

Body discomfort perceived by handloom weavers

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■ **ABSTRACT** : Handloom weavers constitute the largest workforce, next to the agricultural community in India in its ability to provide employment to a large number of persons with far less average capital employed per worker compared to the other segments of the textile industry. Women from lower economic status dominate these sectors and their health status is found to be poor. In Manipur, handloom is a cottage industry with decentralised set-up and loom was an integral part of their furniture. One of the special features of the industry is that women are the only weavers in Manipur. Keeping the above issues in mind, the present study was planned to find out the rate of body discomfort perceived by the women handloom weavers. Imphal- East and Imphal -West districts of Manipur were selected for the study. A sample of 42 women (14 from each group using the three type of looms) were chosen adopting purposive sampling. Body part discomfort Scale (Corlett and Bishop, 1976) technique for measuring postural discomfort was used for the study. The result revealed that the mean cumulative score for body discomfort while weaving on the three looms enabled identifying the body parts involved in weaving operations and the stress inflicted on them. Neck, shoulder, upper and lower arm were the most affected body parts while weaving. Computing work time against mean cumulative body discomfort score highlighted loin loom weavers to suffer the most.

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India has a rich cultural heritage of hand weaving. The artistic skills of the traditional handloom weavers' are second to none. The Indian handloom industry is highly labour oriented, having a legacy of unrivalled craftsmanship with a decentralised set up. Manipur enjoys a distinct place amongst the handloom zones in India. This industry has been flourishing since time immemorial. One of the special features of the industry is that women are the only weavers. The traditional skill of handloom weaving was not only a status symbol for the women-folk but also an indispensable aspect of the socio-economic

life. Handloom industry is the largest and most important cottage industry in the state. Handlooms thrive mainly on three types of looms, namely loin loom, throw shuttle loom and fly shuttle loom. Weaving is universal here and every girl knows how to weave. The loom forms part of their dowry.

Most of the literature available speak about the economic aspects of their occupation, but hardly discuss the drudgery and health- related problems that women workers undergo in their occupational milieu. Musculoskeletal discomforts are developed when

attempts are made by the workers to 'fit the man to the job' rather than to 'fit the job to the man' (Parimalam *et al.*, 2006). National commission of self-employed women in the Informal Sector (1998) had stated that in order to understand occupational health aspects, it is necessary to have a detailed examination of women's work and its effects in terms of physical and mental health and to analyse them in terms of physical stresses and postural health related problems. Women usually assume static or dynamic postural bends and carry physical loads on sensitive muscles and joints during these activities. The effect of these physical works on the worker is a cause of ergonomic concern for protecting the health of these workers (Mrunalini *et al.*, 2006). However, their health has been a sadly neglected field. Women often have to bear the triple burden of a job, housework and children, causing a lot of strain on themselves. Working women, ultimately, face a lot of occupational health hazards (Sinha, 1993), while poverty is the biggest threat to health particularly for women (Vinayagamooty, 2007).

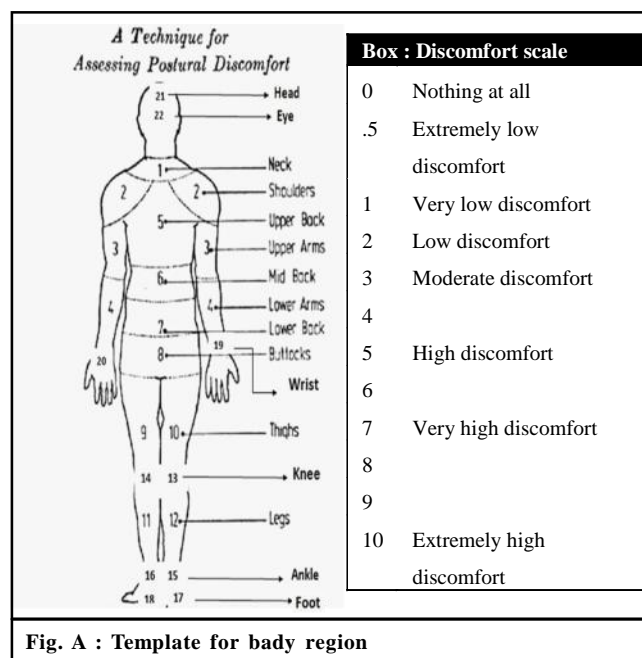
Women must understand that human body works like a machine and it can work efficiently for a long time if it is used with care and caution. Any damage caused to it usually irreversible. Women must learn to use the right posture during work, so that the damage to the body is avoided and the efficiency in work is enhanced (Oberoi and Gill, 2003). According to international ergonomics association, ergonomics is the scientific discipline concerned with the understanding of interactions among humans and other elements of a system, and the profession that applies theory, principles, data and methods to design in order to optimise human well-being and overall systems performance (<http://en.wikipedia.org>).

Therefore, in the light of above, the present study had been planned with the objective to find out the rate of body discomfort perceived by the women weavers.

Tool:

Body part discomfort scale (Corlett and Bishop, 1976) technique for measuring postural discomfort was used for the study. It is a subjective symptom survey tool that evaluates the respondent's direct experience of discomfort at different body parts. It may seem easy to take the scale for granted because it is internationally recognised and universally practiced (http://www.humanics_es.com). The scale helps to identify the pain/

discomfort in to identify the pain/ discomfort in different parts of the body at a specific time.



The investigator has discretion to decide the timings of the day when the status of the sample has to be studied. Using templates of the human body labelled with specific body parts in which the researcher had added a few more parts, the samples, colour the affected parts to identify the parts affected with pain. In the current study six times of the day were chosen and six templates for each time of the day were made for each sample. Scores were awarded based on the discomfort scale presented in box.

Depending on the extent of discomfort felt, scores were awarded for each part with score card based on the intensity of the discomfort felt from 0.5- 10. The exercise was repeated for three consecutive days, and the data entered while the samples were weaving in the three different types of looms. The values are the mean scores taken for three consecutive days. The findings are consolidated and are discussed under the result and discussion.

■ RESEARCH FINDINGS AND DISCUSSION

The results obtained from the present investigation as well as relevant discussion have been summarized under following heads :

Body discomfort perceived on the loin loom (LL):

Table 1 depict details on the body discomfort perceived while weaving using the loin loom. After working and before lunch, loin loom users complained of pain and discomfort in the upper and lower arm, shoulder and lower back. Pain and discomfort in the leg, wrist, buttock and difficulty to breathe were also complained about.

After lunch break, though the samples agreed that the pain in the neck, buttocks, legs and wrist subsided, ache in the upper arm, lower arm, shoulder and lower back were not found to ease completely after the break. Pain generally increased and by the end of the day it was at its peak in these concerned parts. The impact of the previous day’s work as pain in the upper extremities, lower back and knee was reflected on the day’s (days when the tool was administered) work. The samples happened to start the day’s work itself with pain in those parts. Ultimately weaving on the loin loom was the cause for upper limb disorders and

pain in the lower back and knees- the most vulnerable, yet important body parts of everybody. As the work was started and ended with pain, it is concluded that pain in these parts had become a part and parcel of the selected samples.

Body discomfort felt on throw shuttle loom (TSL):

Table 2 present the required information. The day’s work itself was started with pain in the lower back and foot, eyes and upper arm, which gradually increased and released the peak by evening. Though pain had tended to decrease slightly after small rest pauses, the samples really endured pain throughout the day and 24/7 hours. Among these, pain in the lower back ranked high followed by shoulder. Eye sight was affected more among these weavers as they used fine fibre and delicate designs.

Working after lunch break and before snacks too, ache in the shoulder and lower back recorded the highest score. A short break as tea time even was not much helpful in relieving the samples from pain in the upper/lower arms, hip and wrist. As the working time advanced, the samples also started experiencing difficulty with breathing too. Another feature was the swelling in the foot which increased with the time of pedalling and posture adopted.

Perceived body discomfort vs fly shuttle loom (FSL):

Table 3 explained the body discomfort rate of handloom weavers using fly shuttle loom. Unlike the other two groups, the fly shuttle loom weavers reported of pain in the chest and stomach along with the ache in the upper extremities. For this group too, incidence of

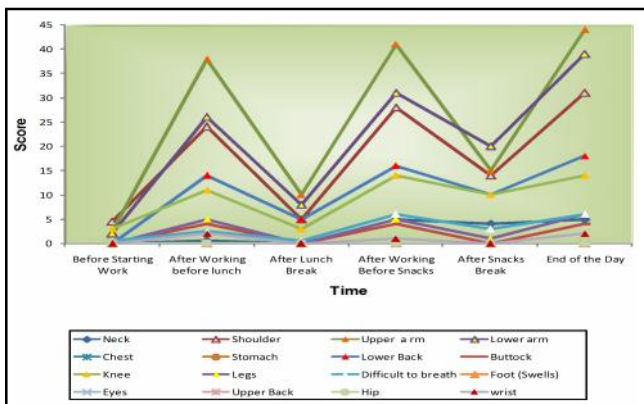


Fig. 1 : Body discomfort perceived on the loin loom (LL)

Body parts affected	Scores recorded for the six times of the day on loin loom					
	Before starting work (BSW)	After work before lunch (AW/BL)	After lunch break (ALB)	After work before snacks (AW/BS)	After snacks (AS)	End of the day (EoD)
Neck(N)	0	0.5	0	5	4	5
Shoulder (S)	4.5	24	5	28	14	31
Upper arm (UA)	2.5	38	10	41	15	44
Lower arm(LA)	2	26	8	31	20	39
Lower back (LB)	0	14	5	16	10	18
Buttock (B)	0	4	0	4	0	4
Knee (K)	3	11	3	14	10	14
Wrist (W)	0	2	0	1	0	2

pain was found to be gradually increasing as the time of day and the work time advanced. Here again, breaks in between work was only a temporary relief from pain. By evening like the other samples, this group too wound up the day with pain in the shoulders, arms and lower back.

All these findings stand testimony to the fact that the samples in all the looms are eventually prone to work related musculoskeletal disorders (WMSDs) in the upper extremities and lower back.

Mean cumulative body discomfort score for weaving:

The data is presented under the Table.4 This aspect projects the mean cumulative score recorded for the impact of the job on all the 42 selected samples (14 each using three types of looms, respectively) and the perception of pain/ discomfort in different parts of the body while performing in the looms. This analysis enabled identifying the body parts which were mainly involved in weaving operations and the stress inflicted on them.

Table 2: Body discomfort rate of handloom weavers using throw shuttle loom

Body parts affected	Scores recorded for the six times of the day on throw shuttle loom					
	Before starting work (BSW)	After work before lunch (AW/BL)	After lunch break (ALB)	After work before snacks (AW/BS)	After snacks (AS)	End of the day (EoD)
Neck (N)	0	2	0	2	1	3
Shoulder (S)	1	25	5	26	11	26
Upper arm (UA)	0	3	0	6	0	6
Lower arm (LA)	0	0	0	3	0	0
Lower back (LB)	2.5	25	6	25	9	25
Buttock (B)	1.5	3	0	5	2	5
Knee (K)	1.5	8	1	8	4	10
Leg (L)	0	6	2	6	2	8
Foot (F)	0	2	0	6	6	9
Eyes (E)	6	11	8	15	10	15
Upper back (UB)	0	2	0	0	2	3
Hip (H)	0	0.5	0	1	0	2
Wrist (W)	0	0	0	1	0	1

Table 3: Body discomfort rate Vs fly shuttle loom

Body parts affected	Scores recorded for the six times of the day on fly shuttle loom					
	Before starting work (BSW)	After work before lunch (AW/BL)	After lunch break (ALB)	After work before snacks (AW/BS)	After snacks (AS)	End of the day (EoD)
Neck (N)	0	1.5	0	2	0	2
Shoulder (S)	0	11	5	15.5	5.5	22.5
Upper arm (UA)	0	12	3	12	3	18
Lower arm(LA)	0	7	0	8	3	10
Chest (C)	1	3	3.5	9	3.5	9
Stomach (S)	0.5	2	2	3	1	3
Lower back (LB)	0	9.5	4	9.5	4.5	9.5
Buttock (B)	0	2	0	6	0	6
Knee (K)	0	3.5	3	2	0.5	6
Leg (L)	0	2	0	3	2	6
Foot (F)	0	0.5	0	1	0.5	1
Eyes (E)	1	1	2	1	2.5	1
Wrist (W)	0	3	0	3	0	4

Though the samples complained of pain in the neck, buttock, upper back, hip and wrist and swollen foot, the distress subsided during the lunch break. Pain in the shoulder, upper and lower arm, chest, stomach, lower back and knees was not found to ease out completely even after the break. Pain in the shoulder and lower back was found to be in the peak among all discomforts during the lunch break and even after the minimal rest. Evidently while resuming work after the break following lunch recess, all the samples were found to be enduring pain in the shoulder and upper arm followed by lower back, lower arm and knee.

Discomfort increased in all the body parts after lunch break while performing work. Difficulty to breathe, stomach ache and pain in the eye, chest, and buttocks were common complaints. But by the end of the day the

samples disclosed that the pain had increased in their shoulder, upper and lower arm, shoulder, lower back, legs and knees in descending order. It is proved therefore that shoulder, upper arm, lower arm and lower back were the body parts to suffer heavy impact due to weaving for all samples. Naturally by the end of the day all the sample weavers were found to be silent sufferers as they switched over to the task of domesticity immediately they vacated the loom, thus revealing that they faced the household chores a real drudgery after the days toil in the physically discomforting looms. Evidently, this multitasking, further added to the samples' poor health status.

Work time on looms vs mean cumulative body discomfort score:

The score for the body discomfort (all parts

Table 4: Weaving Vs mean cumulative score for body discomfort

Body parts affected	Mean cumulative scores for the six varied times of the day					
	Before starting work (BSW)	After work before lunch (AW/BL)	After lunch break (ALB)	After work before snacks (AW/BS)	After snacks (AS)	End of the day (EoD)
Neck (N)	0	0.05	0	0.21	0.11	0.232
Shoulder (S)	0.13	1.4	0.35	1.6	0.72	1.89
Upper arm (UA)	0.05	1.26	0.30	1.40	0.42	1.61
Lower arm (LA)	0.04	0.78	0.19	0.92	0.54	1.16
Chest (C)	0.02	0.07	0.08	0.21	0.08	0.21
Stomach (S)	0.01	0.04	0.04	0.07	0.2	0.07
Lower back (LB)	0.01	1.25	0.34	1.15	0.55	1.53
Buttock (B)	0.03	0.21	0	0.35	0.04	0.35
Knee (K)	0.1	0.53	0.16	0.57	0.34	0.71
Leg (L)	0	0.30	0.04	0.33	0.07	0.14
Foot (F)	0	0.5	0	0.02	0.01	0.23
Eyes (E)	0.16	0.27	0.22	0.36	0.29	0.36
Upper back (UB)	0	0.04	0	0	0.04	0.07
HIP (H)	0	0.01	0	0.02	0	0.04
Wrist(W)	0	0.11	0	0.1	0	0.07

Table 5 : Work time vs total body discomfort score vs looms

Time of the day	Mean cumulative body discomfort score		
	Type of loom		
	Loin loom	Throw shuttle loom	Fly shuttle loom
Before start working (BSW)	8.85	0.82	0.17
After work before lunch (AW/BL)	9.0	6.0	4.14
After lunch (AL)	2.21	1.57	1.60
After work before snacks (AW/BS)	10.35	7.42	5.35
After snacks (AS)	5.28	3.35	1.85
End of the day (EoD)	11.64	8.03	7.0

inclusive) based on work time of the day was done including scores for each type of loom during performance by weavers. This exercise enabled studying the cumulative pain/discomfort felt by the sample during each phase of performance of the day. The analysis also facilitated comparing the impact of performing on the three types of looms. Such a comparison revealed that, the body discomfort rate of the samples performing in the loin loom was more than that expressed by sample in the other two looms. Nevertheless the rate of discomfort varied during different times of the day.

This analysis 'per se' analysed the looms for their impact on weavers.

Conclusion:

Present study was focused on the assessment of work related body discomforts felt by the women handloom weavers.

It was evident from the study that the hotspot pain/discomfort highly perceived by loin loom weavers were in the upper and lower arm, shoulder, lower back and knee in an order, while throw shuttle loom weavers endured pain in the shoulder, lower back, eyes and knee, followed by swelling in the foot. The other group felt discomfort in the shoulder, followed by upper extremities, lower back, chest and knee.

The common body components (body parts) afflicted with pain because of weaving in all the three looms were shoulders, lower back and knee, followed by upper and lower arm extremities. It can be concluded that both the upper and lower extremities get affected (pain/discomfort) due to the posture adopted while weaving in all the three looms with lower back and knee

falling in cue. Another feature was that the sample's appendages along with the lower back suffered great impaction during performance, thus, warranting further investigation and seeking remedial measures.

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