

REVIEW ARTICLE

## Review of Occupational Health and Safety Organization in Expanding Economies: The Case of Southern Africa

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### Abstract

**BACKGROUND** Globally, access to occupational health and safety (OHS) by workers has remained at very low levels. The organization and implementation of OHS in South Africa, Zimbabwe, Zambia, and Botswana has remained at suboptimal levels. Inadequacy of human resource capital, training, and education in the field of OHS has had a major negative impact on the improvement of worker access to such services in expanding economies. South Africa, Zimbabwe, Zambia, and Botswana have expanding economies with active mining and agricultural activities that pose health and safety risks to the working population.

**METHODS** A literature review and country systems inquiry on the organization of OHS services in the 4 countries was carried out. Because of the infancy and underdevelopment of OHS in southern Africa, literature on the status of this topic is limited.

**RESULTS** In the 4 countries under review, OHS services are a function shared either wholly or partially by 3 ministries, namely Health, Labor, and Mining. Other ministries, such as Environment and Agriculture, carry small fragments of OHS function. The 4 countries are at different stages of OHS legislative frameworks that guide the practice of health and safety in the workplace. Inadequacies in human resource capital and expertise in occupational health and safety are noted major constraints in the implementation and compliance to health and safety initiatives in the work place. South Africa has a more mature system than Zimbabwe, Zambia, and Botswana. Lack of specialized training in occupational health services, such as occupational medicine specialization for physicians, has been a major drawback in Zimbabwe, Zambia, and Botswana.

**DISCUSSION** The full adoption and success of OHS systems in Southern Africa remains constrained. Training and education in OHS, especially in occupational medicine, will enhance the development and maturation of occupational health in southern Africa. Capacitating primary health services with basic occupational health knowledge would be invaluable in bridging the current skills deficit. Introducing short courses and foundational tracks in occupational medicine for general medical practitioners would be invaluable

**KEY WORDS** occupational health and safety, southern Africa, worker's health, occupational health access, health systems, workplace health

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## INTRODUCTION

Access to health and safety in the workplace has had an inexplicably challenging gestation and a protracted and complicated delivery phase globally. Its development has not paralleled or matched the industrialization impetus in both developed and expanding economies. This is evidenced by the alarming statistics showing that more than 2 million work-related deaths and about 300 million nonfatal occupational accidents occur annually, resulting in global economic costs contributing to 4% of the global gross domestic product (GDP).<sup>1</sup> Because workers represent half of the world's population and are the major contributors to economic and social development, this magnitude of occupational accidents and fatalities calls for an urgent redress of the situation.<sup>2</sup> Less than 15% of the global workforce, primarily in big enterprises in developed countries, has access to occupational health and safety (OHS).<sup>3</sup> It still remains a big challenge in expanding economies. The imperative fundamentals to the genesis of wider coverage and improvement of OHS rests on the commitment of member states both individually and collectively. The majority of expanding economies in Africa face an enormous challenge of improving coverage and access to OHS services.

The objective of this study was to review the organization of occupational health in expanding economies in southern Africa, namely, Zimbabwe, South Africa, Botswana, and Zambia. However, little published literature exists on this subject, particularly in Zimbabwe, Zambia, and Botswana.

## DEMOGRAPHICS

The southern African countries vary widely in terms of their population sizes, economies, and the size of labor force. South Africa is an upper middle-income country located at the tip of Southern Africa<sup>4</sup> with a total population of 54 million<sup>5</sup> and a GDP of US\$350.6 billion.<sup>6</sup> The country has a labor force of 20,228,000, of which 4,909,000 are unemployed and 2,448,000 are employed in the informal sector (nonagriculture).<sup>7</sup> Zimbabwe is a low-income country with a GDP that stood at \$13.19 billion in 2013.<sup>8</sup> According to the 2012 Zimbabwe National Population Census, the country's population was 13,061,239,<sup>9</sup> and in 2013 it was estimated at 14,150,000.<sup>8,10</sup> In 2012, Zimbabwe had a total labor force of about 5 million with only 30% of the economically active labor force being in paid

employment. The unemployment rate was 11%.<sup>11</sup> This unemployment rate excluded people who were in informal employment. Botswana, like South Africa, is an upper middle-income country with a population of about 2 million and a GDP of \$14.78 billion.<sup>12</sup> Botswana's unemployment rate stood at 20% in 2014, whereas the formal sector accounted for 389,665 workers.<sup>13</sup> Zambia is a lower middle-income country with a population of 14.54 million and a GDP of \$26.82 billion.<sup>14</sup>

## ORGANIZATION OF OHS SERVICES

Globally, OHS is generally a new discipline that is still in its infancy stage, as reflected by the accident and occupational diseases statistics and the low global access to it. Despite the huge negative effect on the lives of people, OHS has not received significant focus and support even when compared with the substantial global support and attention given to HIV, malaria, and tuberculosis. OHS has remained an island whose existence has always been recognized but with no concerted efforts toward support. Southern Africa is no exception to this, as evidenced by the significant gaps in human resource capital, training, and education and programmatic approaches in the workplace. Occupational health was supervised by Ministries of Labor in about 40% of the European Region Member States, and in about 60% by Ministries of Health.<sup>15</sup> In southern Africa, the practice of occupational health has found itself multitentacled and waddling between the Ministries of Health and the Ministries of Labor, although in some cases the Ministry of Labor has assumed responsibility.

Despite the noted poor coverage of OHS, the 4 southern African countries have demonstrated a certain level of commitment to OHS, as shown by their ratifications of the International Labor Organization (ILO) conventions that have to do with health and safety. Of the 4 countries reviewed here, Zambia has the highest number of ratifications of ILO technical conventions with 36, followed by South Africa with 17, Zimbabwe with 15, and lastly Botswana with 6.<sup>16</sup> However, these endorsements still fall far below the scheduled 177 technical conventions.

**OHS Legislation and Organization in Zimbabwe.** In Zimbabwe, the main custodian of OHS is the Ministry of Labor through the Division of Occupational Health and Safety of the National Social Security Authority of Zimbabwe (NSSA).<sup>17</sup> NSSA administers 2 schemes, namely the Pensions and Other

Benefits scheme and Accident Prevention and Workers' Compensation scheme. The Accident and Prevention and Workers' Compensation scheme is administered through statutory instrument 68 of 1990. The Accident and Prevention and Workers' Compensation scheme's mandate is to create awareness and promote health and safety in the workplace, provide rehabilitation services, enforce health and safety legislation, and provide financial benefits to families of workers who have been injured or killed or who have acquired occupational diseases.<sup>17</sup> The scheme requires all workplace accidents to be reported within 14 days regardless of whether the worker has completed treatment. In cases of serious accidents and fatalities, employers are required to report to the nearest NSSA office and the police. The scheme meets all costs related to workplace injuries, such as transport, drugs, hospital fees, and artificial appliances (e.g., dentures, spectacles, hearing aids, artificial limbs, crutches and other apparatus used by people who are physically disabled.).<sup>17</sup>

The scheme is well organized and focuses on the welfare of the employee and his or her family in the event of an incapacitating or fatal accident or occupational disease. Unfortunately, the workforce covered by this scheme is very small, including only 30% of the national labor force in paid employment.<sup>11</sup> The major challenge for the nation is to develop strategies targeted at those workers not currently covered by the scheme, including the informal sector, civil service, and domestic workers. A multitude of health and safety hazards also exist in the excluded categories.

The second scheme administered by NSSA is the Employees' Pension Scheme. Employees who suffer permanent disablements from injuries of magnitudes of at least 30% are entitled to compensation that is paid as a pension.<sup>11</sup> Permanent disablements below the 30% cutoff receive a lump sum one-off payment commensurate with the severity of their permanent disablements.

The Ministry of Health and Childcare plays the role of diagnosing and managing workplace-related occupational conditions. This is accomplished through the normal health delivery system. The Radiation Protection Authority and Environmental Management agencies are charged with specific functions of OHS.

**Legislation.** Zimbabwe has a foundational OHS legislative framework that provides for the protection of workers' health and safety. Like many other African countries, one of the challenges is the lack

of a harmonized and comprehensive legal instrument that covers most workplaces. As previously alluded to, the informal sector, domestic workers, and the civil service are not covered by the current OHS legislation.<sup>11</sup> Highlights on the main OHS pieces of legislation are as discussed here. The foundational pieces of legislation governing OHS in Zimbabwe include some of the following.

*Statutory Instrument 68 of 1990: Act 12/89.*<sup>18</sup> Among many other issues, this instrument spells out the right to compensation for workers involved in accidents arising from and during the course of employment. It further details the exclusions from compensation for willful misconduct or death occurring more than 12 months after the accident unless such death is proven to directly emanate from the injury. The instrument further defines serious accidents as those resulting in permanent disablement of more than 30%. This instrument also lists the scheduled occupational diseases arising from various workplace exposures. Roles of employers and employees in OHS at the workplace are detailed by the instrument in greater depth. Under this act, compensation of victims is the responsibility of NSSA. This statutory instrument is quite comprehensive in presenting a platform for management of OHS issues at the workplace. Lack of specific supporting occupational health standards and fitness for duty standards especially for safety sensitive/critical work presents a challenge in the optimization of OHS.

*Pneumoconiosis Act: Chapter 15.08. of 1971 revised 1996.*<sup>19</sup> The Pneumoconiosis Act specifically addresses, among other pertinent issues, the establishment of a medical bureau that oversees the surveillance of exposed workers in dusty occupations by way of preplacement, periodic, and exit medical examinations at specified times. It prescribes the exclusions of employment in dusty environments. Because Zimbabwe is endowed with various minerals and hard rock mining constitutes the greatest activity, this is a very good proactive system that offers comprehensive surveillance for workers exposed to dust. There is, however, lack of similar pieces of legislation that relate to other specific hazards such as noise, vibration, light, and ergonomic risks. This has led to the so-called pneumoconiosis medical examination taking the center stage at the expense of other significant hazards.

*Factories and Works Act: Chapter 14.08. 1948 revised 1996.*<sup>20</sup> Relevant to OHS, Part 1V of the act requires the establishment of accident registers and reporting to the inspector of all accidents that result

in an absence of 3 days or more from the workplace. Part 1V, item 14 (5) of the act requires that medical practitioners who attend to workers suffering from lead, phosphorous, arsenic, or mercury poisoning or anthrax as a result of occupational exposures report to the inspector.

**Republic of South Africa.** The governance and leadership for OHS in South Africa is shared mainly by 3 government departments: the departments of Labor (DOL), Mineral Resources (DMR), and Health (DOH). The DOL administers the Occupational Health and Safety Act, no. 85 of 1996 (OHSA),<sup>21</sup> which exclude mines and the Compensation for Occupational Injuries and Diseases Act (COIDA), no. 130 of 1993 (COIDA).<sup>22</sup> The DMR administers the Mine Health and Safety Act (MHSA), no. 29 of 1996, for the mines.<sup>23</sup> The DOH administers the National Health Act, no. 61 of 2003, which mandates that the provincial government provide OHS.<sup>24</sup> The Occupational Diseases in Mines and Works Act (ODMWA), no. 78 of 1973, provides for the compensation of certain diseases contracted in mines and works only.<sup>25</sup>

The DOH has adopted the principles of universal health coverage, in line with the World Health Organization (WHO), to increase health coverage with essential health services for those with the greatest need. It is envisaged that the introduction of universal health coverage will increase OHS coverage, especially for workers in small, medium, and micro enterprises, agriculture, and the informal economy, as per the World Health Assembly 60.26 and the WHO's global plan of action on workers' health.<sup>26</sup>

In terms of the OHSA and MHSA, the employer is responsible for the provision of health and safety in the workplace, including the costs for hazard identification and control and the provision of a medical surveillance program where applicable.<sup>21,23</sup> The compensation legislation COIDA and ODMWA both provide for medical insurance for the treatment of occupational diseases and injuries for workers, at least for those in the formal economy.<sup>22,25</sup> The health services for the industry are procured from the private sector through employer-funded medical aid schemes (insurance) and for some enterprises are provided in-house by industry providers and hospitals. Some workers in the informal economy; small, medium, and micro enterprises; agriculture; and contract or casual workers receive their curative OHS services from the provincial DOH in undesignated clinics such as family medicine, internal medicine, surgical, and

emergency departments, and thus are covered through general tax revenue.<sup>24</sup> Overall private health insurance (medical aid schemes), which covers high- and middle-income workers and their families, covered about 16% to 17% of the population, but accounted for more than 45% of total health care financing for South Africa.<sup>27,28</sup> Currently, there is paucity of data on the exact contribution of industry to the total health care expenditure in the private sector, but dated data estimates it to be 6%.<sup>29</sup>

**Botswana.** In Botswana, the main custodian of OHS is the Ministry of Labor and Home Affairs.<sup>30</sup> The main responsibilities of the division include the following:

- Assessment of the suitability of designs of factories.
- Registration of factories.
- Inspection of factories and other places of work.
- Registration and inspection of plant and machinery.

This division is also responsible for disseminating information on OHS and participates in the drawing up of Botswana National Health and Safety Standards.<sup>30</sup>

In Botswana, the regulation of OHS is scattered over a number of acts of Parliament and is under the custody of many government ministries. Legislation includes the Factories Act (under the Ministry of Labor and Social Security); the Food Control Act, Public Health Act, and Control of Smoking Act (under the Ministry of Health); Agrochemicals Act (under the Ministry of Agriculture); the Mines, Quarries Works, and Machinery Act (Ministry of Minerals, Energy, and Water Resources); the Atmospheric Pollution (Prevention) Act and Waste Management Act (Ministry of Environment, Wildlife, and Tourism); and the Radiation Protection Act (Ministry of Communication, Science, and Technology).<sup>31</sup>

The Ministry of Health, through its public health division, provides specialized occupational health services.<sup>32</sup> The services include, among other issues, research in OHS, risk management, development of policies, and standards and provision of occupational health surveillance programs. It also provides occupational health diagnostic services and diagnostic occupational health services for ex-miners.<sup>33</sup>

Diagnostic and curative services can be accessed through the normal health delivery system, although an occupational health specialist clinic in the Ministry of Health exists in the capital. Two important

pieces of legislation in the mining sector include the Mines, Quarries, Works and Machinery Act (MQWMA)<sup>34</sup> and the Workmen's Compensation Act.<sup>35</sup> Part X of the former addresses Health and Labor issues (regulations 91–103) and prohibits the employment of any person in a mine unless they have undergone a medical examination by a registered medical practitioner and have been certified as fit. The act stipulates the content of the examination that should include a chest x-ray and an audiometry test. Conditions such as tuberculosis, pneumoconiosis, ankylostomiasis, nystagmus, dermatitis, or any infectious diseases constitute an exclusionary criteria from employment in a mine. The act also sets down in detail the responsibilities and requirements for workers and employers necessary to create a safe working environment.

**Workmen's Compensation Act.** The act offers a comprehensive framework for the compensation of accidents and occupational diseases. Under this act, reporting of accidents arising out of and in the course of employment that lead to permanent disablement or sickness-related absences exceeding 3 days are required to be reported within 17 days of the date of injury.<sup>35</sup> Under this act, it is the responsibility of the employer to compensate the injured. Negligence or deliberate contravention of any law, regulation, or order meant to protect the health and safety of workers are among some of the exclusions from eligibility to compensation. The act also provides for a schedule of occupational diseases and impairment values for anatomical losses of specified body regions.

**Zambia.** The OHS board is the main national body that is responsible for the coordination and collaboration of OHS issues in Zambia.<sup>36</sup> The main national competent bodies charged with an OHS regulatory function in promoting and enforcing OHS include Occupational Safety and Health Services Department (Ministry of Labor and Social Security), Mines Safety Department (Ministry of Mines, Energy, and Water Development), and Radiation Protection Authority (Ministry of Health). The Occupational Health and Safety Institute, which is under the Ministry of Health, is also a national body charged with a specialized occupational health care function and provision of laboratory services and serves as a research institution for OHS.<sup>36</sup>

The nongovernmental organizations dealing with OHS issues include the Zambia Occupational Health and Safety Association, Zambia Organisation for Occupational Health and Safety, and Zambia National Association of Hearing Impaired.<sup>36</sup>

The Occupational Health and Safety Institute is a regulatory body that was established under the Occupational Health and Safety Act No. 36 of 2010 of the laws of Zambia and came into effect by Statutory Instrument No. 54 of 2012 signed by the Minister of Health.<sup>37</sup> The institute is charged with the responsibility of designing OHS services, conducting occupational medical evaluations, establishing health promotion programs, carrying out occupational disease diagnostics, and investing and researching OHS, among other functions. The institute also provides a special medical evaluation services for retirees termed *Village Benefits Pneumoconiosis Medical Examination*. This service function is provided to retirees for the remainder of their lives.

Key pieces of OHS legislation in Zambia include the Factories Act, only applicable to workplaces defined as factories; the Mining Regulations, only applicable to the mining industry; the Occupational Health and Safety Act, applicable to all sectors of the economy; the Ionizing Radiation Act, which provides for the protection of the public and workers from dangers arising from the use of devices or materials capable of producing ionizing radiation; and the Workers' Compensation Act, providing for the establishment and administration of a fund for the compensation of workers who are disabled by accidents or who contract diseases in the course of their employment.<sup>36</sup>

## OCCUPATIONAL MEDICINE

Throughout Africa, human resources capital in occupational medicine is scarce and where they are offered at company level, they are usually primary care in nature.<sup>38</sup> Although specialist-level occupational medicine services are available to a limited extent in the public sector in South Africa, they exist to an even much lesser extent in sub-Saharan Africa.<sup>38</sup> Occupational medicine is a fairly new discipline in Africa with a very lean human resource base in southern Africa. In most African countries, the gap between the number of practicing occupational medicine physicians and occupational health nurse practitioners is alarmingly wide compared with the populations indicated earlier on in the southern African states. It has been asserted that there is generally an acute shortage of OHS practitioners and services in most developing countries.<sup>39</sup>

A survey of specialist occupational medical services in Africa in 2004 revealed that Zambia and Botswana had a specialist public-sector service

provided through the Occupational Health and Safety Management Board and the Ministry of Health, respectively.<sup>38</sup> By then, Botswana had a single specialist occupational health clinic located within the Ministry of Health. This clinic provided and continues to provide diagnostic services, disability assessment, occupational hygiene, research, and pneumoconiosis screening. To date, there has been the emergence of private occupational medicine specialist clinics<sup>40</sup> and occupational medicine practitioner–run occupational health centers in mines and companies. One study demonstrated that in 2004, the only available occupational health services in Zambia were on the Zambian Copperbelt provided by the Occupational Health and Safety Board.<sup>38</sup> In Zimbabwe, occupational medicine services have been provided by the National Social Security Authority through its occupational health clinics in Harare, Bulawayo, Gweru, and Masvingo. Additionally, the private sector complements this function through enterprise-based occupational medicine services that are run by occupational medicine specialists, occupational medicine practitioners, and general practitioners.

The major problem in the provision of specialist occupational medicine services in southern Africa has been the inadequacy and in some instances a complete lack of qualified and accredited specialists in the field. This is evidenced by the very low margins of occupational medicine specialists, with South Africa having 31,<sup>41</sup> Botswana with 1,<sup>40</sup> and Zimbabwe with 2.<sup>42</sup> This statistic points to an urgent need to provide Africa with occupational medicine skills. For the basic occupational health services concept to succeed in southern Africa, major work on equipping nurses and doctors with basic occupational health skills remains urgent. Short courses and workshops for general medical practitioners would be invaluable. However, there has been an increase in the number of medical practitioners and nurses holding a diploma in occupational health who now work in companies and institutions offering occupational health. Most of the occupational medical centers in southern Africa are funded locally by governments and private companies. For southern Africa to realize basic occupational health services, let alone specialist occupational medicine services, quite substantial human resource capital and expertise is required to grow a minimum base for the provision of such services.

**Training in OHS.** Specialist training in occupational medicine remains greatly constrained in expanding economies. Human resources for OHS have proven

to be a major challenge in southern Africa, as is career development in OHS. Career pathing is a challenge even for occupational medicine, a stand-alone specialty recognized by both the College of Medicine South Africa and the Health Professionals Council of South Africa.<sup>41,43</sup> In Zimbabwe, occupational medicine is a recognized and registrable specialty that, due to limited numbers of trained experts, has no separate register but is catered for under the Community Medicine Specialist Register. In Botswana, occupational medicine is a registrable specialty.

Although there are professional bodies such as the South African Society for Occupational Health Nurses, South African Society for Occupational Medicine, South African Institute for Occupational Hygienists, Ergonomics Society of South Africa, Health Professionals Council of South Africa, and the South African Nursing Council, it is nearly impossible to quantify the number of OHS professionals active in the discipline in South Africa. The same goes for Zimbabwe, Zambia, and Botswana, and unfortunately there are no accurate published statistics for these professional cadres.

In southern Africa, local specialist occupational medicine training only exists in South Africa in 5 universities. Aspiring candidates in southern Africa have to study either in South Africa or pursue their studies overseas. The only available training in Zimbabwe, Zambia, and Botswana in the field are the nonclinical general OHS courses at certificate, diploma, degree, and master's level.

South Africa has 5 medical institutions training occupational medicine specialists, but more than 10 that train OHS professionals. The quality of the training programs for some occupational health professionals may require standardization and quality assurance because the training and development agencies are also the professional bodies. Medical doctors can receive occupational health training in a form of a 2-year part-time diploma course offered as a combination of distance learning and/or block release in various universities or a formal 4-year specialty training recognized by the College of Medicine South Africa. Currently, the majority of workplace health services in South Africa are run by diplomats as the specialty is still new.

## CONCLUSION

The 4 countries reviewed here possess the foundational legislative frameworks and organization of OHS. However, just like the rest of the world, OHS access for workers remains greatly

constrained. The mining sector in these countries possesses relevant pieces of legislation. The major hold in these 4 countries is the inadequacy of the human capital, particularly in occupational medicine. Development of clinical occupational health services infrastructure and support structures

remains a critical component in the implementation of the basic occupational health services concept. Introduction of short courses and seminars on occupational health for primary health care services personnel would be invaluable in advancing the cause of occupational health.

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