

Occupational Health Hazards of Jewellery Makers: A Comprehensive Review

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Abstract: Jewellery manufacturing is an ancient craft that remains a cornerstone of many economies, particularly in developing countries such as India. However, this occupation exposes workers to a variety of health hazards, including musculoskeletal disorders (MSDs), respiratory illnesses, dermatological reactions, and psychosocial strain. This review examines occupational health risks prevalent among jewellery makers, encompassing goldsmiths, silversmiths, and pearl workers. Major hazards stem from prolonged static postures, repetitive manual tasks, inadequate ergonomics, poor ventilation, and exposure to toxic metals such as cadmium, nickel, chromium, and lead. The literature consistently identifies MSDs as the most frequent ailment, followed by respiratory and visual problems. Despite increasing awareness, the informal and unregulated nature of jewellery manufacturing limits the implementation of preventive measures. Ergonomic redesign, education on safe work practices, substitution of hazardous materials, and medical surveillance are critical for protecting artisans. This paper highlights key risk categories, health outcomes, and intervention strategies while emphasizing the need for policy reforms to safeguard the occupational health of jewellery workers worldwide.

Keywords: Jewellery industry, occupational health, musculoskeletal disorders, ergonomic hazards, chemical exposure, worker safety

1. Introduction

The jewellery industry is one of the most rapidly growing artisanal sectors globally, with India contributing nearly 50% of global supply. It employs millions of skilled and semi-skilled workers who craft gold, silver, pearl, and imitation jewellery using intricate manual techniques. While this industry significantly boosts exports and provides livelihood opportunities, it also exposes workers to multiple occupational hazards due to repetitive tasks, static postures, inadequate lighting, and poor environmental conditions.

2. Major Occupational Health Hazards in Jewellery Manufacturing

Occupational hazards in the jewellery sector can be broadly categorized into physical, chemical, ergonomic, mechanical, biological, and psychosocial risks. These hazards vary depending on the type of material processed, task complexity, and workshop environment.

3. Musculoskeletal Disorders (MSDs) in Jewellery Makers

Musculoskeletal disorders are the most commonly reported occupational health problems among jewellery workers worldwide. They affect muscles, tendons, joints, and nerves, primarily in the neck, shoulders, back, and hands. Studies show that prolonged sitting, repetitive fine-motor movements, and poor posture are key contributors.

4. Other Occupational Health Risks

Respiratory diseases, including bronchitis, asthma, and pneumoconiosis, are common due to inhalation of metallic dust and fumes. Workers exposed to polishing compounds and silica-based abrasives are at risk of silicosis and chronic obstructive pulmonary disease. Contact dermatitis,

especially nickel allergy, is prevalent among those handling metals and cleaning agents.

5. Control and Preventive Strategies

Ergonomically designed workstations, adequate ventilation, proper lighting, and use of personal protective equipment can significantly reduce health risks. Training programs and periodic medical check-ups should be mandatory for jewellery workers.

6. Research Gaps and Recommendations

Further longitudinal studies are required to explore chronic effects of exposure to metal fumes and ergonomic strain. Research should also focus on developing low-cost, sustainable interventions suitable for small workshops and home-based workers.

7. Conclusion

Jewellery making, though an economically rewarding craft, remains fraught with health risks due to its physically demanding and chemically hazardous nature. Ergonomic redesign, hazard control measures, and health education are vital to safeguard this workforce. Implementing safety standards will ensure both the sustainability of the craft and the well-being of its artisans.

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