A Study on Occupational Risk Factors of “SitalPati” Weavers of Coochbehar district of West Bengal, India.
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Abstract
Handicraft industry occupies a vital position in the economic vitality of several countries. The weavers in the carpet industry suffer from various health risk matters. 'Sital-pati', a kind of mat is the most notable and well-liked product among the handicrafts of Cooch Behar district of West Bengal. The word 'Sital-pati' means cool-mat. The frequent issues of the problems for the 'Sital-pati' weavers are due to underprivileged ergonomics, poor work station design, prolonged hours of static working situation and lack of awareness. This paper makes an attempt to study the health risks related with this occupation.

Key words: Sital-pati; health risk issues; ergonomics; lack of awareness.

Introduction
Hand woven mats are created in home-based workstation considered as informal small-scale cottage industry in rural areas. Hand-weaving mat is a common exercise in countries such as India, China, Turkey, Iran, and Pakistan and are then taken to other countries for selling purpose [1-3]. Sital-pati is a kind of mat which is most popular and expensive product among the handicrafts of Cooch Behar. The word 'Sital-pati' means cool-mat. Besides this is also available in states of Tripura, Assam and in the Shilhet, Sunamganj, Barisal, Tangail, Comilla, Noakhali, Feni and Chitagong of Bangladesh. The Weavers are usually Kayasthas in caste, not a traditional craftspeople caste. Women and Children also contribute to the work. It involves a few weeks training to weave a Sital-pati but it would take many years’ experience to master the skillfulness. The raw material is the Mutra cane (Maranta dichotoma).

Sitalpati is made from cane or from murta plants, known at different places as mostak, patipata, patibet and paitara. The murta plant grows around water bodies. The green cane is kept waterlogged before it is slashed/sliced into thin strips for making the Sital-pati. Then the fine strips are woven by proficiently linking and interlacing to shape into the final product. The quality of the Sitalpati mat is refereed by its glossiness, smoothness and fineness of texture. The work is often planned around family members and carried out in homes. Mat weaving has been a key source of livelihood for the poor weavers as it does not need resource beyond basic infrastructural facilities to weave mats i.e. cane plants (Schumannianthus dichotomus) and basic weaving tools.

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Figure 2b: Sital-pati weaving and final desired product.

This mat is mainly well-matched for the warm and humid climate of this part of West Bengal. Sital-pati mats make a feeling of coolness to the person sitting or sleeping on it, and are closely associated with everyday rural life. But besides being a rural craft, this is now accessible outside the rural neighborhoods. The artistic appeal and functional value of these mats have made them increasingly noticeable in large towns and metropolitan cities thus increasing their traditional market.

Due to financial reasons, weavers have little source of earning and are exposed to several health risk factors while weaving mats. The objective of this paper is to study the health risk factors in Sital-pati weaving and to recommend certain actions to reasonable these impressions.

Materials and Methods

The primary data for the study were randomly and purposively collected from one-hundred fifty-four families of sital-pati weaver during the year July, 2015 to February, 2016. Among the areas Barokodali (Tufanganj block II of Coochbehar district), Ghughumari and Naklati-Pushnadanga (Coochbehar block I of Coochbehar district) of Cooch Behar district (26° 57’ 40” to 26° 32’ 20” North latitude and between 89° 54’ 35” to 88° 47’ 40” East longitude) where Sital-pati mats are woven. The Ghughumari area of Coochbehar block 1 in the Coochbehar district, West Bengal were selected purposively for the study.

General economic condition of the mat weavers was poor. The average age ranged from 12 to 54 years and educational level was from illiterate to 10th standard. Female and children involvement was high. Appropriate representation of different age, sex, smoking and nonsmoking habit, literate and illiterate was included for recording the data. Secondary sources of information were also accessed namely from DIC, Coochbehar district under Directorate of MSSE, Government of west Bengal.

Results and Discussion

A wide-ranging study was conducted in sital pati making handicraft small scale industry with the objectives of determination of MSDs symptoms predominance, identification of major factors associated with MSDs symptoms in sital pati weaving occupation and development of guiding principle for weaving workplace design. The present study consisted of two stages. In the first part of our work, MSDs symptoms in Ghughumari area Coochbehar block I are by questionnaire among 154 randomly selected weaver families. 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 limitations originated from ill-designed
weaving workplace. Based on the pronouncements, some general guidelines for workplace design were presented. In the second part, considering the general guidelines, an amenable workplace was designed and constructed. To develop quantitative strategy for optimizing workplace set-up in the laboratory seven sets of experimental conditions were tested. Working posture and weavers’ discernments were measured at the laboratory. The results of this laboratory work showed that working posture was acceptable for both the researchers and the weavers when the weaving height was adjusted 18cm above the elbow height and a high seat with forward slope was used. From the usability test, it could be accomplished that, new hand tools caused the concentration of contact stress on the palm of hand to be eliminated at the desirable level [4]. By combining the results of the two phases, guidelines for weaving workplace design were presented. It is believed that the recommended workplace improves working posture and consequences in abridged postural stress on weavers’ bodies and consequently reduced pervasiveness of MSDs symptoms [5].

The assessment of the present work condition confirmed the prevalence of ergonomic issues by identifying the different health risks and from the analysis of questionnaire and observations, it was found that there were four broader problem areas where specific ergonomic intrusion could be recommended [6-7]. Sital pati weaving is related with risk issue for rising musculoskeletal disorders (MSDs). The consequences revealed from our study that major ergonomic factors associated with musculoskeletal indications were depend upon the raw materials (mutra cane) type, working posture, every day working time and seat type. Our study reveals that the weaving workplace was commonly undesirable to the weavers and contributed to an unimproved working posture. Study showed that upper limbs musculoskeletal disorders (MSDs) occurred data high rate among sital pati weavers [8].

These problem areas were associated with cutting mutra cane from the cultivated field to final product making. The general working operation in both organized and unorganized clusters appears to be same, except the working hours which may be controlled or un controlled. Subjective evaluation of body pain was done through Self-report Body Discomfort rating Chart based on Borg’s 10 point rating scales [12] along with the frequency and severity of occurrence of pain among 154 weaver family members for performing weaving operation. A noteworthy percentage of weavers reported that pains after weaving operation, due to bad seating arrangement which indicates the occurrence of ergonomic issues and require for ergonomic involvement. It was found that the highest number of weavers reported of having neck, low back and leg pain followed by shoulder and ankle pain. From subjective assessment for severity of pain, it was noticed that most severe pains were also reported in low back, shoulders, neck, knee and legs[13]. From subjective assessment for frequency of pain, it was observed that most recurrent pains were reported in low back, shoulders, neck and legs[14]. Hence, ergonomic design advancement to adjust the different components of workplace which interacted with the body parts (low back, shoulders, neck and legs) during weaving operation will help to trim down pain [15].

**Conclusions**

The Sital pati weaving occupation is associated with various types of occupational disorders namely injuries during weaving operation and also during the time of collection of raw materials, eyesight problems, fear of insect(snake) bite during the collection of cane from the field, nerve disorders, skin problems. Lack of awareness’s among the workers is one of the most vital serious issue to develop MSDs and other health related issues. Awareness programs and local group discussions are essential for improving the health status and occupational awareness among the weavers. There should be proper lighting at the place of work so that eye strain can be minimized. Proper medical checkup should be conducted by the government for the workers from time to time to minimize occupational health risk factors.

**Acknowledgement**

The author expresses his gratitude to district industry centre for giving valuable information in different times during this study. We are also gratified to M. Das for typographical and computation during preparation of this manuscript. The assistance received from Mr. T. Roy, Mr. H. Saha during the time of extensive survey is acknowledged. The authors like to thanks all the weavers and the managing bodies of the sitalpati weavers units for their participation and their valuable suggestions.

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