Occupational Risk Factor of Workers in the Handicraft Industry: A Short Review

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Abstract: Handicraft industry occupies a pivotal position in the economic dynamism of various countries. Handicraft is one of the important industries employing a large number of people on its workforce. A wide range of activities are involved in it. The objective of this paper is to present a systematic review of the literature in the field to identify problems, recommended practices, and explore occupational needs. The workers in the handicraft industry suffer from various types of health risk factors. Selected for review were published and unpublished reports dealing with occupational risk factor among workers. Some studies concern working environments, equipment design and factors affecting individual workers. The workers engaged in this industry are victims of different occupational disorders and psychosocial stresses. It is true that the work place is not proper and wages are also not adequate, working conditions are non-congenial in most of the cases and involve risk factors. They are victims of headache, backache, joint pains, skin diseases, lung disorders like silicosis, other muscular skeletal disorders, and so on. A need to conduct research on tools/equipment, working environments and individual risk factors is apparent. If ergonomic principles can be integrated into existing handicraft industry tools, methods and work environments then efficiencies can be realized and the risk of occupational injuries will be reduced.

Keywords— Handicraft, Occupational risk factor, Ergonomic principles, Environments.

I. INTRODUCTION

Any industry plays a significant role in building up of a country in terms of its share in employment, output production and wealth creation. The handicrafts of a society often become the chief means of livelihood. It also fulfils their daily requirements and provides employment to the members of the households of the society. So the handlooms and handicrafts play a magnificent role in the socio-economic development of a society [1].

Handicrafts can be defined simply as objects made by the skill of the hand and which carry a part of the creator as well as centuries of evolutionary tradition. Going by industry group, after agriculture, a sizeable number of informal sector workers are engaged in trade and manufacturing related to small scale industries and traditional industries covering Khadi and Village Industries, Sericulture, Coir and Handicrafts (Textile printing, blue pottery, Gem jewelry, Carving Stone, Leather etc), Handlooms, Powerlooms [2]. Various occupational health hazards are associated with the handicraft industry. Handicraft workers get hearing problem, lower abdomen, chronic bronchitis, lung diseases, respiratory irritation, backache, pain in lower limbs, asthma and eye strain [3,4,5].

II. LITERATURE REVIEW

Metgud et al. [6] studied on women workers in a woolen textile factory for identification of health-related problems. He found that observational cross-sectional study conducted on a sample of 100 women workers who volunteered, outlines their cardio-respiratory and musculo-skeletal profile before, during and at end of work. However, the musculo-skeletal problems were found to be abundantly present with pain in 91% of the subjects. Region-wise mapping of pain revealed that postural pain in low back was present in 47% while in neck was 19%. Pain and fatigue were found to be the main problems for women in the spinning section [6]. Carpet weaving is a high risk occupation for developing musculoskeletal disorders (MSDs). The results revealed that major ergonomic factors associated with musculoskeletal symptoms were loom type, working posture, daily working time and seat type. Based on the results, the new weaving workstation was generally acceptable to the weavers and contributed to an improved working posture [7]. Motamedzade et al.[8] showed that upper limbs musculoskeletal disorders (MSDs) occurred data high rate among carpet weavers. From the usability test, it could be concluded that, new hand tools caused the concentration of contact stress on the palm of hand to be eliminated [8].

A comprehensive study was conducted in carpet industry with the objectives of determination of MSDs symptoms prevalence; identification of major factors associated with MSDs symptoms in carpet weaving occupation; and development of guidelines for weaving workstation design. The study consisted of two phases. In the first phase, MSDs symptoms in nine Iranian provinces were surveyed by questionnaire among 1439 randomly selected weavers. The results of this phase revealed that symptoms from the
musculoskeletal system occurred in high rate among weavers. It was found that the majority of ergonomics shortcomings originated from ill-designed weaving workstation. Based on the findings, some general guidelines for workstation design were presented. In the second phase, considering the general guidelines, an adjustable workstation was designed and constructed. To develop quantitative guidelines for optimizing workstation set-up, in the laboratory, nine sets of experimental conditions were tested, and working posture and weavers’ perceptions were measured. The results of this lab work showed that working posture was acceptable for both the researchers and the weavers when the weaving height was adjusted 20cm above the elbow height and a high seat with forward slope was used. By combining the results of the two phases, guidelines for weaving workstation design were presented. It is believed that the recommended workstation improves working posture and results in reduced postural stress on weavers’ bodies and, consequently, reduced prevalence of MSDs symptoms [9]. Mukhopadhya et al. [10] studied on evaluating ergonomic risk factors in non-regulated stone carving units of Jaipur. He identified different ergonomic risk factors associated in this profession. Objective measurements (heart rate and skin temperature) were recorded with stop watch and digital thermometer. The working heart rate after 30 minutes of work was 112.4 beats per minute categorizing the work as moderately heavy. These indicate vulnerability of many of the postures to musculoskeletal disorders and injury [10].

Arphorn et al.[11] studied on the sculptors’ workstation in pottery handicraft to reduce muscular fatigue and discomfort. The improvements of the workstation were redesigned of the banding wheel, storage of carving equipment and adjusted height of seat and results found that discomfort of general body, left and right low back muscles and right shoulder muscle for operating at the modified workstation were significantly less than operating at the traditional workstation. It could be summarized that the modified workstation could clearly reduce discomfort in low back muscles and right shoulder muscle with significant difference. Therefore, these results confirm increased productivity and comfort for the sculptors using this modified workstation [11]. Nurmiyanto studied ergonomic intervention in handicraft producing operation. Twenty trainees were questioned regarding musculoskeletal disorders (MSDs). Among the trainees, knees, back and shoulders problems were more prevalent compared to other body regions. Based on the problems found, a new workstation was developed. The new workstation improved working posture. Working on the table improved neck, trunk and legs postures. The working posture was improved by developing a new working table [4].

Yildirim et. al. [12] was to investigate the effects of noise on hearing, lipid peroxidation and antioxidant enzymes in textile workers. The fact that noise both causes hearing loss and increases the oxidative stress makes one think that there is a relationship between oxidative stress and hearing loss [12]. Tiwari et al.[13] studied was carried out 514 cotton textile workers at Wardha. His study prevalence of low back pain was found to be 11.1%. Age more than equal to 35 years was found to have 9 times more risk as compared to <35 years. Smokers were found to have significant higher risk for development of low back pain than non-smokers. He suggested that ergonomic principles should be used for controlling occupational risk factors [13]. The study was conducted on 20 factories belonging to textile, printing, publishing and paper products industries in Jeddah and found that textile, publishing and paper products industries are the most noisy industries[14]. Songkham et al.[15] investigated occupational hazards and health status on 307 pottery workers working at Chiang Mai, Thailand. The major result revealed that the most illnesses among the sample were musculoskeletal disorders including hand-arm-shoulder pain, back pain, neck pain, and leg pain. Skin and respiratory tract illnesses found among the samples included skin rash, and runny nose, coughing, sneezing, and nose irritation[15]. Limmongkon et. al. [16] studied were to assess the effectiveness of the modified sculptors’ workstation for reduced muscular fatigue and discomfort in pottery handicraft. The results found that discomfort of body, left and right low back muscles and right shoulder muscle for operating at the modified workstation were significantly less than operating at the traditional workstation [16].

III. CONCLUSION AND RECOMMENDATIONS

The handicraft industry is a high risk occupation to develop various types of occupational disorders, respiratory disorders, injuries, eyesight problems, nerve disorders, skin problems. Lack of awareness’s among the workers already existing problems in these handicraft industries. Most of these diseases and health risk factors found in these industries can be avoided by proper precautions. Awareness programs and local group discussions are essential for improving the health status of these among workers. There must be some provision of protective equipments e.g. face masks, first aid facility, gloves and proper uniform, for the protection of workers of handicraft industry. There should be proper lighting at the place of work so that eye strain can be avoided. In some handicraft industry, workers should provide with earplugs so that exposure to noise can be reduced. Proper medical checkup should be conducted by the employers for the workers from time to time. If significant occupational health risk factor are observed, appropriate measures should be taken by the management.
REFERENCES


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