

The Prevalence of Comfort Level in Handicraft Workers Because Of Hand Tools

Niketa Ahirwar¹, Dr Virendra Singh Rajpurohit² Swati Sharma³
Manoj Kumar Jadiya⁴

¹PhD Scholar, Physiotherapy Department, Maharaj Vinayak Global University, Jaipur, India.

², Associate Professor, Jaipur Physiotherapy College, Maharaj Vinayak Global University, Jaipur, India.

³PhD Scholar, Physiotherapy Department, Maharaj Vinayak Global University, Jaipur, India.

⁴PhD Scholar, Physiotherapy Department, Maharaj Vinayak Global University, Jaipur, India.

Abstract

Aim: The aim of the present study is to study the relevance of practical applications of Ergonomics and advances of physical therapy to overcome the challenges in Handicraft works to improve professional capabilities and evaluate upper extremity repetitive motion injuries”

Design: A convenient, descriptive-correlation type of study design.

Material & Methodology: A total of 159 subjects were selected by simple convenient sampling for study after signing the informed consent according to the inclusion and exclusion criterion.

The related questionnaires are held in different handicraft factories after the related coordination with the owner of those factories permission in order to gather the related data. These questionnaires have been also distributed among the participated handicraft workers and then gathered completely.

Results: The primary purpose of this study was to determine to investigate the prevalence of comfort level in workers. From the results of Comfort Questionnaire for Hand tools (CQH), it is observed from present study that working with existing available hand tool is not comfortable.

Conclusions: Overall discomfort rating was measured using Comfort Questionnaire for Hand tools (CQH), which shows the sum and mean score for perception of workers about existing hand block tool is towards high end.

Keywords: Comfort Questionnaire for Hand tools (CQH), Handicraft Workers

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I. Introduction

India is one of the important suppliers of handicrafts to the world market. The Indian handicrafts industry is highly labour-intensive cottage-based industry and decentralized, being spread all over the country in rural and urban areas. Numerous artisans are engaged in crafts work on part-time basis. The industry provides employment to over six million artisans who include a large number of women and people belonging to the weaker sections of the society. The Handicrafts Sector plays a significant & important role in the country's economy. It provides employment to a vast segment of craft persons in rural & semi urban areas and generates substantial foreign exchange for the country, while preserving its cultural heritage.

Handicrafts have great potential, as they hold the key for sustaining not only the existing set of millions of artisans spread over length and breadth of the country, but also for the increasingly large number of new entrants in the crafts activity. Presently, handicrafts contribute substantially to employment generation and exports. The Handicraft sector has, however, suffered due to its being unorganized, with the additional constraints of lack of education, low capital, and poor exposure to new technologies, absence of market intelligence, and a poor institutional framework.

In spite of these constraints, sector has witnessed a significant growth of 3 % annually. In addition to the high potential for employment, the sector is economically important from the point of low capital investment, high ratio of value addition, and high potential for export and foreign exchange earnings for the country.

II. Methods & Methodology

This chapter deals with the methods and material used for this study. These include information on the subjects, procedures used in data collection, and about variables.

Participants and Recruitment

A total of 159 subjects were selected by simple convenient sampling for study after signing the informed consent according to the inclusion and exclusion criterion.

Inclusion criteria

- Male/ Female
- Age group: 18-45 years
- Subject who are working as handicraft workers for more than a year.
- Subjects who agreed to fill informed consent

Exclusion Criteria

- History of recent back injury.
- Subjects having history of lower extremity or upper extremity injury.

Procedures

The related questionnaires are held in different handicraft factories after the related coordination with the owner of those factories permission in order to gather the related data. These questionnaires have been also distributed among the participated handicraft workers and then gathered completely. The necessary explanations have been completely achieved before distributing the questions because this makes all participants aware of the purposes and targets of the related questionnaires. Each participant was required to sign a consent form prior to filling out the survey packet, which was completed and immediately returned to the researcher, indicating that they understood the purpose of the study and their rights as a participant.

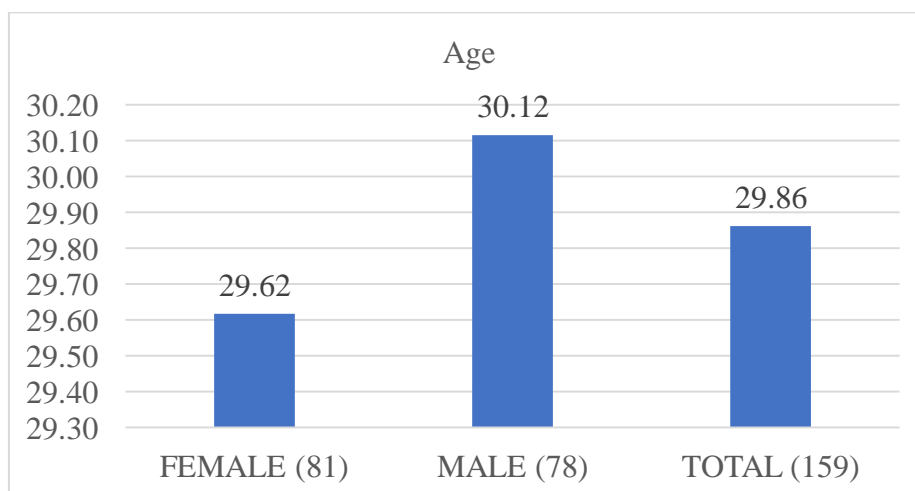
III. Results

This chapter deals with the presentation of the result once the collected information was tabulated and was analyzed using appropriate analysis tools.

Descriptive data

159 samples (81 females and 78 males) were recruited for the study. Mean and standard deviation of age was given below (Table 4.1. and Graph 4.1.)

Table 1. Descriptive Statistics For The Variables		
Sex	Age	
	Mean	Sd
Female (81)	29.62	7.55
Male (78)	30.12	9.08
Total (159)	29.86	8.31



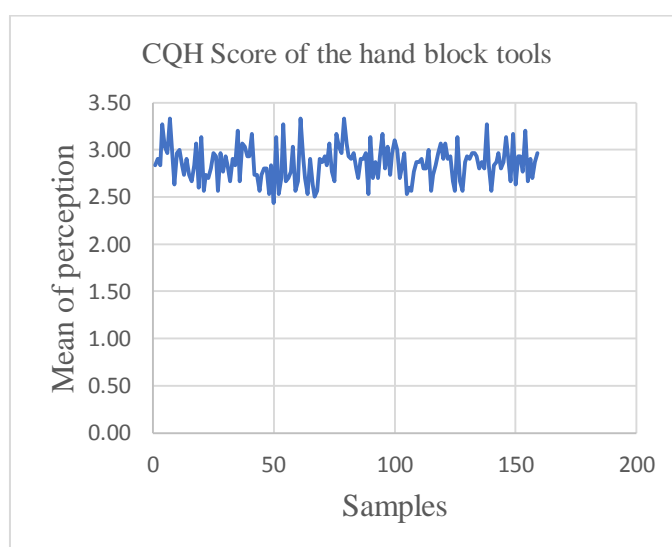
Graph 1 Descriptive Statistics for the Variables

Descriptive variable of the age, CQH score and RULA score of the handicraft workers shown that males and females have almost same scores in all the variables. It means that both males and females are equally affected by the postures which they maintain during their work.

CQH of an Existing Hand Block Tools used by handicraft workers

Overall discomfort rating was measured using Comfort Questionnaire for Hand tools (CQH), which is an adopted from Corlett and Bishop (1976). Table 2 shows the sum and mean score for perception of workers about existing hand block tool. Graph 2 shows the Mean of perception of all the handicraft workers.

Sum Of Perception	85.69
Mean Of Perception	2.86



Graph 2. CQH score of the hand block tools

IV. Discussion

The Handicrafts Sector plays a significant & important role in the country's economy. It provides employment to a vast segment of craft persons in rural & semi urban areas and generates substantial foreign exchange for the country. The Handicraft sector has, however, suffered due to its being unorganized, with the additional constraints of lack of education, low capital, and poor exposure to new technologies, absence of market intelligence, and a poor institutional framework. From the results of Comfort Questionnaire for Hand tools (CQH), it is observed from present study that working with existing available hand tool is not comfortable.

The result is summarized as:

Overall discomfort rating was measured using Comfort Questionnaire for Hand tools (CQH), which shows the sum and mean score for perception of workers about existing hand block tool is towards high end.

Hand block tools and its Comfortability

Overall discomfort rating was measured using Comfort Questionnaire for Hand tools (CQH), and it shows that these tools are not so comfortable for the work. Handicraft work is manual, using non-powered tools. Squeegee is the most important hand tool in screen printing processes of textile industry. The workers have to exert force while working as they have to reach out across the wide table to place the squeegee at the extreme end, and then again reach back to place, in an unbroken rhythm that maintains the pace of work. The movement is controlled by the wrists and a high muscle force is necessary. Many researches (Arphorn et al., 2008; Choobineh et al., 2004b, c; Nurmianto, 2008; Choobineh and Lahmi, 2004) reported that this combination of force and repetitive movement places workers at risk for musculoskeletal problems in the hand/wrist area. Specifically, to lead to a high static load on the upper arm and back muscles (Arphorn et al., 2008). Structural changes in the carpal tunnel region were associated with movements of the lower arms, elbows and wrists (Kutluhan et al., 2001). A study by Motamedzade et al. (2007) reported that a redesigned weaving hand tools can reduce upper limbs problems. A study by Meena et al. (2015) recommended the redesign of hand tool and workstation to reduce the musculoskeletal disorders, increase the work of life and increase the productivity of

hand block textile printing industries. Somasundaram and Srinivasan (2010) and Nurmianto (2008) recommended the redesign of workstation to help enhance quality of work, improve working posture and reduce risk of musculoskeletal disorders. Mirka et al. (2002a) developed new hand tools to help reduction of the upper extremity injury risk. A study by Daniela et al. (2012) reported that developed tools for un-experienced workers can reduce musculoskeletal disorders.

Recommendations and suggestions

- In light of literatures on handicraft industries presented above, following recommendations are advised to enhance worker-workplace productivity. These are:
- There should be improvement in safety aspects at every stage of working procedure so as to ensure worker-safety and avoidance of any kind of accidents.
- Regular training programs of workers would result in its learning and improvement of productivity.
- Awareness should be created among the workers about the loss to the industry and to themselves as a result of worker absenteeism.
- Providing adequate ergonomic resources and improving quality control of ergonomics issues. V. Hand tools should be modified.
- A job should not require workers to stay in awkward posture, such as bending, reaching, or hunching over for long duration of time.
- More recreational facilities and welfare measures should be provided by the industry to reduce work stress and to enhance the satisfaction of their working environment. Conducting some games for the workers once in a month or taking the workers for some entertainment trip will help in motivating and retaining the workers. This will also help in reducing the stress level of the workers.

Limitations and Future Scope

- Small sample size for the analysis is the limitation of this study. These samples were included participants in India only. Generalizability of the results should be increased by carrying the study on large sample size from different parts of India.
- Real implementation of ergonomically designed workstation (i.e., working table and hand tools) is also needed to further explore empirical evidence affecting the worker's quality of work life and productivity of hand block textile printing industries.
- Due to lack of funds and infrastructure, many of the resources like EMG Force plate, and Biofeedback could not be used to make the results clearer and to see the effect of different postures on different group of muscles.

V. Conclusion

Handicraft sector is a part of the small-scale manufacturing industries. The handicraft sector being informal sector suffers with the constraints of lack of education, high manufacturing cost, absence of proper incentives and poor exposure to new technologies. Most of the workers in these industries are dissatisfied with the existing working environmental conditions. Absenteeism of workers at workplace may be due to working in polluted air, poor illumination, high intensity noise, working with bare bodies in front of the kilns and odour nuisance results in physical as well as mental disorders. Unscheduled absenteeism of workers causes hindrance to progress of an organization resulting in loss of productivity, increases costs of hiring additional staff and low morale among workers. Ergonomic intervention and ergonomic redesign of workstations to improve posture and working conditions would result in improving quality of work life for the workers of handicraft industries. No scientific research was found that systematically deals with the relationship between the workload and strain of handicraft workers. Therefore, a comprehensive research is required in this particular area. During the past decade, handcrafting tools and machines have technologically developed and affected the handcrafting methods.

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