

Assessment of drudgery experience of rural women while performing different farm operations

■ **Sharambir Kaur Bal**, Shivani Sharma and Harpinder Kaur

Department of Family Resource Management, College of Home Science, Punjab Agricultural University, LUDHIANA (PUNJAB) INDIA (Email : balsharanbir@yahoo.co.in)

ARTICLE INFO:

Received : 11.01.2013
Revised : 20.04.2013
Accepted : 20.05.2013

KEY WORDS:

Drudgery, Ovako work assessment system, Cardiac strain index deviation

HOW TO CITE THIS ARTICLE :

Bal, Sharambir Kaur, Sharma, Shivani and Kaur, Harpinder (2013). Assessment of drudgery experience of rural women while performing different farm operations, *Adv. Res. J. Soc. Sci.*, 4 (1) : 68 - 71.

ABSTRACT

Women share abundant responsibilities to perform wide spectrum of duties both in the home and outside but their participation is considered normal by the society. They are extensively involved in various farm operations like transplanting, weeding, harvesting, processing, marketing and selling of food grains, fruits and vegetables etc. These tasks not only demand considerable time and energy but also are sources of drudgery. Drudgery is generally conceived as physical and mental strain, agony, monotony and hardship experienced by farm women while performing these farm operations. The drudgery prone condition leads to various health and mechanical hazards which creates physical exhaustion fatigue and low productivity. Though various tools and equipment are available for these activities but maximum of them are designed according to requirement of men. This would require the introduction and adoption of drudgery reducing farm technologies to alleviate the sufferings of women in farm operations and to enable them to participate more energetically and enthusiastically. Therefore, All India Co-ordinated research project on Home Science- FRM Component monitored various drudgery related factors which can be used for assessing the health of the farm women. For this purpose, 75 farm women were selected from five different villages of Ludhiana district. The introduced tools were maize sheller, improved sickle and ring cutter. The parameters for assessment of drudgery experience were drudgery scores, Ovako Work Assessment System, Cardiac Strain Index and Angle of Deviation. The results showed significant reduction in these parameters when improved tools were used as compared to traditional tools.

INTRODUCTION

Rural women play a major role in shaping the country's economy through their active participation in agriculture. About 60% of agricultural operations like transplanting, weeding, harvesting, storage of food grains are handled exclusively by women while in other jobs they share the work with men. While performing these activities, the women work continuously in awkward and difficult postures. Consequently they suffer from pain and discomfort in different parts of their body which lead to drudgery. So, availability of women friendly tools and equipment is very crucial for women to carry out the farm activities efficiently and without much drudgery for which, the major step in the present time is to modify the design of old technology which can help to reduce their drudgery and

increase work efficiency. Keeping in view the above criteria, an attempt has been made under All India Coordinated Research Project (AICRP, 2008-09) on Home Science of Indian Council of Agricultural Research (ICAR), New Delhi to assess the drudgery related factors of rural women while performing different farm operations with old and new improved technology.

METHODS

A sample of 75 rural women, fifteen each from five adopted villages of Ludhiana district for vegetable plucking, maize shelling and fodder cutting activity, who were in the age group of 21-35 years were taken to assess the drudgery experiences in these farm operations. The improved tools introduced were

Ring cutter for vegetable plucking, Maize sheller for shelling of maize and improved sickle for fodder cutting.



Ergonomic assessment (Oberoi and Singh, 2007) of these activities was done with the following parameters:

Postural analysis:

Postural analysis of the lumbar sacral region during the performance of the activity was measured with the help of flexi curve. The angle of bend of the back during the performance of the activity was measured and compared with the normal bend of the back and the angle of deviation was determined by subtracting the normal angle of bend from the angle of bend during the bending posture by using the following standard formula:

Required angle = $\angle x$
 Measured angle = $\angle y$
 Required angle ($\angle x$) = $360^\circ - \angle y$

OWAS : By using standard work sheet

Achieving at Grand Score to identify the action level

Back	1	2	3	4	5	6	7	Legs
1	1	1	1	1	1	1	1	1
2	1	1	1	1	1	1	1	1
3	1	1	1	1	1	1	1	1
4	1	1	1	1	1	1	1	1
5	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1
7	1	1	1	1	1	1	1	1

Action categories:
 1 no corrective measures
 2 corrective measures in the near future
 3 corrective measures as soon as possible
 4 corrective measures immediately

Cardiac strain index (CSI) = $\frac{\text{Working heart rate} - \text{Resting heart rate}}{\text{HR maximum} - \text{Resting HR}} \times 100$

HR max. = 220 – Age of the worker

Parameters used to assess the drudgery experiences:

Following six parameters were used on five point scale with 1 score for minimum and 5 for maximum :

- Rating on work demand.
- Rating on feeling of exhaustion.
- Rating on posture assumed in work.
- Rating on manual loads operatives.
- Rating on difficulty perception.
- Rating on work load perception.

Drudgery experiences :

- Very demanding (5), demanding (4), moderate (3), less demanding (2), very less demanding (1).
- Very exhausted (5) exhausted (4), moderately exhausted (3), mildly exhausted (2), No exhaustion (1).
- Very painful (5), painful (4), moderately painful (3), mild pain (2), no pain (1).
- Very heavy loads (5), heavy loads (4), moderately heavy loads (3), light loads (2), no loads (1).
- Very difficult (5), difficult (4), moderately difficult (3), easy (2), very easy (1).
- Very heavy (5), heavy (4), moderately heavy (3), light (2), very light (1).

OBSERVATIONS AND ANALYSIS

The results obtained from the present study are summarized below according to objectives of the study:

Ergonomic assessment of technologies:

Under the objective of Ergonomic assessment of technology intervention, evaluation of three technologies namely, Ring cutter, Maize sheller and Improved sickle for vegetable plucking, maize shelling and fodder cutting was done by using the parameters like OWAS, cardiac strain index and angle of deviation. The scores for each of the parameters were calculated by using both traditional and improved tool which were again compared. The results of above assessment have been discussed below.

Table 1 shows the scores that were calculated for each of the parameters by using both traditional and improved tools and percentage change was also calculated. It was found that regarding OWAS the scores were reduced when improved tool like maize sheller was used due to improved posture from standing to sitting. However, no postural change was observed while the activities were performed with other two tools.

As far as Cardiac Strain Index is concerned, it was observed that by using tools *i.e.* maize sheller, improved sickle and ring

	OWAS			C.S.I.			Angle of deviation		
	T	I	C	T	I	C	T	I	C
*Ring cutter	** 3	3	0	43.7	42	3.89	17	17	-
Maize sheller	3	2	1	49.5	24.1	51.31	16	15	1
Sickles	** 2	2	0	26.3	25	4.94	18	18	-

*Output increased by 20% after using the improved tool.

**3- Corrective measures as soon as possible.

**2- Corrective measure in the near future.

cutter, CSI was reduced significantly when compared with traditional tools. The work efficiency of the users also increased with the use of improved tools due to the reason that less efforts were required when above farm operations were performed with these improved tools.

Angle of deviation was another parameter on which both traditional and improved tools were compared. In case of improved sickle and ring cutter since there was no change in posture, no change was observed in angle of deviation. By using maize sheller, change of only 1 degree was observed

when compared with traditional method of shelling the maize due to change of posture from standing to sitting. It is important to mention that by using improved tools like ring cutter an increase of 20% in output level was observed as compared to traditional tool/method for vegetable plucking.

Assessment of drudgery experiences:

Drudgery experiences were calculated and compared (Table 2, 3 and 4) for each of the activities on the basis of scores gained on different parameters like feeling of exhaustion,

Technology	Drudgery experience	Conventional tool/ practice	Improved technology available	Improved – conventional / Conventional x100
Ring cutter	Rating on work demand (Score 1-5)	3	2	33.3
	Rating on feeling of exhaustion (Score 1-5)	4	2	50
	Rating on posture assumed in work (Score 1-5)	4	4	-
	Rating on manual loads operatives (Score 1-5)	4	2	50
	Rating on difficulty perception (1-5)	4	1	75
	Rating on work load perception (1-5)	4	1	75
	Total		23	12

Technology	Drudgery experience	Conventional tool/ practice	Improved technology available	Improved – conventional / conventional x100
Maize sheller	Rating on work demand (Score 1-5)	4	2	50
	Rating on feeling of exhaustion (Score 1-5)	5	2	60
	Rating on posture assumed in work (Score 1-5)	4	1	75
	Rating on manual loads operatives (Score 1-5)	3	1	66.6
	Rating on difficulty perception (1-5)	4	1	75
	Rating on work load perception (1-5)	4	1	75
	Total		24	8

Technology	Drudgery experience	Conventional tool/ practice	Improved technology available	Improved – conventional / conventional x100
Improved sickle	Rating on work demand (Score 1-5)	3	2	33.3
	Rating on feeling of exhaustion (Score 1-5)	4	2	50
	Rating on posture assumed in work (Score 1-5)	4	4	-
	Rating on manual loads operatives (Score 1-5)	4	3	25
	Rating on difficulty perception(1-5)	4	1	75
	Rating on work load perception (1-5)	4	2	50
	Total		23	14

posture assumed, perception on manual loads operative, difficulty faced and work load perception. The scores were given from 1-5 indicating very painful/difficult/demanding to no pain/very easy/very less demanding. There was significant reduction in drudgery experiences regarding all the parameters, when improved technology *i.e.* ring cutter, maize and improved sickles were used. Drudgery experiences regarding difficulty perception and work load perception, the reduction was more as compared to other parameters. This may be due to the reason that as low efforts were required to perform all the activities with improved tools work efficiency of the users increases and in case of improved ring cutter the output was also increased by 20% as ring cutter was used in finger resulting in increased holding capacity of hand.

To promote these technologies, different training programmes were conducted in all the five adopted village to create awareness of three selected drudgery reducing tools *i.e.* ring cutter, maize sheller and improved sickle. The target group were made aware of the facts that by using these drudgery

reducing tools, their physiological stress can be reduced to a great extent.

REFERENCES

- AICRP (2008-2009). All India Coordinated Research Project on Home Science - FRM component. *Annual Report of PAU Centre*, Punjab Agricultural University, Ludhiana (PUNJAB) INDIA.
- AICRP (2009). A Trainers Training Module on Drudgery Reducing Technology Interventions for women in Agriculture. Technical /module /FRM/2009. Family Resource Management, All India Coordinated Research Project in Home Science.
- Oberoi, K. and Singh, S. (2007). Methodologies for assessment of ergonomic cost of work. In: *Ergonomics interventions for health and productivity*. Himanshu Publications, Udaipur (RAJASTHAN) pp. 40-66.
- Varghese, M.A., Saha, P.N. and Atreya, N. (1995). Rapid Appraisal of Occupational Workload from a Modified scale of Perceived Exertion. *Ergonomics*, **37** : 485-491.

2nd
4th Year
★★★★★ of Excellence ★★★★★