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Workplace hazards and safety practices in the small-scale industries

Mahmoud Fathy ElSharkawy[1*]

[1] Department of Environmental Health, College of Public Health, Imam Abdul Rahman bin Faisal University, Dammam, Kingdom of Saudi Arabia; msharkawy@iau.edu.sa
*Correspondence: msharkawy@iau.edu.sa

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Abstract
The small-scale industries are considered a major sector of economic investment in the world. Small-scale industries typically suffer from problems such as poor management systems, poor safety training, difficulties in complying with legislation, and absence of safety performance. This study aimed to measure the levels of heat stress and noise and assess the safety performance in small-scale industries. Twenty industrial workshops were selected representing four different types of small-scale industries (foundries, automotive repair, metal processing, and aluminium processing) in Alexandria, Egypt. Inside each selected workshop, both levels of heat stress and noise were measured by calibrated instruments. A pre-designed checklist evaluated the adequacy of the safety performance. Noise levels ranged between 86.4 ± 2.0 and 89.7 ± 2.7 dB exceeding the recommended value (85 dB). In the most studied workshops, the levels of heat stress were relatively high, especially in the foundries. Besides, the safety practices at all these workshops were-poor or very poor. The most obvious safety problems included poor housekeeping, lack of PPEs, inadequate illumination, absence of emergency exits, and insufficient fire extinguishers. The results emphasize the responsibility of the local authorities to give more attention and interest to this type of industry.

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1. Introduction

The size of an industry is commonly assessed by its workforce. Specifically, small-scale industries are characterized by their employment numbers. According to Hasle et al. (2012), these industries typically have a workforce ranging from more than 10 to fewer than 50 workers. Alternate definitions, such as those proposed by Balkhyour et al. (2019), suggest that small-scale industries may employ between 20 and 100 workers. Globally, small-scale industries are recognized as a significant sector for economic investment, contributing substantially to the economies of both developed and developing countries, as highlighted by Soundattikar et al. (2000). Additionally, such industry type is considered an excellent opportunity for job creation and plays a crucial role in enhancing the economies of thriving nations by providing numerous worker benefits (Ahmad et al., 2017).

Compared with large industries, small-scale industries are typically suffering from limited resources either workforce expertise or lack of finance which leads to poor safety training, difficulties in complying with legislation, and absence of safety performance (Hasle et al., 2012). The combination of machines and the limited workspace in small-scale industries creates many challenges related to safety, accurate sensing, motion planning and control (Nirmalkannan et al., 2015). Several studies revealed that handling manual material without an appropriate control system is the main cause of a high percentage of injuries and death cases at workplaces of small-scale industries (Hasle et al., 2009).

Globally, industrial safety and occupational health have gained increased significance across various sectors for several ethical, legal, and social reasons. Businesses prioritize these aspects differently depending on management's objectives, which can range from boosting production and economic benefits to improving the social aspects of worker welfare and community well-being (Kifle et al., 2014; López-Botero and Ovalle-Castiblanco, 2016). The work environment of most small-scale industries is characterized by regular exposure to several occupational hazards such as high noise levels, hot environments, dust, gases, and fumes. These hazards hold the potential to affect worker's health adversely (Mirer and Stellman, 2008). Compared to the developed countries, the number of workplace injuries in most developing countries is much higher, where occupational health is neglected putting the health and lives of workers usually at risk (Bharwana, et al., 2015; Dida et al., 2019). Based on several studies, more than 90% of the small-scale industries in developing countries have a very poor work environment, and the workers' management overlooks the legal component that protects them (WHO, 2001). In Africa, informality (the range of employment and income-generating activity outside of formal enterprises) and poverty result in environmental degradation and a low standard of occupational safety (Wenner, et al., 2006), which leads to greater frequency and severity of the injury (Dida et al., 2019).

Processing or the casting of foundry is an important small-scale industry. It is a very efficient and effective manufacturing process, which can transform raw material into daily required products (Chelladurai et al., 2020). Two main procedures are carried out in a foundry: sand molding and metal casting through pouring liquid metal into a mold containing a socket in the geometry desired for the final part (Ribeiro and Filho, 2006). The industrial process of the foundry is characterized by its simplicity in process, economic to operate and easy to produce small size castings (Chelladurai et al., 2020). On the other hand, workers in foundries are exposed to different serious hazards such as contact with hot metal, extreme temperatures, burns, noise, vibration, fire or explosion, and non-ionizing and ionizing radiation (Ahmad and Balkhyour, 2020).

The metal processing industry is comprised of many different types of small-scale enterprises in metal production, finished hardware production, wellhead equipment, machinery and machine tools production, and metal recycling (Kuo et al., 2007). Examples of this type of industry include the processing of aluminium windows, iron doors, and brass door handles. Operations involved in the metal processing industry include metal production, recycling, processing (turning, grinding, welding) and others (Nejea and Balappa, 2017). Workers in the metal small-scale industries are usually exposed to many occupational hazards including mechanical hazards (such as tools and equipment), physical hazards (such as noise and vibration), chemical hazards (such as welding fumes), and extensive physical load (Jelinic et al., 2005). In metal processing, noise usually is elevated, especially metal cutting with a grinding machine, cutting with a guillotine and metal pressing. Elevated noise can lead to several adverse impacts such as hearing impairment and occupational deafness (Mârtiòsone et al., 2010).

Automotive repair workshop is another type of small-scale industry. The most common activities performed at automotive repair shops include replacement of automotive fluids (e.g., motor oil), replacement of non-repairable equipment and repair of fixable equipment (e.g., carburettors). The hazards associated with car repairing include exposure to excessive noise, paint chemicals and welding fumes; burns due to contact with hot surfaces and injuries due to collapse of jacking, lifting, or hoisting equipment (OCAPP, 2007).

2. Literature review

Several previous research was focused either on external factors such as social capital or internal factors such as human resources management (Torres, O., 2011) for the success of small-scale industries (Beshah et al., 2013; Kuntaric et al., 2012). In developing countries, limited research has been conducted for the assessment of occupational hazards and safety performance in the workplace area of the small-scale industry. Hence, this study aims to fill this gap by assessing levels of two types of physical hazards noise and heat stress, and to assess the safety performance in different types of small-scale enterprises in a main city of a developing country.

3. Experimental

3.1. Selection of small-scale industries

Twenty workshops were selected for this study representing four types of small-scale industries in Alexandria, Egypt based on several criteria such as the exposure of workers to both noise and heat stress and the severity of workers' exposure to these hazards. Five workshops were chosen from industries including foundries, automotive repair, metal processing, and aluminium processing. The study's methodology commenced after obtaining the necessary permissions, particularly from the owners of the workshops. A preliminary walkthrough survey was conducted in all selected workshops for the designation of the safety performance questionnaire, determination of the appropriate time for measurement and preparation of the required data from the workshop owner. A cross-sectional descriptive study was conducted to measure two physical hazards and evaluate the safety performance in the selected industrial workshops.

3.2. Measurements of noise and heat stress levels

At each one of the selected small-scale industries, measurements of noise and heat stress were conducted at the machine itself (the source) and at various locations farther from the sources. On average, six sites were selected as measuring points inside every single workshop. All measurements were conducted during the workdays (Saturday – Thursday) at the maximum workload of the day. Each single workshop was visited at two different times during the total period of study. All measurements were done during the hot months of the same year (May-August) to exclude the differences in weather conditions. Additionally, the measurements were conducted across the four types of workshops during consecutive days to minimize the influence of external factors. Before carrying out the study during the warmer months, a pilot study was conducted across various months of the year (December and March), in instances where differences in measurements were not significant, it was determined that noise levels are not affected by weather conditions but rather depend on the types of machines and devices in the work environment, and the industrial process in most of the selected small industries (especially foundries) requires high-temperature environment (such as furnaces), whether the weather outside these units is hot or cold, because all the selected small-scale industries were closed and isolated from the external environment.

One of the most recommended methods for measuring heat stress at the workplace is the Wet Bulb Globe Temperature (WBGT) Index (OSHA, 2012). It is a temperature measurement derived from three sensors influenced by temperature, humidity, radiant heat, and air flow. It gives work/rest regimens based on the WBGT and the metabolic rate of the worker. Its values are expressed in °C and can be calculated from the following equations: WBGT (Indoor) = 0.7 NWB + 0.3 GT, while WBGT (outdoor) = 0.7 NWB + 0.2GT + 0.1 DT. The NWB means Natural Wet- Bulb Temperature, the DT means the Dry- Bulb Temperature and the GT means the Globe Temperature. During this study, the WBGT levels were assessed using a WBGT measuring instrument (RSS-214 'WiBGet®', GENEQ Inc). Two measurements were conducted at each selected sites inside each single workshop. Nearly 250 measurements were conducted for all types of workshops during this study.

The area noise means the general noise in a certain workplace in which all workers in this place are exposed at the same time to nearly the same level. Noise levels (A-weighted sound pressure levels) were measured in decibels (dB) using a sound level meter, which detects the pressure of sound waves as they move through the air. During this study, the noise measurements were monitored by using a calibrated sound level meter (TES 1352A, TES Electrical Electronic Corp). The noise level survey was conducted in areas where hazardous noise levels are present and where the workers are present most of the working day (at the machine itself). At least three noise measurements were conducted at each selected sites inside each single workshop. Nearly 400 measurements were conducted for all types of workshops during this study.

3.3. Analysis of data

Results of noise and heat stress monitoring were analysed statistically using the Statistical Package for the Social Sciences (SPSS) version 23 and Excel Software 2016. Descriptive statistics and analysis of variance (ANOVA) test were used for comparing levels of the studied levels of noise and heat stress and different types of small-scale industries. The ANOVA test is a statistical test used to determine if there is a statistically significant difference between two or more categorical groups by testing for differences of means using a variance. Another key part of ANOVA is that it splits the independent variable into two or more groups. The statistical significance of p-value <0.05 was used for all tests of significance.

3.4. Evaluation of safety performance

The safety performance was evaluated inside the selected industrial workshops during the study as an indicator of the safety practices and the safety culture in small-scale industries in general. A pre-designed safety checklist was used for the evaluation of the safety performance, where it was reviewed by two experts for its validity and reliability before use. It was divided into ten sections with a total of 50 questions. It includes questions about the layout, work environment, emergency procedures, first aid facilities, general facilities welfare, manual handling, electrical safety, general safety workshop, plant and equipment, and–personal protective equipment (PPE). For each question, there were two options for the answer; yes or no. Data from the checklist were collected by the researcher himself for all selected workshops through walkthrough surveys inside each workshop to fill the checklist for every single workshop, evaluation of the safety performance was conducted twice during each visit using this checklist to confirm the results and ensure that there are no major changes in the work activity within the facility. Data from the checklist was statistically analyzed to calculate the compliance and non-compliance percentages for each one of the ten sections. The mean percentage for all items of the checklist was calculated for each workshop and hence, the overall percentage of the safety performance was calculated for each type of the four selected small-scale industries.

3.5. Targeted Population

Mostly small-scale industries are owned by a signal person or family, where there are not multiple jobs or employment levels like in the large industries. In small-scale industries, all workers are at one level-headed by one as a general supervisor who works in the same environment, and in many cases the employer is the same supervisor to save excess labour expenses. Therefore, all workers in each selected small-scale industry were exposed to the same exposures throughout the work period.

4. Results and discussion

4.1. Levels of Noise

Figure 1 shows the mean levels of noise in dB at the four types of workshops, compared with the Threshold Limit Value (TLV). The mean ± standard deviation (SD) of noise levels at foundries, metal processing, aluminium processing and car repairing workshops were 86.4 ± 2.0, 89.1 ± 3.3, 89.7 ± 2.7 and 86.7 ± 2.1 dB respectively. Levels of noise inside the four types of workshops were compared statistically using the One - Way ANOVA test, as shown in table 1. There was a statistical difference ($p<0.001$) at both the metal and aluminium processing workshops compared to the other two types of workshops. On the other hand, no significant difference was found, neither between noise levels at the metal and aluminium processing workshops nor between those at foundries and car repairing workshops ($p>0.05$).

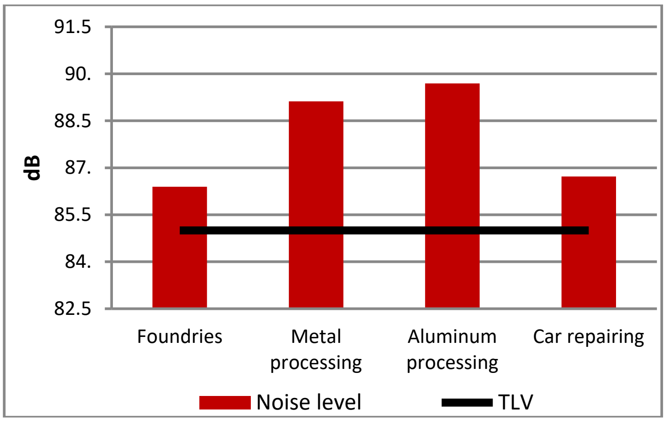

Fig. 1. Average levels of noise at the four selected workshops

Table 1. One - Way ANOVA test for noise and heat stress levels inside small metal workshops

Type of workshop	Noise levels	Heat stress levels
Foundries - Metal processing	.000*	.003*
Foundries - Aluminum processing	.000*	.000*
Foundries - Car repairing	.646	.003*
Metal processing - Aluminum processing	.421	.295
Metal processing - Car repairing	.001*	.993
Aluminum processing - Car repairing	.000*	.300

*Significant at 95% C.I

4.2. Levels of Heat Stress

As shown in Figure 2, the mean ± SD of heat stress levels in foundries, metal processing, aluminium processing, and automotive repair workshops. The heat stress level inside foundries was the highest, followed by metal processing, and aluminium processing, while the lowest one was recorded in the automotive repair workshops (29.6 ± 3.9, 27.1 ± 2.9, 23.9 ± 1.7 and 26.3 ± 2.1°C respectively). The ACGIH has published the TLVs for heat stress in the working area in ºC WBGT considering the work and rest periods, as shown in Table 2 (Appendix A). The acclimatized worker means "the worker who has been previously exposed to hot conditions and shows tolerance to working in such hot environment". In contrast, the unacclimatized worker means "the worker who has not previously been exposed to work in hot conditions and must be given time to acclimatize during working in the hot environment" (ACGIH, 2009).

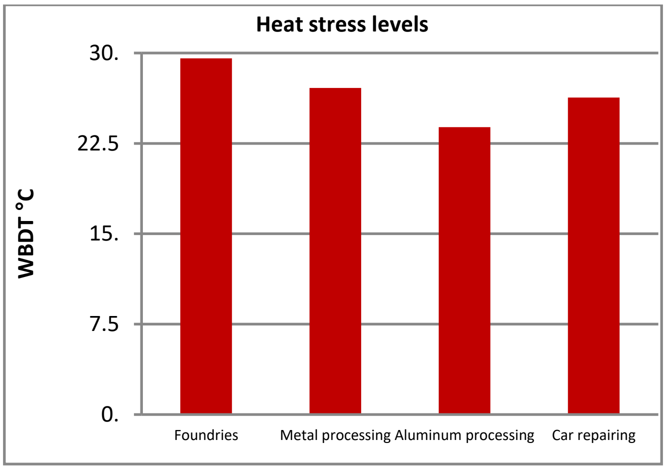

Fig. 2. Average levels of heat stress at the four selected workshops

4.3. Safety Performance

Table 3 (Appendix B) represents the full study checklist and results of the selected twenty foundries, metal processing, aluminium processing, and automotive repair workshops. The foundries and automotive repair workshops had inadequate layouts (such as inadequate storage areas for tools, raw materials, and products) with a percentage of 13% and 10% respectively. The work environment was bad to very bad at the four types of the selected industrial workshop. The percentage of a safe work environment (such as adequate lighting) was 0%, 4%, 16% and 24% at the automotive repair, foundries, aluminium processing and metal processing workshops respectively. The emergency procedures, such as the presence of extinguishers with an appropriate type and easily accessible, were also insufficient at the four types of the selected industrial workshop. Its percentage ranged between 10% and 13%. The electrical safety items (such as the presence of test tags for the portable equipment) are completely absent (0%) at both the foundries and automotive repair workshops, while its percentage at the aluminium processing and metal processing workshops was 12% and 16% respectively. At all studied workshops, the PPE was completely missed (0%). The percentage of the other items of safety performance in the selected workshops (first aid facilities, general facilities, manual handling, general workshop, and equipment) was lower than 40% and some of them were also completely absent (0%).

In metal and aluminium processing workshops, the most common operations are metal sheet cutting and shearing, drilling, turning, boring, milling, shaping, planning, and grinding. All these operations are considered the main sources of noise, and for this reason, the highest mean levels of noise were found at the workplace of these workshops. On the other hand, the common operation in foundries is the physical treatment of metal such as metal heating and pouring of molten alloy. In automotive repair workshops, there is a mix of light metal handling (such as removal and installation of metallic parts) and other physical or chemical treatment for metal such as welding and painting. The noise emitted from these operations is generally lower when compared with the former two workshops.

As shown in figure 1, the mean levels of noise at all chosen small-scale industries were higher than the NIOSH 8-hr weighted average (TWA) of 85 dBA (NIOSH., 2008). It is well known that noise can increase the overall workload on operators while performing a specific task, masks both the speech and the alarm sounds and affects the overall worker's performance (Aybek et al., 2010). Exposure to excessive noise higher than 85 dBA can cause health problems including temporary or permanent hearing loss, concentration problems, stress, nervousness, sleeping problems and fatigue, reduce productivity, interfere with communication and concentration, and contribute to workplace accidents and injuries by making it difficult to hear warning signals (Fernandez et al., 2009; Luka and Akun, 2018). In addition, the physiological and psychosocial alterations among noise-exposed workers are the development of noise-induced hearing loss (Arezes et al., 2012; Noweir and Zytoon, 2013).

In Latvia, a study was conducted during the period between 1996 and 2005 to investigate risk factors in the work environment of the Latvian metal processing industry. In the assessed metalworking workplaces, the work environment was estimated to be of poor quality, because occupational exposure limits or recommended values were exceeded in 42% of cases. Noise most often exceeded the occupational exposure limits or recommended values with strong statistical significance ($P < 0.001$) (Mârtiòsone et al., 2010).

In all chosen workshops, the working shift is usually 8-9 hours including two two-hour rest periods. The networking period is about 75% of the total work shift in a heavy to very heavy workload. From Table 2, the TLVs are 27.5 and 24.0 WBGT °C for both acclimatized and unacclimatized workers respectively. Based on the ACGIH standards, the mean levels of heat stress inside foundries were higher than the recommended values. In the metal and car repairing workshops, levels of heat stress were above the TLV of the unacclimatized workers only, while it was safe in the aluminium workshops for all workers. Founding (or casting as it is commonly called) involves the pouring of molten metal into a mould made to the external shape of the article to be cast, and after cooling, the mould is subjected to a ‘shakeout’ procedure which releases the casting and removes the core. The casting is then cleaned, and any extraneous metal is removed from it (National Occupational Health and Safety Commission, 1989). Accordingly, workers in foundries are exposed to severe hot work environments. On the other hand, workers in the other three types of workshops are exposed to lower hot environments due to welding operations. Welding is a metal-joining process in which fusion is produced by heating to suitable temperatures and melting the metal (Sharifian et al., 2011). For this reason, the foundry workplace had the highest levels of heat stress with a strong significant difference compared with the other types of workshops ($p < 0.005$). When heat is combined with physical activity, loss of fluids, fatigue, and other conditions; it can lead to several heat-related illnesses and injuries. Xiang revealed that workplace heat exposure can increase the risk of occupational injuries and accidents (Xiang et al., 2013).

At all studied workshops, the most obvious safety problems included very bad housekeeping, absence of personal protective equipment, insufficient lighting, inappropriate safe access, absence of emergency exits, and inefficient fire extinguishers.

Small-scale industry workers are considered the least aware of safety and health concerns that result from workplace exposures, activities, and materials (Ahmad et al., 2017), the literature demonstrated that understanding, knowledge, and information are deficient on appropriate usage of PPE among such workers (Kamal et al., 2016; Taha, 2000). Several previous studies indicated that small-scale shops are associated with more health and safety in compliance and higher accident rates regardless of-geographic location. For example, an Ethiopian study investigated an occupational injury correlation for 197 workers who were involved in metalwork among small-scale industry workers, where 69.2 % of the metalwork workers had occupational injuries. The workers in all small-scale industries reported only 22.1 % who used PPE regularly. They concluded that the physical agents, powered hand tools, excessive physical effort and machines were mainly associated with the injury’s occurrence (Dida et al., 2019). Another study conducted in Colombia revealed the lowest level of obligation to the occupational safety and health law for small-scale metalworking shops, compared to mid and large-size ones (López-Botero and Ovalle-Castiblanco, 2016).

A recent study done in Jeddah, Saudi Arabia, involving more than one hundred-workers from about 30 small-scale industries reported that 80.4% of workers are exposed to high levels of noise in their workplace. Besides, the most common safety practice problem was the absence of personal protective equipment that is needed in such types of industry such as ~~the~~ safety glasses, gloves earplugs or muffs (Balkhyour, 2019).

Hasle et al. studied the relation between the workers and the workshop owners, and they concluded that conditions unique to small-scale enterprises primarily attribute the causes of accidents to unforeseeable circumstances, and the owners reject those conditions under their control that have caused the accident. They related this bad relation to several factors such as deficiency of social insurance, lack of emergency responses, lack of medical and social services and absence of workers’ welfare services (Hasle et al., 2012).

Besides, workers in-small-scale industries burly exposed to several mechanical hazards such as falling and flying objects, sharp edges, striking against, being caught between, falling on the same level, falling on different level, slip, and burning (Ahmad et al., 2016; Ali et al., 2016; Kamal et al., 2016). The absence or insufficient use of engineering controls and PPEs in the small-scale industries can expose workers to many safety and health hazards and risks which ultimately can cause serious health implications (Brosseau et al., 2014).

Many studies have been conducted to compare levels of occupational hazards in small, medium, and large–scale industries. As instance, the comparative descriptive cross-sectional study amongst registered medium and small-scale manufacturing industries in Anambra State in Nigeria revealed that the average noise level was found to be higher in the medium-scale industries (76.2) as compared to the small-scale industries (72.6), while cuts and injuries constituted 41.2%; 35.4 and 25.9%; 30.0 of complaints by workers associated with hazards in the small and medium scale industries respectively (Eguvbe et al., 2017). Another study was done to evaluate the occupational hazards in medium and large-scale industrial sectors in Sri Lanka, where it was concluded that physical hazards detected in the workplaces were, excessive noise (78.3%), poor light (58%), increased temperature (65.2%), and poor ventilation (68.1%). Over 50% of large machinery and 33% of medium-scale machinery were not adequately guarded. Nearly 41% of the machinery were difficult to operate, of them 36.2% had controls in positions which were hard to reach. Of safety measures adopted, only 34.8% had proper demarcation of areas with 28.9% displaying safety signs. Housekeeping was poor in 59.4% and less than 40% had safe storage of raw materials and end products (Arnold et al., 2019). Unnikrishnan et al., revealed that the safety management practices are inadequate in most small and medium enterprises (SMEs) in India, where the lack of awareness, resistance to change, and lack of training for employees were found to be the main barriers (Unnikrishnan et al., 2015).

5. Summary and conclusion

Among the all-selected small metal workshops, the workers were exposed to severe noise levels higher than the TLV values. In foundries, in addition to that they were also exposed to high levels of heat stress. Most of the studied metal workshops had bad or very bad safety performance. Small-scale industries have limited financial resources to hire designated employees for health and safety matters. In most circumstances, this responsibility will be allocated to workers who have no formal training in health and safety and will be assigned to different activities within the workshop. Simple recommendations that could be easily implemented without high capital cost, include improving of housekeeping, better layout, using the appropriate personal protective equipment (PPE), and improving safety awareness of workers and owners through appropriate training. Besides, the regulatory authorities should inspect the activation of safety criteria and occupational health laws within these places. Results of this study reveal the major challenge for small-scale industries' efforts to improve occupational health and safety. Although this study is a single geographical area (Alexandria, Egypt), its result can be used for many cities in developing countries.

Limitations of the study

Although the study surveyed four types of small-scale industries, the studied number of each type (five workshops) is still small due to the difficulties that the research team faced in obtaining the necessary approvals, in addition to the lack of approved occupational or environmental records compared to the large – scale industries. It was found most of the workers were exposed to high levels of noise, therefore future studies must focus on monitoring worker noise exposure using a dosimeter (personal noise meter). In addition, the other small–scale industries (such as wood and painting workshops) must be studied at different governorates and seasons of the year to correctly evaluate and characterize levels of occupational hazards and safety performance inside such workplace environments.

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Appendix

Appendix A

Table 2. One - Way ANOVA test for noise and heat stress levels inside small metal workshops

Allocation of work in a cycle of work and recovery	TLV (acclimatized)				Action limit (unacclimatized)			
	Light	Moderate	Heavy	Very Heavy	Light	Moderate	Heavy	Very Heavy
100% Work	31.0	28.0			28.0	25.0		
75% Work	31.0	29.0	27.5		28.5	26.0	24.0	
50% Work	32.0	30.0	29.0	28.0	29.5	27.0	25.5	24.5
25% Work	32.5	31.5	30.5	30.0	30.0	29.0	28.0	27.0

Appendix B

Table 3. The full study checklist with the detailed results

No	Item	Foundries		Metal processing		Aluminum processing		Car repairing	
		Yes	No	Yes	No	Yes	No	Yes	No
	1 LAYOUT								
1	1.1 Area is tidy and well kept	20%	80%	40%	60%	60%	40%	0	100%
2	1.2 Adequate storage area provided	0	100%	60%	40%	60%	40%	0	100%
3	1.3 Floor coverings in good condition	40%	60%	80%	20%	80%	20%	40%	60%
4	1.4 Any opening in the floor is guarded or covered	20%	80%	60%	40%	80%	20%	20%	80%
5	1.5 Aisles are sufficiently wide for traffic	0	100%	0	100%	60%	40%	0	100%
6	1.6 Walkways clearly marked and guarded if necessary	0	100%	0	100%	20%	80%	0	100%
	Average	13%	87%	40%	60%	60%	40%	10%	90%
	2 THE ENVIRONMENT								
7	2.1 Temperature is comfortable	0	100%	0	100%	60%	40%	0	100%
8	2.2 Lighting is adequate	0	100%	40%	60%	60%	40%	0	100%
9	2.3 Area is free from odors	0	100%	0	100%	0	100%	0	100%
10	2.4 Noise level is acceptable/adequately controlled	20%	80%	0	100%	0	100%	0	100%
11	2.5 Ventilation is adequate	0	100%	40%	60%	0	100%	0	100%
	Average	4%	96%	16%	84%	24%	76%	0%	100%
	3 EMERGENCY PROCEDURES								
12	3.1 Written procedures posted	0	100%	0	100%	0	100%	0	100%
13	3.2 Extinguisher of appropriate type easily accessible	0	100%	0	100%	0	100%	0	100%
14	3.3 Tag on extinguisher has been checked in the last 6 months	60%	40%	60%	40%	80%	20%	60%	40%
15	3.4 Escape routes are clear	0	100%	20%	80%	0	100%	0	100%
16	3.5 Emergency and hazard signage is clearly visible	0	100%	0	100%	0	100%	0	100%
17	3.6 Evacuation drills carried out	0	100%	0	100%	0	100%	0	100%
	Average	10%	90%	13%	87%	13%	87%	10%	90%

	4 FIRST AID FACILITIES								
18	4.1 Kits accessible within 5 minutes	0	100%	0	100%	0	100%	0	100%
19	4.2 Kits are stocked, and contents are in-date	20%	80%	40%	60%	20%	80%	0	100%
20	4.3 Names and contacts of first aiders displayed	0	100%	0	100%	0	100%	0	100%
	Average	7%	93%	13%	87%	7%	93%	0%	100%
	5 GENERAL FACILITIES								
21	5.1 Washing facilities are clean and functional	0	100%	20%	80%	40%	60%	0	100%
22	5.2 Lockers or equivalent available for staff	0	100%	0	100%	40%	60%	0	100%
23	5.3 Eating areas clean, hygienic and adequately serviced	0	100%	0	100%	0	100%	0	100%
24	5.4 EHS posters and information is displayed	0	100%	0	100%	0	100%	0	100%
	Average	0%	100%	5%	95%	20%	80%	0%	100%
	6 MANUAL HANDLING								
25	6.1 Frequently used items are within easy access between knee and shoulder	80%	20%	80%	20%	80%	20%	80%	20%
26	6.2 Heavy items stored at waist height	0	100%	0	100%	20%	80%	0	100%
27	6.3 Stepladders or safe steps are available to access items stored on high shelves	0	100%	0	100%	20%	80%	0	100%
28	6.4 Trolleys are available for heavy items and loads	20%	80%	20%	80%	20%	80%	20%	80%
29	6.5 Stored items adequately secured and stable	0	100%	0	100%	40%	60%	0	100%
	Average	20%	80%	20%	80%	36%	64%	20%	80%
	7 ELECTRICAL SAFETY								
30	7.1 Portable equipment has current test tags	0	100%	40%	60%	20%	80%	0	100%
31	7.2 Power leads in good condition	0	100%	0	100%	40%	60%	0	100%
32	7.3 Power leads are off the floor or placed away from walkways	0	100%	0	100%	0	100%	0	100%
33	7.4 Power boards used (not double adaptors)	0	100%	40%	60%	0	100%	0	100%
34	7.5 Faulty equipment is tagged out	0	100%	0	100%	0	100%	0	100%
	Average	0%	100%	16%	84%	12%	88%	0%	100%
	8 GENERAL WORKSHOP								
35	8.1 Warning and safety signage in good condition	0	100%	0	100%	0	100%	0	100%
36	8.2 Procedure, plant and equipment manuals are current and available	0	100%	0	100%	0	100%	0	100%
37	8.3 Workshop free of food and drink	0	100%	0	100%	0	100%	0	100%
	Average	0%	100%	0%	100%	0%	100%	0	100%

	9 PLANT AND EQUIPMENT								
38	9.1 Access to plant is clear	60%	40%	60%	40%	100%	0	100%	0
39	9.2 Safe working instructions displayed close to plant	0	100%	0	100%	0	100%	0	100%
40	9.3 Plant locked or cannot be accessed when left unattended	100%	0	100%	0	100%	0	100%	0
41	9.4 Plant and equipment maintained and in good condition	0	100%	0	100%	40%	60%	0	100%
42	9.5 Emergency stops are working	0	100%	0	100%	0	100%	0	100%
43	9.6 Plant guarding in place	0	100%	40%	60%	0	100%	0	100%
44	9.7 No sharp edges protruding into aisles or walkways	20%	80%	20%	80%	20%	80%	20%	80%
45	9.8 Seating appropriate and in good condition	0	100%	20%	80%	0	100%	0	100%
46	9.9 Ladders in good condition and properly stored	0	100%	0	100%	0	100%	0	100%
	Average	20%	80%	27%	73%	29%	71%	24%	76%
	10 PPE								
47	10.1 Correctly stored	0	100%	0	100%	0	100%	0	100%
48	10.2 Well maintained and in good condition	0	100%	0	100%	0	100%	0	100%
49	10.3 Signage of PPE requirements displayed	0	100%	0	100%	0	100%	0	100%
50	10.4 Required PPE available	0	100%	0	100%	0	100%	0	100%
	Average	0%	100%	0%	100%	0%	100%	0%	100%