

Original Research Article

A profile on occupational health hazards among the working class of factories in an industrial area of Bengaluru

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ABSTRACT

Background: The occupational safety and health scenario in India is complex. The working class are victims of different occupational disorders and psychosocial stresses cause being poverty, lack of education, poor working conditions, excess working hours, etc. The morbidities include musculoskeletal disorders, generalized weakness, heart burn, endocrine disorders, injuries, etc. Hence, the present study was conducted to list the occupational health hazards of the working class of factories in an industrial area of Bangalore.

Methods: The study was conducted in various factories of an industrial area in Bangalore. Socio-demographic profile, health hazards, stress, quality of life and DALY of the study subjects was assessed using a standard, pre-structured proforma. Descriptive statistics like mean and percentages was used for data analysis.

Results: 384 subjects were included in the study. Majority being males i.e. 322 (86.4%) and aged 31 to 40 years, educated upto high school i.e. 342 (89%). The most commonly seen morbidities are diabetes mellitus (4.4%), hypertension (3.6%). Among the study subjects, 77% had no stress, 12.1% had mild stress and 10.7% had moderate level of stress. On assessing the quality of life, it was found that 83.5% were in good physical health, 77.6% had pain and symptoms, 96.8% were satisfied with their social relations and DALY assessment showed that diabetes was responsible for 28.42 years of life lost due to disability.

Conclusions: Majority of them had no stress and diabetes was the most commonly seen morbidity.

Keywords: Occupational health hazards, Working class people, Factories

INTRODUCTION

According to "World Health Organization (WHO)", health has been defined as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity." Occupational health is a field of healthcare concerned with enabling an individual to do their occupation, in the way that causes less harm to their mental and physical health. An occupational hazard is a bad experience in the workplace. It is of many types, including chemical, biological, psychosocial and physical hazards.

Occupational hazard as a word defines both long-term and short-term risks associated with the workplace and is a field of study within occupational safety and health and public health.¹⁻³ Short term risks may include physical injury, while long-term risks may be increased risk of developing cancer or heart disease.

Chemical hazards are a type of occupational hazards that involve exposure to dangerous chemicals. It can cause acute or long-term health effects. There are many types of dangerous chemicals, example-neurotoxins, immune agents, dermatologic agents, carcinogens, reproductive

toxins, systemic toxins, asthmagens, pneumoconiotic agents, and sensitizers.⁴

This proves that workplace exposure to hazards such as silica dust, engine exhausts or welding fumes, among others are associated with increased prevalence of heart disease. Occupational hazards have been shown to increase the chance of pulmonary heart disease, stroke, and high blood pressure.⁵

Biological agents, including microorganisms and toxins produced by living organisms, can cause dangerous health problems in employees.

Medical professionals are at risk to exposure to blood-borne illnesses and particularly to emerging infectious diseases, especially when not enough resources are available to control the spread of the disease. Health workers, including veterinarians, are at risk for exposure to zoonotic disease.

Psychosocial hazards are hazards that affect someone's social life or psychological health. Psychosocial hazards in the workplace include occupational burnout and occupational stress, which can lead to burnout.⁶

Physical hazards are a type of hazards that involve environmental hazards that can cause harm with or without contact. Physical hazards include ergonomic hazards, radiation, heat and cold stress, vibration hazards, and noise hazards.⁷

Every year in the United States, 22million workers are exposed to noise levels that could potentially harm their health status. Hearing loss is the most common occupational illness in the manufacturing sector. Workers such as musicians, mine workers, those involved with stock car racing, are exposed to higher levels of noise and therefore are at a higher risk of developing hearing loss. As such a widespread issue, NIOSH has been committed to preventing future hearing loss for workers by establishing recommended exposure limits (RELs) of 85 dB(A) for an 8-house time-weighted average (TWA). The Buy Quiet program was developed by NIOSH to encourage employers to reduce workplace noise levels by purchasing quieter models of tools and machinery.⁸

So present study was taken to find out the morbidity profile of the study population and to describe the socio-demographic profile of workers in unorganized sectors.

METHODS

The study was conducted at various factories of an industrial area in Bangalore. The study subjects were included after written informed consent and fulfilling inclusion and exclusion criteria. A standard, pre-structured proforma was used for collecting the data on their socio-demographic details, morbidities and their

disabilities. The stress disorders among them were assessed using stress disorder scale. All the study subjects were subjected to general physical examination and the study data thus obtained was statistically analyzed using descriptive statistics like mean, percentages. The Quality of life among the study subjects was assessed using questionnaire which is based on physical health, self care, social support, psychological well-being and goal attainment.

Study place: Industrial area of Bangalore.

Study subjects: Workers both male and female aged above 14 years.

Study period: 2 months (June 2018 to July 2018)

Study design: Descriptive study

Sampling technique: Purposive sampling

Sample size: 384

Inclusion criteria

Inclusion criteria were all males and females above 14 years working in factories of an industrial area of Bangalore.

Exclusion criteria

Exclusion criteria were working class not willing to participate

RESULTS

In the present study, the study population belongs to the age group of 30-40 years and all of them belong to semi-skilled occupation and class-II socio-economic status.

Table 1: Socio demographic characteristics of subjects.

Socio demographic characteristics		Number (n=384)* N (%)
Gender	Males	322 (83.8)
Age group	31-40 yrs	322 (83.8)
Education	High school	342 (89.06)
Religion	Hindu	373 (97.13)
Occupation	Semi-skilled	360 (93.7)
Socio-Economic status	Class-II	348 (90.6)

In the present study, 77% of the population have zero stress and 12.35% belongs to mild stress scale and 10.3% belongs to moderate stress scale.

Majority of the study population was suffering from diabetes mellitus followed by hypertension.

Table 2: Stress level among study subjects

Stress scale	n=384 (%)
Nil	77
Mild	12.3
Moderate	10.3
Severe	-

Table 3: Health hazards of the study subjects

Medical morbidities	n=384 N (%)	ICD
Diabetes mellitus	16 (4.4)	IV
Hypertension	13 (3.6)	IX
Generalized body pain	6 (1.5)	XIII
Hypertension	4 (1.04)	XI

DISCUSSION

In the present study, 384 subjects were included in the study. Majority being males i.e. 322 (86.4%) and aged 31 to 40 years, educated upto high school i.e. 342 (89%). According to a study by Olufunsho Awodele, shows that 72.5% of the respondents are aware of the hazards associated with their jobs; 30% have had formal training on hazards and safety measures; 40% do not use personal protective devices, and 90% of the respondents reported symptoms relating to hazard exposure. There was a statistically significant ($p < 0.05$) increase in the mean heavy metal concentrations in the urine samples obtained from paint factory workers as compared with non-factory workers.⁹

The most commonly seen morbidities were diabetes mellitus (4.4%) and hypertension (3.6%). Chemicals have become an indispensable part of human life, sustaining activities and development, preventing and controlling many diseases, and increasing agricultural productivity. Despite their benefits, chemicals may, especially when misused, cause adverse effects on human health and environmental integrity. Widespread application of chemicals throughout the world increases the potential of adverse effects. Growth of chemical industries, both in developing and in developed countries, is predicted to increase. In this context, it is recognized that the assessment and management of risks from exposure to chemicals is among the highest priorities in pursuing the principles of sustainable development. Risk assessment is a process involving several steps. First, the risk factor (what is dangerous) must be identified and its health effects (what type of damage) described. Next, the mechanism of adverse effects (how damage is caused) must be clarified and effect-modifying factors characterized (does the damage become more or less in the presence of other factors). The “severity” of the risks must also be known on the basis of exposure–effect and exposure–response relationships (how much exposure causes how much damage; what is the “safe level”). Finally, extrapolation is made to the occupational setting

to assess the magnitude of the problem (how many cases of illness). This process needs a multidisciplinary endeavor in which the occupational health physicians hold a central position. Their contribution is crucial for identifying the hazard, for describing its mechanisms, and for quantifying the risk. Risk assessment also relies on other disciplines such as epidemiology, statistics, toxicology, occupational hygiene, and ergonomics.¹⁰

Among the study subjects, 77% had no stress, 12.3% had mild stress and 10.7% had moderate level of stress. Construction is one of the most dangerous occupations in the world, incurring more occupational fatalities than any other sector in both the United States and in the European Union. In 2009, the fatal occupational injury rate among construction workers in the United States was nearly three times that for all workers. Falls are one of the most common causes of fatal and non-fatal injuries among construction workers. Proper safety equipment such as harnesses and guardrails and procedures such as securing ladders and inspecting scaffolding can curtail the risk of occupational injuries in the construction industry. Due to the fact that accidents may have disastrous consequences for employees as well as organizations, it is of utmost importance to ensure health and safety of workers and compliance with HSE construction requirements. Health and safety legislation in the construction industry involves many rules and regulations. For example, the role of the construction design management (CDM) Coordinator as a requirement has been aimed at improving health and safety on-site.¹¹

On assessing the quality of life, it was found that 83.5% were in good physical health, 77.6% had pain and symptoms, 96.8% were satisfied with their social relations. The 2010 National Health Interview Survey Occupational Health Supplement (NHIS-OHS) identified work organization factors and occupational psychosocial and chemical/physical exposures which may increase some health risks. Among all U.S. workers in the construction sector, 44% had non-standard work arrangements (were not regular permanent employees) compared to 19% of all U.S. workers, 15% had temporary employment compared to 7% of all U.S. workers, and 55% experienced job insecurity compared to 32% of all U.S. workers. Prevalence rates for exposure to physical/chemical hazards were especially high for the construction sector. Among non-smoking workers, 24% of construction workers were exposed to second hand smoke while only 10% of all U.S. workers were exposed. Other physical/chemical hazards with high prevalence rates in the construction industry were frequently working outdoors (73%) and frequent exposure to vapors, gas, dust, or fumes (51%).¹²

CONCLUSION

Majority of them had no stress and Diabetes was the most commonly seen morbidity among the study subjects. The need to develop effective frameworks that will initiate the

integration and ensure implementation of safety regulations in paint factories is evident. Where these exist, there is a need to promote adherence to these practice guidelines.

Recommendations

Awareness among the study subjects regarding the various morbidities and regular monitoring of their health.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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