

The relationship between musculoskeletal pain, work-related posture and quality of life among jewellery manufacturing workers in Colombo District, Sri Lanka

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Jewellery manufacturing workers are often exposed to prolonged static postures, repetitive upper limb movements, and poorly designed workstations. These occupational stressors increase the risk of developing musculoskeletal (MSK) pain and may negatively affect their quality of life (QOL). This study aimed to assess the relationship between MSK pain, work-related posture, and QOL among jewellery manufacturing workers in the Colombo District, Sri Lanka. An analytical cross-sectional study was conducted among 134 jewellery manufacturing workers selected through a two-stage random sampling method. Participants aged 18-60 years with at least two years of work experience were eligible. Data were collected using an interviewer-administered questionnaire, the Nordic Musculoskeletal Questionnaire (NMQ), Rapid Entire Body Assessment (REBA), and the SF-36 questionnaire. Statistical analysis was conducted using SPSS version 25, utilizing descriptive statistics and the Mann-Whitney U test. MSK pain was reported by 87.3% of participants during the past 12 months, with lower back being the most affected region (62.7%). In the past 7 days, 66.4% of participants experienced MSK pain, with lower back pain remaining the most common (30.6%). REBA analysis showed that 64.9% of workers were in the medium-risk category. A significant association was found between MSK pain and higher REBA final scores, particularly for the pain in neck, elbow, upper back, lower back, and knee regions ($p < 0.05$). MSK pain was also significantly associated with lower physical component scores (PCS) of QOL ($p < 0.05$), while no significant association was found with mental component scores (MCS) ($p > 0.05$). MSK pain is highly prevalent among jewellery manufacturing workers and is strongly associated with poor working posture and reduced physical quality of life. Targeted ergonomic interventions and occupational health strategies are essential to reduce MSK burden and improve workers' health and productivity.

Keywords: *Musculoskeletal pain, Work-related posture, Quality of life, Jewellery manufacturing workers*