Investigation of Work Related Health, Safety and Ergonomics Issues in Metal Fabrication Industries in Karnataka

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Abstract

The basic process in metal fabrication industry is welding which poses several risks and hazards to the workers. Welding process contributes to work related problems and is the most common method of metal joining and a part of metal fabrication work. The present study in to investigate the awareness level of workers to occupational health and safety, usage of personnel protective gear (PPEs), welding hazards and postural risks. Metal fabrication industries from North Karnataka are selected for study (10 industries) and about 60 workers comprise the sample. The metal fabrication industries selected for study were of three types; general fabrication (06), furniture making (02) and heavy fabrication works like tractor trailers, pressure tanks (02) etc. The general process in metal fabrication is cutting, welding, drilling, grinding hammering and painting. The methodology adapted was observation and collection of demographic data, usage of PPEs, and measurement of environmental parameters like noise, temperature, illumination, and prevalence of musculoskeletal issues by modified MSD questionnaire and postural stress by ergonomic evaluation tool Rapid Upper Limb Assessment (RULA) and Rapid Entire Body Assessment (REBA). The results show that MSD problems are prevalent where about 70% to 80% report discomfort in various body parts with lower back, upper back and shoulder and wrists accounting for major score. The results from RULA postural analysis indicate about 60% postures are high risk in welding and 57% have high risk according to REBA analysis. The usage of safety devices and personnel protective gear is negligible except eye shield/goggles which accounts for 90% usage. Masks are used by only 18% of sample and hand gloves by about 23%. The usage of ear plugs/muffs is about 14%. Apart from these the workers complain about general health like vision problems, accidents and injuries to body and job stress. The study indicates that the sfety measures and awareness can be further strengthened and interventions carried out to increase workers awareness in areas like safety training, usage of PPEs and enforcing appropriate safety regulations.

Keywords
Welding, occupational health and safety, RULA, REBA and musculoskeletal disorders.

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Dr. Qutubuddin S.M. is presently working as Associate Professor, Industrial and Production Engineering Department, P.D.A.College of Engineering, Gulbarga. He has more than 28 years experience in teaching and research and has published more than 35 papers in International and National journals and Conferences. He has introduced the course Human Factors and Ergonomics in the curriculum in under graduate engineering and has developed laboratories such as Industrial Engineering Laboratory and Ergonomics Laboratory. He is a life member of professional societies such as ISTE, IIPE, IAENG, and ISE. He is a regular member of various committees' of IEOM Society conferences and continuously involved in promoting the activities of IEOM Society. He has established a IEOM Society student Chapter at PDA College of Engineering. Research interest include Industrial Ergonomics; Human Factors; Occupational Health and Safety; Productivity Improvement Studies; Production/Operations Management; Environmental Ergonomics.