

Occupational Lung Diseases — The Silent Epidemic of this Era

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GLOBAL BURDEN:

Occupational lung diseases are a group of conditions associated with workplace exposures to dust and vapours, which act as irritants, carcinogens or immunological agents. Occupational lung diseases (OLDs) thus are caused, aggravated or exacerbated by exposures at the workplace.^[1]

The global burden of diseases related to occupational factors was estimated at 4–10 million cases per year, with approximately 3–9 million cases per year in developing countries. An estimated 12% of COPD deaths are from occupational exposure to airborne particulates. Almost 2 million people die early from work related causes.

There were 1.53 million deaths in 2016 and 76 million disability-adjusted life years were due to occupational factors with most deaths attributed to exposure to particulate matter, gases and fumes, carcinogens and second-hand tobacco smoke. Lung diseases caused by workplace exposure are too often mis- or underdiagnosed due in part to these diseases being indistinguishable from common diseases. Occupational lung diseases include COPD, Bronchial asthma (including work-exacerbated asthma), Silicosis, coal workers Pneumoconiosis, Berylliosis, Asbestoses and many other. The ambit of occupational lung diseases is increasing chiefly due to newer industries manufacturing various new products, for example Indium Lung, a newly recognized lung injury first reported in 2003, is thought to be caused by the inhalation of indium compounds. Another new hazard to lung health in occupational setting is manufactured nanomaterial, which is intentionally produced with at least one of its three dimensions in the range of 1-100 nm.

Compared with micro-size particles, nanoparticles have greater inflammogenicity and fibrogenicity in the lungs. There are many reports that nanoparticles induced the pulmonary inflammation. Disasters associated lung conditions have also come under occupational diseases such as Tsunami lung, a type of aspiration pneumonia occurring when a person being swept by tsunami waves inhaled salt water con-

taminated with various substances such as sludge, chemicals, heavy metals, oil, and bacteria, making lung damage more complex.^[2]

Labourers working in many small scale and cottage industries which involve both organic and inorganic dust also show features of occupational lung diseases but go unrecognized by the policymakers.

Of all the occupational lung diseases chronic obstructive lung disease and asthma are the most significant. Among occupational cancers, lung cancer is the most common, and is associated with more than 10 important workplace carcinogens. Classic occupational interstitial lung diseases such as asbestosis, silicosis, and coal workers' pneumoconiosis still comprise a substantial burden of disease in modern industrial societies, while other occupational causes of pulmonary fibrosis and granulomatous inflammations are frequently misclassified as idiopathic condition.^[3]

Occupational lung diseases contribute toward global health and economic impacts. Prevention and control of occupational lung diseases require a collaborative effort among employers, workers, occupational physicians, pulmonary physicians, industrial hygienists, and members from other disciplines.

CHALLENGES :

In India the data of workers, both in organized and unorganized sectors, exposed to obnoxious particles and consequent complications is meager. Nationwide surveys to detect both the exposed including the severity of disease as well as the agents involved need to be extensively evaluated. Lack of awareness of the serious health risks among workers as well as general population should be addressed. Because of lack of awareness and low income levels, symptomatic workers tend to disregard the symptoms and continue working in dusty environments.

Frequent surveys involving questionnaires, Chest X-rays and Spirometry will help in early detection of OLDs. Cancers of the lung and pleura are diseases for which Computed Tomography (CT) screening programs are in place to catch disease early. To prevent any future dust exposure, the workers must be moved to an alternative job in the same factory where they will not be exposed to dusts. Government regulatory bodies, on the other hand, must guarantee that factory owners relocate workers to another vocation as soon as they exhibit signs of disease.

Preventive gear, Effective exhaust systems, and strict working hours help prevent development of diseases. Increased attention should be directed toward reducing OLD burden through identification and implementation of effective preventive strategies. For this to happen, it is imperative that policymakers across the globe, especially those who establish regulatory standards and oversee their enforcement, reevaluate protections currently in place for workers exposed to recognized inhalation hazards.^[4] There is an urgent need to increase clinical recognition and public health awareness of OLDs.

CONCLUSIONS AND RECOMMENDATIONS:

OLDs are totally preventable diseases. Recognition of wide spread occupational diseases in the country can be the first step in prevention of OLDs. Steps to increase awareness among workers, their families, industry owners, general population and as well as among the medical graduates regarding OLDs must be implemented.

Frequent surveys, health assessments, investigative evaluation, disease grading as well as relocation of affected

should be done. Owners of the dust producing industries, big or small, should be held accountable for any lapses. Policy makers must be alert in recognising new agents causing OLDs.

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