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Occupational Disorders and Risk Assessment: A Systematic Overview

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Review Article

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ABSTRACT

Around the globe, work has heavy impact on the health. Any chronic ailment that results due to continuous work or any occupational activity can be known as Occupational disease. Various occupational exposures lead to different types of Occupational diseases. These can be caused by both 'exertional factors' and 'environmental factors' of which the former include injuries that are caused by the amount of physical exertion needed to perform the job and the latter refer to the presence of chemicals, dust, fumes, gases and other substances in the workplace.
However, it is not always that easy to designate a disease as being occupational. There are many diseases that could be related to occupation in one or the other way. On one hand there are some classical diseases which are occupational in nature and generally related to one causal agent. On the other hand, there are many kinds of disorders which probably include several possible causal agents without being related to occupation.
The present review discusses about the various types of common occupational disorders prevailing in different working fields, work compensation act and measurements and steps to be taken to prevent the occupational diseases according to the Occupational Health and Safety regards.

INTRODUCTION

Occupational disease, once called industrial disease may be a physical upset ensuing from the routine performance of one's skilled responsibilities. It will be referred as a definite disease or disorder as a result of the character of one's work. As an example, if one suffers a loss of hearing as a result of his/her exposure to loud industrial machinery for long periods, that hearing impairment is an occupational disease. A repetitive strain injury that results from performing repetitive physical tasks at work is additionally associate degree disease. A mineworker exposed to oxide dusts at work might develop the respiratory organ malady, silicosis, as an occupational disease.

Musculo-skeletal Disorders

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Musculoskeletal disorders (MSDs) are impairments of body structures like muscles, joints, tendons, ligaments, nerves, bones or a localised blood circulation system caused or aggravated primarily by the performance of labour and by the results of the immediate setting wherever the work is dispensed [1-5]. MSDs will arise from a explosive labour like lifting a heavy object, or will arise from creating a similar motions continually or from repeated exposure to force, vibration, or awkward posture over an extended amount of time. The symptoms could vary from discomfort and pain to shrunken body performance [6-8]. Though it's not clear to what extent MSDs are caused by work, their impact on operating life is large [9-11]. MSDs will interfere with activities at work and might cause reduced productivity, illness absence and chronic occupational disability. Work related musculoskeletal disorders are also growing problems among nurses in many developing countries [12-15].

Musculoskeletal disorders are also frequent throughout agriculture work as a result of exposure to heavy, repetitive and forceful work, adoption of awkward and uncomfortable postures and carrying of excessive loads that has been determined to impose an impact on health of agricultural workers [16-18]. These factors place stress on muscles and joints, have an effect on the soft tissues of the neck, shoulder, elbow, hand, wrist, fingers and back. Additionally the normal agricultural tools and ways used for work need high human energy and might increase the chance of musculoskeletal injury [19-21]. Epidemiological and ergonomic Work-Related Musculoskeletal disorders (WMSD) research has captured a prominent position in the arena of occupational health due to the substantial financial cost and decreased productivity among employers and employees [22].

Work-related MSDs are the leading sorts of occupational injury and incur greater impact of cost to the industry and also the workers' compensation system. Pains and strains during work and at workplace are so serious and disabling for employees, inflicting pain and suffering starting from discomfort to severe incapacity [23-25]. The implications are way reaching and might have an effect on worker's life. MSDs are also expensive for employers [26-28]. They are the quantity one reason for lost-time claims reported to the workplace safety board, leading to vast direct and indirect expenses for employers. There is a robust link between exposure to the work-related risk factors for MSD and also the development of those disorders [29-31]. Taking proper measures to eliminate or reduce the exposure to the work-related risk factors will minimize the danger of MSDs. However, MSDs still be a serious source of disability and lost work time within the workplaces [32,33].

There has been an increasing effort in recent years to analyze the causes of MSDs and to take require action to stop them [34-37]. This has provided an intensifying recognition from workers, employers and government agencies that a strong relationship exists between factors inside the operating workplace surroundings and the development of MSDs [38,39]. The science of contemporary ergonomics and its application to MSDs associated with the modern workplace provide

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both an important perspective and a preventative approach. The breadth and impact of ergonomics extends well beyond what is often presented in the literature [40-43].

Cardiovascular and lung disorders

Common occupational lung diseases include mesothelioma, occupational asthma, silicosis, asbestosis, and sick building syndrome [44-48]. They are often described to be specifically related to factors in the work environment; examples of such diseases are the pneumoconioses. [49] However, in addition to other exertional factors, occupational exposures also contribute to the development of common respiratory diseases, such as chronic obstructive pulmonary disease (COPD), asthma and lung cancer [50-52]. Chronic exposure to occupational noise may also be associated with increased occurrence of coronary heart disease (CHD) and hypertension [53,54].

The pneumoconioses, extrinsic allergic alveolitis [55-58], lung damage due to irritant gases, fumes, and smoke are the most important occupational lung diseases that affect the lung parenchyma. The pneumoconioses are the diseases which result from the accumulation of dust in the lungs [59-61]. The International Labour Organization (ILO) [62] has established a well-defined system for classification of these pneumoconioses that includes both descriptions of diffuse lung opacities and pleural disease [63,64]. The most common of the fibrogenic pneumoconioses are silicosis and asbestosis [65-68].

Chemical pneumonitis is caused by the exposure to toxic fumes. The acute disease may produce diffuse lung injury which is characterized by air-space disease typical of pulmonary edema [69].

The inhalation of certain agents causes acute injury to the respiratory tract of differing severity [70,71]. Occasional exposure to very high levels of metal fumes or organic dusts contaminated with microorganisms and endotoxins leads to metal fume fever and organic dust toxic syndrome, respectively [72-74]. These inhalation fevers are the clinical diagnosis of a relatively benign and transient. Such reactions generally occur in agricultural work [75].

Despite uncertainty about the number of people affected and risk factors for adverse pulmonary outcomes in this occupational setting, the Working Group recommended: standardized approaches to pre- and post-deployment medical surveillance [76-78]; criteria for medical referral and diagnosis; and case definitions for major deployment related lung diseases [79-81].

Cardiovascular disorders (CVDs) [82] are constituted as a major burden for health of working populations throughout the world of which 50% lead to death and at least 25% lead to work disability. There are some changes in cardiovascular risk factors among occupational classes [83]. This is mainly due to the evolution of new types of work-related causes of morbidity [84-86] which are associated with the recent developments in work life around the globe, particularly in the industrialized countries [87,88]. Meanwhile, in the developing countries or those in transition (e.g., in Eastern Europe), mortality is increasing due to major socioeconomic changes, the demographic transition and high industrialisation and urbanization [89,90], which are leading to growing challenges to cardiovascular health. Better control and prevention of known risk factors like smoking,

obesity, physical inactivity, high cholesterol, high blood pressure, and high blood glucose, is effective to prevent CVD incidence [91-93]. But the expected results were not been achieved. The obstacles of not achieving such control measures are due to lack of awareness, lack of policies and their implementation into practice and shortage of infrastructures and human resources [94-96].

Occupational risk assessment

The major purpose of risk assessment is to make the employer to take necessary measures in order to ensure the safety and health of workers in each and every aspect related to work [97]. According to European Union guidelines and practice, these measures include the prevention of occupational risks, the provision of controllable measures and training to employers [98]. Risk assessment usually focuses on the risks related to every workplace to evaluate the hazards and to estimate the likelihood of the potential for harm under the working conditions and its possible extent. The health assessment of the employees is not the single prominent goal of the risk assessment [99].

Risk assessment is a scientific method used to determine an individual's risk of developing a specific adverse health effect due to a specific exposure. There are primarily four components for the risk assessment or management. The first is the identification of the hazard, which is based on in vitro tests, animal bioassays, and epidemiological studies. The second component includes the dose-response assessment which deals with susceptibility, age, and the gene-environment. The third component is the exposure assessment that investigates the types, levels, and the duration of exposures. The final component is the risk characterization that deals with the nature of the risk, estimates the adverse effect of the worker, examines the robustness of the studies from the hazard identification, the susceptibility of the population, and the relevant of the mode of action [100]. Occupational risk assessment measures the risk factors for a specific disease from a specific exposure among individual workers.

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