Journal of Population Therapeutics & Clinical Pharmacology

RESEARCH ARTICLE
DOI: 10.53555/jptcp.v28i2.5317

The Analytical Framework and Impact of OHS in Industrial Setting

Jerin Johnkutty[1], Dr.Serajul Haque[2*], Jerry Davis T[3]

[1]Research Scholar, Dept. of Mechanical Engineering, B.S. Abdur Rahman Crescent Institute of Science and Technology, Chennai jerinjohnkutty18@gmail.com
[2*]Assistant Professor, Dept. of Mechanical Engineering, B.S. Abdur Rahman Crescent Institute of Science and Technology, Chennai, serajulhaque@crescent.education
[3]Assistant Professor, Dept. of Mechanical Engineering, Government Engineering College Thrissur, Kerala, jerrydavist@gectcr.ac.in

***Corresponding Author:** Dr.Serajul Haque
*Assistant Professor, Dept. of Mechanical Engineering, B.S. Abdur Rahman Crescent Institute of Science and Technology, Chennai, serajulhaque@crescent.education

Abstract
Occupational Health and Safety (OHS) for India is a 'development tool' and an inspiring trend. India is a developing nation, the most dynamic and strong democratic nation globally, and an emerging super-power. Most of the Indian workforce is employed in the unorganized sectors and lives in rural areas, while the population of urban was rising. Health at work and a safe workplace are among the essential properties of people, families, and nations. The wellbeing and welfare of workers are essential facets of the smooth and productive operation of the organization. OHS is a field concerned with preserving the safety, health, and wellbeing of people involved in work. As most process industries work under comparatively higher operational conditions with process variables (such as temperature, pressure, usage of dangerous chemicals, etc.), there is an elevated risk of injuries or workplace exposure to hazardous chemicals in process plants. With this focus and awareness, the number of accidents is continuing in the process industries. It can be assumed that there are gaps in the execution of OHS policy; therefore, an analysis is needed in this domain. In this paper, a detailed survey on OHS and its standards are discussed and analyzed.

Keywords: OHS, OHS Standards, OHS in India, Occupational Diseases, WHO, Global impact.

Introduction
Occupational health and safety is a human wellbeing concern that presently urbanization and service-providing industries are increasing, resulting in a boom in health at work. Workplace protection and health risks are also considered as a guiding factor in seeking ways to secure workers' harmful effects from the production sector [1]. OHS are among the most significant fields of study for organizations and businesses due to their indirect and direct benefits. The performance of safety is the core measure of an organization's value of the brand and commitment and is considered to be based on multiple predictors, like human factors, safety cultures, and activities of employees [2].
The idea of health and safety at work originated with the Industrial Revolutions in the United States and the United Kingdom. The Factory Inspectorate was established in the United Kingdom in the Act of 1833. The purpose of the inspectorate was to monitor the health of workers and to manage working conditions. Furthermore, it has become essential to uphold regulations such as children's

working hours, younger people, and women in the textile industry. Also the regulations like the prohibition of children for working at night and the obligation for attending school for six days a week, two hours, was also necessary. Employees were guaranteed the right to a one-hour break for lunch [3].

Based on the Act of 1833, several Factory Acts were introduced where there were radical improvements in working standards, and further businesses were integrated into the acts following. Prevention of harm to employees was compulsory in the design of safety work structures, injuries in factories were recorded, the concept of employer responsibility was added, and danger identification and industrial diseases were considered. As a result, private and public organizations that inspect and implement healthy work-related practices have been developed and improved. In 1974, the Act of Health and Safety at Work provided the systematic structure for industries, representing the least rate of non-fatal accidents in the UK and the second-least number of fatal accidents in Europe at work. The European Organization for Health and Safety at Work was also responsible for defining minimum requirements for OHS in the European Union (EU) [4].

Table.1. OSH Research Domains [4]

Domains of OSH research	**Sub domains**
External contextual domains	• Regional, national and international regulations and policies • Susceptible population (childrens, disabled, women, older, and migrant workers) • Compensation and disabilities (economic and social burden) • Occupational mobility (retirement, unemployment) • Hazard and population movements
Internal domain	Work organizations, Workplace hazards, exposures (disease spectrums), service, occupational health, and programs.

Occupational health and safety could be essential for moral, legal, and financial benefits. Every organization has a responsibility to ensure that staff or any other individual affected by the organization are adequately protected. Moral responsibilities will include the safety of the lives and welfare of workers. Legal reasons for OHS activities contribute to the preventative, corrective, and compensatory consequences of regulation that safeguards employees' health and safety. OHS can also mitigate the costs of accidents and sickness related to workers, including medical treatment, sick leave, and disability benefit costs. OHS can include connections between a broad range of subjects, like occupational hygiene, occupational medicine, safety engineering, public health, chemistry, industrial engineering, health physics, occupational health psychology, industrial and organizational psychology, and ergonomics [5-7].

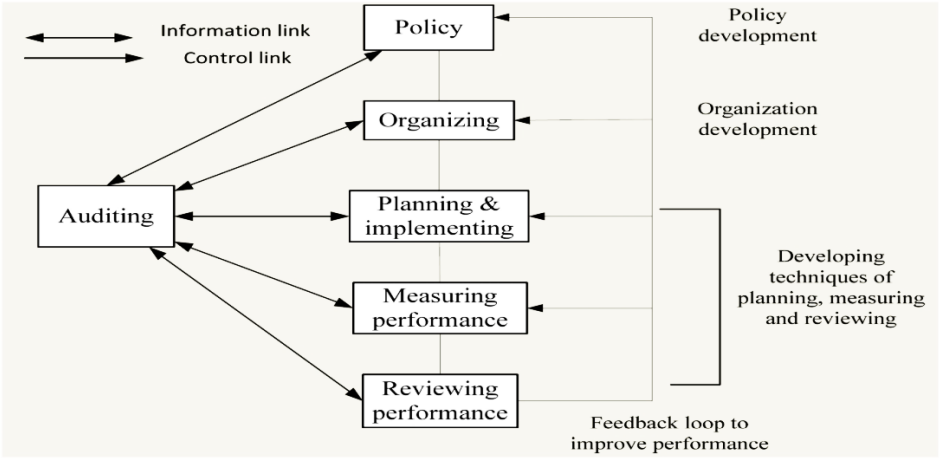

Figure.1. Key elements of successful health and safety management [8]

Occupational health is associated with health-related to work and the workplace environment. It requires health education and health security, emergency treatment, a wide variety of prevention,

curative, and recovery services, a term that covers all that can be used to improve employees' health and working capability [9].

OHS is an inter-disciplinary field dealing with preserving the health, safety and wellbeing of persons involved in work or employment. The reason of all workplace safety and health policies was to foster the working space healthy. As the secondary consequences, also it can secure members of family, co-workers, consumers, local communities, vendors, and various public groups who were influenced by the environments of the workplace [10].

The purpose of OHS risk assessment is to assure the safety and protection of occupational stakeholders. It also helps to reduce future costs and losses arising from work, worksite, and worker-related practices and leads to the more profitable and efficient sector. The risk assessments can be executed qualitatively or quantitatively. In quantitative assessments, the risk value was calculated by statistical formula. In qualitative assessments, numerical scales were allotted to the probability of a possible hazards and its intensity; and are evaluated using logical and mathematical risk evaluation approaches [11-14].

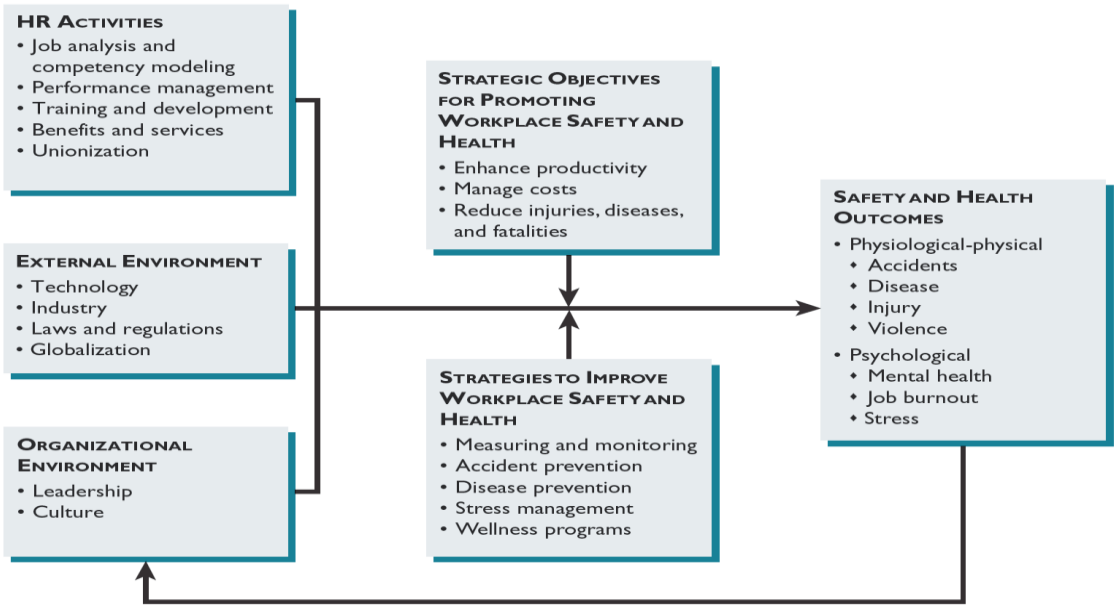

Figure.2. Strategies Followed in an Organization for Occupational Health and Safety [15]

Importance of Occupational Safety and Health

Work plays a crucial role in human lives, as most workers spend at least eight hours a day at work, like office, hospital, factory, plantation, etc. It was additionally noted that healthy employees are main reason for increasing productivity growth, reducing the production cost. Therefore, the health and welfare of workers is a prerequisite for improving efficiency and competitiveness and is essential for inclusive and sustainable socio-economics growth. This was not the exact with a lot of jobs. Each day, employees face many health risks, such as smoke, fumes, vibration, noise, high temperatures, etc. [16]. Adversely, individual employers have some responsibility for the maintenance of the health and welfare of employees. Indeed, certain employers not even been aware of that they have a fundamental and official duty to protect employees. Occupational injuries and illnesses are frequent due to risks and lack of regard to health and safety [17].

Need of OHS

The human, economic and social costs of accidents at work, causalities and illnesses, and significant industrial incidents already a subject of concerns at all stages, from a private work place to international and national level [18]. Measures and procedures intended for preventing, monitoring, minimizing or eliminating workplace hazard and threats have been advanced and continuously gained over the years for keeping pace with technology and the economic developments. However, though continuous, if sluggish, progress, injuries at work and illnesses are still too familiar, and their

costs remain substantial in terms of human misery and economic burdens. A current ILO (International Labor Organization) study reports that 2 million workplace deaths occur worldwide per year. The higher percentage of death is due to cancer related to work, cerebrovascular and circulatory disorders, and specific infectious diseases. The cumulative average number of fatal and non-fatal injuries at work was evaluated at 270 million. About 160 million employees agonise from health-based disease, and almost 2:3 are out of job for four days of working or more as a consequence [19-20].Hence, after occupational disorders, cancer, and some infectious diseases, unintended workplace accidents are one of the primary causes of work-related casualties. Latest statistics from the ILO and the WHO show that total workplace injuries and injury rates were steadily decreasing in most developed nations but are growing or rising in emerging and industrial nations: As per the ESAW (European Statistics on Accidents at Work) each year in the 15 Member States of the European Union (EU), about 5,000 employees were killed in work-related accidents before the 2004 and 2007 enlargements, and about 5 million employees are accidents victims at work resulting in over three days' absence from work. In sub-Saharan Africa, the fatality rate is 21 per 100,000 employees, and the accident rate is 16,000. This means that 54,000 employees die every year, and there are 42 million job-related injuries that trigger minimum three days leave from work. About 30,000 deaths occur per year in the Caribbean and Latin-America, and 22.6 million workplace injuries trigger minimum three days of leave from work. In China and India, the level of workplace deaths and injuries were close, in-particular 10.4 and 10.5 per 100,000 for casualties, 8.700 and 8.028 for accidents. The economic expenses of these accidents and fatalities were immense at the business, national and international level. Considering compensations, lost working times, disruption of development, trainings and retraining, medical costs, and etc., assessments of such damages were regularly assessed at about 4% of global GDP each year and likely even more [21].

Scope of OSH standards

Rules and Guidelines on OHS can serve a variety of intents, such as:

- Basic principle to lead policies for development, actions and maintenance;
- Normal safety measures, like the protection of machineries, the medical inspection of younger workers or the reduction of the weight of the load to be handled by an individual worker;
- Protection in particular fields of economic development, like mining, manufacturing, trading and dock works;
- Specific professions protection (i.e., seafarers and nurses) and group of employees with specific occupational health requirements (i.e., women or younger workers);
- Protections toward potential hazards (ionizing radiations, asbestos, benzene,); occupational cancer prevention; air pollution control, vibration and noises in the workplace; safety precautions in the chemicals usage, along with the major industrial accident prevention;
- Organizational safety and regulations related, i.e., to labor inspection or remuneration for work-related injuries and illnesses.

The Globalisation Impact on OHS

The OHS figures of ILO's could not be explicitly utilized to calculate transition over time (thus the effect of globalization on OHS) since they were dependent on obsolete details and updated utilizing more advanced data from selected nations. However, if insecure or casual employment was utilized as a metric to the effect of globalization on the labor markets, a detailed analysis by the University of New South Wales indicated that globalization has an adverse effect on OHS. The analysis has demonstrated the clear and compelling correlation among insecure jobs and inadequate OHS results, like accidents, diseases, and tension [22].

Globalization has been linked to structural transition in developed nations into comparatively healthy (related to workplace injury) service industries and beside more dangerous sectors like agricultural, forestry, and mining. The hazardous sectors have gradually been moved to developed nations where there are fewer facilities for helping employees or where, in few situations, like

'export processing zones,' employers might be excluded from labor laws. In developed nations, increasingly risky jobs, like recycling of lead-acid battery, metal stone grinding, screen printing, and garment manufacturing, are being externalized to informal businesses, like small family issues. New global production strategies like 'Total Quality Management,' 'Lean Production,' and 'Just-In-Time,' have also been correlated with higher level of musculoskeletal injuries and regular strain injuries induced by 'repetitive motions, unnatural and static postures, and heavyweight manipulations'. Unfortunately, considering the levels and durability of the data available, international comparisons were not feasible.

The significant lack of large-scale and reliable data on OHS challenges in growing nations and informal employees is specific. It emphasizes the requirement to spend additional resources on OHS and its developmental research. Otherwise would ensure that often reported adverse effect of globalization on the OHS remains essentially not verified by robust and comparable data, whilst simultaneously, the very real existence of workplace hazards and the adverse health pressure on informal employees are improbable to be clarified in the implementation and execution of national OHS programs. This will appear to be the worst of both worlds: often mentioning how bad everything was in the light of globalization but not coming up with any realistic means of solving the issue [23].

Currently, there is an objective that should restructure the conventional OSH management system, considering:

- Use as the foundation for principles in management, accepted in world practices;
- Applications of the system approaches to the solutions of the issues of labor rights;
- Transitions from responding to insured accidents to handling work-related hazards at the workplaces, including micro-injury and occurrences;
- Close contact between management and production operations;
- The transitions from local control system to adaptive control system.

In compliance with international occupational safety guidelines, the following preventive steps are used to protect the health and safety of employees:

- Creating a plan for handling the wellbeing of the company, including safety working environment, Social affairs, avoidance of the effect of industrials environmental conditions on safety at work;
- Finding of the underlying causes of the risk;
- Risk evaluation that cannot be avoided;
- Minimizing risks at the workplaces and, where possible, decreasing them to zero;
- Replacing hazardous factors of development with less hazardous ones;
- Considering the particular quality of the work of a specific professional, determining the reduction in the risk of production;
- Training and development of company employees;
- Preferential implementation to collective protection measures [24-30].

Coverage of OHS in India

In India, occupational health is the order of the Ministry of Labour. It is not integrated with either the Primary Health Care or the Ministry of Health. Enforcement is handed out at the State level by the Directorate of Industrial Safety and Health. They work with the aid of factory's inspecting engineers and medical inspectors. The 1998 report by the Director-General of Factory Advisory Services & Labor Institutes (DGFASLI) indicates that there are 1,154 factory inspectors, 1,400 safety officers, and 27 medical inspectors in the nation. These numbers are insufficient as the enforcement authorities' function more in the regulated sector, leaving the unorganized sectors unsupervised. There was also an immediate need to establish the confidence of the enforcement authorities [31]. Some significant industries/public sectors offer medical care but rely on a curing scheme that neglects occupational health. Occupational health doctors are often involved in curative

and liaison practice, with little attention paid to occupational health. This results in under-reporting and under-diagnosis of occupational diseases. In our nation, occupational hygiene practices, even if performed, are carried out in the sense of protection and not in the context of OH&S. In India, 58% of employment is present in fisheries and agriculture, and these sectors make a significant contribution to economic growth. It should be noted that 22 percent of Indian employees are working in the service sector. Just 14 percent of the employees work in industries like mining, marketing, quarrying, and manufacturing. These workforce deployment statistics show that India wants to strengthen occupational health services in non-manufacturing industries on a priority basis. In the regulated sector, in comparison to other sectors, significant organizations have access to occupational health.

For the company to operate efficiently and successfully, its workers' health and welfare must be assured. In India, OSH also plays an essential role among progressive sectors and businesses in reducing OSH hazards and the workplace. Nowadays, several enterprises have complete health, safety, and environmental policies that have qualified for different OHS certificates. The key legislation on OHS in India is as follows: Municipal Solid Waste (Management and Handling) Rules, 2000; Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996; the Environment (Protection) Act, 1986; Dangerous Machines (Regulation) Act, 1983; Dock Workers (Safety, Health & Welfare) Act, 1986; the Mines Act, 1952; the Factories Act, 1948; Indian Explosives Act, 1884; etc. The Directorate-General for Mining Safety (DGMS) and the DGFASLI is the Ministry of Labor and Employment field of occupational safety and health in factories, mines, and ports. The Constitution of India has provided for laws to ensure OHS for employees in three Articles 24, 39 (e and f), and 42. The Indian government announced a National Policy on Safety, Health and the Environment at Work on February 20th 2004. The core aspects of the National policies are follows:

- It considers a stable and safe working environment as the basic human rights.
- It seeks to strengthen workers and society's wellbeing in general by minimizing work-related accidents, illnesses, etc.
- It points out the objectives to be accomplished and reflects the goal of a continuous reduction in occupational accidents and injuries.
- It defines the action program with nine main tactics, i.e., Enforcements, Compliance, Development of National Guidelines, R&D, Awareness, Professional Development, Practice Guidance, Data Collections, and Incentives.
- Also, it allows for the periodic reviews minimum once in every five years [17, 32-40].

India's Occupational Health Legislation

There are currently 16 regulations on working time, working condition, and employments. Two acts contain the essential aspects for the legislative measure to protect the health and safety of employees. In 1970, the National Institute of Occupational Health (NIOH) was founded in Ahmedabad, Gujarat, as the WHO Collaborative and Reference Center for Occupational Health and collaborates with the Ministries of Labour, Health and Family Welfares, Agriculture, Environments and Forestry, etc. Some main fields of the Institutes include environmental pollution, occupational and environmental epidemiology, toxicology, agricultural health, women health, and HR growth. The goals of NIOH were: to encourage detailed analysis to measure stress/factors of environment at the work place, to support the high level of occupational safety through basic and applied researches, to improve control systems and health initiatives through essential and basic researches to create HR in the sector. Two Regional Occupational Health Centers (ROHCs) were established in Calcutta and Bangalore.

The National Safety Council of India (NSCI) was founded to facilitate safety awareness between employees to avoid injuries, mitigate hazards and threats, and coordinate relevant awareness and education programs. The three primary functions of the NSCI were road transport safety, health safety in the constructional sector, health, safety, and the environment in small and medium scale enterprise (SMEs). Some public institutions also associate the Central Labor Institute (with its related institute) and the All India Institute of Hygiene and Public Health. The IAOH (Indian

Association of Occupational Health) is an organization of more than 3000 individuals, including healthcare professionals, safety professionals, industrial hygienists, social workers, and so on. It seeks to encourage OHS through a range of initiatives, including the conduct of training programs, seminars, conferences, the development of scientific journals, the conduct of research programs, cooperation with international organizations in the domain, and an occupational health national registry.

Statistics of Occupational Health in India

The National Institute of Miners' Health (NIMH), an institute under the Government of India, Ministry of Mines, implement applied researches in occupational health and hygiene and engages in offering technicality service support for mineral-based and mining industries with particular references to the metallurgical sectors and works for mines safety and miners health through R&D. According to NIMH, the incidence of pneumoconiosis opacities in chest diagnosis of workers in open-cast mine from 2005 and 2011 was 5.7% to 12% and 5.3% to 13%. Out of 101 workers in the stone mine site suffering from lung disorders, 73 suffered with silicosis, 16 of which had progressive massive fibrosis (PMF).

A study undertaken in an underground metal mine found that nearly 75% of employees had signs of noise-induced loss of hearing impairment. In a recent report released by NIMH in different mines, 117 HEMMs (heavy earthmoving machines), 100 percent dozers, 95 percent loaders, 90 percent dumpers, and tippers, 15 percent excavators, and 8 percent shovellers recorded low to higher health hazards due to vibrations affecting the body. Of the 48 HEMM workers, 85 percent talked about different musculoskeletal problems relating to the back, shoulders, spine, and knee. In India, significant occupational diseases include pneumoconiosis asbestosis, various chronic lung disorders, musculoskeletal disorders, noise-induced loss of hearing, chemical toxicity, and accidents. Mining, Construction, and agricultural-based professions have a higher incidence of related illnesses. Occupational health nurses were the largest individual group of health experts participating in delivering health care in the place of work. They are the frontline workers trying to protect and improve the health of the working community. In India, the practice of occupational health nursing is recent. There is no such thing in unorganized industries. Even the public sectors and private sectors not yet understood the value. There is a need to raise awareness among all stakeholders on this subject.

Occupational Diseases Control and Treatment

Occupational health is one of the elements of the National Health Policy of 1983 and 2002. The Indian government’s Ministry of Health and Family Welfare initiated the National Program for the Occupational Diseases Control and Treatment in 1998-99, Ahmedabad, the National Institute of Occupational Health, was the nodal agency for the same reason. In India, the major types of occupational diseases include occupational injury, cancers, dermatoses, lung diseases, toxicology, and psychological disorders. The classification of most of the occupational diseases in India by etiological factors involves work-related injuries: related to ergonomics; chemical factors: smoke, chemicals, gas, alkali, acids, metals, etc.; physical factors: radiation, heat, noise, etc.; behavioral factors; biological factors; and social factors. In India, from 1998-99, the incidence of silicosis was 6.2–34 percent for mica mine workers, 4.1 percent for manganese mine workers, 30.4 percent for zinc and lead mine workers, 9.3 percent for surface and deep coal mine workers, 27.2 percent for iron foundry employees, and 54.6 percent for slate pencil employees. Asbestosis has been raised from 3% in asbestos mine workers to 21% in textile employees. In textile employees, byssinosis widely spread as 28–47%. The nutritional condition of workers related to body mass indices (BMI) also dramatically reduced.

National List of Occupational Diseases in India

According to the Factories Act of India 1948, Sections 89 and 90 of the Third Schedule – List of Notifiable Diseases, there were 29 specified diseases. This involves poisoning by compounds and metals, like lead, arsenic, tetraethyl lead, carbon bisulphide, mercury, phosphorous, manganese,

benzene, nitrous fumes, their nitro or amido derivative or its sequelaes, anthracosis, radium, silicosis, chrome ulcerations, or various radioactive substance, halogen or halogens derivatives, skin cancers, jaundice, toxic anaemia, dermatitis or oil acne because of mineral oils, asbestosis, byssinosis, beryllium, noise-induced loss of hearing, contact dermatitis, carbon monoxide, isocyanates, phosgene, coal miners' pneumoconiosis, toxic nephritis and work-related cancer [41].

Table.2. Relations between OSH Factors and its Impact on Workplace [8]

OSH related factor	**Impact of Work place innovation**
Personal protective equipments	Impose workers properly to use
Job systems	Creates work and job characteristics convenient and straightforward for employees and management
Personal characteristic	Enhance the personal activities and improve the satisfactions of workplace
Occupational accident/injury	Reduces the disability, fatalities, and injuries
Occupational diseases	Reduce the occurrence of occupational diseases because of accident causing factors innovations
Occupational injury cost	Reduce the occupational expenses through decrease in accident and health diseases
Occupational environments (internal-external)	Enhances the external and internal environments that leads to fail to meet the concurrence
Society	Society's life and societal values are rising, and society reduces the ecological degradation of insecure workplaces.
Government	Influences the government to engage in policies decision-making and allocating resources
Stakeholders/ employers	Modifies their behavior from profitability and productivity dependent on innovation in the workplace
Employee participation	Increases staff involvement in the prevention and monitoring of incidents at work through secure communication
Work culture	Enhance and incorporate a structured approach to change the operating process of system change
Management system/culture	Leading to creative work place choices and confidentiality supervision helps the employee to be better approached.
Family/individual	Safe protection and wellbeing; thus, the family may not suffer from injuries.

Table.3. Description of OSH Indicators [42]

Indicators	**Descriptions**
Accountability for OHS	A culture of work place that stresses a sense of duty sharing and liability for OHS by consciously adding oversight and clarity to reporting was probable to affect the workspace's behavior.
Communication and Consultation about OHS	This applies to standard, informal and formal communications and consultations on OHS. Employee survey can be one way to collect input from workers on their views of OHS.
Employee involvement and Empowerment in decision makings about OHS	It was widely acknowledged that workers' participation in decision-makings can contribute to 'ownerships' of their actions and beneficial consequences, like safety behaviors. Numerous researchers studied the empowerment and commitment role in OHS and noted that encouraging staff and managers to create OHS choices (i.e., to avoid risky work) is a key predictor of OHS success.
Management commitment and leadership	As for every corporate project, management is the secret to OHS. This involves managers at each rank, from the boards and senior level to frontline supervisors. Effective commitment was reflected in

	constructive involvement in fields like collecting knowledge about OHS, creating confidence so that all workers see managers as committed to OHS, actions of manager showing they were role models of OHS, and manager representing that OHS was the highest priority towards a company.
Recognition and Positive feedback for OHS	It was proposed that high OHS performance can be improved by positive feedbacks and appreciation of the previous performance. However, such appreciation does not provide incentives that may lead to under-reporting of accidents or injury.
Prioritization of OHS	The propensity for protection to be exchanged over production was addressed at length through OHS education. Instead of productivity and safety as opposing priorities, OHS incorporated in the organizations as the higher priority along with productivity and efficiency could be used as the leading indicators of OHS efficiency.
Risk managements	This relates to the convergence of risk managements with OHS managements; risk managements elements involve risk assessments, management, review, and maintenances. Risks can be related to the physical, psychosocial, and physiological aspects of OHS.
System for OHS (policies, practices, procedures)	The system refers to workplace processes, policies, and activities intended for controlling and track OHS and were usually performed and managed by administrators and working group.
Training, information, interventions, resources and tools for OHS	In addition to the resources of OHS with sufficient OHS skills, the provisions of OHS preparation, knowledge, software, and services were key indicator of OHS success. This requires a training to respond and the response plan in motion.
Workplace OHS inspections and audits	A significant consequence of this is that the operation of an audit or inspection could not, in itself, be an appropriate measure of the OHS success. Inspection and audit must be structured for providing adequate and detailed informations. Effective and prompt disciplinary steps must be taken for resolving the problems found through audits or inspections.

Table.4. Different Standards of Occupation Health and Safety Management Systems [43]

Code	Edition Year	Institution	Descriptions	Focus
BS 8800	1996 (as BS 8800:1996) and amended in 2004 (as BS 8800:2004) and in 2008 (as BS 18004:2008).	BSI	"It provides direction on OHMS to support compliances with specified OHS plans and standards and on how OHS must be incorporated into the overall management system of the organization."	Social Dimensions
HSG 65	1991 and amended in the year 1997 and 2013.	HSE	"A helpful guidance for director, manager, health/security professional and employees who want to enhance safety and health in their organization."	Social dimensions
OHSAS 18001	The first edition (OHSAS 18001:1999) has been technically	44 cooperating Organizations (constituting OHSAS Project Group)	"It is depended on (i) 'Plan': establishing the objectives and process that were necessary for accomplishment in line with OHS policies; (ii) 'Do': implementing process; (iii)	Social dimensions

	amended and replaced by the OHSAS 18001:2007 edition (second one).		'Check': monitoring and measuring process towards OHS policies, priorities, legal as well as various specifications and reporting result; (iii) 'Act': taking action to enhance OHS performances constantly."	
ILO-OSH 2001	2001 and amended in 2009.	ILO	"It offers the specific and effective tool for cultivating a culture of sustained safety inside organization. The practical suggestions of these regulations were meant to be used by all those responsible for OHSM."	Social dimensions
AS/NZS 4801:2001	2001	AS/NZS	"This norm's scope was to lay down auditable standards for the OHSMS. This standard was meant to include the best elements of those systems currently commonly utilized in Australia and New Zealand. It provides guidelines on how these standards should be fulfilled."	Social dimensions
ANSI/ AIHA Z10-2005	2005 and amended in 2012	ANSI	"Important feature that characterize Z10 includes emphasizing management's leadership positions, productive workforce engagement, concept analysis, and improvement. It offers a resource to support organization build and improve OHS efficiency."	Social dimensions
SS 506	2004 (as SS 506:2004) and amended in 2009 (as SS 506:2009).	SSC	"It consists of 3 sections: (i) Requirement, (ii) Instructions for the application of SS506, (iii) Requirement for the chemical industries. Denotes criteria for an OSHMS for allowing an organization for creating and execute the plan and scope that considers legal requirements and details on OSH risks."	Social dimensions
Une 81900:1996 EX	1996	AENOR	"- UNE 81900:1996 EX: Preventions of Occupational Hazard. Regulations for the implementations of an SGPRL. - UNE 81901:1996 EX: Preventions of Occupational Hazard. Normal Regulations for the Evaluations of SGPRLs. - UNE 81902:1996 EX: Preventions of Occupational	Social dimensions

			Hazard. Vocabulary. - BUNE 81903:1997 EX: Preventions of Occupational Hazard. Normal Regulations for the Evaluations of an SGPRL. Criteria for the qualifications of the Auditor of Preventions. - UNE 81904:1997 EX: Preventions of Occupational Hazard. Normal Regulations for the Evaluations of SGPRLs. Managements of audit program. - UNE 81905:1997 EX: Preventions of Occupational Hazard. Regulations for the implementations of an SGPRL."	
Uni 10616	1997 (and withdrawn in 2012	UNI	"Some key qualification points were (i) the implementation of inherence protection standards. (ii) Matching or risk map for determination of tolerability/acceptability of risk. (iii) Description of inspections operations and periodic inspection of essential line and facilities. (iv) the estimation of the external domino effects among adjacent plants; (v) the implementation of the work-permission systems; (vi) the collection of supplier of products and services like businesses, builders, companies, consortia; (vii) the adoption of protocols for annual internal auditing by external or internal auditor;"	Social dimensions
ISO 14000	ISO 14001:2004	ISO	"The ISO 14000 family of standard stress the management of their environmental obligations. ISO 14001:2015 and following criteria, like ISO 14006:2011, depend on environment processes to do this."	Environmental dimensions
ISO 45001	2018	ISO	"ISO 45001 was designed for using by any company, regardless of the scale or scope of their function, and could be incorporated with other safety and health systems like the wellbeing and wellness of employees. It will allow an agency for complying with its	Social dimensions

			legal requirement."	

Discussion

Manufacturing sectors have been shown to have two opposing possible growth factors. One is the engine of the economy, and the other is the risk generator for jobs. As the studies summarized on the basis of their methodologies, goals, and discovering or concluding, protection at work has given less attention to being a global problem. Integrated frameworks with a multidisciplinary level, external and internal operational influences, socio-economic position, technical progress, leadership, protection culture, Deming period, technology transfer, team creativity, occupational innovation, and physical environmental factors still need to be built to resolve OSH concerns. In other words, fragile, heavy, human, and environmental aspects are very important for the control of hazards at the workplace. Other considerations, such as prioritized process development & progress management, the Information Management Model, the Road to Excellence (RTE) system, safety culture, among others, have been flouted and have not been studied in well-integrated systems for multidisciplinary approaches. To date, many forms of studies have not embraced a multi-level analytical approach for the study of protection at work, nor have they sought to incorporate results from multiple disciplines. There is a lack of convergence of safety at work with human resource management, corporate activity, safety engineering, and various areas in medicine and public health in order to concentrate on cross-level linkages between global, organizational, and personal variables in relation to the disclosure of healthy working behavior and incidence of individual incidents, injuries, and illnesses. As a result of this lack of awareness of multidisciplinary science, workplace safety and health is now getting worse and becoming a global concern. Secure working is a condition of employment. Every worker is required to recognize the injuries prevention to themselves and co-workers. The presence and thought of every individual in the safety processes are respected and anticipated. Continuous progress was the objective. Individual and team should be respected for their confidence to and progress of safety.

The occupational safety and health practices should be customized to prevent/reduce the transmission/outbreaks (of COVID-19) at the workplaces. The employer should seriously consider the specific exposure risks, sources of exposure, routes of transmission, and other unique characteristics of SARS-CoV-2 while adopting the preventive measures. Precarious resumption of work without appropriate planning and measures can result in a cascade of failures/catastrophe. Hence the employer should attempt to address the challenges of COVID-19 with sufficient resources and trained workers to optimally perform during this pandemic situation [44].The employer should correct any conditions of employment and notify the employees of any remaining dangers. Ensure that employees meet with the provisions of the Law and the OSHA Act [45] and that they recognize and comply with their rights and obligations under the Regulation. By providing and manage protective tools, equipments, and clothes and to ensure the employees using them. Consulting and collaborate with the Joint Health and Safety Committee and consult with Work safe BC and officers. It is the duty of each employee to follow defined procedures and policies. Daily participation is compulsory for every worker of a company. Responsibility should not end simply by preserving their own, and further by disclosing poor working practices to the administration. It was the duty of all employees to operate in the competent and secure manners. Employees must be active in the development and execution of the Occupational Safety Initiative in order to be successful.OHS Principles and Regulations have continued to establish different facets of contemporary life. This part was achieved by rendering compulsory schooling for workers employed in the garment and manufacturing sectors. In addition, thanks to the interest of OSH, other related concerns have begun to evolve, such as industrial diseases, the production of safety equipment, public health, and environmental conservation. The establishment, enforcement, and advancement of OHS activities continued with internal and external improvements, such as social movements, public consciousness, and the formation of public and private organizations aimed at seeking alternatives to work-related injuries and diseases. This factor would be crucial for future developments in the protection and welfare of employees. OSH is a wide area in which diverse actors and sciences collaborate together to accomplish a shared objective of creating a clean and

stable atmosphere for workers around the world. Challenges and opportunities for research are ongoing and will have countless options, but the most important fact is that OSH is a legal responsibility but also a religious obligation for businesses.

Conclusion

The field of occupational health and safety (OHS) has gained significance over the last three decades due to its potential for reducing work-related injuries and illnesses. The research choice of OHS, which itself is a very broad topic was done because of its wide applicability to organizations and society at large. OHS effectiveness has been developed and implemented by many major organizations, but studies of their implementation and effect have rarely been carried out. The present research work focused on studying the OHS practices in labour intensive sector through observation and analysis. OHS of workers are also crucial requirements for performance and are of great importance for both socio-economic and sustainable growth. Employees should know of their entitlement to a worker-friendly workplace that offers life-free risks, healthier lives, and a secure atmosphere. Employees should be mindful of their roles and obligations with respect to the usage of the services given to them. This maintains a secure working environment that allows for protection at work. In future, a detailed research on the field of industrial sector can be carried out based on this proposed survey. A set of Questionnaires can be provided to employees and employers for the detailed collection of data.

References

1. Kassu J and Daniel K, A Literature Review on Global Occupational Safety and Health Practice & Accidents Severity, Int J Qual Res, 10(2); 2018; 279–310.
2. Ravi S and Dharmesh K. M, An analysis of thematic structure of research trends in occupational health and safety concerning safety culture and environmental management, J Cleaner Product, 281, 2021; 125346.
3. Robson LS et al. A systematic review of the effectiveness of occupational health and safety training, Scand J Work Environ Health, 2012; Vol. 38, No. 3, pp. 193-208.
4. Lourdes R S and Duong V T, Occupational Safety and Health: An Overview, 11th IEEE International Symposium on Applied Computational Intelligence and Informatics, 2016, pp. 355-360.
5. Michael Z and Patrick D, Occupational health and safety managements in organization: A review, 2012, pp. 328-344.
6. Waqas A K, Talha M and Anmol T, Occupational Health, Safety and Risk Analysis, Int J Sci Environ Technol, Volume. 3, No. 4, 2014, pp. 1336-1346.
7. Occupational health: A manual for primary health care workers, WHO 2001.
8. Kassu J and Daniel K, Industrial occupational safety and health innovation for sustainable development, Eng Sci Technol Int J, Volume 20, Issue 1, 2017, pp. 372-380.
9. Pratik K. J et al., A study of knowledge and utilization of safety measure against occupational hazard among constructional workers in Surendranagar city, Gujarat, India, Int J Community Medi Pub Health, 2016; 3(11):3055-3058.
10. Lincy J, A study on effectiveness of Safety & health program on workforce of various manufacturing sectors, Bangalore, Global J Manage Business Stud, Volume 7, Number 1 (2017), pp. 1-13.
11. Gul M and Ak MF, A comparative outline for quantifying risk ratings in occupational health and safety risk assessment, J Cleaner Product, 2018, DOI: 10.1016/j.jclepro.20 18.06.106.
12. Tetzlaff EJ, Goggins KA, Pegoraro AL, Dorman SC, Pakalnis V, Eger TR, Safety culture: A retrospective analysis of occupational health and safety mining reports, Safety and Health at Work, 2020, https://doi.org/10.1016/j.shaw.2020.12.001.
13. Lynda S. R et al. The effectiveness of occupational health and safety management system interventions: A systematic review, Safety Sci, Vol. 45, 2007, pp. 329–353.
14. Andrienko A.S et al.., The Realization of Programs: "Occupational Safety and Health (OSH)" and "Health Safety and Environmental (HSE) Management Systems," 2015 9th International

Conferences on Applications of Information and Communication Technologies, 2015, pp. 511-515, DOI: 10.1109/ICAICT.2015.7338612.
15. S.Sujatha, Sivaligam A., Prabhakaran D., Thirumarimurugan M, A Study on the Importance of Health and Safety Environment in a Food Industry, Int Res J Eng Technol, Volume 02, Issue 03, June-2015, pp. 2016-2026.
16. Zohreh M and Napsiah I, The Relationship between Occupational Safety, Health, and Environment, and Sustainable Development: A Review and Critique, Int J Innov Manage Technol, Vol. 5, No. 3, 2014, pp. 198-202.
17. Bagmita B, Basics of Occupational Safety and Health, IOSR J Environ Sci Toxic Food Technol, Volume 9, Issue 8, Ver. I, 2015, pp. 91-94.
18. Grace K J and Rosemary W M, Maintaining Health and Safety at Workplace: Employee and Employer's Role in Ensuring a Safe Working Environment, J Edu Prac, Vol.7, No.29, 2016.
19. Iñaki H-S, Olivier B, and Ander I, ISO 45001 and Controversial Transnational Private Regulation for Occupational Health and Safety, Int Labour Rev, 159(2); 2020.
20. Sally C. M and Marc S, Migrant Workers and Their Occupational Health and Safety, Annu Rev Pub Health, 2018, 39:351–365.
21. Praveen K M, Mugundhan K, and Visagavel K, Occupational Health and Safety in Textiles Industry, Int J Res Eng Technol, Volume: 03 Special Issue: 11, 2014, pp. 168-172.
22. Mohsin A S and Song W, Occupational Health and Safety Facilities and Performance of Workers in Manufacturing Industry: An Empirical Investigation, Proceedings of 198th the IIER International Conference, 2018, pp. 6-13.
23. Subash K and Subrata D, Occupational Health and Safety in Textiles Industries, Int Res J Eng Technol, Volume 06, Issue 10, 2019, pp. 1140-1143.
24. Adel B, Bryan B-T, and Ahmed S S, Occupational health and safety in the industry 4.0 Era: A cause for major concern? Safety Sci, Vol. 109, 2018, pp. 403–411.
25. E V Klimova, A Y Semeykin, E A Nosatova, Improvements of process of professional risk assessments and managements in occupational health and safety systems, IOP Conf. Series: Material Sciences and Engineering, 451, 2018, 012198.
26. Rajat K S, Occupational Health in India, Annal Global Health. 2018; 84(3), pp. 330–333. DOI: https://doi.org/10.29024/aogh.2302.
27. Florence S, and Amos A, Effects of Selected Occupational Health and Safety Managements Practices on Job Satisfactions of Employees in University Campus in Nakuru Town, Kenya, J Hum Resour Manage, Volume. 5, No. 5, 2017, pp. 70-77.
28. P. Katsuro, C.T. Gadzirayi, Taruwona M, and Suzanna M, Impacts of occupational health and safety on worker's productivity: A case of Zimbabwe food industry, African J Business Manage, Vol. 4(13), 2010, pp. 2644-2651.
29. Kwesi A-T and Kwasi D-B, Occupational Health and Safety: Key Issues and Concerns in Ghana, Int J Business Soci Sci, Vol. 2, No. 14, 2011, pp. 119-126.
30. Gilbert J A S, Emmanuel G, Adelaide A D, and Nana K N, The Effect of Occupational Health and Safety Management on Performance in the Banking Sector, Ghana, Int J Business Manage; Vol. 14, No. 10; 2019, pp. 172-184.
31. Kallol K S, Occupational Health And Safety Managements In RMG Sectors of Bangladesh, Int J Scient Technol Res, Volume 5, Issue 12, 2016, pp. 176-193.
32. Fabián A S S, Gloria I C P and Joaquín C A, Occupational safety and health in construction: a review of applications and trends, Indus Health, 2017, 55, pp. 210–218.
33. Lim H Y and Hussein M E A A-R, Occupational Safety and Health Practices in Manufacturing Industry, Proceedings of Symposium on Technology Management & Logistics (STML–Go Green), 2017, pp. 782-792.
34. Fatini H B M T, Zulhafiza B Z, and Siti Z B A K, Safety and Health Practice and Injury Managements in Manufacturing Industry, Procedia Economics and Finances, Vol. 35, 2016, pp. 705-712.
35. In-Ju K, Safety and Health Practices in the Food Industry and Ergonomic Interventions, J Ergonomics, 2016, 6:1, DOI: 10.4172/2165-7556.1000e146.

36. V.Gunaseelan and Leo A G, Study on Safety Management System of Manufacturing Industry, Int Res J Eng Technol, Volume 4, Issue 12, 2017, pp. 788-790.
37. D O Putri, B Triatmanto, and S Setiyadi, The effect of occupational health and safety, work environment and discipline on employee performance in a consumer goods company, International Conference on Industrial and System Engineering (IConISE) 2017, IOP Conf. Series: Materials Science and Engineering, Vol. 337, 2018, 012036, DOI: 10.1088/1757-899X/337/1/012036.
38. Sergey S, Joy I, and Sarah K, Using leading indicators to measure occupational health and safety performance, Safety Sci, Vol. 72, 2015, pp. 240–248.
39. Di F, Cherrie J Z, Andrew R. T, Yiyi S, Xinli H, and Ying L, Using the past to map out the future of occupational health and safety research: where do we go from here?, Int J Hum Resour Manage, 2019, DOI:10.1080/09585192.20 19.1657167.
40. Ashraf A. S and Naseem M. S, Worker productivity, and occupational health and safety issues in selected industries, Comput Indus Eng, Vol. 45, 2003, pp. 563–572.
41. Birgit Teufer et al. Evidence-based occupational health and safety interventions: a comprehensive overview of reviews, BMJ Open, 2019; 9:e032528. DOI: 10.1136/bmjopen-2019-032528.
42. Tracey S, Helen D C, Ross D, Brian C, and Cathy S, Leading indicators of occupational health and safety: An employee and workplace level validation study, Safety Sci, 85, 2016, pp. 293–304.
43. Panagiotis M, Dimitrios K, Ioannis N, and Sotiria T, International Occupational Health and Safety Management-System Standard as a Frame for the Sustainability: Mapping the Territory, Sustain 2018, 10, 3663; DOI:10.3390/su10103663.
44. Ankit V, Avinash P, Kamalesh S, and Rakesh B, Occupational Health and Safety Practices at Workplace during COVID-19 Pandemic, J Comprehen Health, Volume 8, Issue2, July-2020, pp. 77-82.
45. "Importance of Safety cultures in Industry"– BC Food Processors Health and Safety Procedures –https://www.sia.org.au.