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ORIGINAL RESEARCH

Status of Occupational Health and Safety and Related Challenges in Expanding Economy of Tanzania

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Abstract

INTRODUCTION Occupational health and safety is related with economic activities undertaken in the country. As the economic activities grow and expand, occupational injuries and diseases are more likely to increase among workers in different sectors of economy such as agriculture, mining, transport, and manufacture. This may result in high occupational health and safety services demand, which might be difficult to meet by developing countries that are prioritizing economic expansion without regard to their impact on occupational health and safety.

OBJECTIVE To describe the status of occupational health and safety in Tanzania and outline the challenges in provision of occupational health services under the state of an expanding economy.

FINDINGS Tanzania's economy is growing steadily, with growth being driven by communications, transport, financial intermediation, construction, mining, agriculture, and manufacturing. Along with this growth, hazards emanating from work in all sectors of the economy have increased and varied. The workers exposed to these hazards suffer from illness and injuries and yet they are not provided with adequate occupational health services. Services are scanty and limited to a few enterprises that can afford it. Existing laws and regulations are not comprehensive enough to cover the entire population. Implementation of legislation is weak and does not protect the workers.

CONCLUSIONS Most Tanzanians are not covered by the occupational health and safety law and do not access occupational health services. Thus an occupational health and safety services strategy, backed by legislations and provided with the necessary resources (competent experts, financial and technological resources), is a necessity in Tanzania. The existing legal provisions require major modifications to meet international requirements and standards. OHS regulations and legislations need refocusing, revision, and strengthening to cover all working population. Capacities should be improved through training and research to enable enforcement. Finally the facilities and resources should be made available for OHS services to match with the growing economy.

KEY WORDS occupational health and safety, occupational health services, challenges, economy, laws, regulations, Tanzania

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The mainland of Tanzania has a population of about 44 million, of which about 31 million (71%) live in rural area.[1] The total population employed in formal sectors in the country is about 1,550,018 (7%)[2]; the remainder are self-employed, mostly farmers and pastoralists, in rural area. The informal sector

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is growing fast, with precarious working conditions and particular hazards for women and children.

Tanzania is experiencing considerable growth in all sectors of the economy. The annual growth of gross domestic product (GDP) was 6.9%, 7.0%, and 7.0% in 2012, 2013, and 2014, respectively,[3] driven by the development of industry, trade, and transport. The growth, however, does not translate into the spending. Budget allocated to health is mostly for procurement of medicines, prevention of epidemic diseases, immunization for children, construction of hospitals and dispensaries, and HIV and malaria control.[4] Prevention of occupational diseases is normally not on the priority list.

Tanzania is heavily dependent on agriculture. More than 70% of its people live and work in agricultural settings in rural villages. The agricultural sector, which accounts for half of the national economy, grew by an estimated 4.3% in 2013.[5] However, this sector is responsible for the highest rates of deaths and injuries, and the workers do not access adequate occupational health services.[6,7] The workers in agriculture and other informal sectors in Tanzania receive health services through primary health care, where professionals have no occupational health background.

The construction industry is among the fastest growing and expanding economic sectors in the country. Activities include construction of buildings (bungalows, high-rise buildings) and new roads. Many accidents and diseases occur in the industry because of its inherent hazardous nature. The industry employs 9%-11% of the national workforce but account for 25%-45% of fatalities.[8] Occupational health services for this industry are at most first aid. Cases that require medical attention are mostly referred to primary health care facilities.

Motor traffic accidents in Tanzania are on the increase, claiming many lives, and have crippled and incapacitated many people.[9,10] The numbers of vehicles in cities such as Dar-es-Salaam are also very high, polluting the environment with exhaust fumes and risking the health of people, especially traffic police because they spend a lot of time guiding vehicles without any respirators.[10] Pedestrians and those living along the roadsides are also at risk.[10] Although the transport system links all sectors, as people move from one area to another and transport goods and services, it is a hazard.

Tanzania is among the countries with high rates of mining injuries. Small-scale mining is to a large extent unregulated and therefore not safe. For example, in Mererani, in 2002, some 48 miners were suffocated to death when a compressor used to pump in clean air failed to work.[11] Common causes of fatal injury include rock fall, collapsed pits, fires, explosions, mobile equipment accidents, falls from height, entrapment, suffocation, and drowning in flooding.[12] Nevertheless, occupational health care is almost nonexistent and health care service delivery is poor.

After discoveries of natural gas resources in southern regions of the country (Lindi and Mtwara), Tanzania is expected to be a major producer and exporter of this resource.[13,14] This discovery can play an important role in the substantial transformation of the industrial base with an immense impact in job creation and overall socioeconomic development. However, health and safety have to be incorporated in the development plans for the development to be sustainable. Moreover, there is a new discovery of uranium, and plans are underway to implement uranium mining projects.[15] The activity may add its life-threatening hazards, and thus stringent measures must be taken to ensure uranium mining does not compromise the safety of people and the environment.[16]

Challenges in provision of occupational health services under the state of expanding economy are many. The large-scale establishments of new and mostly foreign or multinational companies as well as consolidation and expansion of existing enterprises result in the demand for more and better occupational health services.[17] The main challenge is to ensure that growth and expansion reflect increases in safety and health for those working in the industry as well as the public in general. National policies and institutional frameworks and resources have shaped occupational health services in Tanzania, and their impacts are reflected in the accidents, injuries, and diseases and how they are dealt with.

OCCUPATIONAL ACCIDENTS AND DISEASES

According to the International Labour Organization (ILO), millions of workers worldwide are at risk of various types of work-related diseases. Occupational diseases such as pneumoconiosis remain widespread, whereas relatively new occupational diseases, such as mental and musculoskeletal disorders, are on the rise with no adequate preventive, protective, and control measures. Despite millions of people being at risk, about 2 million workers die every year from occupational illnesses.[18]

There is little information about work-related disease and injury in the African region on which

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to base occupational health and safety outcomes. We lack systems to collect such data regularly and actively and rely on "passive notification," either to compensation or insurance authorities or the labor inspectorate whenever there is a workplace accident. According to estimates, almost 18,000 workers are killed in work-related accidents in the Southern Africa region per year, more than 13 million are injured in accidents, and 67,000 contract occupational diseases.[19] The magnitude of occupational accidents and diseases arising from economic activities (such as construction, commerce, transport, manufacturing, and agriculture) in Tanzania is yet to be ascertained because of lack of a coordinated national reporting system for such incidents. In Tanzania the most commonly reported occupational health disorders are pesticide poisoning in agriculture,[20] musculoskeletal and respiratory disorders in mining, and eyesight in small welding shops. Respiratory symptoms have been reported among workers in sisal estates, coal mines, and coffee factories.[21-23]

An Occupational Health and Safety (OHS) audit conducted in Tanzania in 2012 revealed that fatality rates differ sector-wise ranging between 0.12%-24%, the construction sector being the lead, followed transport and mining (Table 1). Most construction projects in Tanzania were observed to be below standards because of corruption, and this has been the cause of the increasingly frequent building collapses that have occurred in recent years.[25]

Diseases and illnesses as a result of occupational hazards are another concern among workers in many workplaces. Moreover, lack of advanced diagnostic tools and expertise worsen the situation. Currently there is no national system in place for recording, compiling, and reporting occupational accidents and diseases. This leads to absence of information to enable implementation of necessary interventions for improving occupational health and safety in the country.

Table 1. Fatality Rate by Sector

Sector	Total Employed	Number of Fatal Injuries × 1000	Fatality Rate (%)
Construction/building	151,690	36	23.73
Transport	111,571	23	20.61
Mining & quarrying	29,223	6	20.53
Manufacturing	245,449	28	11.41
Commerce & distribution	2,486,818	12	0.48
Agriculture, forestry, fishing	13,890,054	16	0.12
Total	**16,914,805**	**121**	

Reproduced from The United Republic of Tanzania, National Audit Office.[24]

The number of accidents reported countrywide are scanty because of the low level of reporting. In 2003 and 2004, accidents reported in Tanzania mainland were 1692 and 1889, respectively,[24] and between January and June 2010 a total of 11,223 accidents were reported, of which about 2085 (18.6%) involved motorcycles. The total number of deaths as a result of motor traffic incidents was 1492, of which 286 (19.2%) involved motorcycles.[10] A total amount of TZS 668.5 million was used during the period of 2003 and 2004 to compensate occupational accident victims.[24] With new stress factors as a consequence of technological development and work organization, the health burden of workers is increased and the legislation is limited for the new risks.[26]

LAWS, REGULATIONS, AND STANDARDS OF OCCUPATIONAL HEALTH

The ILO Convention No. 161 on Occupational Health Services, the World Health Organization (WHO) Global Strategy on Occupational Health for All, and the WHO Global Plan of Action for Workers' Health, 2008-2017, call for the organization of occupational health services to all working people of the world.[27-29] In Tanzania there are various laws, rules, and regulations on occupational health and safety formulated and implemented under different ministries, departments, and agencies. These pieces of legislation do not adequately address the needs of regional or international requirements, as stated earlier. The earliest legislation is the Factories Ordinance Cap. 297, promulgated in 1950, which became operational in January 1952. This legislation emphasized the protection of workers' health in factories, which were largely owned by foreign companies, hence leaving many sectors out. Because of the limited scope of the Factories Ordinance, the Occupational Health and Safety (OHS) Act 2003 was enacted.[24,26] Although this act widened the scope of application and recognized roles played by other public and private institutions and it is now the main legislation governing occupational health and safety practice in Tanzania, it still leaves out the self-employed and informal sectors.

Much of the OSH legislation reflects the Factories Act 1950, which required examinations of cranes and lifting equipment, steam boilers, and so on and slightly covers health issues. The legislation is not encompassing as it provides OSH services to enterprises that can pay for the services, hence excluding the informal sector because of their low economic capacity. The Act also provides for notification and reporting of occupational accidents resulting in injuries and fatalities and obliges workplaces to follow a prescribed procedure to initiate and maintain a suitable means of collecting, recording, analyzing, and reporting the occurrences to the Occupational Safety and Health Agency (OSHA).

Although Tanzania has not ratified the ILO Employment Injury Benefits Convention (No. 121), adopted in 1964, that lists occupational diseases for which compensation should be paid, it has enacted the Workers Compensation Act (2008). This law, which is due to come into effect in July 2015, requires employers to pay compensation to employees who have sustained diseases, injury, or death as a result of accidents sustained in the course of employment. The compensation Act uses the ILO list of disease recommendation R 194 of 2002. This means any new occupational disease arising after 2002 will not be compensated. To be effected the Workers Compensation Act will require trained occupational health practitioners to certify the conditions.

Other OHS laws and regulations that are also operational include the Factories (Building Operations and Works of Engineering Construction) Rules of 1985, the Woodworking Machinery Rules of 1955, the Factories (Electricity) Amendment rules of 1985, the Factories (Occupational Health Services) Rules of 1985, the Factories (Electricity) Amendment rules of 1985, the Notification of Accidents and Occupational Diseases Ordinance of 1953, Cap 330, Workmen's Compensation Ordinance of 1949, and the Factories (Occupational Health and Safety Services Fees) rules, 2001.[30] All these statutes are administered by OSHA under the Ministry of Labour, Youth Development and Employment. There are bylaws made under the Contractors Registration Board Act. No. 17 of 1997. These statutes are administered by the Contractors Registration Board (CRB) under the Ministry of Works and are applicable in construction industry.[30] Apart from the OHS Act of 2003, there are other principal legislations touching OHS in the country, as shown in Table 2. A majority of Tanzanians (>80%) are not covered by the OSH law, and they do not access occupational health services.

ENFORCEMENT OF OCCUPATIONAL HEALTH AND SAFETY

OSHA is an executive agency established under the Executive Agency Act 1997 under the Ministry of Labour, Employment and Youth Development. It is headed by a chief executive officer (CEO) who is assisted by managers for occupational health, occupational safety, and business support. The office of the CEO has 4 units headed by senior management officers for legal affairs, training information and research, public relations, and internal audit.[30] As of 2012 OSHA had a total of 53 inspectors and 31 supporting staff stationed at the headquarters and zonal offices. This is only 45% of the staff needed for them to perform their duties efficiently.[24]

OSHA enforces the OHS regulations standards and promotes occupational health and safety practices in all workplaces in Tanzania mainland. These are accomplished through workplace registration, inspections, and risk assessment; training and information on occupational health and safety, scrutiny and approval of workplace drawings and plans, and diagnosis of occupational diseases; and occupational health surveillance, work environment monitoring, investigation of accidents, and authorization of private OHS providers.[24,30] However, there are few inspections conducted by other authorities. For instance, OHS in mining is currently administered by inspectors from Ministry of Energy and Mines, and pesticides inspections are carried out by the Ministry of Agriculture, Food Security and Cooperatives through the Tropical Pesticides Research Institute.[24,30] The current institutional setup makes OSHA an occupational health and safety service provider, regulator, and enforcer, a situation that is leading to conflict of interest and unnecessary inefficiencies that compromise workers' health.

About 3% of workers in the country are unionized, but subordination of trade unions to the interests of the government has crippled trade union contributions to the advancement of occupational health. At the Trade Union Congress level there is a person responsible for OSH; however, at workplaces it is rare to find a union representative, unless they happen to be members of safety committees.

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Table 2. Occupational Health and Safety–related Legislations and Their Respective Administering Ministries/Agency

	OHS-related Legislations	Administering Ministry/Agency
1	The Pharmaceuticals and Poison Act (1978)	Ministry of Health and Social Welfare
2	The Tropical Pesticides Research Institute Act (1979)	Ministry of Agriculture
3	The Fire and Rescue Services Act (1985)	Ministry of Home Affairs
4	The Industrial and Consumer Chemicals Act (1985)	Government Chemist Laboratory Agency
5	The Plant Protection Act (1997)	Ministry of Agriculture
6	Mining Act (1998)	Ministry of Energy and Mineral Resources
7	The Atomic Energy Act (2003)	Ministry of Science, Technology and High Education
8	The Employment and Labour Relations Act, (2004)	Ministry of Labour, Employment and Youth Development
9	Workers compensation Act (2008)	Ministry of Labour, Employment and Youth Development
10	The Public Health Act (2009)	Ministry of Health and Social Welfare

OHS, Occupational health and safety.

OSH activities in the country are therefore promoted mainly by the Ministry of Labour, Youth Development and Employment, and other players for different employment sectors and overseen by the Ministry of Health and Social Welfare (MoHSW). The MoHSW also takes responsibility in treating injured or sick workers through primary health services in places where occupational health services are inadequate or not provided.[31]

OCCUPATIONAL HEALTH SERVICES

Occupational health services are accessed by less than 5% of the working population in Tanzania, although there is noticeable expansion in the economy. Occupational health and safety in the country is reflected in the occupational safety and health law, which covers only formal economic sectors, such as health care, factory, construction, and mining workers. Despite that, few workers in the formal sectors access occupational health services and rarely those in the informal sectors, including agriculture, informal and small-scale mining, and informal industries. The burden is borne by workers and their families in the neglected sectors. Occupational health services and supporting legislation require refocusing, revision, and strengthening to respond to this reality.

There is no single authority to address the OHS requirements of various industries in Tanzania. Occupational health and safety services are a multisectoral entity with many players, such as government ministries, employers, workers, nongovernmental organizations, community-based organizations, and private individuals (Fig. 1). Mechanisms for Occupational Health Services delivery are not yet well coordinated, as indicated with broken lines in Figure 1. The OHS Act provides for pre-employment, periodic occupational, and exit medical examination; however, implementation is inadequate because of lack of capacity and overlapping roles played by the OSHA and the local government authorities (LGAs). Medical examination for the workers is conducted partly by OSHA's occupational medical doctors, private occupational health services providers, and some of health officers from local authorities. Although OSHA is supposed to regulate OSH in the country, they also provide such services. The LGA institutions have powers to demand and carry out periodic/routine medical examinations, especially to workers in the food and service industries located within their areas. The OHS Act is therefore not adequately implemented and is outdated.

The Factories (Occupational Health Services) Rules of 1985 makes provisions for surveillance of the factors in the working environment that may affect the workers, information and training related to safety and health, organizing curative health services, guidance of handicapped workers, welfare-related activities, keeping and reviewing records of health and safety, and first aid services. However, there is no national strategy to enhance compliance with the rules. For example, compliance in construction sites is still inadequate for most services, except for first aid, which at the moment is the most common occupational health service availed to workers in the sites.

Among the bottlenecks to the implementation of this legislation is a shortage of occupational health professionals, particularly occupational medicine practitioners. Overall the ratio of doctor to population is about 1:26,000. But at the moment there are few doctors who are qualified as occupational medicine practitioners (<10 in the country). A study

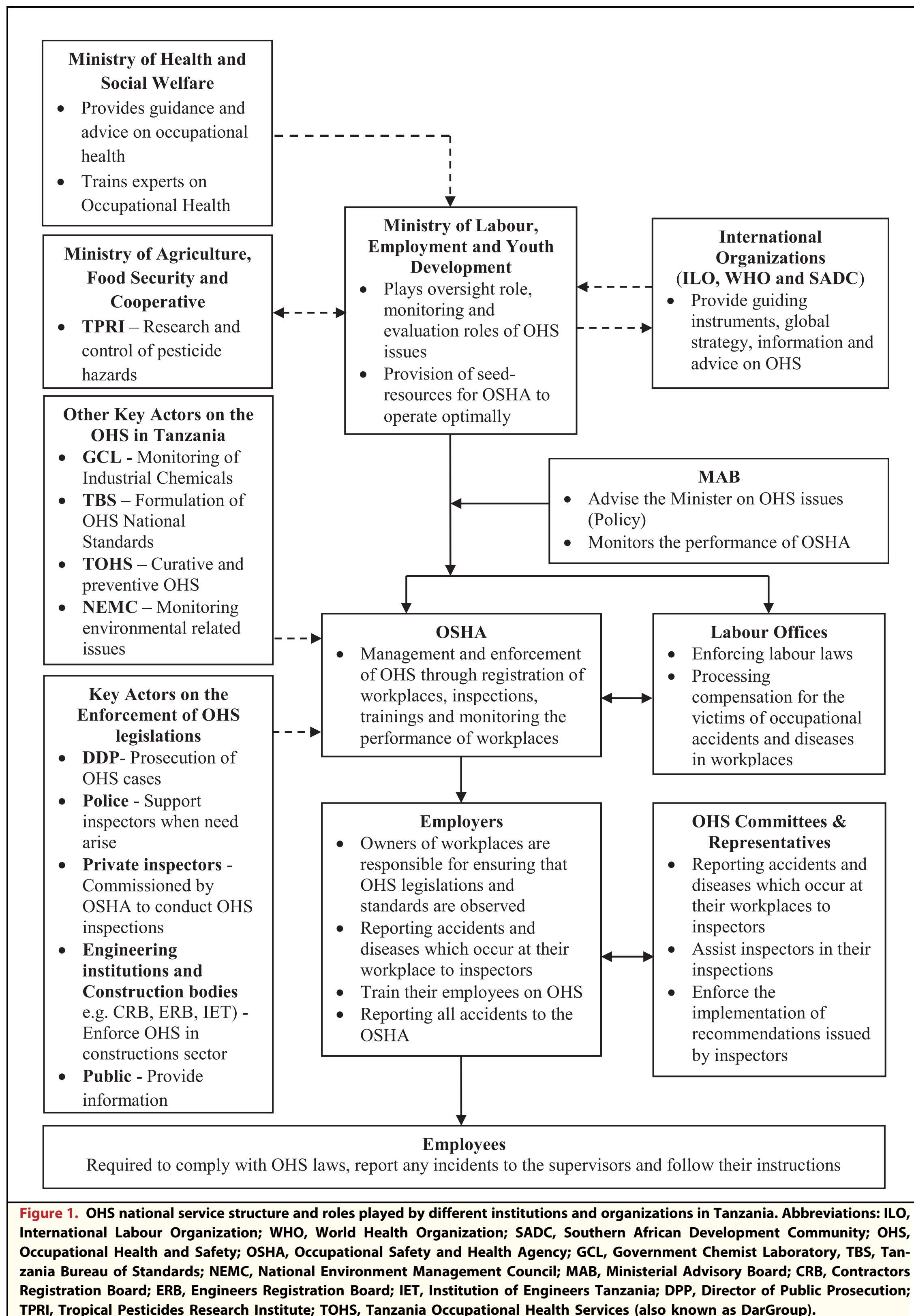

Figure 1. OHS national service structure and roles played by different institutions and organizations in Tanzania. Abbreviations: ILO, International Labour Organization; WHO, World Health Organization; SADC, Southern African Development Community; OHS, Occupational Health and Safety; OSHA, Occupational Safety and Health Agency; GCL, Government Chemist Laboratory, TBS, Tanzania Bureau of Standards; NEMC, National Environment Management Council; MAB, Ministerial Advisory Board; CRB, Contractors Registration Board; ERB, Engineers Registration Board; IET, Institution of Engineers Tanzania; DPP, Director of Public Prosecution; TPRI, Tropical Pesticides Research Institute; TOHS, Tanzania Occupational Health Services (also known as DarGroup).

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Table 3. **Occupational Health Professions in Tanzania Mainland – Overall Human Resource**

Professional	No. in Public Sector	No. in Private Sector	Qualification and Legal Requirement
Occupational health physicians	3	7	Postgraduate diploma in occupational health
Occupational health nurses	1	2	Postgraduate diploma in occupational nursing
Occupational hygiene specialist, safety engineers, and technician	20	—	Postgraduate diploma in occupational health or safety
Inspectors	53	—	Postgraduate in engineering, occupational health or safety or health
Environmental protection specialist	15	—	Postgraduate diploma in occupational health

conducted by Manyele et al (2008) in 14 districts revealed that there was lack of qualified personnel for OHS in all surveyed hospitals. Moreover, none of the 430 study participants was trained in OHS.[32] Furthermore, knowledge and skills in treatment of occupational diseases among health care providers at workplaces is grossly inadequate.[6] A baseline study conducted on health and safety conditions at construction sites revealed that only 15.9% of the visited sites had knowledge of safety requirements.[33] Occupational health and safety services in health sector are weak, biased toward HIV infection, prevention, and control and less focused on other occupational health and safety aspects. This indicates the need for training and creation of awareness on occupational health and safety issues among working population, employers, and employees.

As observed by Puplampu and Quartey (2012), improving occupational health and safety services is one of the key interventions in pursuance of improved health and safety outcomes for the populations in African region.[34] Thus to effectively reduce occupational accidents and diseases, there is a need to increase human resources and skills level, both in enforcement agencies as well as within all levels of the workforce. The development of an occupational health services model that can be integrated into public health systems is an important step toward improving workers' physical and mental health. The model will provide primary medical treatment and/or referral, support rehabilitation, decrease occupational risk factors, promote good health practices, control occupational diseases and its hazards, and track epidemiologic data for further analysis of occupational illnesses and accident rates. Unfortunately, in Tanzania (both mainland and island) the occupational health services are not yet integrated into primary health care because of limited resources.[35] To reduce the shortage of occupational health experts, basic occupational health services and primary health care have been proposed[36] and a number of countries are experimenting these approaches.[37-42] Training of practicing physicians and other health care professionals is necessary in implementing occupational health at primary health care facilities in Tanzania. Table 3 shows the current status of human resource in the country.[26]

Currently the major institutions providing OSH educational programs in Tanzania are Muhimbili University of Health and Allied Sciences, which offers short courses, diplomas, Bachelor of Science and master's degrees in environmental and occupational health, and master's degrees in public health. Tumaini University offers master's in public health. OSHA provides tailor-made training to organizations.

To enhance awareness, education, and training programs on occupational health and safety at all levels, the government of Tanzania has been collaborating with several international agencies. For instance, the Danish International Development Agency assists OSHA to build capacity to be able to deliver its services effectively and efficiently. The activities supported include (i) increasing the capability of OSHA to conduct relevant technical services in all major occupational environments, (ii) establishing zonal offices to extend OHS services outside Dar es Salaam, (iii) strengthening occupational safety and health practices, and (iv) promoting occupational safety and health knowledge and awareness.[30] Other agencies, such as the Food and Agriculture Organization and the World Bank, sponsored the Africa Stockpile Programme on pesticides disposal. Events on health, safety, and HIV/AIDS in the workplace are supported by ILO, whereas events related to health issues such as tuberculosis are supported by WHO.[35]

OCCUPATIONAL HEALTH AND SAFETY RESEARCH

Research is important in finding new OHS information and providing solutions to health and safety

problems. Thus in enforcing occupational health and safety research helps to prevent occupational hazards.[43] Unfortunately, Tanzania has no comprehensive nationally coordinated occupational health and safety research strategy. There are no public OHS research institutes in place; there is inadequate capacity to perform in-depth investigative work to service needs arising from day-to-day operations, such as accident investigations, as well as a capacity to perform long-range research to support standard-setting recommendations.[24,30] On the other hand, there is a well-equipped Government Chemist Laboratory that can be used to analyze air samples, biological samples, and samples related to chemical poisoning.[30] Thus there is a need to develop a strong and effective research capacity for implementation of national occupational health and safety promotion programs. A dedicated research allocation in budgeting and long-term arrangements to secure research activity are also required.[24]

SUMMARY OF THE CHALLENGES AND PROBLEMS FOR OCCUPATIONAL HEALTH IN TANZANIA

Tanzania, like other developing countries, faces challenges in promotion and provision of occupation health and safety services. These include the following:

1. Fast technological development, globalization, and expanding economy.
2. Inadequate effective institutional framework to enhance OHS in formal and informal sectors.
3. Low OHS skills among health care service providers.
4. Lack of resources (human, technical, and financial) to carry out OHS.
5. Low awareness of OHS matters among the general public, workers, and employers.
6. Low compliance to OHS standards.
7. Poor work environment in the informal sector.
8. Inadequate OHS training and skills development.
9. Lack of financial commitment by government and social partners to enhance occupational safety and health activities.
10. Government officers who are not fully committed or motivated to enforce health and safety law.
11. Corruption.
12. Lack of employer interest in providing a safe working environment.
13. Inadequate OHS information.
14. Inadequate programs to address cross-cutting and sectoral issues related to gender, HIV and AIDS, migrant workers, disabled people, and people living in abject poverty.

CONCLUSIONS

Millions of people are at risk and about 2 million workers die every year from occupational illnesses. The majority of Tanzanians (>80%) are not covered by the OSH law, and they do not access occupational health services. With new stress factors as a consequence of technological development and work organization, the health burden of workers is increased and legislation is limited for the new risks.

The biggest challenge for occupational health and safety to succeed in emerging economies like Tanzania is for major modification of the existing legal provisions to meet international requirements and standards and the availability of trained occupational health professionals to offer occupational health services.

The current institutional setup makes OSHA an occupational health and safety service provider, regulator, and enforcer, a situation that leads to conflict of interest and unnecessary inefficiencies that compromise workers' health. OSHA also has only 45% of the staff needed for them to perform their duties efficiently. The OHS Act is therefore not adequately implemented and is outdated.

The MoHSW also takes responsibility in treating injured or sick workers through primary health services in places where occupational health services are inadequate or not provided. The burden is borne by government, workers, and their families in the neglected sectors. Occupational health services and supporting legislation require refocusing, revision, and strengthening to respond to this reality.

To be effected the Workers Compensation Act will require trained occupational health practitioners to certify the conditions. This indicates the need for training and creation of awareness on OHS issues among working population, employers, and employees. Training of practicing physicians and other health care professionals is necessary in implementing occupational health at primary health care facilities in Tanzania.

There is also a need to develop strong and effective research capacity for implementation of national occupational health and safety promotion program. A dedicated research allocation in budgeting and long-term arrangements to secure research activity are also required.

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