

Original Research Article

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## Low Back Pain Assessment of Farm Women involved in Sericulture

Swapnali Borah\* and Stephanie K. Sangma

Department of Family Resource Management, College of Community Science, Central  
Agricultural University, India

\*Corresponding author

### ABSTRACT

The present study on “Low back pain assessment of Farm women involved in Sericulture” was done to assess the musculoskeletal discomforts faced by farm women who are actively involved in Sericulture industry. Low back pain is a universal experience that every human has at some point. It is a symptom of a pain that can be found between the twelfth rib and the inferior gluteal folds of the body. Sericulture is an important industry in the rural areas of Meghalaya where rural women are involved. The study was done in two villages of Samanda Block in East Garo Hills district of Meghalaya. Personal interview method was used to collect the data. While assessing low back pain in women, findings showed that most women had suffered low back pain which hindered their ability to walk, sit, stand and bend. It was also found that the intensity of pain was highest while removing worms from cocoons which require them to squat and bend for long hours. Further analysis showed that severity of pain was more in lower back in comparison to upper back. It was also found that due to low back pain 30 per cent of the farm women were affected in their sleep and 33 per cent of women were interfered by the pain in their ability to stand for long hours and 27 per cent could not stand for more than an hour in the past 2 weeks. It was also found that 23 per cent women were not able to sit comfortably in chairs and 17 per cent could not sit for more than an hour. Low back pain was also found to have interfered the farm women in their ability to walk as 47 per cent of the women could not walk for more than an hour. It was also found that low back pain had prevented some of the women from carrying out their daily activities (23%) and some women were mildly and moderately

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### Introduction

Low back pain is a universal human experience that almost everyone has at some point. The lower back, which starts just below the ribcage, is called the lumbar region. Pain here can be intense and is one of the top causes for which people are often missing their work. Low back pain (LBP) is a symptom of a pain which can be localised

between the twelfth rib and the inferior gluteal folds (low back), with or without leg pain from various causes (Krismer and Van Tulder, 2007), but is not a disease. Symptoms of low back pain can range from a dull ache to a stabbing or shooting sensation. The pain may also make it very hard to move properly or stand up straight. Acute back pain comes on suddenly, often after an injury from sports or heavy lifting. Pain that lasts for more than

three months is often considered chronic. LBP results in socio-economic losses, health and clinical problems, not only for individuals but also for countries, because LBP causes obstacles to work or work absence and increases economic burden of treatment and compensation. Low back pain is more common between the ages of 25 and 64 years [World Health Organisation (WHO), 2001], though it can occur in all age ranges. The prevalence of LBP peaks between ages 35 and 55 (Andersson, 1992). Occupational LBP is an important problem for workers. Since occupational LBP is caused by work related factors, which are physical factors (e.g. heavy physical work, manual handling, lifting, bending or twisting, vibration, awkward postures, repetitive work) and psychosocial factors (e.g. work environment, job content, job dissatisfaction, social support, personal relation) (Pope *et al.*, 1991; Andersson, 1992; Burdorf and Sorock, 1997), it can occur in various types of work settings.

Female lower back pain can be caused by various things and can vary greatly based on location. Unfortunately, female lower back is a very common phenomenon and in general, almost everyone will experience some form of back pain or back problems during their lifetime regardless of their gender.

Sericulture is the rearing of silkworms for the productions of cocoons which forms the raw material for producing raw silk. Sericulture, the production of silk worms and thus ultimately of silk fibre (Ganga and Chetty, 1991), has become a promising rural activity in India because of its minimum gestation period, minimal investment, maximum employment potential and quick turnover for investment (Kasi, 2000, 2009a and 2009b). Out of 6.39 lakh villages in India, sericulture is practised in about 69,000 villages (Central Silk Board, 2002; Geetha and Indira, 2011; Lakshmanan *et al.* 2011). Sericulture is an extremely labour intensive industry and

occupies a pivotal position from the point of providing employment and additional income to weaker sections (Best and Maier, 2007; Bhatta and Rao, 2003). Women in rural India participate in a variety of economic activities. Women have been involved in the sericulture activities in various capacities viz., worker, supervisors and supporting personnel within the family (Venkatesh *et al.*, 2010). Sericulture is a labour intensive industry in all its phases. Women are mostly favoured because of their industrious nature. They are employed in a mulberry garden or silkworm rearing or in a grainage. Coming to the post cocoon technology, the involvement of the women is greater, commencing from silk reeling, weaving and garment manufacturing industry (Dewangan, 2017).

Sericulture and weaving are the two most important eco-friendly industries in the rural areas of Meghalaya where women are extensively involved. Particularly in the districts of East Garo Hills, women farmers are largely involved in Sericulture industry along with their daily agricultural and allied activities. However, being involved in the industry means intensive bending, standing and sitting for long hours which result in severe back pain and other musculoskeletal discomforts; the importance to which this study focuses on. Large evidences indicate severity in back pain after long hours of continuous bending or sitting on surfaces without proper back rest. Therefore a study was envisaged for assessment of low back pain, impact of low back pain and its severity on farmwomen involved in sericulture activity.

## **Materials and Methods**

Thirty rural women of age group 20-50 years involved in Sericulture industry were purposely selected for the present study from two villages of Samanda Block of East Garo Hills district of Meghalaya, India. One

interview schedule was structured containing three parts viz. low back pain assessment, impact of low back pain and intensity of low back pain and used recall period of two weeks. To study the resultant chronic effects of selected activities a suitable body map was used along with interview schedule.

In order to ascertain the degree of severity of pain, a five point scale (Varghese *et al.*, 1996) as given in Table 3 was used.

### Analysis of data

Simple average, percentage, standard deviation and weighted mean scores were used to analyse collected the data for the study. Scoring techniques were used for calculating mean scores for intensity of back pain. The weighted mean score was calculated as follows:

Weighted mean Score ( $i^{\text{th}}$  factor)

$$\begin{aligned} &= \frac{\text{Total scores earned by respondents for } i^{\text{th}} \text{ factor}}{\text{Total number of respondents}} \\ &= \frac{\sum X_{ij}}{n} \end{aligned}$$

Where,

$X_{ij}$  = The score earned by the  $j^{\text{th}}$  respondent for the  $i^{\text{th}}$  factor

$n$  = Total number of respondents

$i$  = 1, 2, 3 .....k (k = number of factors)

$j$  = 1, 2, 3 ..... n

## Results and Discussion

### Low back pain assessment

Assessment of low back pain of women involved in Sericulture activity has been done and presented in the table 1. The table reveals that 53.33 percent women involved in sericulture activity have suffered pain in the

back between 1 and 5 days which is followed by 13.33 per cent who have suffered between 6 and 10 days in past two weeks. 10 per cent of women reported that there is not at all pain in last two weeks. Again it is expressed that continuous standing (66.67 %) made the pain worse which is followed by sitting (30 %).

When it was asked to the women whether any kind of activity eases their pain, 50 percent of women replied that while lying down they felt comfort which is followed by sitting down (43.33 percent). While working 36.67 per cent women feel pain in the right thigh, 33.33 per cent women feel pain in the right shin or calf and 16.67 per cent of them feel pain in right buttock and 13.33 per cent of them feel pain in the foot or ankle. The trend of suffering of pain in left leg is almost similar with the right leg.

Again it is found that 43.33 per cent women have weakness or loss of power in the right knee which is followed by 36.67 per cent have weakness or loss of power in the right hip region and 20 per cent women have weakness of loss of power in right ankle. In case of left leg 30 per cent, 50 per cent and 20 per cent women reported weakness or loss of power in hip, knee and ankle respectively. Nobody has reported any weakness or loss of power in foot of both the legs. Further analysis shows that weakness or loss of power is more in upper leg in comparison to the lower leg due to pain in lower back.

Again when it was asked to women involved in sericulture activities that, "if you were to try and bend forward without bending your knees how far down to you think you could bend before the pain stopped you", majority (53.33 percent) of women have replied that they could touch their ankles with the tips of their fingers, 30 percent reported that they could touch the floor, but 16.67 percent of women reported that they could only touch their mid thighs with the tips of their fingers.

Wani and Jaiswal (2011) reported that majority of silkworm rearers of Kashmir are suffering from health problems like injuries, back pain, allergies, respiratory problem and headache.

### **Discomfort rating while performing different activities in Sericulture**

The intensity of discomfort while performing selected activities in sericulture was assessed through scores and is shown in Table 2. The table reveals that the intensity of pain in upper back and lower back is highest while removing worms from cocoons with scores that range between severe to very severe and least when rearing the worms with scores between mild and moderate. Further analysis shows that severity of pain is more in lower back in comparison to upper back. Globally it is proved that the overall prevalence of LBP is higher in women than in men (Bailey A, 2009). Nagi *et al.*, (1973) also noted that women over 50 years of age were more likely than men to report back pain therefore it should be great concern for women worker for remedy of this LBP.

### **Impact of low back pain**

#### **Sleep affected by pain on worst nights in the past week**

Impacts of low back pain of women involved in Sericulture activity were assessed through personal interview method and is presented in graph 1. The graph reveals that 70 per cent of women did not have any problem while sleeping due to back pain whereas 30 per cent of women were prevented from sleeping by the pain.

#### **Pain interfering ability to stand in the past 2 weeks**

Graph 2 reveals that 40 per cent of women involved in sericulture activities could stand

for long hours without any pain while 33 per cent of women could stand for long hours but with pain and 27 per cent of women could not stand for more than an hour due to the pain.

#### **Pain interfering ability to sit down in the past 2 week**

When the women were asked if there was any interference in their ability to sit down, 60 per cent of women replied that they were able to sit in any chair while 23 per cent of women said that they could sit comfortably only in their favourite chairs and 17 per cent women replied that they could not sit at all for more than an hour (Graph3).

#### **Pain interfering ability to walk in the past 2 weeks**

Graph 4 reveals that 53 per cent of women were not prevented by the pain from walking any distance whereas 47 per cent of women could not walk for more than an hour due to the pain.

#### **Pain preventing from carrying out daily housework**

When the women were asked if the pain prevented them from carrying out their daily activities, 77 per cent of women replied that the pain did not affect them in their daily activities but 23 per cent women replied that because of the pain they could not perform their daily activities without suffering (Graph 5).

#### **Leisure activities affected by pain**

Graph 6 shows that 67 per cent of women were mildly affected by pain in their leisure activities while 30 per cent women were moderately affected and 3 per cent of women were not affected by pain in their leisure activities.

**Table.1** low back assessment of women involved in sericulture activities

Sl. No.	Questions	Response	Frequency (%)	Standard Deviation (SD)
1	In the past 2 weeks how many days did you suffer pain in the back or leg (s)?	None at all	10 (33.33)	16.496
		Between 1 and 5 days	16 (53.33)	26.396
		Between 6 and 10 days	4 (13.33)	6.597
		For more than 10 days	-	-
2	Is the pain made worse by any of the following?	Coughing	-	-
		Sneezing	-	-
		sitting	9 (30)	14.849
		Standing	20 (66.67)	33.00
		Bending	1 (3.33)	1.647
		walking	-	-
3	Do any of the following movements ease the pain?	Lying down	15 (50)	24.748
		Sitting down	13 (43.33)	21.446
		Standing	2 (6.67)	3.302
		walking	-	-
4	In your right leg do you have any pain in the following areas?	Pain in buttock	5 (16.67)	8.251
		Pain in the thigh	11 (36.67)	18.151
		Pain in the shin or calf	10 (33.33)	16.496
		Pain in the foot or ankle	4 (13.33)	6.597
5	In your left leg do you have any pain in the following areas?	Pain in buttock	3 (10)	4.949
		Pain in the thigh	11 (36.67)	18.151
		Pain in the shin or calf	10 (33.33)	16.496
		Pain in the foot or ankle	6 (20)	9.899
6	In your right leg do you have any weakness or loss of power in the following areas?	Hip	11 (36.67)	18.151
		Knee	13 (43.33)	21.446
		Ankle	6 (20)	9.899
		foot	-	-
7	In your left leg do you have any weakness or loss of power in the following areas?	Hip	9 (30)	14.849
		Knee	15 (50)	24.748
		Ankle	6 (20)	9.899
		foot	-	-
8	If you were to try and bend forward without bending your knees how far down to you think you could bend before the pain stopped you?	I could touch the floor.	9 (30)	14.849
		I could touch my ankles with the tips of my fingers.	16 (53.33)	26.396
		I could touch my mid thighs with the tips of my fingers.	5 (16.67)	8.251
		I could not bend forward at all.	-	-

**Table.2** Discomfort rating while performing different activities in Sericulture

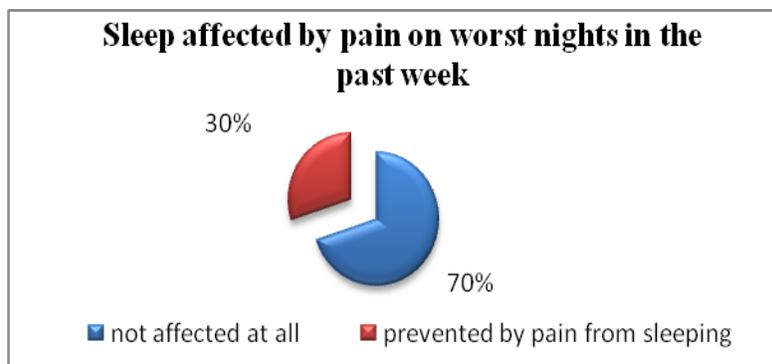
Activities	* Body part involved along with discomfort rating		Sum of discomfort rating	Average pain rating
	Upper Back	Lower Back		
Rearing	2.76	2.67	5.43	2.716
Removing of worm from cocoons	4.53	4.6	9.13	4.567
Reeling	3.6	4.5	8.1	4.05

\*Discomfort rating: Very Mild – 1, Mild –2, Moderate– 3, Severe – 4, Very Severe – 5

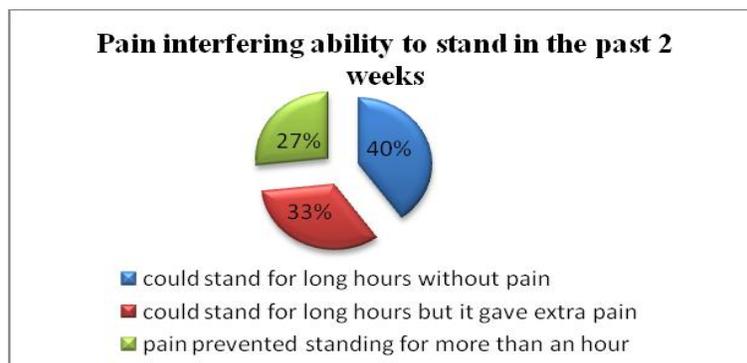
**Table.3** Five point scale to ascertain the degree of severity of pain

Score	Intensity of pain
5	Very severe
4	Severe
3	Moderate
2	Mild
1	Very mild

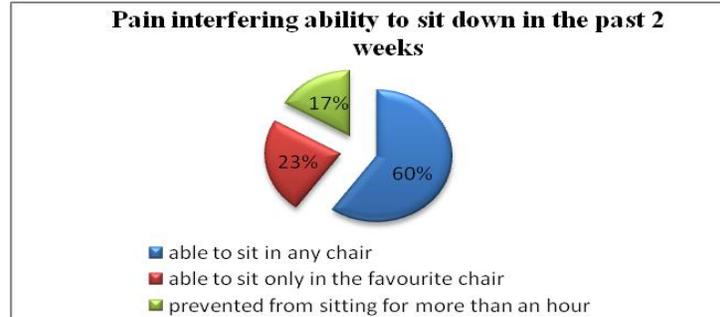
**Graph.1** Sleep affected by pain on worst nights in the past week



**Graph.2** Pain interfering ability to stand in the past 2 weeks



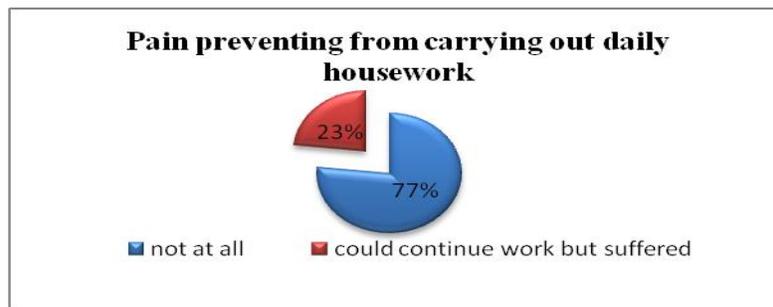
**Graph.3** Pain interfering ability to sit down in the past 2 weeks



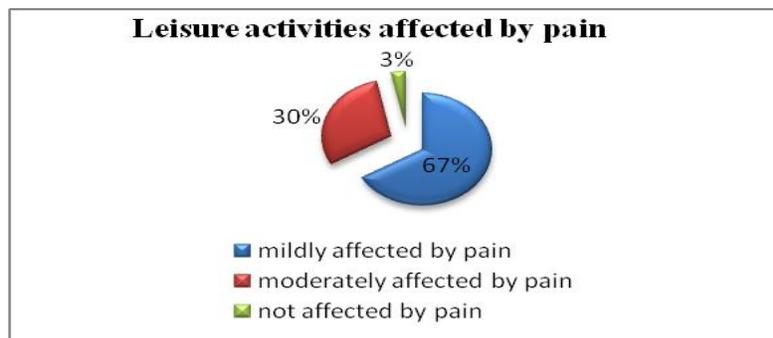
**Graph.4** Pain interfering ability to walk in the past 2 weeks



**Graph.5** Pain preventing from carrying out daily housework



**Graph.6** Leisure activities affected by pain



Out of all 291 conditions studied in the Global Burden of Disease 2010 Study, LBP ranked highest in terms of disability and sixth in terms of overall burden. The global point prevalence of LBP was 9.4 percent. Disability-adjusted life years increased from 58.2 million in 1990 to 83.0M in 2010. Prevalence and burden increased with age (Damian Hoy *et al.*, 2013). In Africa the mean LBP prevalence among adult was 32 percent, average one year prevalence among adult was 50 percent and average lifetime prevalence of LBP among adult was 62 percent (Quinette A Louw *et al.*, 2007).

The present study is consistent with the study done in two districts of Maharashtra by Sanadi and Jadhav (2016) where they found that most of the workers from both pre-cocoon and post-cocoon technology in sericulture industry complained musculoskeletal discomforts like hand pain, shoulder pain, neck pain, back pain, etc.

In conclusion, after assessment of low back pain of farm women involved in Sericulture activity, it is found that one third women worker have suffered from low back pain arising from ergonomic exposure at work which is an important cause of disability. There may be also cultural differences in the pain perception or reporting, with some ethnic minorities having the attitude that pain is to be endured without complaint (Manchikanti, 2009) Therefore there is an urgent need for further research to better understand of low back pain of women involved in Sericulture industry.

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