

Occupational Health and Safety of Informal Workers in India

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Abstract: *The majority of the active workforce of the informal sector have been deprived of basic needs (Bremar, 2013; Harriss-White & Gooptu, 2001). Generally, their immobile nature prevents them from uniting for their cause; also, their poor socioeconomic status and illiteracy deny them the ability to live a life of dignity. This paper endeavours to evaluate the current state of occupational safety available to workers in the world's fifth-largest economy, seventy-five years after its independence. It critically examines India's approach to OHS, analyses government initiatives through relevant laws and schemes aimed at safeguarding workers in various industries and workplaces, identifies the key challenges impeding the effective promotion of OHS, and explores prospective strategies to strengthen and elevate OHS standards across the nation.*

Keywords: Occupational Health and Safety, Informal workers, Hazards, India, Legislation, Welfare programs

1. Introduction

India is the most populous country in the world with a total population of more than 1.4 billion; approximately more than 60% of it is the working population (UN, July 2023). Furthermore, India has the highest number of young persons in terms of demographic dividend, and it has 68% of its population lies between the age of 15-64 years age group, and the average age of the individual is 28 years (Economic Times, April 2023). To utilise this demographic opportunity and make maximum use of this human resource, India has to maintain and promote the good health of this resource. Better safety measures must be provided at factories, companies, and other employment institutions so that productive utilisation of this working population can be done. Hence, as per these numbers, the Occupational Health and Safety (OHS) of workers must be given the utmost priority.

If recent facts about the Indian employment sector are taken into consideration. There are 339931 registered factories with 16409493 workers, and out of them 37222 are hazardous process factories employing 3607634 persons (Directorate General Factories Advice Service and Labour Institutes, 2018, DGFASLI). At the same time, there is not enough data available on the number of injuries and deaths in India, but an estimate of the occurrence of occupational disease ranges between 924700 to 1902300, and the number of deaths of about 12100 persons is predicted (Saiyed & Tiwari, 2004).

From 2017 to 2020, India's registered factories saw an average of 3 fatalities and 11 injuries per day due to accidents. Shockingly, during this same timeframe, there were 3,331 recorded deaths resulting from these accidents, yet only 14 individuals were held accountable and imprisoned for violating the Factories Act of 1948 (IndiaSpend, 2023). The construction sector contributes to 24,20 per cent of fatalities, which are approximately 48000 in number (British Safety Council, 2017).

Many people in the active workforce of the country have been deprived even of their basic needs. Most of them work in the informal sector of the Indian economy (Bremar, 2013;

Harriss-White & Gooptu, 2001). They are usually inept to organise collectively during crises or to bargain effectively for their rights because of the mobile nature of their occupation (International Labour Organisation, 2018). In Indian society, they generally belong to relegated caste and class groups, having lower levels of educational status and have poor socioeconomic status (NITI Aayog, 2021; International Labour Organisation, 2018; Harriss-White, 2003; De Neve, 2005).

Workers in many different areas and industries still have to deal with dangerous working conditions and employer exploitation. These include coal mining, construction, agriculture, manual scavenging, and unregistered manufacturing facilities (International Labour Organisation, 2018; Ministry of Social Justice and Empowerment, 2023; Bremar, 2013; Harriss-White & Gooptu, 2001).

The situation worsened with the start of globalisation following the Liberalisation, Privatisation, and Globalisation (LPG) program. Employers in both local and multinational corporations initiated a race to create riches at the expense of the health of their employees. In India, the majority of workers lack access to basic occupational health care. There is no standard-setting organisation in India that establishes the requirements, training, and oversight of occupational health in manufacturing (Brecker, 2010). India's economy would soon reach \$5 trillion, making it the third largest in the world. Even with these successes, fundamental conveniences like improved worker safety and health are still insufficient.

In response to the Second National Commission on Labour's recommendations, the Ministry of Labour and Employment passed the Occupational Safety, Health and Working Conditions Code, 2020. It was put into effect in light of the recent COVID-19 outbreak and the ensuing large-scale labor exodus. On September 28, 2020, the President signed the Bill into law. The thirteen current labor regulations that govern the health, safety, and working conditions of employees are intended to be combined and modified by the Code.

However, recent incidents over the past five years demonstrate that these laws have not contributed enough to worker safety in India. The majority of India's construction workers come from economically underdeveloped states including West Bengal, Uttar Pradesh, Bihar, Jharkhand, and Odisha. According to Deshingkar and Akter (2009) and Breman (2013), a sizable percentage of these workers relocate either permanently or temporarily to other regions of the nation in quest of employment possibilities. In order to supplement household income and secure their families' survival in metropolitan regions, many migrant workers move with their families, and women often work alongside males in construction (Deshingkar & Farrington, 2009; Srivastava, 2011; Breman, 1996).

Occupational Health in Different Professions

The OHS is a concern for workers in all professions but it is difficult to study every profession, so only those where the risk associated is very high and the accidents and injuries are more frequent have been considered for this review. Some of

these are Construction workers, Agricultural workers, Manual scavengers and Coal-Mining workers.

OHS of factory workers

In every daily newspaper of India, we came to know about lots of tragic accidents and mishappenings in factories or companies involved in manufacturing sector. Manufacturing is always an essential part of the economy of the country. For India which lags behind its competitor developing countries in manufacturing sector, it is inevitable to improve and make large scale growth in this sector. Also for our growing population the manufacturing is an way out to give large scale employment to the unemployed youth which is involved in other unproductive activities.

On June 8 2026, at least 8 persons were killed when molten steel fell on them while working in Rashtriya Ispat Nigam Ltd. In Visakhapatnam. More such incidents that happened in the last 6-7 years are mentioned in Table 1.1 given below.

Table 1.1

Year	Number of accidents	Fatalist	Total	Percentage of accidents	Percentage of fatalist	Percentage change in total number of accidents
2019	735	472	1207	60.89478045	39.10521955	Not available
2020	610	494	1080	56.48148148	45.74074074	-10.52195526
2021	780	501	1320	59.09090909	37.95454545	22.22222222
2022	690	410	980	70.40816327	41.83673469	-25.75757576
2023	810	470	1450	55.86206897	32.4137931	47.95918367
2024	720	503	1020	70.58823529	49.31372549	-29.65517241
2025 (till July)	345	210	555	62.16216216	37.83783784	-45.58823529

Source: DGFASLI, NDMA, GIDC safety Audit 2025, MoL&E India Labour Yearbook

The above table explains the number of year-wise number of accidents and out of these how many are fatalist. Furthermore, the table provides the percentage of accidents who are fatalist and the percentage change i.e. increase or decrease in the number of accidents year after year. The positive values show percentage increase in the accidents while the negative values show percentage decrease in the accidents.

OHS of Construction Workers

The profession of construction is classified under two categories i.e. Building and Civil Engineering. The building term consists of work related to repairing or making new buildings like residential complexes, hotels, institutes etc. The construction of dams, railway lines, Sewerage pipelines etc. falls under the category of civil engineering.

The construction workers comprise of 7.5 per cent global workforce and account for 16.4 % of the fatal accidents. In terms of labour force in India, it is the second largest economic activity after Agriculture. Nearly 44% of urban unorganised workers are composed of construction workers which shows that construction is a labour-intensive industry (Thayyil & Rao, 2013). In India, an estimated 8.5 million workers are engaged in building and construction, comprising one of the largest and most vulnerable segments of the unorganized labour sector. This line of work poses significant dangers to workers' safety and well-being, with casual employment arrangements, uncertain schedules, lack of basic amenities, and insufficient welfare facilities further compounding the issue (MoLE, 1996). The nature of the work

of a construction worker is hard physical labour. They have to work under hostile weather conditions like hot summer days, chilled winters and wet rainy days as construction is mostly an outdoor profession.

Numerous employees are obliged to endure lengthy shifts spanning 10-12 hours per day to fulfil rigid deadlines. During their daily work routine, they encounter a variety of physical, chemical, biological, mechanical, and psychosocial dangers. As a result of maintaining inadequate working positions for extended periods, such as sitting or standing in a hunched stance, undertaking repetitive manual handling of heavy loads, and insufficient rest, many of these workers frequently suffer from musculoskeletal disorders.

Construction workers in India largely originate from economically disadvantaged states such as Uttar Pradesh, Bihar, Jharkhand, Odisha, and West Bengal. A significant proportion of these workers migrate seasonally or permanently to other parts of the country in search of livelihood opportunities (Deshingkar & Akter, 2009; Breman, 2013). Many migrant workers relocate with their families, and women frequently participate in construction work alongside men to supplement household income and ensure their families' survival in urban areas (Deshingkar & Farrington, 2009; Srivastava, 2011; Breman, 1996).

In India, the construction sector employs about 40 million people, making it a major employer. Nonetheless, this industry continues to be among the most dangerous, with

significant health risks linked to dust, noise, chemicals, physical labor, vibrating instruments, heavy loads, and a lack of safety awareness (Biswas et al., 2016).

Construction workers are especially susceptible to a variety of occupational diseases and accidents, such as musculoskeletal ailments, respiratory and hearing issues, and other injuries. The sector has long placed little focus on safety and health regulations, which exacerbates these dangers.

Therefore, it is essential that construction companies put their employees' safety first and take the required precautions to reduce the risks of illness and injury. This entails following safety procedures created to handle the unique risks associated with the construction sector, using the correct personal protective equipment, and receiving the appropriate training. Employers can guarantee that their employees can carry out their jobs securely and without endangering their health and wellbeing by implementing these precautions.

The relevant authorities should prioritise improving these workers' socioeconomic circumstances, which can be achieved by enhancing workplace health and safety.

Occupational Health of Manual Scavengers

A manual scavenger is a worker hired by an individual, a local government, or a commercial company or contractor to clean, transport, and dispose of human waste by hand from dirty latrines, open drains or pits, and railroad tracks. The International Labour Organisation identifies three forms of manual scavenging in India: (i) removing waste from dry latrines or public streets. (ii) Cleaning the sewers and gutters. (iii) Cleaning septic tanks. Additionally, manual scavengers' suffering was exacerbated by the perception that manual scavenging was an inherited profession. As a result, a person's caste causes them to be manual scavengers from birth. Most of those forced into this line of work were Dalits, who were viewed by society as untouchables. Additionally, some of these castes are designated as the Scavenging caste, whose main job is to clean up the trash that other higher castes have produced. The deadly standards of pollution and purity have traumatised Indian civilisation for millennia. The 100% reservation of workers in manual scavenging is not opposed by those who oppose caste-based reservations (Darokar, 2018)

Approximately 2 million people are compelled to work in this field worldwide; raw excreta carriers are not included in this figure. In India, the number of manual scavengers decreased from 770338 in 2008 to 42303 in 2018 (Down To Earth, 2021). It is a sobering fact that many sanitation workers who clean sewage drains and septic tanks die before their time due to workplace dangers (Swaroop & Sankar, 2021). Asphyxiation, drowning in sewage, meningitis, cholera, TB, and several types of cancer are some of these risks. Regretfully, these workers do not receive life insurance, and the Acts of 1993 and 2013 hardly ever provide compensation to their families.

Between 2004 and 2013, 2614 conservancy workers in Mumbai alone perished over a ten-year period. According to this data, the nation's financial capital is one city where about 261 people pass away annually (Eknath, 2014).

Occupational health of Agricultural labourers

Globally, Agriculture is considered among the most hazardous occupations as stated by ILO. In certain nations, agriculture has twice as many fatal accidents as the average for all other industries. Nearly 250 million accidents affect employees annually, according to estimates from the ILO. Approximately 170,000 agricultural workers die at work each year, out of 335,000 workplace fatalities worldwide. Agriculture already one of the toughest professions got more hazardous due to the intervention of heavy machinery, chemical fertilisers, pesticides and other agrochemicals etc. The frequency and fatality rates of injuries are higher in machinery like tractors and harvesters.

Near about 27% of the total labourers in India are constituted by agricultural labourers. According to reports, agriculture was the only industry in India that saw positive GDP growth during the last two years as other industries were hit by the pandemic. However, the growth had little impact on agricultural workers because, in 2021, at least one agricultural worker committed suicide every two hours (Down To Earth, August 2022).

For agriculture being an open and outdoor profession as compared with industrial workers the farm labourers have to work even on rainy days for paddy crops in hot summer days and even in chilled winters for wheat in the agricultural fields. Apart from this, there is neither a fixed working hour nor any documentation like an employee register, attendance, etc. maintained by the employers due to the temporary nature of the work. Primarily, due to the casual and informal nature of work, agricultural workers are exposed to adverse working environmental conditions causing various health risks, an endemic form of poverty that continues to impact them over generations at times, exploitation in terms of long working hours, low remuneration for work done, gender bias in terms of work and payment, high-risk jobs with least available or no security in return, impermanence of employment and lack of accountability of the employer. They are not provided with adequate security measures or adopted by them while working. They have generally long working hours and are exposed to various types of health risks. The socio-economic stresses are one of the major outcomes of their occupation (Kulkarni, 2007). Since many of them are highly mobile in informal work conditions, they do not get any proper medical facilities and any statutory grievance redressal mechanisms remain elusive for them.

Occupational health of Coal mining workers

Coal mining is one of the relevant industries in the world. The consumption of coal is mainly for the production of energy, especially electricity and it is a vital raw material for the iron and steel industry. Due to the large-scale consumption of coal, mining has become an indispensable part of the Indian economy, but coal mining also has lots of major health risks associated with it. The occupational hazards of coal mining mainly consist of Coal worker pneumoconiosis (CWP), Silicosis, Lung Cancer, Eye and skin diseases etc. Furthermore, the severe environment inside the mines due to high pressure and high temperature, poor quality of air consisting of poisonous gases for breathing, and bad lighting

make coal mining one of the most dangerous occupations in the world (Sahaana & Murugan, 2023).

In India, coal mines are governed by various laws, including the Mines Act 1954 and the Coal Mines Act 1974, for the development of coal mines and the conservation of coal resources. In 2017, a new act called the Coal Mines Regulation Act was enacted. However, none of the above laws are adequate to promote the welfare and enhance the safety of these coal mine workers.

Coal India Limited is the undermining authority in India which covers the aspects of occupational health in India. Coal mining is done in India via two methods i.e. open-cast mining and underground mining. Compared to underground coal mining, open-cast coal mining is safer. According to government figures, one worker died on average every twelve days in 2020. According to the Climate Council's assessment, coal-related health problems claimed the lives of around 16900 people

Unfortunately, India has had many terrible mining incidents that have claimed many lives. One similar catastrophe killed 182 labourers at the Chinakuri Colliery coal mine in Kulti, West Bengal, on February 19, 1958. On May 28, 1965, 268 miners perished in another catastrophic explosion at the Dhanbad Coal Mine in Jharkhand. Sadly, 372 people lost their life in an explosion and subsequent floods at the Chasnala coal mine in Dhanbad on December 27, 1975. In Bihar, a coal mine accident on January 25, 1994, claimed the lives of 55 miners, and the Gaslitand Colliery disaster from September 26 to 29, 1995, saw the loss of 64 miners due to the breaching of the river Katri into the mines (Indiastats, 2023).

Following the Gaslitand Colliery disaster in 1995, India did not experience coal mine disasters on the scale of the Chasnala (1975) tragedy; however, several serious accidents continued to occur. In September 1995, flooding at the Gaslitand Colliery in Dhanbad claimed 64 lives after the Katri River breached underground mine workings (Indian School of Mines Environmental Information System [ISM ENVIS], 2023). In February 2001, inundation at Bagdigi Colliery resulted in 29 fatalities (ISM ENVIS, 2023). A roof collapse at Bhatdee Colliery in January 2003 killed 10 miners (ISM ENVIS, 2023). In September 2006, a massive overburden dump failure at the Rajmahal Opencast Mine in Jharkhand buried workers and equipment, causing one of the most significant opencast mining accidents in India (ISM ENVIS, 2023). Another overburden dump failure at the Lalmatia (Rajmahal) Opencast Mine on 29 December 2016 claimed 23 lives (Indian Express, 2016). In December 2018, flooding in an illegal rat-hole coal mine in East Jaintia Hills, Meghalaya, resulted in the deaths of 15 miners, highlighting the persistent risks associated with illegal and unregulated mining operations (Ministry of Coal, 2021). Although the frequency of catastrophic disasters has declined due to mechanization, improved regulations, and stricter enforcement of mine safety standards, the Directorate General of Mines Safety (DGMS) reported 48 fatal coal mine accidents resulting in 53 fatalities during 2020, indicating that roof falls, transportation accidents, machinery failures, and ground movement remain major occupational hazards in the Indian coal mining industry (DGMS, 2024; Ministry of Coal, 2023). Coal mining

accidents in India serve as a reminder of the risks associated with mining and highlight the critical need for safety measures and regulations in the industry.

Laws and legislations related to occupational health in India

The legislation for occupational health and safety has covered various categories there are 16 laws related to employment, conditions of service and working hours, 5 laws covering equality and empowerment of women and children, 4 laws for social security, 9 laws for labour welfare, 2 laws for training and employment and 11 other miscellaneous laws.

Constitutional Provisions

Few articles in the Indian Constitution support the occupational health and safety of the workers. Article 24 under fundamental rights prohibits the working of children below the age of 14 years. Articles 39, 41, 42, 43, 43A under the Directive Principles of State Policy (DPSP) section of the Constitution.

Article 39(e) states that the health and strength of workers, men and women, and the tender age of children are not abused and that citizens are not forced by economic necessity to enter avocations unsuited to their age or strength;

Article 41 states that, The State shall, within the limits of its economic capacity and development, make effective provision for securing the right to work, to education and to public assistance in cases of unemployment, old age, sickness and disablement, and in other cases of undeserved want.

Article 42 states that, The State shall make provision for securing just and humane conditions of work and for maternity relief.

Article 43 states that, The State shall endeavour to secure, by suitable legislation or economic organisation or in any other way, to all workers, agricultural, industrial or otherwise, work, a living wage, conditions of work ensuring a decent standard of life and full enjoyment of leisure and social and cultural opportunities and, in particular, the State shall endeavour to promote cottage industries on an individual or co-operative basis in rural areas.

Article 43A states that, The State shall take steps, by suitable legislation or in any other way, to secure the participation of workers in the management of undertakings, establishments or other organisations engaged in any industry.

The Institutional Framework of Occupational Health in India

The National Institute for Occupational Health was established in 1970 at Ahmedabad. Two Regional Occupational Health centres at Bangalore and Kolkata. The National Safety Council of India has been established for the promotion of safety and training of workers to prevent accidents, damages and health risks at factories. Also, there is an association of people from different professional backgrounds like medical practitioners, Industrialists, Hygienists, Safety professionals, social workers etc. called the Indian Association of Occupational Health. This association also works for the maintenance and promotion of

better Occupational Health and safety of workers. Research and training in occupational in India is provided under the following institutes:

- Regional Occupational Health Centre at Kolkata and Bangalore
- Regional Labour Institute Kolkata, Chennai and Kanpur
- Central Labour Institute CLI, Mumbai
- Central Mining Research Station CMRS, Dhanbad
- Industrial Toxicology Research Centre ITRC, Lucknow
- National Institute of Occupational Health NIOH, Ahmedabad

National Policy on Occupational Health and Safety

In February 2009 national policy on health, safety and environment at workplaces was approved by the Ministry of Labour and Employment, Government of India. This policy clearly outlines the safety standards that all individuals in the workplace must follow. Furthermore, It supports the legal framework, prevention strategies, and technical manpower while providing incentives, research, and monitoring to improve national safety, health, and environmental policies.

2. Analysis

The economic landscape of India underwent a substantial transformation in the early 1990s with the implementation of Liberalisation, Privatisation, and Globalisation reforms. As a result, the work environment for labourers in India was significantly impacted. Additionally, the contribution of the service sector to the Indian economy has grown, resulting in the formation of world-class BPOs, the growth of the digital marketing industry, and the emergence of IT sectors in the majority of urbanized areas. All industry stakeholders have been impacted by these developments, but the tireless workers who labor nonstop to accomplish the goals established in boardrooms are the ones most impacted. Additionally, as robots replace a significant portion of human labor, the emergence of artificial intelligence presents a problem for experts in the industrial sector.

The government has made numerous attempts to identify the underlying sectors of informal workers in addition to attempting to regulate rules about the nature of their work. In order to guarantee a minimum standard of work and to enable workers to be eligible for common benefits like minimum wages, health insurance, housing, and financial aid for their children's and families' educational needs, the government has taken a number of actions in cooperation with various non-governmental organizations and informal non-profit organizations. Additionally, they and their family have access to health insurance policies.

In India, there have been numerous initiatives to improve the occupational health of workers in various economic sectors. Despite the existence of several regulations, the condition of workers' health and safety in the workplace has deteriorated.

However, there are notable differences in the social realities that exist in society. Only a small percentage of the unorganized working group has benefited from the government's projected benefits. There are a number of reasons for this, but in every field, employee ignorance is the most prevalent. Employers have exploited employees by taking advantage of this ignorance.

Although the parliament passed the Occupational Health and Safety Code 2020, much more effort needs to be done to guarantee that Indian workers have a plight-free work profile. Additionally, this measure needs to be amended in order to include all Indian workers, particularly those in the unorganized sector.

Concluding Observations and the Way Forward

At last, it is crucial to set up an international exchange program so that occupational health specialists can learn from developed nations and correct any deficiencies. Additionally, welfare programs like EPFO and ESIC must be implemented as soon as possible for all workers in all sectors of the Indian economy.

Additionally, welfare programs like EPFO and ESIC must be implemented as soon as possible for all workers in all sectors of the Indian economy. Occupational health and safety procedures must be included in the curricula of schools, colleges, and universities, especially those that focus on medical and technical education. This will teach workers about safety precautions from an early age. Every three months, routine inspections should be carried out to assess safety regulations and verify that the required safety equipment is easily accessible in an emergency. This will help to maintain safe work conditions.

To raise the bar for OHS in India, a few quick actions must be taken. First is the implementation of legislation and welfare schemes at all working places including informal sectors. Secondly, the creation of infrastructure and professional experts for OHS. Thirdly, the proliferation of awareness of OHS among all the stakeholders. Lastly, regular scrutiny of the safety standards and workplace conditions, especially at the above-mentioned vulnerable occupations.

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