This need becomes all the more necessary when workplace injury-related deaths have been projected to be the second leading cause of death, worldwide, by the year 2020 [7]. Analyses of workers' safety perceptions have been useful in this aspect as they provide a powerful proactive management tool for designing effective safety management policies. This study was thus designed to measure the precursors of accidents identified in a safety climate analysis through an objective measurement of workers' attitudes and perceptions toward workplace safety in a developing country, Ghana.

1.2. Perceptions of Safety Climate

Research on workplace safety perceptions began in the early 1980s with Zohar's [8] study and has since received considerable attention in organizational and psychological literature. Safety climate, as defined in the literature, refers to a coherent set of perceptions and expectations that workers have regarding safety in their organization [9, 10, 11]. In effect, it denotes the shared perceptions about safety principles, values, norms, beliefs, and practices of workers in their work environments. Results obtained from studies on safety perception have linked workers' safety perception to safety performance. For example, Hoffman and Stetzer [12] have noted that workers' perceptions of high workload and work pressure tend to be associated with an increased tendency to engage in unsafe acts which in turn increases their susceptibility to accidents. According to Probst [13] and Probst and Brubaker [14], workers who report high perceptions of job insecurity tend to exhibit decreased safety motivation and compliance with safety procedures. Workers who express more anxiety and stress in the workplace also tend to take fewer precautions and get involved in more injuries and accidents [15, 16].

Additional importance of safety perception surveys can be gleaned from the literature (e.g., [17, 18]). First, as leading indicators of safety performance, they have served to identify precursors to accident occurrence. Second, they have helped in identifying characteristics that distinguish between workers with high- or low-accident involvement rates, and by so doing, they have effectively decreased accident occurrence. Third, because they supply proactive information about safety problems before they develop into accidents and injuries, safety analyses have provided guidance for management on how to develop specific safety programmes. Fourth, they have enabled organizations with multiple plants or departments to make valid comparisons of work safety between different sections and to evaluate the effectiveness of safety intervention programmes. Thus, they provide information about safety management from the perspective of employees. Fifth, compared to other proactive means of accident prevention efforts such as a safety audit, safety climate surveys are relatively inexpensive. Finally, their positive spill-over effects improve other functions in the organization such as efficiency and productivity.

Given the critical importance of safety perceptions in the work environment, safety climate has been studied meticulously and refined in various industrial settings for the past 30 years. Examples of these are safety analyses in health care settings [19], in the manufacturing sector [8], in airport ground handling operations [20], in construction sites [21, 22, 23], in clerical and service organizations [17], and in road administration [24]. Additionally, comparative analyses between managers' and employees' perceptions [25], high- and low-accident organizations [11], individual-

and organizational-level climate perceptions [8, 11, 12], and between blue- and white-collar workers [26] have been carried out.

Regrettably, all the aforementioned studies have been developed, conducted, and tested in Western and developed nations. Because the work environment in these places differs so much from that of the developing countries, blanket adoption of safety measures mapped out from these studies might be inappropriate. It is in light of this, that calls from safety experts [15] have been made for safety climate analyses in non-Western and developing nations. The current study was thus primarily designed to respond to that call. It is part of a larger explorative study that examined safety perceptions among Ghanaian industrial workers. The paucity of research on organizational behaviour and safety-related studies in developing countries, particularly in Africa, thus constitutes the main reason for these analyses.

1.3. The Current Study

The current study compares safety perceptions of workers in high- and low-accident groups on Hayes et al.'s Workplace Safety Scale [28]. This scale effectively captures all the dimensions identified by safety experts that influence worker perceptions on workplace safety. These are management values, management and organizational practices, communication, workers' involvement in workplace health and safety, workers' concern or indifference about safety, and the level of safety precautions in the company. By so doing, it specifies where workers' perceptions of work safety may be poor and thereby present a need to improve the organizational safety climate. One of the key parameters in formulating safety climate is via an analysis of accident rates. Thus, following previous studies [11, 24], I compared safety perceptions of workers in low- and high-accident groups. Follow-up analyses involved item-by-item assessments of the two categories of workers with regards to (a) job satisfaction and (b) compliance with safety management policies.

1.3. Hypotheses

Based on current organizational safety literature, and the literature review in section 1, the following hypotheses were formulated:

Hypothesis 1. Due to the exploratory nature of the study and the absence of ample evidence that bears directly on workers' perceptions of safety in a non-Western work environment, no formal hypothesis was offered.

Hypothesis 2. I anticipate that workers in the low-accident category would express more job satisfaction than their counterparts in the high-accident group.

Hypothesis 3. I anticipate that workers in the low-accident group would be more compliant with safety policies than their counterparts in the high-accident category.

2. METHODOLOGY

2.1. Selection and Description of Participants

The participants—320 Ghanaian industrial workers—had the following characteristics: 65% male, 35% female; subordinate workers 75%, supervisors 25%; 40% single, 60% married; 31% mine workers (n = 102), 69% non-miners (n = 218). The non-miners were mainly from breweries, textile factories, and wood-processing industries. In terms of educational levels, 23% of the respondents reported having only basic education, 36% reported secondary or technical education, 38% reported having some professional or commercial education, and 3% reported having university education. Regarding work experience, 13% of the respondents had been in the workplace for less than a year, 22% 1–4 years, 21% 5–10 years, 25% 11–14 years, and 19% 15 years and over.

The interviews were conducted during the workers' lunch breaks and lasted 15–20 min, depending on the context in which they were conducted, and on the participants' level of education. The questionnaire interview was conducted in English. Where participants were illiterate or semi-illiterate and had problems

understanding the English language, the services of an interpreter were sought and the local dialect was used. The supervisors, who had a higher standard of education, completed the questionnaire on their own. The participants were assured of complete confidentiality.

2.2. Measures, Questionnaire Scoring, and Reliability

2.2.1. Perceptions of safety climate were measured with the 50-item Workplace Safety Scale (WSS) developed by Hayes et al. [27]. This instrument assesses workers' perceptions of work safety and measures five factorially distinct constructs: (a) job safety, (b) co-worker safety, (c) supervisor safety, (d) management's commitment to safety, and (e) satisfaction with the safety programme. Past research has shown this scale to have good psychometric properties [28]. Sample items were "Safety programmes are effective", "Supervisors enforce safety rules", and "Management provides safe work conditions". The authors reported a coefficient alpha of .91 for job safety, .91 for co-worker safety, .95 for supervisor safety, .95 for management safety practices, and .93 for satisfaction with the safety programme. Responses to this scale in the current study produced satisfactory reliability of .96 for job safety, .80 for co-worker safety, .97 for supervisor safety, .94 for management safety practices, and .86 for satisfaction with the safety programme. The total coefficient alpha score was .87. Participants responded on a 5-point scale ranging from 1—*not at all* to 5—*very much*.

2.2.2. Job satisfaction was measured with Porter and Lawler's [29] one-item global measure of job satisfaction. This scale was chosen because single-item measures of overall job satisfaction have been considered to be more robust than scale measures [30]. Besides, it has been used extensively in the organizational behaviour literature (e.g., [31, 32, 33]). The measure has five response categories ranging from *extremely dissatisfied* to *extremely satisfied*, corresponding to the 5-point response format of 1—*not at all* to 5—*very much*. Thus, the scores were coded so that higher scores (4—*quite much* and 5—*very much*) reflected higher levels of job satisfaction, and lower scores (1—*very little* and 2—*quite little*), lower levels of job satisfaction or job dissatisfaction.

2.2.3. Workers' demographic variables of interest to the study were age and work experience. Assessments were based on workers' responses to questions that were to elicit this information as part of the data collection process.

2.2.4. Items for compliance with safety behaviour were pooled from the extant literature. They comprised four questions and assessed workers' compliance to safety behaviour. Sample items were "Follow safety procedures regardless of the situation" and "Encourage co-workers to be safe". Participants responded on a 5-point scale ranging from 1—*never* to 5—*always*.

2.2.5. Accident rate. Participants were asked to indicate the number of times they had been involved in accidents in the past 12 months. All cases studied were accidents classified by the safety inspection authorities as serious. A serious accident is one which requires more than 3 days' absence from work.

2.3. Data Analysis

Statistical analyses of the data were done with SAS version 8.2. Participants were categorized into two groups according to accident rates: into the low-accident group (0–1 accident per year) and the high-accident group (2–4 accidents per year). Using accident rate frequency as an independent variable, differences among the perceptions were identified by a one-tailed *t*-test analysis. Thus, item-by-item analyses for the two categories of accident groups on all 50 items of the safety perception scale were computed. To further examine the relationship between the two categories of workers, the sum variables of the subsets scales were calculated and subjected to *t*-test analyses. Participants' responses on job satisfaction and compliance with safety management policies were subjected to a similar procedure. Levels of significance were set at $p < .05$, $p < .01$, and $p < .001$. Items that were not completed by the respondents were coded as missing values and excluded from the analyses.

3. RESULTS AND ANALYSES

Following are the characteristics of the two accident groups. Those of the low-accident group is provided first: n = 173; age (18–29 = 11%, 30–39 = 41%, 40–49 = 83%, 50+ = 85%); gender (male = 49%, female = 71%); work experience (1–12 months = 8%, 1–4 years = 14%, 5–10 years = 66%, 11–14 years = 86%, 15 years = 91%). The high-accident category had the following characteristics: n = 129; age (18–29 = 86%, 30–39 = 59%, 40–49 = 17%, 50+ = 15%); gender (male = 51%, female = 29%), work experience (1–12 months = 92%, 1–4 years = 86%, 5–10 years = 34%, 11–14 years = 34%, 15 years = 9%).

3.1. Hypothesis 1

Scores on the five subsets are presented first, followed up by the item-by-item analyses. These are displayed in a tabular format in Table 1. Regarding H1, t tests revealed differences of statistical significance between the two categories of workers in all but one of the five subsets: *management safety practices* (t = 1.09, df = 171, *ns*).

TABLE 1. Means and Standard Deviations on the Workplace Safety Scale

	Low-Accident Group			High-Accident Group			
Variable	***N***	***M***	***SD***	***N***	***M***	***SD***	***t* test**
A. Work Safety			(t = 3.43, df = 169, p < .0001)				
1. Dangerous	171	1.77	1.18	124	3.67	1.37	p < .05
2. Safe	171	3.85	1.21	124	1.24	1.37	p < .05
3. Hazardous	171	1.64	1.07	124	3.33	1.37	p < .05
4. Risky	170	1.44	0.75	124	3.65	1.33	p < .0001
5. Unhealthy	170	1.57	0.75	124	3.62	1.21	p < .0001
6. Could get hurt	170	1.54	0.85	124	3.67	1.22	p < .0001
7. Unsafe	170	1.63	0.81	124	3.84	1.16	p < .0001
8. Fear for health	170	1.58	0.79	124	3.72	1.25	p < .0001
9. Chance of death	170	1.44	0.73	124	3.52	1.34	p < .0001
10. Scary	170	1.52	0.79	124	3.57	1.25	p < .0001
B. Co-worker Safety			(t = 2.29, df = 164, p < .0001)				
1. Ignore safety rules	169	1.89	0.93	124	3.15	1.16	*ns*
2. Don't care about other's safety	168	1.80	0.97	124	3.16	1.28	p < .01
3. Pay attention to safety rules	169	3.71	0.99	124	2.60	1.24	*ns*
4. Follow safety rules	168	4.26	0.84	124	2.47	1.16	p < .0001
5. Look out for others' safety	169	4.41	0.76	123	2.47	1.22	p < .0001
6. Encourage others to safety	169	3.98	0.77	123	2.28	0.95	*ns*
7. Take chances with safety	167	3.31	1.16	122	2.27	1.04	*ns*
8. Keep work area clean	167	3.88	0.82	122	2.10	1.04	p < .05
9. Safety-oriented	167	4.25	0.92	123	2.26	1.12	p < .05
10. Don't pay attention	164	2.52	1.20	124	2.46	0.99	*ns*
C. Supervisor Safety			(t = 1.99, df = 172, p < .0001)				
1. Praise safe work behaviour	173	3.90	0.74	129	2.67	0.74	*ns*
2. Encourages safe behaviours	173	4.06	0.83	129	2.33	0.90	*ns*
3. Keep workers informed on safety rules	173	4.02	0.82	129	2.20	0.95	*ns*
4 Rewards safe behaviours	173	3.73	0.97	129	1.98	1.03	*ns*
5. Involves workers in setting safety goals	173	3.90	0.88	129	2.02	1.09	*ns*
6. Discusses safety issues with others	173	4.06	0.89	129	2.09	0.97	*ns*
7. Updates safety rules	173	4.19	0.76	129	2.12	0.98	p < .05

TABLE 1. (*continued*)

Variable	Low-Accident Group N	M	SD	High-Accident Group N	M	SD	*t* test
8. Trains workers to be safe	173	4.22	0.79	129	2.15	1.08	$p < .0001$
9. Enforces safety rules	173	4.35	0.77	129	2.15	1.05	$p < .0001$
10. Acts on safety suggestions	173	4.51	0.74	129	2.29	1.08	$p < .0001$
D. Management Safety Practices			($t = 1.09$, $df = 171$, *ns*)				
1. Provides enough safety programme	173	3.37	0.93	129	2.34	1.01	*ns*
2. Conducts freq. safety inspections	173	2.82	1.09	129	1.99	0.99	*ns*
3. Investigates safety problems	173	2.79	1.02	129	1.94	0.97	*ns*
4. Rewards safe workers	172	2.65	1.09	129	1.93	0.92	*ns*
5. Provides safe equipment	173	3.28	0.95	129	1.95	0.95	*ns*
6. Provides safe working conditions	173	3.46	0.94	129	1.95	0.87	*ns*
7. Responds to safety concerns	173	3.51	1.09	129	2.12	0.97	*ns*
8. Helps maintain clean area	173	3.65	1.11	129	2.03	1.05	*ns*
9. Provides safety information	173	3.88	1.09	129	2.18	1.05	*ns*
10. Keep workers informed of hazards	173	3.89	1.14	129	2.10	1.04	*ns*
E. Safety Programmes (Policies)			($t = 1.51$, $df = 163$, $p < .0001$)				
1. Worthwhile	173	4.24	0.82	129	2.18	1.01	$p < .05$
2. Helps prevent accidents	173	4.27	0.84	129	2.00	0.94	$p < .05$
3. Useful	173	4.36	0.74	129	1.71	1.02	$p < .0001$
4. Good	173	4.35	0.79	129	1.79	1.92	$p < .05$
5. First-rate	173	3.16	0.75	129	1.75	0.87	*ns*
6. Unclear	168	3.19	1.21	128	2.23	1.07	*ns*
7. Important	172	4.98	0.89	129	1.94	1.04	$p < .05$
8. Effective in reducing injuries	171	4.26	0.82	129	1.75	0.97	$p < .05$
9. Do not apply to my workplace	157	2.88	1.35	120	1.88	0.95	*ns*
10. Do not work	152	2.56	1.35	119	2.30	1.05	*ns*

A dissection of the remaining four subsets indicated the following: regarding *work safety*, relative to their counterparts in the low-accident category, workers in the high-accident category significantly perceived their work assignments to be *dangerous*, *hazardous*, and *unsafe* ($t = 3.43$, $df = 169$, $p < .0001$). Besides, they were significantly more dissatisfied with the *safety*

TABLE 2. Descriptive Statistics on WSSA, WSSB, WSSC, WSSD, Job Satisfaction, and Safe Work Behaviour

Variable	Low-Accident Group N	M	SD	High-Accident Group N	M	SD	*p*
WSSA	173	18.06	4.58	127	34.89	8.49	***
WSSB	169	34.12	3.56	124	25.44	5.38	***
WSSC	173	40.96	5.58	129	22.00	7.87	***
WSSD	173	33.31	7.30	129	20.54	7.63	*ns*
WSSE	173	37.53	5.30	129	19.77	6.52	*
Job satisfaction	173	20.48	3.06	129	12.94	4.91	***
Safe work behaviour	172	20.23	3.16	129	12.11	4.41	***

Notes. *$p < .05$, ***$p < .001$; WSSA—work safety, WSSB—co-worker safety, WSSC—supervisor safety, WSSD—management attitudes and practices, WSSE—safety programmes.

programmes than their colleagues in the lower accident category ($t = 1.51$, $df = 143$, $p < .0001$). The results also revealed that workers with lower accident frequency had more positive perceptions regarding their co-workers' ($t = 2.29$, $df = 161$, $p < .0001$) and supervisors' ($t = 1.99$, $df = 172$, $p < .001$) contributions towards safety than their counterparts in the high-accident category. The mean scores are provided in Table 2.

The item-by-item computations on the four subsets that produced differences of statistical significance indicated the following: regarding *work safety*, workers in the high-accident category significantly perceived their job assignments to be *risky* ($t = 3.18$, $df = 169$, $p < .0001$), *dangerous* ($t = 1.34$, $df = 170$, $p < .05$), *hazardous* ($t = 1.63$, $df = 169$, $p < .05$), *unhealthy* ($t = 2.60$, $df = 169$, $p < .0001$), unsafe ($t = 2.09$, $df = 169$, $p < .0001$), and *scary* ($t = 2.54$, $df = 169$, $p < .0001$). Not surprisingly, they entertained *fear of death* ($t = 2.49$, $df = 169$, $p < .0001$), *chance of death* ($t = 3.38$, $df = 169$, $p < .0001$), and *fear of getting hurt* ($t = 2.60$, $df = 169$, $p < .0001$) at a more significant level. Workers in the low-accident category significantly felt *secure* and *safe* ($t = 1.28$, $df = 170$, $p < .05$).

The second subset assessed perceptions of *co-worker safety* (the extent to which co-workers contribute to safety). Four items indicated differences of statistical significance. High-accident category workers expressed negative views on the role of their co-workers towards safety. They perceived them as not *caring about others' safety* ($t = 1.74$, $df = 167$, $p < .05$). Interestingly, workers in the low-accident category positively evaluated their co-workers' contribution to safety: they *look out for others' safety* ($t = 1.88$, $df = 168$, $p < .0001$), *encourage others to safety* ($t = 2.56$, $df = 168$, $p < .0001$), and *are safety-oriented* ($t = 1.60$, $df = 166$, $p < .05$). The third subset measured *supervisor safety*, the extent to which supervisors contribute to safety. Four items indicated differences of statistical significance. Workers in the low-accident category had a positive appraisal of their supervisors' responsibility for workplace safety. They remarked how their supervisors *updated safety rules* ($t = 1.65$, $df = 172$, $p < .001$), *trained workers to be safe* ($t = 1.87$, $df = 172$, $p < .0001$), *enforced safety rules* ($t = 1.85$, $df = 172$, $p < .0001$), and *acted on safety suggestions* ($t = 2.14$, $df = 172$, $p < .0001$). Differences regarding perceptions on the *managements' safety practices* subscale were not of statistical significance. The *safety programmes* subscale indicated six items with statistically significant differences. The low-accident category workers significantly perceived the safety programmes at their work places as *worthy* ($t = 1.54$, $df = 172$, $p < .05$), *good* ($t = 1.64$, $df = 172$, $p < .05$), *useful* ($t = 1.91$, $df = 172$, $p < .00001$), *helpful in preventing accidents* ($t = 1.28$, $df = 172$, $p < .05$), *effective in reducing accidents* ($t = 2.04$, $df = 119$, $p < .05$), and *important* ($t = 1.34$, $df = 171$, $p < .05$). Taken together, these results present a perception orientation whereby workers with low accident frequency have more positive perspectives regarding safety climate than their colleagues with high accident frequency.

Interesting observations were made regarding the relationships between safety perceptions, job satisfaction, and compliance with safe work practices.

3.2. Hypothesis 2

As anticipated, workers in the low-accident category expressed more job satisfaction than their colleagues in the high-accident group ($t = 1.98$, $df = 168$, $p < .0001$).

3.3. Hypothesis 3

Workers in the low-accident category were more compliant with safe work practices than their work colleagues in the high-accident category ($t = 1.96$, $df = 165$, $p < .0001$).

4. DISCUSSION

The hypotheses of the study focused on the relationship between safety perceptions, accident frequency, compliance with safe work practices, and job satisfaction. It was hypothesized that workers in the low-accident group would express more job satisfaction and would be relatively more committed to safety management policies. The results revealed a distinctive pattern of safety

perception associated with accident frequency. While workers in the lower accident category had a noticeably positive and constructive perception of safety in their workplaces, their counterparts in the higher accident category had a rather pessimistic and an unenthusiastic view. The major finding of an association between the accident rate, workers' perceptions of safety, and compliance with safety management policies at the highly significant level of $p < .0001$ gives strong support for the observation, and it corroborates previous studies in the Western world (e.g., [9, 14, 10, 34]). In these studies, workers with high accident frequencies had perceived the existence of poorer safety practices, expressed pessimism about management's commitment to safety [10, 35], and recorded higher levels of accident involvement [35, 36].

The noted low mean scores and the absence of statistically significant differences on *management's attitude* and *commitment to safety* should be of concern as the perception of management's attitudes to safety is considered to be one of the most significant predictors in safety climate analysis (e.g., [35, 36]). This observation thus underscores the critical need for management to be more involved in safety management policies. As indicated by the current findings, management was found to be seriously lacking in all areas related to safety issues: workers were never rewarded nor praised and safety problems were rarely investigated. Even when conducted, little or no information was provided to the workers. This insensitivity of the management to workers' safety and their concerns might have impacted negatively on their job satisfaction, incited them to violate safety policies, and subsequently increased their susceptibility to accidents.

4.1. Implications of Findings for the Work Environment

Due to the nature of the study, more attention is devoted to the implications of the findings in the work environment. The current findings are important from a practical standpoint. Responses revealed aspects of safety beliefs which were directed towards workers' perceptions of reality in their work environments. As a result they were not just informative in comparing and differentiating categories of workers but, more essentially, they provided proactive measures by which personnel and managerial policies regarding safety could be conducted. There is a consensus among safety researchers that poor management attitude towards occupational safety policies is the major cause of accidents (e.g., [36, 37]). Thus, evaluation of workplace safety basically comes from workers' perceptions regarding management's actions. To address the recorded negative perceptions in Ghana's work environment, a genuine change in management's attitude with an increased commitment to workers' safety must take place. For example, top management and supervisors should be visible in their involvement in safety management programmes and safety should be regarded as an integral part of the production process. Empirical evidence shows that organizations in which management's commitment to safety is clearly demonstrated tend to succeeded in motivating workers into positive organizational behaviours [28, 33] with a decline in accident frequencies [37].

The noted association between a high accident rate and low job satisfaction could be remedied with a visible display of management's commitment and concern for workers' well-being and safety. Measures that increase workers' level of job satisfaction, such as the provision of support beyond what is formally stated in the contractual agreement [38, 39, 40], the institution of job enrichment programmes [41, 42], the provision of quality housekeeping [43], and safety-skills acquisition [44] could be implemented. Additionally, management might have to encourage an organizational climate that stresses the importance of safety and a reward-scheme that encourages safe work practices, give workers enough freedom and authority, and provide them with information and assistance on how to do their jobs properly. It is on record that the more positive top management, supervisors, and co-workers are towards safety programmes, the more workers are motivated to accept those programmes [45]. Drawing from the Social

Exchange Theory [46] and the Reciprocity Theory[1] [47], such positive managerial attitudes and investment in workers' safety create a sense of obligation for workers to reciprocate in a way that benefits their organizations and management. They would be motivated to actively engage in activities that are considered facilitative to organizational goals such as compliance with the organizations' safety management policies [48, 49]. The provision of such a generally positive and supportive organizational climate would influence the extent to which workers perceive safety as important in their organizations [10, 50]. Such measures, besides reducing the high human and social cost that is caused by industrial accidents, promote organizational efficiency and productivity.

Another noted inadequacy that needs to be addressed relates to the role of supervisors. As reflected in the data, subordinate workers were seldom praised, encouraged, rewarded, or informed on safety-related issues. They seldom participated in safety discussions. The current observation aptly reflects administration in most high power-distance cultures, where power is centralized and authority deferred to, and where decision-making is autocratic without consultation with or participation of subordinates [51, 52, 53]. Here, interaction of subordinates and superiors is impeded by cultural norms, which restrains open and frank discussions on work safety issues. To remedy this situation, subordinate workers should be encouraged to actively participate in and contribute to safety-related discussions. Being part of decision-making processes increases their self-worth, self-esteem, level of job satisfaction [54], commitment to safety management policies [55] and, consequently, reduce the accident rate [12]. Available data re-emphasize the vulnerability of young (18–29 years) and newly-recruited workers (particularly those in their first year) to industrial accidents [56]. Clearly, there is a need for special safety programmes specifically designed for this group of workers.

4.2. Limitations

The major limitation of this research was the need for respondents to recall industrial accidents. Such retrospective accident analyses always entail the risk of memory error. However, as the accidents had occurred less than a year before the interview, it is assumed that recall distortion was minimized. Prospective examinations of accident processes could be viable alternatives to such retrospective studies. Another limitation is the use of self-reported measures. Responses might be affected by intentional distortions and misinformation. To counter this threat, the participants were assured of their anonymity and promised that their responses would be treated with the highest level of confidentiality. Self-reported measures have been commonly and successfully used in safety analyses (e.g., [51, 52, 57]). Besides, epidemiologic reports have been found to be faulty, biased, and deficient because of poor documentation [58, 59]. Meanwhile, research reports have found self-reported accident rates to be closely related to documented accident rates [60].

Notwithstanding the aforementioned limitations, the current study supports the important role of worker perception as a determinant of safety performance in the workplace, and a predictor of the occurrence of industrial accidents. The study serves an important purpose. It extends the research and the application of empirical findings and theoretical explanations on safety perception to developing and non-Western nations, particularly African ones. As this study is among the first in its attempts to replicate and extend workers' perceptions on safety in a developing and non-Western nation, additional research in this area would be in order.

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[1] According to these theories, expression of positive affect and concern for others creates a feeling of indebtedness and a corresponding sense of obligation to respond positively in return. Workers who perceive a high level of organizational concern and support are therefore motivated into prosocial organizational behaviours.

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