



Occupational Health and Safety: An Insights from Nepal, South Asia, and Global Perspectives

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Abstract

The industrialization globally is increasing the occupational morbidity even if the traditional labor-oriented markets are on more of automation and mechanization, at the same time there is a requirement of manual attention towards delicate operation and general awareness about occupational safety, occupational and environmental hazards were not spread in an effective manner or is subjected to less importance. Occupational safety and health (OSH) are defined as the science of the anticipation, recognition, evaluation and control of hazards arising in or from the workplace that could impair the health and well-being of workers, taking into account the possible impact on the surrounding communities and the general environment. Due to the high number of accidents that occur in industrial consequences for workers, organizations, society and countries, OSH has become a very important factor to maintain to look after the human rights. This paper is going to research as in the aspect of how the OSH functions in various countries, its constitution history as well as its effectively. This paper will be mostly based on secondary research which will involve articles, journal, books, blogs and some previously available research work. Occupational health and safety (OSH) remain critical concerns globally, with significant implications for workers' well-being and economic productivity. Recent data indicates that approximately 18% of the global workforce has experienced serious harm at work in the past two years, underscoring persistent challenges in ensuring safe working environments. In South Asia, and specifically Nepal, these challenges are exacerbated by factors such as inadequate reporting systems, limited access to safety training, and the prevalence of informal employment. This paper also examines current trends in OSH from a global perspective, with a focus on Nepal and the broader South Asian region, highlighting recent data, notable incidents, and key facts up to 2024.

Keywords: Health, Occupation, safety, measures, management, workplace, worker, risk assessment, safety audits, workplace inspections, workplace violence prevention, hazard prevention

Introduction

Occupational safety and health (OSH) are concerned with guarding the safety, health and welfare of people who are engaged in work or employment. OHS consist of the laws, standards, and programs which aims at making the workplace healthier and safer for workers, along with co-workers, family members and customers as well. An up gradation in company's occupational health and safety standards ensures good business, a better brand image, and higher employee morale.

When we talk of better health it includes their protection from harm in any form of injury or disease of both physical conditions of both mind and body, of all people at the workplace including the workers, and people they are associated with. Safety is about the physical condition at the worksite and applies to a state where the risk of harm and

damage has been removed or reduced to a tolerable level. There is a increase in stress and strain level leading to the occurrence psychosocial and ergonomic problems The international overview indicates that Occupational health and safety has always been challenging and difficult to coordinate and maintain. The combination of OHS into worksite management, maintenance of safety activities, and role of the employees to lower injury rates. Physical working conditions comprise of workspace, and the width of the stairs, lighting, fire escape facilities, and the number of toilets. It is statistically seen that the physical working conditions are often poor in the industries and often further results in reduction of production along with the fact that many of the potential hazards introduced into the industry are because the machines became larger, speedier and much more complex in operation. The hazards damages don't only

include damage to human life but also to the surrounding environment. The provision of maintaining safety measures in occupational places is also required to be eco-friendly. Modernization is important and essential for emolument, but it should not involve harm to the human life or their ecosystem to live in. Occupational health and safety are fundamental components of decent work, essential for safeguarding workers and enhancing productivity. Despite international efforts to promote safe working conditions, work-related accidents and diseases continue to occur at alarming rates. Globally, it is estimated that 2.93 million workers die each year due to work-related factors, with an additional 395 million sustaining non-fatal injuries annually. These statistics highlight the ongoing need for effective OSH policies and practices. In South Asia, the situation is particularly concerning. The region's rapid economic growth has often outpaced the development of robust OSH frameworks, leading to significant occupational hazards. In Nepal, for instance, workers in industries such as agriculture and construction face various risks, including exposure to hazardous chemicals, noise, and psychosocial stressors. The informal nature of much of the region's employment further complicates the implementation and enforcement of OSH standards.

Researchers conclude that stress put up from communities have led to the ratification of various safety legislations and safety standards in different countries ^[1] Ahonen *et al.* argue that different international and national safety standards provide guidance to help organizations develop their safety management systems with respect to varied business needs and requirements ^[2]. For a matter of fact that people are paying very little attention and resources in accordance with health and safety at work in emerging economies, workplace safety and health has been overlooked in their industrial development policy and strategies. They are mostly focused on the production volume or profit undermining the latent effect of dissatisfactory working environment. Safe workplaces are profitable workplaces, whether measured in a company's bottom line, its market share, its broader consumer reputation, or its ability to attract and retain workers, managers, or investors. Healthy people are expected to contribute more to productivity and innovation. However, absenteeism from workplace site causes productivity loss.

History: Initiation to occupational health and safety

Around seventeenth century, before the beginning of any kind of Industrial Revolution, the source of making a living was through agriculture or the making and selling of products. Then there was beginning of mass sale of products which required new developments in machinery and manufacturing processes, and slowly there began a society moving forward with industries fueled by mass production and the factory system. People began outsourcing to the cities for work where they found increased opportunities for employment in the construction places, mills and factories. The enormous number of people looking for employment, and the need for cheap labor, led to drastic consequences of less paid hazardous factory work and an increase in child labor. Hours were long and conditions dangerous, and a consistence escalation in number of deaths at work ^[3]. Dangerous acts of girls usually minor girl working at match

factories would develop distorted jaw from phosphorus fumes, children employed at glassworks were regularly burnt and blinded, while those working at potteries were vulnerable to poisonous clay dust. A lack of health and safety also meant that many children developed occupational diseases such as lung cancer and died before the age of 25. All this arose a global alarm to put more focus over the conduct and regulations of workplace.

The act of united kingdom's can be called as the first outcry over child labor conditions led to factory owner, Sir Robert Peel, introducing the Health and Morals of Apprentices Act 1802 ^[4], commonly known as the Factory Act. The Factory Act applied to all textile mills and factories employing three or more apprentices or twenty employees and required factories to; Have sufficient windows and opening for ventilation Be cleaned at least twice yearly with quicklime and water, Limit working hours for apprentices to no more than 12 hours a day and few other principles. Then gradually there was introduction of factory inspectors 1833-1868 ^[5] This Act extended the 12 hours working limit to all children and included woolen and linen mills which required delicate and extensive work procedures. This was the most important development and can be called as the introduction of factory inspectors. The inspectors were given access to the mills and granted permission to question workers. Their main duty was to prevent injury and overworking of child workers but were also able to formulate new regulations and laws to ensure the Factories Act could be suitably enforced.

Situation weren't getting better as in only ^[6] four inspectors being appointed for approximately 3,000 textile mills across the country, but there was an impact witnessed, they were able to influence subsequent legislation relating to machinery guarding and accident reporting. And there was a growing public interest in worker's welfare. However, an appeal of the case established that the employer is not responsible to ensure higher safety standards for an employee than he ensures for himself. This was necessary in a manner because there needs to be a presence of fear of strict adjudication to maintain the severity of the situation. Then the next was the Royal commission in ^[7] 1840, United Kingdom which showed the state of conditions for workers in the mining industry. It documented the appallingly dangerous working conditions and high frequency of accidents in mines. The public outrage that followed resulted in the Mines Act of 1842. The Act created an Inspectorate for mines and collieries which led to many safety improvements and prosecutions. Inspectors could enter and inspect premises at their discretion by 1850. Then in other parts, as in ^[8] 1880, USA: Voluntary establishment of the American Society of Mechanical Engineers, one of the first regulatory body was established in response to a reported 50,000 fatalities a year caused by explosions in pressures systems on land and at sea. Followed by ^[9] events in 1883 & 1884, Germany: Otto von Bismarck brought about the first social insurance legislation in 1883 and the first worker's compensation law in 1884 – the first of their kind in the Western world. Similar acts followed in other countries, partly in response to labor unrest.

Since 1950, the International Labor Organization (ILO) and the World Health Organization (WHO) have shared a common definition of occupational health. This definition

was adopted by the Joint ILO/WHO Committee on Occupational Health at its first session in 1950 and revised at its twelfth session in 1995. The definition reads: "Occupational health should aim at: the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations; the prevention amongst workers of departures from health caused by their working conditions; the protection of workers in their employment from risks resulting from factors adverse to health; the placing and maintenance of the worker in an occupational environment adapted to his physiological and psychological capabilities; and, to summarize, the adaptation of work to man and of each man to his job." Occupational Safety and Health (OSH) is a cross-disciplinary area concerned with protecting the safety, health and welfare of people engaged in work or employment. The goal of all occupational safety and health programs is directed in fostering a safe work environment. OSH determines vulnerabilities and provides mitigating and adoptive measures to overcome any work-related adversities. It analyses problems through surveillance in determining hazards, conditions of work, and exposure of workers. The tools of OSH assess the health of workers and takes measures to reduce vulnerability of hazards and risk which can cause health impairment. It also dictates on preventive and control measures to prevent unnecessary exposure during normal operating conditions. It also includes emergency preparedness and continues in case of possible accidents and emergencies. OSH strengthens health education, health promotion, and promotion of work ability through disseminating Information on identified workplace health hazards.

Global Trends in Occupational Health and Safety

Recent data from the World Risk Poll 2024 indicates that 18% of the global workforce, approximately 667 million adults, have personally experienced serious harm at work in the past two years. Notably, rates of workplace harm are highest in low- and lower-middle-income countries, at 19% and 22% respectively. The poll also reveals that 62% of workers worldwide have never received occupational safety and health training, with this figure rising to 78% in low-income countries. Climate change has emerged as a significant factor affecting OSH globally. The increasing frequency of extreme heat events poses new challenges, particularly for outdoor workers. A report by the International Labor Organization (ILO) highlights that heat stress leads to nearly 23 million injuries and approximately 18,970 deaths among workers each year. More than 70% of the global workforce is vulnerable to extreme heat, underscoring the need for adaptive measures in OSH policies.

Occupational Health and Safety in Nepal and South Asia

In Nepal, the recording and notification of occupational accidents and diseases are mandated by the Labor Act 2017, which requires employers to report incidents to the Labor and Employment Offices. However, significant gaps remain, including inadequate accident recording mechanisms and insufficient monitoring by factory inspectors. These deficiencies hinder the development of informed OSH policies and the implementation of preventive measures.

The informal sector, which comprises a substantial portion of Nepal's economy, presents additional challenges. Workers in informal settings often lack access to basic OSH services and are not covered by existing labor laws, leaving them vulnerable to various occupational hazards. A review of OSH in Nepal identifies exposure to infectious diseases, hazardous chemicals, and psychosocial risks as common issues among workers in industries such as agriculture and construction. The broader South Asian region faces similar challenges. Rapid industrialization, coupled with inadequate regulatory frameworks, has led to frequent workplace accidents and occupational diseases. For instance, in India, the death of a 26-year-old executive at Ernst & Young in 2024, attributed to overwork, has prompted authorities in states like Maharashtra and Karnataka to draft tighter workplace regulations and increase inspections to protect white-collar employees.

Ensuring occupational health and safety remains a pressing challenge globally, with complexities in regions like South Asia and countries such as Nepal. The high incidence of workplace harm, coupled with inadequate training and reporting mechanisms, underscores the need for comprehensive OSH strategies. Addressing these issues requires a multifaceted approach, including strengthening regulatory frameworks, enhancing data collection and reporting systems, and expanding access to safety training, especially in informal sectors. As the global workforce continues to evolve, adapting OSH policies to emerging challenges, such as climate-induced heat stress, will be crucial in safeguarding workers' health and well-being.

Reference To Labor Act of Nepal

Though the Government of Nepal established the Occupational Safety and Health Project (OSHP) under the Ministry of Labor and Transport Management in 1995 with the prime objective of improving occupational safety and health in Nepal, it has not been able to obtain a permanent status for long term sustainability. The major facade to installing the concept of OSH in Nepal lies in the inability of concerned stakeholders to grasp the utility and importance of occupational health services. Major obstacles in enforcing effective OSH practices in Nepal from the nation's perspective are least priority of the government, lack of national strategy for OSH management, legal back up mechanism and focal point at government ministries. Few industries have taken prudent measures by establishing OSH setups thereby decreasing vulnerability of hazards. In Nepal, the ILO works with governments, employers' organizations and workers' organizations in promoting safe and healthy conditions in the workplace by enhancing the application of the International Labor Standards and supporting to formulate national labor legislation and promoting social dialogue, social justice, and decent work. The concept of OSH in Nepal is in its initial stage. The notion of OSH in Nepal has not been able to educate about its principle and ideologies at all levels. The OSH sector in Nepal has three major identified sectors,

1. Government,
2. The industries/ employers and
3. The work force/labor unions. The government of Nepal has enforced concepts of OSH through its Labor Act 1992; it has highlighted few issues and provisions on

working hours, physical infrastructural setup, yearly medical examination and provisions of safety measures in work etc. It has already endorsed 9 conventions passed by ILO but has not yet ratified convention No. 155 which solely bears OSH obligations. In this light, except for few enactments under Labor Act 1992, the issues of OSH still lack legal backup. The employer or the industries bearing obligation to providing safe working conditions by practicing OSH have an easy exit mechanism in absence of concrete laws. Few industries have taken prudent measures by establishing OSH setups thereby decreasing vulnerability of hazards. The reality has a different story to tell, with very few medical facilities and emergency medical backup the issues of OSH are largely overlooked. The labor forces are guided by their political affiliations, lack effective coordination and unity on OSH issues. They have not been able to cater to the needs of much aspired OSH concerns of workers. The labor forces at the bottom rung of ladder are still facing hardship as their voices often fall on deaf ears and issues pertaining to healthy working conditions are overlooked by their employers and even the state. The reality of this situation is such that workers have still been collectively bargaining for issues relating to minimum wages, equal remuneration etc. thereby, overshadowing issues pertaining to occupational safety and health.

The major façade to installing concept of OSH in Nepal lies in inability of concerned stakeholders to grasp the utility and importance of occupational health services. The major impediments in enforcing effective OSH practices in Nepal are as follows:

- Lack of legal back up mechanisms.
- Need of separate laws on OSH.
- Update of Labor Act 1992.
- Isolation and overlooking of OSH issues by formal and informal sectors.
- Necessity to build the capacity of State, employers and workers on OSH.

The task of maintaining a safe and healthy work environment is not an easy alley to trespass. All the stakeholders should be informed and educated on occupational grounds for an effective occupational response through their meaningful participation. The government should develop evidence-based legislations, policy, framework, and programs on occupational safety and health. It requires the translation of scientific findings on occupational safety and health into policies. The Labor Act, 2074 provides for various provisions that are related to welfare and safety of employees along with the payment and compensation to them in case of occupational disablement and an assessment of these are provided in the following portion of the answer sheet. In order for the safety and health of the labor to be maintained, the Act provides for the provision to regularly check-in on the workplace by the labor supplier and forward recommendations if needed in Section 61(3) which acts as a regular inspection on the situation at the workplace of the laborer where if the recommended changes have not been made and the safety is at risk then they, according to Sub-section 4 forward the

information to the Department or concerned office. Also, Section 64 provides for the employer to take measure in ensuring the occupational safety and health through which the Act provides for the employee to enjoy the treatment of having a safe working environment. These are some provisions that vaguely deal with the duty of providing the employees with a safe working place that does not harm their safety and health in any way. As for specifically dealing with the issue of safety and health is provided in Chapter-12 Provisions Relating to Occupation Safety and Health within which exists the provisions such as formulation of safety and health policy; Section 68 provides that the employer must develop and implement a workplace safety and health policy for workers and other individuals and register it with the office. The office will monitor the policy's implementation on a regular basis. This provides for authorities to properly track and record the conditions of the workplace.

Health Hazards By Industries

Construction industry give away the most hazard and drastic injuries. In previous times when there was an absence of machinery, men had to do the heavy lifting by their bare hands to finish construction and earn a daily wage. Even now in modernization yet with machinery according to opinion it's riskier because one malfunctioning in the machinery system and the heavy lifting can cost thousand lives. When work is associated with health hazards, it causes various occupational diseases. There includes physical and both psychological injuries A study showed that the physical injuries in industrial workers were ranging from moderate to serious in severity. Whereas the hands, fingers and eyes, being the most delicate regions involved in work were mostly damaged in accident. Works related to ^[10] agricultures are often at risk of work-related injuries, lung disease, noise-induced hearing loss, skin disease, as well as certain cancers related to chemical use or prolonged sun exposure. And now in the modernization era of even agriculture it includes heavy machinery and that includes an extensive version of risk. The mining industry still has one of the highest rates of fatalities of any industry ^[11]. There are a range of hazards present in surface and underground mining operations. In surface mining, leading hazards include such issues as geological stability, contact with plant and equipment, blasting, thermal environments, respiratory health ^[12] In underground mining operations hazards include respiratory health, explosions and gas (particularly in coal mine operations), geological instability, electrical equipment, contact with plant and equipment, heat stress, inrush of bodies of water, falls from height, confined spaces. ionizing radiation

Management of Occupational Health and Safety System Internationally

BS OHSAS 18001 has been replaced by ISO 45001 the new international standard for occupational health and safety ^[13]. ISO 45001 is an International Standard that specifies requirements for an occupational health and safety management system, with guidance for its use, to enable an organization to proactively improve its OHS performance in preventing injury and ill-health. ISO 45001 is intended to be applicable to any organization regardless of its size, type

and nature. ISO 45001 enables an organization, through its OHS management system, to integrate other aspects of health and safety, such as worker wellness/wellbeing; however, it should be noted that an organization can be required by applicable legal requirements to also address such issues.

An ISO 45001 based OH&S management system will enable an organization to improve its OH&S performance by Developing and implementing an OH&S policy and OH&S objectives Establishing systematic processes which consider its "context" and which take into account its risks and opportunities, and its legal and other requirements determining the hazards and OH&S risks associated with its activities; seeking to eliminate them, or putting in controls to minimize their potential effects, Increasing awareness of its OH&S risks and various other acts. These measures will ensure that an organization's reputation as a safe place to work will be promoted, and can have more direct benefits, such as Improving its ability to respond to regulatory compliance issues, Reducing the overall costs of incidents, Reducing downtime and the costs of disruption to operations and various other benefits.

If your organization has people working on its behalf, or who may be affected by its activities, then using a systematic approach to managing health and safety will bring benefits to it ^[14]. The standard can be used by small low-risk operations equally as well as by high risk and large complex organizations. While the standard requires that OH&S risks are addressed and controlled, it also takes a risk-based approach to the OH&S management system itself, to ensure a) that it is effective and b) being improved to meet an organization's ever changing "context". This risk-based approach is consistent with the way organizations manage their other "business" risks and hence encourages the integration of the standard's requirements into organizations' overall management processes.

Contemporary developments by world health organisation and international labor organisation

On an international scale, the World Health Organization (WHO) and the International Labor Organization (ILO) have begun focusing on labor environments in developing nations with projects such as Healthy Cities ^[15]. Many of these developing countries are stuck in a situation in which their relative lack of resources to invest in OSH leads to increased costs due to work-related illnesses and accidents.

The means used by the ILO to promote occupational safety and health include international labor standards, codes of practice, the provision of technical advice and the dissemination of information. By these means it aims to increase the capacity of member States to prevent occupational accidents and work-related diseases by improving working conditions. One of the main functions of the ILO, from its foundation in 1919, has been the development of international labor standards. These cover labor and social matters and take the form of Conventions and Recommendations. Conventions are comparable to multilateral international treaties which are open for ratification by member States and, once ratified, create specific binding obligations. The ILO Constitution sets forth the principle that workers must be protected from sickness, disease and injury arising from their employment. Yet for

millions of workers the reality is very different. According to the most recent ILO global estimates, 2.78 million work-related deaths are recorded every year, of which 2.4 million are related to occupational dis- eases. In addition to the immense suffering caused for workers and their families, the associated economic costs are colossal for enterprises, countries and the world.

The Constitution of WHO stipulates the fundamental right of all people to the highest attainable standard of health. In addition, article 2 of Chapter II - of the Constitution specifies prevention of accidental injuries and the promotion of improvement of working conditions as functions of WHO. WHO has had a special programme for occupational health since 1950 and close coordination and collaboration has taken place with ILO? The Alma Ata Declaration emphasized the need to organize primary health care services (both preventive and curative) "as close as possible to where people live and work". The Declaration emphasized that in the organization of such services, high priority should be given to the people most in need, including the working populations at high risk. In 1979 a new strategy for the further development of occupational health was launched when the World Health Assembly adopted Resolution WHA32.14 on the Comprehensive Workers' Health Programme. The right to health and safety at work has been stipulated in the Constitution of WHO and ILO and is supported by several other United Nations documents. No country has so far been fully successful in achieving this objective for all workers. Thus, occupational health infrastructures and programmes should be further developed in every country.

Safety training and education

Employee safety training or education has been recognized since the era of industrial revolution as an effective instrument in promoting workers' safety practices. OHS training embodies instructing workers to recognizing known hazards and assisting them to use available work processes and procedures to protect themselves. In addition, worker education prepares them to deal with potential hazards or unforeseen problems at workplaces. Thus, training or education gives guidance in ways to become better or informed worker that acts aimed at eliminating workplace hazards and protecting lives and property. Generally, training refers to instruction and practice for acquiring skills and knowledge of rules, concepts or attitudes necessary for workplace hazard recognition and measures taking to controlling such hazards. Workers training also involve learning safe work practices, proper usage of PPE, acquiring knowledge of emergency procedures and preventive actions necessary for safety. In addition, training provides workers with ways to obtain additional information about potential occupational health hazards and how to control these hazards The workers must be trained after being hired and before they begin their job especially in the jobs perceived to having high risks to health. The availability of first aid facilities with trained person encourages provision of health assistance to injured or ill workers before professional help is sought. Worker's willingness to accept the levels of OHS risks could be minimized through first aid 15 training and first aid training provides workers with the ability to control the workplace risks and safeguard their well-being.

Conclusion

In conclusion as important it is to have industrial development in a nation, it is equally necessary to focus on the human rights. It is a two-way process to include, the people need jobs and the industries, how much ever modernized machinery it possesses it requires human assistance. Hence it is necessary to give importance to their health facilities, even if there exists a possibility of hazards but maintenance is required. The study shows that bad occupational health safety (OHS) practices decrease the workers' performance, leading to the decline of productivity. A worker who is suffering from an occupational illness is slower and weaker, thereby, missing set targets. The morale of workers in the food industry is very low. There is an improvement in the situation globally, yet it is a long way to go in development and the aim is zero hazards and fastest compensation and work regulation. The landscape of occupational health and safety is continually evolving, influenced by technological advancements, emerging psychosocial risks, and global challenges such as climate change. While progress has been made in developing comprehensive OSH frameworks, significant disparities persist, particularly in regions like South Asia and countries such as Nepal. Addressing these challenges requires a multifaceted approach that encompasses the adoption of innovative technologies, the implementation of robust mental health initiatives, and the development of climate-resilient safety strategies.

Recent advancements in occupational health and safety (OSH) encompass technological innovations, recognition of psychosocial risks, and the impacts of climate change. The integration of wearable devices, real-time monitoring systems, and data analytics has enhanced hazard identification and risk management, enabling proactive safety measures. Organizations are increasingly addressing psychosocial risks such as work-related stress and harassment by implementing comprehensive mental health programs that promote supportive work environments and provide access to counseling services. Additionally, climate change poses emerging challenges to OSH, with rising global temperatures increasing the vulnerability of outdoor workers to heat-related illnesses. Implementing adaptive measures, such as rescheduling work hours to cooler periods and educating workers on recognizing heat stress symptoms, is crucial for protecting workers from these adverse effects. Furthermore, the globalization of supply chains necessitates a commitment to maintaining consistent safety standards across diverse operational contexts. Organizations must prioritize the protection of vulnerable worker populations by extending OSH coverage and ensuring equitable access to safety resources. By embracing a holistic and inclusive approach to occupational health and safety, stakeholders can work collaboratively to create safer and healthier work environments. This collective effort is essential for safeguarding workers' well-being, enhancing productivity, and promoting sustainable economic development on a global scale.

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