

Identification of Workplace Hazards of Underground Coal Mines

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Abstract : Underground mining of coal is carried out manually in Pakistan. Exposure to ergonomic hazards (musculoskeletal disorders) are very common among the coal cutters of these mines. Cutting coal in narrow spaces poses a great threat to both upper and lower limbs of these workers. To observe the prevalence of such hazards, a thorough study was conducted on 600 workers from 30 mines (20 workers from 1 mine), located in two districts of province Punjab, Pakistan. Rapid Upper Limb Assessment sheet and Rapid Entire Body Assessment sheet were used for the study along with a standard Nordic Musculoskeleton disorder questionnaire. SPSS, 25, software was used for data analysis on upper and lower limb disorders, and regression analysis models were run for upper and lower back pain. According to the results obtained, it was found that work stages (drilling & blasting, coal cutting, timbering & supporting, etc.), work experience and number of repetitions performed/minute were significant (with p-value 0.00, 0.004 and 0.009, respectively) for discomfort in upper and lower limb. Age got p value 0.00 for upper limb and 0.012 for lower limb disorder. The task of coal cutting was strongly associated with the pain in upper back (with odd ratios 13.21, 95% confidence interval (CI) 4.0-21.64) and lower back pain (3.7, 95% confidence interval 1.3-4.2). scored on RULA and REBA sheets, every work-stage was ranked at 7-highest level of risk involved. Workers were young (mean value of age = 28.7 years) with mean BMI 28.1 kg/m²

Keywords : workplace hazards, ergonomic disorders, limb disorders, MSDs.

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