

Occupational health and safety management systems – a review of practices in enterprises in Botswana

SY Seoke^{1,2} and IM Kamungoma-Dada¹

¹School of Health Systems and Public Health, University of Pretoria, Pretoria, South Africa

²Department of Occupational Health and Safety, Ministry of Labour and Home Affairs, Gaborone, Botswana

Correspondence: Dr Sinah Yamogetswe Seoke, Deputy Director, Department of Occupational Health and Safety, Ministry of Labour and Home Affairs, 136 Independence Avenue, Private Bag 00241, Gaborone, Botswana.
e-mail: syseoke@gov.bw; syseoke@gmail.com

Dr Sinah Seoke is a member of the International Commission on Occupational Health.

ABSTRACT

Unsafe working conditions create heavy burdens in workplaces and on the wellbeing of workers. Despite this, Occupational Health and Safety Management Systems (OHSMS) to reduce accidents and diseases in workplaces remain inadequate in many countries, including Botswana. An exploratory cross-sectional study, using secondary data, was undertaken to establish OHSMS practices in various industrial sectors in Botswana. The results showed that a quarter (27.6%) and about half of small and medium enterprises (SMEs), respectively, and just over half (60%) of large enterprises, have existing OHSMS. Only 29.2% of enterprises had an OHS policy statement. The elements of OHSMS were not uniformly implemented across all enterprises, with SMEs faring poorly. However, 71.1% of enterprises reported provision of induction courses. OHSMS is not widely practiced in Botswana, raising concerns for worker wellbeing, particularly in SMEs. Further research is needed to identify gaps and the development of a coherent OHSMS for the country.

Keywords: occupational health and safety, enterprises, work-related injuries, survey

INTRODUCTION

Occupational health and safety (OHS) at the workplace is important, not only for maintaining workers health and wellbeing, but as an enabler for poverty reduction through employment, productivity, and economic efficiency of a country.¹ Although recognised that work-related accidents and ill-health can be prevented, globally, statistics show an increasing trend in occupational accidents and diseases in enterprises in general² and particularly in small and medium sized enterprises (SMEs).^{3,4}

The International Labour Organization (ILO) estimates that up to 2.02 million people die every year from work-related diseases, with an additional 160 million people suffering from non-fatal work-related diseases.⁵ In Botswana, as in many other developing countries, there is little information about work-related diseases and injuries on which to base any firm answers to the questions regarding the health and safety of workers across small, medium and large enterprises. Van Ooteghem, in 2006⁶, reported that Botswana had more than 1000 work-related reportable accidents, which are accidents that result in more than three days absence from work. In real terms, work-related injuries could be much higher, as those where workers can continue working following an injury or require less than three days absence from work are not reportable, as per country labour legislation. Further, although 62 fatal accidents were officially recorded

in Botswana in 2005, the ILO reported that an estimated 1 088 fatal accidents occurred in that year.⁷

Studies show that there is paucity of data from enterprises, particularly from developing countries^{6,7} and also that OHS has not been given the priority it deserves in the workplace, as a contributory factor to the economic viability of an organisation and, hence, the country's economy.⁸

In recent years, the application of systems model to OHS, commonly referred to as the Occupational Health and Safety Management Systems (OHSMS) approach, has attracted the attention of enterprises, governments and international organisations, as a promising strategy to harmonise OHS and business requirements, and to ensure more effective participation of workers, in implementing preventive measures for injury to health of workers.⁹ OHSMS is a framework that allows an organisation to consistently identify and control its health and safety risks, reduce potential accidents, help achieve compliance with health and safety legislation, and continuously improve its performance.⁹

Studies indicate that workplaces implementing strategies to prevent occupational injuries, are associated with lower injury rates in the workplace.^{3,4} Studies reviewed by Robson et al.³ showed that implementation of OHSMS has positive effects on intermediate outputs (such as better safety culture and increased hazard reporting), and decreases injury rates; and disability-related costs. Robson et al.³ concluded that "these studies suggest which potential elements of an

OHSMS are important by identifying those that are correlated with low injury rates." Yoon et al.¹⁰ showed that both occupational accidents and fatal accident rates can be significantly reduced by the implementation of OHSMS. This study reported a 67% reduction in the average accident rate, which was attributed to the implementation of OHSMS, when OHSMS-certified companies were compared with non-certified companies.¹⁰ Further, OHSMS-certified companies not only had lower work-related accident rates but also had a lower annual fatal accident rate of 10.3%.¹⁰ The implementation of OHSMS practices have also been shown to improve productivity, attitude and adherence to organisational rules by employees.^{8,11,12}

Botswana, an upper-middle-income country with a total Gross Domestic Product (GDP) of R110.53 billion is dependent on a developmental strategy to diversify and grow its economy^{13,14} through private sector expansion, with a focus on SMEs and the informal sector.¹³ With this national plan, the country will experience an increase in the number of SMEs as well as large enterprises. Studies have shown that SMEs, in particular, are characterised by higher rates of accidents and ill health, with accidents being 20% more frequent in small enterprises than in enterprises with more than 100 workers, and 40% more frequent than in enterprises with more than 1 000 workers.^{15,16} Hasle and Limborg¹⁷ support this finding with evidence that there are high accident risks in small enterprises and that exposure to physical and chemical hazards is higher in small enterprises. Further, information on workplace injuries research shows that SMEs do not routinely keep records of the costs of ill-health or accidents.¹⁸ Quite commonly, small enterprises in particular, are only motivated to fulfil statutory requirements by the threat of punitive action¹, requiring effective and comprehensive legislation and monitoring implementation. Glass¹⁹ indicated that, due to the lower likelihood of small enterprises being inspected by government agencies, there are poor environmental conditions, greater hazard levels, and higher injury/illness rates.

The Work and Health in Southern Africa report (WAHSA)⁷ stated that, in the Southern African Development Community (SADC), of which Botswana is a member, (a) agricultural workers are exposed to heat, pesticides and fertilisers, ergonomic hazards, biological hazards that may result in lung problems and allergy, and machinery and tools that may cause physical injury; (b) industrial workers are exposed to chemicals, noise, dusts that might affect their lungs, mechanical hazards that could result in injury, and ergonomic hazards; and (c) services sector workers are exposed to different hazards, such as biological hazards (tuberculosis and Human Immuno-deficiency Virus) among healthcare workers, office ergonomic hazards, problems with indoor air quality, and transport accidents among transport workers. The WAHSA report further highlighted the lack of information systems in the SADC area, with those that exist described as weak; and the irregular collection of data, with

countries mainly relying on 'passive notification' whenever there is a workplace accident.⁷

To this end, Botswana embraced the ILO Decent Work Agenda in February 2011, as an effective strategy to address challenges of providing decent and safe working conditions and environment^{20,21} under growing global acceptance that there are heavy burdens imposed on human health and well-being, productivity, employment and the economy of a country as a whole¹ due to unsafe and unhealthy working conditions. The ILO guidelines on OHSMS (ILO-OSH 2001) capture the recommended required basic systems approach to management at enterprise level, and consist of: setting OSH policy within the enterprise; establishing organisational responsibilities within the enterprise; planning and implementation; evaluation; and action for improvement.²²

Botswana has no comprehensive information regarding OHS practices at enterprise level. A national assessment was conducted in June 2012 to establish current OHSMS practices at all enterprise levels in Botswana. The specific objectives for the national assessment were to determine the existence of OHSMS in enterprises; to identify the elements of OHSMS that exist in enterprises; and to identify what OHS information is communicated and disseminated to enterprise employees and the type of OSH training that is given to employees. This paper reports on the secondary data analysis, the aim of which was to establish OHSMS practices at enterprise level in Botswana, and to identify

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Table 1. National enterprises included in the survey, by industry

Industry	n	%
Community, Social, Household and Personal	144	34.8
Agriculture	26	6.3
Mining and Quarrying	12	2.9
Manufacturing	53	12.8
Water and Electricity	21	5.1
Construction	43	10.4
Wholesale retail, Hotel and Restaurant	102	24.6
Transport, Storage and Communication	9	2.2
Financing, Insurance, and Real Estate	4	0.9
	414	

Table 2. Enterprises included in survey, by size

	Size of enterprise (number of employees)				Total
	1-49	50-249	250-1200	≥1201	
No.	283	91	13	9	414
%	68.4	22.0	3.1	2.2	100

gaps in both SMEs and large enterprises in the country. The findings will, hopefully, assist in planning interventions and informing government policy.

METHODS

An exploratory cross-sectional study, using secondary data, was conducted to establish OHSMS practices at enterprise level in Botswana. The data that were analysed were collected during the National OHS Enterprise Survey Project that took place in June 2012.

Workplace managers or supervisors, with overall responsibilities encompassing OHS in the enterprise, were interviewed during the national survey by trained interviewers. The interviewers used a structured questionnaire, specially developed for the survey, to collect data on OHSMS practices from the respondents. The questionnaire was administered face-to-face to all respondents to facilitate responses and quality information by the interviewers, and also to prevent interviewer variations which can affect the data quality.²³ The questionnaire development was guided by the standard drawn from the ILO document "Outline for Compiling National Profile of Occupational Safety and Health profile,"²⁴ and covered the following sections:

A: Organisational demographics;

B: Specialised technical, medical, and scientific institutions; and

C: Educational, training and awareness-raising structures.

Section A gathered information on the OHS background of the enterprise and included information on OHSMS elements (policy statement, OSH committees and representatives, environmental or exposure monitoring, and training of employees) to determine OHSMS practices in the enterprises. Secondary data analysis was performed only on section A for the purpose of this study.

Study population

The primary study population was drawn from all 3 838 enterprises recorded in the Department of Occupational Health and Safety (DOHS) database as operational in June of 2012. Workplaces in mining and quarrying, agriculture and transport were included in the survey, even though they are not on the DOHS database and are not ordinarily inspected by the DOHS inspectorate. A comprehensive sampling list of industries consisting of the following industry categories was drawn up:

- Agriculture;
- Mining and quarrying;
- Manufacturing;
- Water and electricity;
- Construction;
- Wholesale and retail trade;
- Transport; and
- Household and personal services.

Sampling

The country's 16 districts were identified as clusters. For each district, lists of enterprises in each industry category indicated above were generated. Ten percent of industries from each category were randomly selected for inclusion in the study. During the survey, when interviewers were in the field and found that a workplace on the list was no longer operational, an accessible industry in close proximity was selected and interviewed to reach the target number for the district. Table 1 presents the comprehensive list of industries and sample sizes.

Data analysis

Data were captured using Excel, and were analysed using SPSS version 20. Data were summarised using descriptive statistics; percentages were calculated because the variables were mainly categorical. Group differences were tested by means of Chi-square analysis, using a statistical significance of 5%.

Ethical clearance for the study was obtained from the

Table 3. Pattern of elements of OHSMS

Element of OHSMS	Size of enterprise					
	Small (1-49)		Medium (50-249)		>250	
	Yes (%)	No (%)	Yes (%)	No (%)	Yes (%)	No (%)
Designated safety and health employee	27.2	72.8	54.9	45.1	62.4	37.6
Existence of OHS Committee	30.4	69.6	61.5	38.5	70.0	30.0
Environmental or exposure monitoring	34.6	65.4	47.3	52.7	56.8	43.2
Existing OHS data base	68.9	31.1	80.2	19.8	90.0	10.0



DOHS Banner for World Day for Safety and Health at Work, 28 April 2011, Botswana

University of Pretoria's Faculty of Health Sciences Research Ethics committee (ethics reference no: 96/2013) and permission to use and publish the data was obtained from the Ministry of Labour and Home Affairs, Botswana.

RESULTS

The total number of interviews conducted was 432; 414 (95.8%) questionnaires were complete and were analysed. The size of the surveyed enterprises, as defined by the number of employees, is presented in Table 2. According to the World Bank,²⁵ small enterprises can be defined as those that employ 1 to 49 employees, medium-sized enterprises as those that employ 50 to 249 employees, and large enterprises as those that employ 250 or more employees.

The Cronbach's Alpha coefficient for the current research was 0.79, implying that the results of the survey are replicable and consistent over time.

Existence of OHSMS

The survey revealed that overall, 35.8% (148/414) of the enterprises had existing OHS MS. Just over a quarter (27.6%; 78/283) of the small enterprises, about half (50.5%; 46/91) of the medium-sized enterprises, and more than half (60%; 24/40) of the large enterprises had existing OHSMS. Of the enterprises with OHSMS, 76.6% indicated that they were based on the ILO guidelines.

Table 4. Pattern of elements of OHSMS (all enterprises)

Element of OHSMS	Yes (%)	No (%)
OHS policy statement	29.2	70.8
Environmental or exposure monitoring	38.9	61.1
Existing OHS database	72.1	27.9

Elements of OHSMS

Proportions for different elements of OHSMS in the different sized enterprises are shown in Table 3. Just over a quarter, (27.2%; 77/283) of the small enterprises, about half (54.9%; 50/91) of the medium sized enterprises and 62.5% (25/40) of the large enterprises had a designated safety and health employee. Likewise, the larger the enterprise, the higher the proportion with an OHS committee.

Overall proportions for elements of OHSMS for all surveyed enterprises are presented on Table 4 which shows that only 29.2% of the surveyed enterprises had an OSH policy statement in place. More (38.9%) indicated that they were performing environmental or exposure monitoring in their workplaces, and a high proportion (72.1%) were keeping OHS data. The type of records kept in the OHS databases are summarised in Table 5.

OHS information communicated and disseminated to employees and type of OHS training provided

When it came to information provision; 71.1% of the enterprises indicated that they provided an OHS induction course to their employees; 73.8% provided safe work procedure training, and 38.9% provided medical data sheets to their employees. The training was provided "in-house" by more than half (57.6%) of the enterprises.

Table 5. Records kept on databases

Records	Yes (%)	No (%)
Accidents and injuries	67.5	32.5
Employees medical records	24.4	75.6
Records on near misses	53.6	46.4
Records on occupational diseases	41.9	58.1
Sick leave tracking	5.5	94.5

The association of the size of the enterprise with other factors is shown in Table 6. OHSMS, an OHS committee, a designated Safety and Health (S&H) employee, and exposure monitoring were significantly associated with the size of enterprises ($p = 0.000$). As the size of enterprise increased, there was better management of OHS. There was no significant association between the size of enterprise and keeping of OHS data.

DISCUSSION

This study revealed that OHSMS is not a common practice in SMEs in Botswana, with just over a quarter of the small enterprises and about half of the medium-sized enterprises having existing OHSMS. These findings are consistent with reports in the literature.^{16,17,19} Possible reasons for this include limited finances and knowledge to implement proper control of occupational hazards.¹⁸ The literature also reveals that OHS is not managed in SMEs because it is often perceived as irrelevant due to the small workforce and its OHS management benefits are not obvious in the short term.^{21,22} Hasle and Limborg¹⁷ state that a comprehensive OHSMS often seems too complicated to be applied by small enterprises. The World Bank has noted that "it is a good business practice for all operations, regardless of size, to have an OHSMS commensurate with their risks."²⁵

The survey showed that only about one third of the participating companies had an OHS policy statement. The European Agency for Safety and Health at Work (EASHW)²⁶ states that formal OHS policies are more frequent in larger enterprises. The EASHW further reported that lack of necessary expertise and poor knowledge about the necessity of such undertakings, are cited as main reasons by enterprises that do not have an OSH policy, or do not carry out risk assessments or other safety measures. These factors appear to be more frequent among smaller enterprises.²⁶

One third of the SMEs had a designated safety and health employee and less than half had OHS committees. This is consistent with findings reported by Hasle and Limborg¹⁷ who concluded that "formal structures, such as safety committees, are difficult to establish and sustain because of the informal culture of the small enterprises."

A significant number of enterprises provided training and information for their employees. This is a positive finding because training is emphasised for managers, supervisors, and employees so that they understand risks and how to deal with them.²⁵ As stated by Allli (2008),¹⁶ "training is an essential element in maintaining a healthy and safe workplace and has been an integral component of OHS management for many years." Pingqing et al. (2006)²⁷ warn that, due to limited time for SMEs businesses activities, OHS training is usually summarised and hence the need to standardise the training to ensure the safety of workers.

CONCLUSION AND RECOMMENDATIONS

OHSMS are not common in Botswana, particularly in SMEs. Larger enterprises tend to have better management of OHS. Although 76.6% of enterprises with OHSMS indicated that

Table 6. Association of size of enterprise with other factors

Variable	Chi-square value	p-value
OHSMS	32.502	0.000
H&S committee	47.789	0.000
Designated S&H employee	40.979	0.000
Exposure monitoring	30.338	0.016
OHS database	13.803	0.087

their OHSMS were based on the ILO guidelines; the elements of OHSMS were not uniformly implemented. These point to the need for the country to develop inclusive legislation, policies, guidelines and systems that will ensure monitoring of workplaces through harmonised implementation of OHSMS to improve workplace safety in all enterprises. In essence, implementation of OHSMS in enterprises should be part of the country's economic diversification plans and guidelines. This is particularly important for a country that is diversifying its economy through a strategy that will see an increase in the number of SMEs.¹³

Pingqing et al. (2006)²⁷ advise that, "although SMEs are a significant economic driving force, most of the studies show that it is extremely difficult to manage OHS, and that accidents occur more frequently than in other size categories." Therefore, Botswana must realise that the provision of sound safety and health services is an investment in the workforce, the employability of citizens, and potential productivity. OHS promotion to improve quality of working life and decent work should be pivotal to the national development agendas to ensure sustainable enterprises and business that can provide optimal performance and competitiveness.

The recommendations from this survey are as follows:

- Further investigation on challenges that SMEs and large enterprises encounter in the implementation of OHSMS
- The development of a specific approach to promote awareness and training in the management of OHS in SMEs large enterprises.
- The development of information systems, including standardisation of data collected, and harmonisation of reporting systems.
- The development of monitoring systems to ensure that implementation of all elements of OHSMS are appropriate and relevant to the risk profile of the workplaces.
- Review of the government's capacity to assist enterprises to implement OHSMS.
- The development of an all-inclusive database of industries at all enterprise levels.
- The development of legislative and policy frameworks for implementation and reporting of OHSMS in all enterprises.

CONFLICT OF INTEREST

The authors declare that they have no affiliations to commercial organisations and that there are no relationships which may have inappropriately influenced the writing of this paper. The survey was conducted in line with the duties of the

corresponding author as the Deputy Director, Department of Occupational Health and Safety, Ministry of Labour and Home Affairs.

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LESSONS LEARNED

1. OHSMS are not widely practiced in enterprises in Botswana, particularly in SMEs. This raises great concerns for worker wellbeing, particularly for a country set on a path to economic growth through expansion of SMEs.
2. There is a need to develop an all-inclusive database of industries at all enterprise levels for the country
3. There is a need to have an inclusive national legislative framework and policy guideline for workplaces in all sectors of the economy to ensure adoption and implementation of OHSMS.
4. Although workplaces offer OHS information to their employees, there is need to determine if the information is appropriate and relevant to the risk profile of the workplaces.

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