

Prevalence of perceived occupational injuries and associated factors among factory workers in Mogadishu, Somalia

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Research Article

Keywords: Occupational injuries, safety, factory workers, Somalia

Posted Date: May 25th, 2026

DOI: <https://doi.org/10.21203/rs.3.rs-9462068/v1>

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Additional Declarations: No competing interests reported.

Abstract

Introduction:

Occupational injuries are a significant public health concern, particularly in low income countries. In Somalia, factory work is considered the most hazardous sector, with limited data on injury prevalence. This study aimed to determine the prevalence of occupational injuries and associated individual and workplace-related factors contributing to injuries among factory workers in Mogadishu district, Somalia

Methods

A descriptive cross-sectional study was conducted among 623 randomly selected factory workers in Mogadishu. Data were collected using a structured questionnaire uploaded in Kobo Collect software and analyzed using multivariate logistic regression to identify factors associated with occupational injuries. Variables with a p-value < 0.05 were considered statistically significant.

Results

Majority, 72.8% (454/623) of the study participants were manual labourers, and less than half 41.3% (257/623) had reached tertiary level. Participants' mean age was 31 years (SD $\pm$ 9.7), and 29.7% (185/623) reported having experienced an occupational injury in the last 6 months of which majority, 55.7% (103/185) were burns. Several factors were found to be significantly associated with occupational injuries. Older workers [AOR = 0.37, p = 0.003, CI = 0.05–0.81] were at a lower risk of suffering from occupational injuries. Individuals with friends who had suffered from injury before [AOR = 2.87, p = 0.02, CI = 1.16–7.11], and those with disabilities [AOR = 3.45, p = 0.004, CI = 1.49–7.99] were at a higher risk of experiencing injuries. Additionally, workers who had experienced sleep disturbances [AOR = 5.01, p < 0.001, CI = 2.31–10.84] were more likely to be injured. Those with higher education levels [AOR = 0.64, P = 0.04, CI = 0.18–0.90], in factories with Occupational Safety and Health (OSH) guidelines [AOR = 0.78, p = 0.01, CI = 0.25–0.81], providing PPE to workers [AOR = 0.57, p = 0.03, CI = 0.51–0.91] and undergoing medical examination at the workplace [AOR = 0.71, p = 0.04, CI = 0.19–0.98] were less likely to have occupational injuries. Those who reported noise at the workplace [AOR = 3.82, p = 0.001, CI = 1.32–4.91] were more likely to have occupational injuries.

Conclusion

The prevalence of occupational injuries among factory workers in Mogadishu is high, highlighting a significant public health concern. Both individual factors and workplace factors were significantly associated with injuries. Strengthening occupational safety measures and addressing these factors is essential to reduce injury risk among factory workers.

Introduction

Occupational injury, defined as any physical harm sustained by a worker in the course of performing work-related duties, remains a major global public health concern (1). According to the International Labour Organization, approximately two million deaths occur annually due to work-related causes, with over 300,000 directly attributed to occupational injuries (2). In addition to mortality, millions of workers experience non-fatal injuries and long-term disabilities. Globally, occupational injuries account for an estimated 4% loss in gross domestic product (GDP) each year due to healthcare costs, compensation, and reduced productivity (3). Factories are among the most hazardous work environments globally, particularly in low- and middle-income countries (LMICs) (4). Compared to other workplaces, factory workers are up to three times more likely to die and twice as likely to sustain injuries (5). It is estimated that factories account for approximately 24,000 fatal and 24 million non-fatal injuries annually worldwide (6). Given that workers spend a substantial proportion of their time at work, exposure to unsafe conditions significantly affects their health and well-being (7). Consequently, occupational injuries pose serious health, social, and economic challenges for workers, employers, and health systems (8).

Although occupational injuries occur globally, their magnitude and determinants vary between developed and developing countries. In high-income countries (HICs) such as the United States, injury rates have declined over time, largely due to improved occupational health and safety systems. However, factory workers still experience higher injury rates compared to other sectors, particularly injuries resulting in days away from work (9). Evidence from studies conducted in France, the United States, and China suggests that men are generally at higher risk of occupational injury than women (8). In contrast, findings from Ethiopia indicate no significant association between gender and occupational injury, highlighting contextual variability (10). In these settings, occupational injuries are commonly associated with job-related factors such as physically demanding work, blue-collar occupations, long working hours, and multiple job holdings (9).

In LMICs, the burden of occupational injuries is substantially higher, with risks estimated to be 10–20 times greater than in HICs (11). The World Health Organization (WHO) identifies occupational injury as an epidemic-level public health problem in these contexts (12). This increased burden is largely attributed to weak occupational health and safety systems, inadequate enforcement of regulations, and limited access to protective measures. Several factors have been associated with occupational injuries in these settings, including low educational attainment (13), limited work experience (14) and non-use of personal protective equipment (15). Behavioral factors such as smoking, alcohol consumption, poor sleep, and lack of physical activity also contribute to increased risk (16). Additionally, work-related conditions, including long working hours, night shifts, and physically demanding tasks, further exacerbate vulnerability (17).

In Africa, occupational injuries are a leading cause of morbidity among adults, particularly among factory workers (18). Younger workers are disproportionately affected, experiencing higher injury rates compared to older workers (19). Educational level has been shown to be protective, with higher levels

associated with reduced risk of workplace injuries (20). However, many African countries face persistent challenges, including inadequate policy frameworks, weak regulatory enforcement, and limited occupational safety infrastructure (21). Across Sub-Saharan Africa, occupational injuries impose substantial economic and social costs. These include increased absenteeism, high staff turnover, reduced productivity, and additional training requirements, all of which negatively affect organizational performance and national economies (22). Employers also incur increased insurance and compensation costs, further compounding the economic burden. Evidence from rapidly industrializing urban settings highlights a growing concern.

In Mogadishu, Somalia, increasing industrial activity has been associated with a rise in workplace accidents, with reports indicating approximately 10 factory-related injuries occurring daily (23). Despite these reports, there is limited empirical evidence documenting the prevalence and determinants of occupational injuries among factory workers in Mogadishu. Most available data are either anecdotal or derived from broader regional estimates, which may not accurately reflect the local context. This reflects a broader trend in many low- and middle-income countries, where industrial growth often outpaces the implementation and evaluation of effective occupational health and safety measures. The lack of context-specific data limits the ability of policymakers and stakeholders to design targeted interventions to improve workplace safety. Therefore, this study aimed to assess the prevalence of occupational injuries and associated individual and workplace factors among factory workers in Mogadishu, thereby addressing this critical evidence gap.

Methodology

Study setting and design

This was a descriptive cross-sectional study carried out from June 2024 to January 2025 and involved collecting quantitative data using a pre-tested semi-structured questionnaire. The study was conducted in Mogadishu, Somalia's capital city. Mogadishu is situated on the Indian Ocean coast of the Horn of Africa of Northeast Africa, in the Banaadir administrative region in southeastern Somalia. The city is administratively divided into eighteen districts of Abdiiaziz, Bondhere, Daynile, Dharkenley, Hamar-Jajab, Hamar-Weyne, Heliwa, Hodan, Howl-Wadag, Karan, Shangani, Shibis, Waberi, Wadajir, Wardhigley, and Yaqshid. Mogadishu's economy is diverse and driven by a combination of trade, services, construction, and light manufacturing industries. The city is home to Somalia's largest seaport and airport, which serve as critical entry and exit points for goods and passengers. Key economic activities include import and export trade, fisheries, telecommunications, banking, real estate, and small-scale manufacturing. Industries in Mogadishu are mainly light manufacturing enterprises, including plastic production, steel and metal fabrication, soap and cosmetics manufacturing, beverage bottling, paper products, textile and garment production, and food processing industries such as flour mills and fisheries-related factories. According to the Ministry of Commerce and Industry (2023), there are 108 registered factories operating in Mogadishu, varying in size and production capacity, with an estimated population of 214,500 people.

Study population.

The study population comprised factory workers employed in the selected factories in Mogadishu. Eligible participants were employees who had worked in the factory for at least six months prior to the study, as this duration was considered sufficient for exposure to workplace conditions. Workers who were not full-time employees of the factory were excluded from the study.

Sample size estimation and sampling procedures

We estimated a study sample size of 623 participants using the formula by Kish Leslie for categorical outcomes (24) at 95% Confidence Interval, Z value of 1.96, 0.05 margin of error, pooled prevalence of occupational injuries in Africa 57.0% (25), a non-response rate of 10%. and design effect of 1.5. A 10% adjustmate was included to account for refusal and incomplete responses due to the busy schedule of factory workers. Additionally, a design effect of 1.5 was used to adjust for the clustering effect arising from sampling participants within selected factories, as workers within the same factory may share similar characteristics. A combination of probability proportionate to size and simple random sampling techniques was employed to select both the factories and factory workers who participated in this study. According to data obtained from the Ministry of Trade in Somalia, 2023, there were a total of 108 factories in Mogadishu. The sampling process began with the selection of 11 factories through a simple random sampling approach. This involved assigning unique, computer-generated numbers to all 108 factories and randomly selecting 11. The list of these selected factories was obtained from the Ministry of Trade, specifically from the Occupational Safety and health division. These included: Warshada Rayan Shampoo Firdows Industries Ltd Somali Plastic Factory Ltd Asal Industry Adorro Paper and Plastic Warshadda Burka Soomaaliya United Bottling Company Dalsan Industry Ltd Som Chips Ltd Somtuna Fishing Company Camel Latte (EA) Ltd. Following the selection of factories, the number of workers to participate from each selected factory was determined using samplingmethod. Within each selected factory, workers were stratified based on their type of work, divided into two strata: manual labourers and office workers. Probality proportionate to sample was again employed to determine the number of participants from each stratum. Finally, individual participants within each stratum were selected using a simple random sampling method, facilitated by computer-generated random numbers.

Study variables

Dependent variable

The primary outcome was the proportion of factory workers who had sustained any form of injury (burns/scalds, animal bites/human bites/stings, injury with sharps, cuts, falls, hearing loss, visual loss) in the last 6 months. Those who reported having experienced a form of injury were recoded as 1, and those who reported not having experienced any form of injury were recoded as 0. All these were assessed through self-reporting.

Independent variable

Workplace factors

These included, factory working hours for staff, health and safety training, factory adherence to policies and guidelines, vibrations, type of work, work section, light rays at workplace, personal protective equipment (PPE), ventilation, supervision, heat, lightening, moisture, and noise level at working.

Individual factors

These included age of workers, sex of worker, education level of worker, sleeping disturbance, job stress, disability status of worker, level of training, working experience, knowledge on work safety, attitudes and compliance to guidelines.

Data collection

Data were collected using kobo collect with a pre-tested structured questionnaire. The development of the questionnaire was guided by studies conducted in similar industrial and occupational health settings, including those by (14, 26). The questionnaire comprised of four sections. The first section gathered information on the socio-demographic characteristics of the respondents, including age, gender, education level, and work experience. The second section focused on the public health burden of occupational injuries, collecting data on the prevalence, place, and time of injury occurrence. Section three addressed both individual and workplace factors associated with occupational injuries, such as safety practices and working conditions. The final section contained questions designed to capture additional relevant details for the study.

Four competent research assistants with at least a diploma in public health, occupational health, or a related field were selected and trained on questionnaire administration and data collection procedures for 2 days by the principal investigator. Their selection was based on educational qualifications and proficiency in English, Somali, and Arabic to facilitate effective communication with participants. The questionnaire was pre-tested at Daldhis Aluminium & Decoration Factory located in Wadajir District, Danwadaagta Street, Buulo hubey, Mogadishu, Somalia. It was selected because it has similar socio-demographic and operational characteristics to the study sites, and were translated into Somali and Arabic to enhance clarity and relevance. Following pretesting, necessary revisions were made to address inconsistencies, and collected data were cross-checked and cleaned for completeness. Throughout the data collection process, the principal researcher provided continuous supervision to ensure adherence to study protocols, while field editing of completed tools was conducted to ensure accuracy and completeness of the information collected in line with the study objectives.

Data management and analysis

Data were collected using kobo collected and analysed using STATA version 14. Analysis was carried out at univariate, bivariate and multivariate levels. At univariate level, analysis was run for all the variables. Categorical data were presented in form of frequencies and percentages. Mean and standard deviation was used to present continuous data. At bivariate level, the outcome variable was whether a respondent had ever experienced any occupational injury or not within the last 6 months before the study. Bivariate logistic regression analysis was used to identify different factors (sociodemographic characteristics, individual factors and workplace factors) associated with occupational injuries; using crude odds ratios and P-values at 95% confidence intervals as the measure of association.

To construct the final multivariable model, all variables with a p-value < 0.05 at bivariate analysis, together with those considered biologically plausible, were entered into an initial logistic regression model. A stepwise backward elimination approach was then applied, sequentially removing variables with the highest p-values until only variables with $p < 0.05$ were retained in the final model. Multicollinearity among independent variables was assessed using variance inflation factors, and variables with high collinearity were excluded. The goodness-of-fit of the final model was assessed using the Hosmer Lemeshow test. Adjusted odds ratios with 95% confidence intervals were reported.

Results

Socio-demographic characteristics of study participants.

Participants' mean age was 31 years ($SD \pm 9.7$). The majority, 72.8% (454/623) of the study participants were manual labourers, less than half, 41.3% (257/623) had reached tertiary level and 89.6% (558/623) reported to reside in urban areas. Furthermore, over half 54.0% (336/623) reported to have been in their current job for over a year (Table 1).

Table 1
Socio-demographic characteristics of participants

Variable	Frequencies (N = 623)	Percentages (%)
Age (years)		
< 25	107	17.2
25–30	309	49.6
31–40	98	15.7
> 40	109	17.5
Sex		
Female	169	27.2
Male	454	72.8
Duration at current job (months)		
< 6	130	20.8
6–12	157	25.2
> 12	336	54.0
Education level		
Primary	105	16.8
Secondary	204	32.8
No education	57	9.2
Tertiary	257	41.3
Place of residence		
Urban	558	89.6
Rural	65	10.4
Marital status		
Divorced	89	14.3
Married	224	36.0
Single	293	47.0
Widowed	17	2.7
Job category		

Variable	Frequencies (N = 623)	Percentages (%)
Age (years)		
Manual labourer	454	72.8
Office worker	169	27.2

Prevalence of occupational injuries among factory workers

Among the participants, 29.7% (185/623) reported having experienced an occupational injury in the last 6 months, of which the majority, 55.7%(103/185),were burns, followed by falls, 16.8% (31/185), cuts, 15.7% (29/185), and electric shocks, 5.4%(10/185).

Factors associated with occupational injuries among factory workers

Age, education level, friend suffering from an injury, having a disability, duration at the workplace, experience of sleeping disturbances, and sleeping at the workplace were the individual factors associated with occupational injuries. The odds of having an occupational injury in the last 6 months [AOR = 0.37, CI = 0.05–0.81, P = 0.003] were 63% lower among study participants aged over 40 years as compared to those aged below 25 years at 95% confidence interval. Additionally, those who reached secondary, [AOR = 0.64, CI = 0.18–0.90, P = 0.04] were 0.36 times less likely to have suffered from an occupational related injury in the last six months compared to those who stopped in primary. Study participants with friends who had suffered from an occupational injury [AOR = 2.87, CI = 1.16–7.11, P = 0.02] were 2.87 times more likely to have suffered from an occupational injury in the last 6 months compared to those with such friends. Study participants with disability [AOR = 3.45, CI = 1.49–7.99, P = 0.004] were 3.45 times more likely to have suffered from an occupational injury in the last 6 months compared to those without any form of disability. Those who had stayed in their current workplace for more than 12 months [AOR = 0.18, CI = 0.06–0.86, P = 0.02] were 0.82 times less likely to have suffered from an occupational injury in the previous 6 months compared to those who had worked for less than 6 months. Study participants who reported to be experiencing sleeping disturbances [AOR = 5.01, CI = 2.31–10.84, P < 0.001] were 5.01 times more likely to have suffered from an occupational injury in the last 6 months compared to those without sleeping disturbances. Additionally, those who sometimes slept at work [AOR = 2.72, CI = 1.76–7.46, P = 0.04] were 2.72 times more likely to have suffered from an occupational injury in the last 6 months compared to those who did not sleep at work. Presence of occupational safety and health guidelines, provision of PPE to workers, noise at the workplace and medical examinations were also significantly associated with occupational injuries among study participants. Participants who reported that their factory had OSH guidelines [AOR = 0.78, CI = 0.25–0.81, P = 0.01] were 0.22 times less likely to have suffered from an occupational injury in the previous 6 months compared to those who reported the factories not to have guidelines. Additionally, those who reported to have received PPE at the workplace [AOR = 0.57, CI = 0.51–0.91, P = 0.03] were 0.43 times

less likely to have suffered from an occupational injury in the previous 6 months compared to those who reported not to have received the PPE. Study participants who reported a lot of noise at the workplace [AOR = 3.82, CI = 1.32–4.91, P = 0.01] were 3.82 times more likely to have suffered from an occupational injury in the previous 6 months compared to those who reported no noise at all. Those who reported to have undergone medical examination prior to being recruited at the factory [AOR = 0.71, CI = 0.19–0.98, P = 0.04] were also 0.29 times less likely to have suffered from an occupational injury in the previous 6 months compared to those who reported not have ever done medical examinations (Table 3).

Discussion

This study found that over a quarter of the factory workers in Mogadishu had experienced occupational injuries in the last six months, indicating a substantial public health burden in this population. Both individual factors (age, education level, disability status, and sleep-related factors) and workplace factors (availability of occupational safety and health guidelines, provision of PPE, workplace noise, and pre-employment medical examination) were significantly associated with injury occurrence. These findings suggest that occupational injuries in this setting are driven by a combination of worker-related vulnerabilities and modifiable workplace conditions. This highlights the need for integrated interventions that strengthen workplace safety systems while addressing individual risk factors to reduce injury rates and improve worker health and productivity.

The study revealed an occupational injury point prevalence of 29.7% among factory workers. This implies that a lot of valuable time is lost by employees in managing work place injuries hence affecting overall factories output performance. This prevalence is consistent with findings from a cross sectional study conducted among workers of iron and steel industry in West Bengal, India which showed a prevalence of 28% (27). However, these findings are less than those reported by Tanga (20.6%)(28) and Dilie 18.6% (29), all in Ethiopia. The discrepancy between the two studies may be attributed to the different populations studied as the current research focused specifically on factory workers, who are considered among the most hazardous occupations according to the International Labour Organization (ILO). The injury prevalence reported in this study is lower than the pooled prevalence of 57% observed in studies across the African continent (30). It is important to note that the higher prevalence in the African context likely reflects the inclusion of more hazardous occupations, such as mining and construction, which are known to have higher rates of occupational injuries. This high injury prevalence in the current study not only does it threaten health and productivity of individual workers but also imposes significant economic costs through lost workdays, medical expenses, and compensation claims. These findings highlight the urgent need for targeted occupational safety interventions, stronger enforcement of workplace safety regulations, and investment in preventive measures.

The majority of reported injuries were burns, accounting for over half of the incidents. This high occurrence of burns could be indicative of the nature of work in these factories, which may involve exposure to high temperatures, chemicals, or machinery prone to overheating. Previous studies have also highlighted burns as a common occupational hazard in industrial settings, particularly in developing

countries where safety measures are often inadequate (31). The predominance of burns among reported injuries highlights a critical public health concern, as such injuries often lead to long-term disability, reduced productivity, and increased healthcare costs. The finding suggests a need for enhanced safety protocols, such as the use of PPE and better training for workers on handling hot materials or operating machinery safely. Cuts were the second most common type of injury reported, which is consistent with findings from other industrial settings where sharp tools, machinery, or materials are frequently handled. Such injuries also contribute to lost workdays, reduced productivity, and increased healthcare costs. Their occurrence could be reduced by improving the quality and availability of PPE, such as gloves, and by ensuring that machinery is well-maintained and equipped with safety features. Moreover, regular training and awareness programs focused on safe work practices could further mitigate these risks. Electric shocks, though less common, represent a critical safety concern due to their potential severity. The reported cases highlight the need for stringent adherence to electrical safety standards and the regular inspection of electrical equipment and installations. Previous research (32) has shown that inadequate grounding, exposed wires, and lack of insulation are common causes of electrical injuries in industrial settings. Although less frequent, electric shocks pose a serious public health risk due to their potential for fatal outcomes and long-term disability. Strengthening electrical safety standards and worker training is therefore essential to reduce this burden.

Existing literature consistently demonstrates that individual characteristics such as age, gender, education level, disability status, and sleep quality play a significant role in determining occupational injury risk (33, 34). Studies from both developed and developing countries have shown that younger workers, those with lower education levels, and individuals experiencing sleep disturbances are more vulnerable to workplace accidents, while longer job experience and higher education appear protective (30, 35). Similarly, workers with disabilities have been found to face heightened risks due to physical or cognitive limitations (36). These findings provide a strong foundation for interpreting the individual-level associations observed in the present study.

Older workers, those over 40 years) had a significantly lower risk of occupational injuries compared to younger workers under 25 years). This could be attributed to the experience and caution that typically increase with age, as older workers may have developed better coping strategies and a heightened awareness of safety protocols. It could also be attributed to more years of experience in the field. A study by (37) supports this finding, indicating that younger workers often face higher risks due to inexperience, risk-taking behavior, and a lack of familiarity with workplace hazards. This finding therefore implies that focus to improve workplace safety should be put on relatively younger employees. Targeted safety training and mentorship programs for younger employees are therefore essential to reduce injury rates and safeguard long-term workforce productivity.

Education level was negatively associated with workplace injuries as workers with a secondary education were less likely to suffer from occupational injuries compared to those with only a primary education. This may be due to the fact that higher education levels often correlate with better understanding of safety practices, improved problem-solving skills, and the ability to follow instructions

effectively. Similar studies have shown that education plays a critical role in enhancing workers' ability to recognize and mitigate risks in the workplace. Factory administration may consider recruiting relatively educated and knowledgeable workers so as to minimize workplace injuries (38). The protective effect of higher education against workplace injuries highlights an important public health dimension, as education equips workers with the knowledge and skills to recognize hazards and adopt safer practices. Promoting access to education and integrating occupational safety into training programs can therefore reduce injury rates and strengthen workforce resilience.

Interestingly, workers who had friends who had suffered from occupational injuries were nearly three times more likely to experience an injury themselves. This finding could be explained by a shared work environment or similar risk behaviors among social groups. It also suggests the potential for peer influence on safety practices, both positively and negatively. This phenomenon aligns with the social learning theory, which posits that individuals may model behaviors observed in peers, including risky ones that lead to injuries (39). Promoting positive peer influence through group-based safety training and awareness programs is therefore crucial to reduce injury rates and foster safer workplace cultures.

Workers with disabilities were significantly more likely to suffer from occupational injuries, a finding that underscores the vulnerability of this group in hazardous work environments. Disabilities may impair a worker's ability to perform tasks safely or react swiftly to dangerous situations, increasing the risk of injury. This finding is consistent with existing literature (40), which indicates that workers with disabilities are at greater risk of workplace injuries due to physical or cognitive limitations, and it highlights the need for tailored safety measures and accommodations for disabled workers. Implementing tailored safety measures and workplace accommodations is therefore essential to protect this group and promote inclusive occupational health.

The study revealed that workers who had been at their current workplace for more than 12 months were significantly less likely to suffer from occupational injuries compared to those who had worked for less than 6 months. This finding suggests that familiarity with the work environment and experience in the specific job role contribute to a lower risk of injury. Workers who have spent more time in a particular job may better understand the associated hazards and how to avoid them, a conclusion supported by similar research indicating that job tenure is inversely related to injury risk. The protective effect of longer job tenure against occupational injuries highlights a public health priority, as retaining workers and reducing turnover can lower injury risks, improve productivity, and decrease healthcare costs. Supporting new employees with targeted orientation and safety training is therefore essential to bridge this gap.

A striking finding was the strong association between sleep disturbances and occupational injuries. Workers experiencing sleep disturbances were five times more likely to suffer injuries, highlighting the critical role of adequate sleep in maintaining alertness and cognitive function. Sleep deprivation impairs judgment, slows reaction times, and reduces overall alertness, all of which increases the likelihood of workplace accidents. This finding is consistent with a growing body of evidence linking poor sleep quality to higher rates of occupational injuries across various industries (32). Promoting healthy sleep

practices and addressing shift-related fatigue among factory workers is therefore essential to safeguarding worker safety. The study also found that workers who sometimes slept at work were nearly three times more likely to suffer from an injury. This finding is in agreement with those in a cross sectional study conducted in Ethiopia by (41). This behavior could be indicative of fatigue, irregular working hours, or inadequate rest periods, all of which compromise safety. Workers who sleep at work may also be more likely to work long hours, leading to physical and mental exhaustion, which are well-established risk factors for workplace accidents. Addressing work schedules and promoting adequate rest is therefore essential to reduce accidents and protect worker well-being.

Previous research has shown that workplace conditions play a decisive role in shaping occupational injury risks (42). Factors such as inadequate personal protective equipment, poor supervision, excessive noise, long working hours, and lack of occupational safety guidelines have all been linked to higher injury rates in industrial settings (43). Studies across Africa and other developing regions consistently highlight that weak enforcement of safety standards and limited access to health and safety training exacerbate these risks (44). This evidence provides a useful backdrop for interpreting the workplace-related associations observed in the present study.

The presence of OSH guidelines in factories was associated with a significant reduction in the likelihood of occupational injuries. Workers in factories with established OSH guidelines were 0.22 times less likely to experience an injury compared to those in factories without such guidelines. Studies from other similar settings have shown that workplaces with comprehensive safety guidelines experience fewer accidents and injuries, as these guidelines provide clear instructions on hazard identification, risk assessment, and the use of protective measures (45). This finding highlights the importance of having structured safety protocols and regulations in place to guide worker behavior and ensure a safe working environment. The implementation of OSH guidelines has been widely recognized as a cornerstone of effective occupational health and safety management; which need to be adopted in factories in Mogadishu.

The provision of PPE to workers was another significant factor associated with a lower incidence of occupational injuries. Workers who received PPE were 0.43 times less likely to report injuries, indicating that PPE plays a crucial role in protecting workers from various hazards. PPE such as gloves, helmets, earplugs, and protective clothing are essential in preventing injuries from burns, cuts, noise, and other workplace hazards. The effectiveness of PPE in reducing injury risks has been well-documented, particularly in environments where workers are exposed to physical, chemical, or biological hazards (46). Ensuring that all workers have access to and consistently use appropriate PPE is a key strategy in injury prevention.

Noise at the workplace was identified as a significant risk factor, with workers reporting a lot of noise being 3.82 times more likely to suffer an injury compared to those in quieter environments. This finding is consistent with studies by (47) that links excessive workplace noise to an increased risk of accidents and injuries. High levels of noise can impair concentration, hinder communication, and cause fatigue, all

of which contribute to a higher likelihood of accidents. Additionally, prolonged exposure to loud noise can lead to hearing loss, further increasing the risk of injury due to reduced awareness of surrounding hazards. Addressing workplace noise through engineering controls, such as noise barriers or sound-dampening materials, and providing hearing protection for workers are critical steps in reducing noise-related injuries.

Workers who underwent medical examinations before being recruited were significantly less likely to report occupational injuries, being 0.29 times less likely compared to those who did not undergo such examinations. Similar findings have been highlighted in a study by (48). Pre-employment medical examinations can help identify health conditions or physical limitations that may increase the risk of injury in certain job roles. These examinations ensure that workers are fit for the specific demands of their jobs, thereby reducing the likelihood of accidents caused by undiagnosed medical conditions. Furthermore, regular medical assessments can help monitor workers' health over time, allowing for early detection and management of conditions that could impair their ability to work safely. Factory managers should therefore ensure employees undergo regular medical examinations before and after recruitment at the factories.

Study strength and limitations

Findings from this study can only be generalized to Mogadishu, and not the whole Somalia. This is because the study area is an urban setting under rapid growth and development and hence daily emergency of factories due to commercialization. As a result, the findings here may not provide a similar picture in other rural and peri-urban parts of the country. The is potential for recall bias exists, as some study respondents could have difficulty remembering injury experiences, particularly those of less severity and long duration preceding the study. To mitigate this, we implemented a strategy to cross-reference and validate self-reported injury data by examining available medical records. This approach aimed to enhance the accuracy of injury information, minimizing the impact of recall bias and ensuring a more comprehensive and reliable dataset for our study. The study also focused on unintentional forms of injury. Injury experiences like suicide were not put into consideration. It however employed a relatively large sample of factory workers, enhancing the generalizability of findings within Mogadishu. The study also adopted standard trauma assessment tool which improved the reliability of findings.

Conclusions

The prevalence of occupational injuries among factory workers in Mogadishu was generally high. This highlights a significant public health concern, necessitating urgent interventions to improve workplace safety and health standards. Both individual and workplace factors contribute to injury risk, underscoring the need for comprehensive interventions that combine worker training, enforcement of safety standards, and provision of protective equipment. Strengthening occupational health policies and practices will be essential to safeguard worker well-being, sustain productivity, and reduce the societal burden of workplace injuries.

Declarations

Ethics approval and consent to participate

All methods were performed in accordance with relevant guidelines and regulations, such as the 1964 Declaration of Helsinki. Approval for the study was obtained from the Makerere University School of Public Health, Research and Ethics Committee. Administrative clearance was obtained from Somalia Ministry of Trade, the Occupational Safety and health. Written/thumbprint informed consent was obtained from all participants before participation in the study, and participation was voluntary. Any personal or identifying information was kept secure, and participants' privacy was respected during the interview.

Consent for publication

This does not apply to this study.

Clinical trial number: not applicable.

Availability of data and materials

The datasets generated and analyzed during this study are available from the corresponding author on reasonable request.

Code availability

This does not apply to this study.

Competing interests

The authors declare that they have no competing interests.

Funding

The study received no funding

Authors' contributions:

RHI conceptualized the idea, carried out research, analysed the data, and wrote the manuscript. AH and RM supervised RHI, reviewed the proposal, dissertation, and manuscript. MA and DM revised the analysis and edited the manuscript.

Acknowledgements

We would like to thank the Somalia ministry of Trade for granting us the administrative approval and all the workers that agreed to take part in this survey

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Table 3

Table 3 is available in the Supplementary Files section.

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