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Research Paper

Dehusking of paddy – A myth of hill women

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■ **ABSTRACT :** Hilly tribal women of Meghalaya are very far from technological advancement. They have to perform tedious, time and labour intensive work for their livelihood resulting in drudgery. The study was conducted to determine the physical exertion and musculo-skeletal problems perceived by hilly Garo tribal women of Meghalaya involved in dehusking activity to cater their family members. The sample included forty tribal women of West Garo Hill of Meghalaya within the age group of 21 – 50 yrs. having the average BMI of 20.12 which is in normal range. Rating of feeling of physical exertion and musculo-skeletal problems were studied by using Rating scales, and Weighted mean score was used to analyze the collected data. The study revealed that the perceived workload of the activity by the tribal women was very heavy and also they felt "severe to very severe" pain in upper and lower back, arms, finger, wrist etc. which are the high risk factor for musculo-skeletal problem in their later life.

■ **KEY WORDS :** Perceived exertion, Musculo-skeletal disorders, Dehusking of paddy, Women drudgery

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Women are nucleus of family and all kinds of society. They play a vital role in the socio-economic development of any nation. Rural women are critical to the well being of farm households, as they play a vital role both in the management of domestic work as well as farm related work. They work for 14 to 16 hours a day in trying to balance competitive demands in agriculture production, household focused activities and income generation (Gordon *et al*., 2002). Women comprise 50 per cent of the population, contribute 75 per cent work hours, and receive 10 per cent income and 1 per cent share in property.

In India, nearly 75 per cent of the women hail from rural areas where the impact of Science and Technology on daily life is limited (Grover and Grover, 2004). The contribution of women both in agricultural and household activities have been rendered invisible due to under enumerated statistical data base in economic surveys and not accounting her productive household tasks in the System of National Accounting used for estimating the Gross Domestic Product.

The study of home making work is almost an entirely neglected area of study, yet the job of homemaking encompasses a core of activities essential to our existence. The work they do is back breaking, time consuming, arduous, monotonous, repetitive, manual and within economic return.

Rice is staple food of Garo tribal of Meghalaya. Rural women are doing the dehusking of rice to cater their family members in their traditional wooden pound manually as the pounding mill is very far from rural areas. Based on above consideration, the study was envisaged to determine the physical exertion and intensity of musculo-skeletal problems perceived by the tribal farm women while doing the activity of dehusking of paddy in hilly areas of Meghalaya where technological advancement is still far from their livelihood.

■ RESEARCH METHODS

The study was conducted in four villages of Rongram block of West Garo Hills of Meghalaya. Forty tribal farm women of two age groups (twenty from age group of 21 – 35 years and twenty from 36-50 years), involved in the activity of dehusking of paddy (pounding and winnowing) were selected for the study.

Details of selected household activities :

A questionnaire was developed to know in details about the selected activities which include frequency of doing the activity, needed time, mode of activity etc.

Measurement of rated perceived exertion :

Subjective rating of feeling of tiredness was studied in split up stages *viz*., spreading of paddy for sun drying, collection of paddy, pounding and winnowing (Phase I) and also in complete cycle of the activity (Phase II) by using a 5 point scale.

Determination of musculo-skeletal problems :

Musculo-skeletal problems during the performance of dehusking of paddy were recorded from intensity of pains in different parts of the body. The details of this parameter are given as under.

To study the resultant chronic effects of selected activities, a suitable body map was used along with questionnaire. The questionnaire was divided in four sections, covering the following regions of the body for measuring the intensity of pain :

–Back: The upper and lower back

–Upper extremity: Head, neck, eyes, chest, upper arm and lower arm

–Lower extremity: Thigh and legs, buttock, calf muscle, feet

–Joints: Shoulder, elbow, wrist, knee and ankle.

In order to ascertain the degree of severity of pain, a five point scale was used.

Analysis of data :

Simple percentages and weighted mean scores were used to analyze the collected data during the experiment. Scoring technique was used for calculating mean score for perceived exertion and intensity of body pain. It was measured on a five point continuum scale and scores of 1, 2, 3, 4 and 5 were awarded indicating very light, light, moderately heavy, heavy and very heavy for perceived exertion and very mild, mild, moderate, severe and very severe for intensity of pain in various parts of the body, respectively. The weighted mean scores were calculated as follows:

$$\text{Weighted mean score } (i^{th}\text{factor}) = \frac{\text{Total scores earned by respondents for } i^{th}\text{factor}}{\text{Total number of respondents}}$$

$$= \frac{\sum xij}{n}$$

where,

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

n = Total number of respondents

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

j = 1, 2, 3 …….. n

■ RESEARCH FINDINGS AND DISCUSSION

Assessment of the physical characteristics showed that the mean age of the rural women who have involved in the activity of dehusking of paddy was 36.5 years having weight and height as 48.05 kg and 154.55 cm, respectively. Body mass index, which is an important indicator of energy adequacy, was on an average (20.12 kg/m) which can be said to be of normal BMI (Table 1).

Table 1 : Physical characteristics of rural women involved in dehusking activity

Parameter	Age group		
	21 – 35 yrs (n = 20)	36 – 50 yrs (n = 20)	Total (21-50yrs) (n=40)
Age (yrs)	30	43	36.5
Weight (kg)	47.1	49.0	48.05
Height (cm)	154.3	154.8	154.55
BMI (kg/m)	19.78	20.05	20.12

The activity of dehusking was studied in details. Table 2 shows that the frequency of doing work was once in a week for all rural women. It was also observed that for the activity of dehusking, 90 per cent of rural women required 4-6 hours and 10 per cent of them required 6 hours and above. All the rural women followed same steps for dehusking such as spread of paddy for sun drying, collected dried paddy, pounding and winnowing. While studying the mode of activity, it was found that all farm women worked individually not in group for whole process of dehusking of rice for their family.

Table 2: Details of dehusking (pounding and sieving) of rice

Parameter	Age group					
	21 – 35 yrs (n = 20)		36 – 50 yrs (n = 20)		Total (21-50yrs) (n=40)	
	f	%	f	%	f	%
Frequency of doing work						
Twice in a week	-	-	-	-	-	-
Once in a week	20	100	20	100	40	100
Once in fortnightly	-	-	-	-	-	-
Needed time						
4-6 hrs	18	90	12	60	30	75
6 hrs and above	02	10	08	40	10	25
Mode of activity						
Individual	20	100	20	100	40	100
Group	-	-	-	-	-	-

Perceived exertion of rural women while doing dehusking operation was calculated by giving weight to the

average mean score and results are presented in Table 3. It was reported that while doing the activity of spreading of paddy for sun drying, the rural women felt that the activity of collecting of paddy was "light to moderately heavy". But while doing the pounding, the rural women reported that they perceived the activity as "very heavy" for them, as this activity required lots of energy as well as they have to adopt standing and bending posture frequently. But winnowing activity was considered by them as heavy to very heavy. In case of complete cycle starting from sun drying of paddy to winnowing was perceived by farm women as very heavy. The winnowing activity was considered by them as heavy to very heavy. But in the complete cycle starting from sun drying of paddy to winnowing, was perceived by farm women as very heavy. These manual activities use human energy in two ways: they are arduous and time consuming. Different postural stresses were imposed on farm women during different phases of their work. Momin (2004) also reported that tribal women suffer physical drudgery in various operations in Jhum including dehusking, shelling, pounding, grinding of cereals and pulses by hand etc.

Table 3 : Rated perceived exertion of women for dehusking of rice

Steps studied	Age group (21 – 35 yrs) n=20	Age group (36 – 45 yrs) n=20	Total
Phase I			
Spreading of paddy for sun drying	1.05	1.9	1.475
Collection of paddy	2.3	2.3	2.3
Pounding	5	5	5
Winnowing	4	4.8	4.4
Phase II			
Complete cycle	5	5	5

The mean scores of intensity of pain in different parts of the body while doing the activity of dehusking of paddy in a complete cycle are presented in Table 4. It is revealed that the rural women experienced severe to very severe pain in their upper back and very severe pain in lower back while doing the activity of dehusking of rice, as they have to do the activity of pounding and during the pounding they have to adopt awkward posture like standing and bending posture frequently for long time which is responsible for severe pain in both upper and lower back. Lower back is the most susceptible part of the body. Various musculo-skeletal disorders may be caused due to the bad work postures for an applicable amount of time. Oberoi *et al.* (1999), Zend *et al.* (2001) and Borah and Oberoi (2006) also found major incidences of musculo-skeletal complaints among farm women related to abnormal working posture. In case of upper extremity also, the rural women felt severe to very severe pain in upper arm and severe pain in lower arm, it may be because they have to do pounding by hand using a traditional tool namely "*chaam-rimol*". In case of joints also, the rural women experienced severe to very severe pain in case of shoulder which may be because they have to lift up and down the "*rimol*" (round heavy wooden rod) and they also felt severe to very severe pain in finger as they have to hold the "*rimol*" tightly for long time. In the year 2007, Maiti *et al.* studied the musculo-skeletal disorders and postural stress in post harvesting jobs where women are involved and reported that workers suffered from low back problem, neck problem, shoulder problem and wrist or hand problem in different phases of post harvesting jobs.

Table 4 : Intensity of pain in the body while doing the dehusking of rice

Parts of the body	Age group (21-35 yrs) n=20	Age group (36-45 yrs) n=20	Total
Back			
Upper back	4.2	4.65	4.425
Lower back	5	5	5
Upper extremity			
Head	No pain	No pain	No pain
Neck	No pain	No pain	No pain
Eyes	No pain	No pain	No pain
Chest	2.8	3.1	2.6
Upper arm	4.6	5	4.8
Lower arm	5	5	5
Lower extremity			
Thigh	2.25	3.9	3.35
Legs	2.9	3.7	3.3
Buttock	No pain	No pain	No pain
Calf muscle	No pain	No pain	No pain
Feet	1.65	1.65	1.65
Joints			
Shoulder	4.45	4.95	4.7
Elbow	1.65	2.6	2.12
Wrist	4.3	4.6	4.45
Knee	2.8	3.9	3.35
Ankle	No pain	No pain	No pain
Fingers	4.65	4.95	4.8

Conclusion :

Tribal women of Meghalaya share abundant responsibilities to perform various duties both in the home and outside. They do dehusking of paddy to cater their family members. This activity is perceived by themselves as very heavy and while working they have complained of severe to very severe pain in different parts of their body which may further lead to many musculo-skeletal disorders in their later

life. Therefore, it is an area for further in detailed study so that some techniques and technologies can be developed to minimize their drudgery.

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