

To study on the extent of hand pain experienced and risky postures adopted by rural women working with sickle

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Abstract: It is believed by some of the historians that it was women who have first initiated farming by domesticating crop plants. While men went out hunting, women started gathering the seeds of plants and began cultivating them to meet the fibre and fuel needs. When the hunting was reduced and the agricultural industry increased that the males occupied some of the agriculture activities and controlled the finances. Women still participate equally and sometimes solely in crop selection to land preparation, seed selection, planting, weeding and harvesting. Yet women were not given due importance in developing agriculture technologies suitable for them. Women put in labour not only in terms of physical output but also in terms of quantity and efficiency, so they are critical to farm households. There are few studies found on the present problem. Studies suggest that some of the occupational health hazards of farm women include cuts, wounds and injuries, allergy, skin and eye irritation, swollen and sore hands and feet, chest congestion and breathing problems, body ache, sun stroke, physical tiredness, fatigue and exhaustion. A national health interview survey reported that agriculture and forestry are most likely exposed to all types of musculoskeletal injuries and hazards. To bring the women in light a study was done on women using sickle while harvesting in Anand district.

Key words: Rural farm women, postures, fatigue, pain intensity of hand

1. Introduction

Women put in labor not in terms of physical output but also in terms of quality and efficiency so are critical to wellbeing of farm households. Apart from raising children, women are expected to prepare meals, maintain home, attend to the general health of the family and assist in crop and animal production. Women are involved in all aspects of agriculture from crop selection to land preparation, seed selection, planting, weeding, harvesting. Agriculture engineering traditionally has been viewed as a male dominated technical discipline and most tools have been developed with 'men' as farmer. Women are now handling the entire agriculture operations all by themselves. Both men and women use same tools that are exclusively made for men. Weight, size and handle grip of tools are the major problem faced by women while working in farm. Whatever the reason for this neglect, the importance of developing technologies relevant to women has only recently been recognized. There are very few studies found on the present problem. To bring the women in light the investigator would like to work on this topic. The beneficiaries of the current topic are physiotherapists, orthopedics, NGO's, ergonomists, students, equipment tools.





2. Objectives:

- To identify the existing hand tools used by rural women working in farm.
- To study the type of postures adopted by the women while using sickle.
- To identify the extent of pain areas in hand of the rural women while using sickle.
- To assess the rate of perceived exertion of the respondents after the day's work with sickle.
- To examine the hands of the rural women physically for redness, corns, scraped skin, irritation etc.
- To impart suggestions for improving the working of the rural women with respect to sickle.

3. Methodology

The study was conducted in three villages Tarapur, Sojitra and Umreth of Anand District, Gujarat. List of women working in five different farms of each village was made. Randomly two women working in each farm were selected for the survey. Total 40 women were selected who are working with sickle in the farm. This study was conducted to assess the drudgery of farm women at the time of harvesting with sickle. Well prepared Performa was used for assessing the data, while collecting the data special attention was given on the selected sample size as regarding to pain area, awkward postures and analysis of comfort aspects while using sickle and observations related to it. General information like age, education, occupation, working experience, income earned was collected from each farm women. To study the type of postures adopted by women while using the hand tool sickle. the activity was analyzed and split up into 2-3 postures which they adopted while working with the sickle Photographs of those respondents while doing the activity were taken and postures were analyzed with REBA (Rapid Entire Body Assessment) sheets and very high risk postures were identified.

4. Results and Discussion

The result of the study reveals that the workers are mainly from lower income group and have no fixed source of income. Generally the families are large and live in joint families. The workers have hand to mouth existence and totally dependent on the income earned from farm work for their daily needs. It was found that sickle was used by majority of farm women.

Sr no	Tools	F (N=70)	%
1	Sickle	40	66.66
2	Pavdo	10	16.66
3	Tagaru	5	8.33
4	Kharpdi	5	8.33



Figure : 1: Distribution of respondents according to age group and education.

The age of the less than one- fifth workers are 15 to 25 years, two-fifth are 45-65years, while more than two-fifth are 25-45years. Less than one-third workers had education up to 5th standard and less than one-fifth had education between 5-10 standard while more than half of the workers were illiterate.

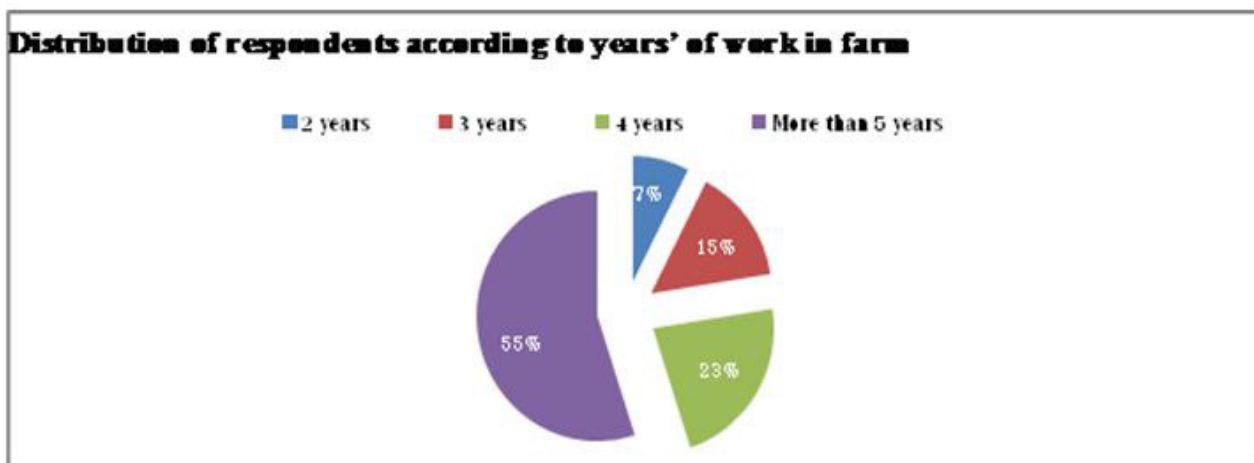


Figure : 2: Distribution of respondents according to years 'of work in farm.

Less than one tenth were working in farm since 2 years. Less than one fifth were working since three years, more than one fifth were working since four years while more than half of the women were working in the farms with sickle for more than 5 years.

Table: 2: Distribution of respondents according to comfort aspects of sickle.

Sr. No.	Comfort aspects while using sickle	Yes		No	
		F(N=40)	Percentage	F(N=40)	Percentage
01	Weight of Sickle	27	67.5	13	32.5
02	Easy Grip	27	67.5	13	32.5
03	Handle of Sickle	28	70	12	30
04	Size as per User	21	52.5	19	47.5
05	Blade Sharpened	15	37.5	25	62.5



When the respondents were inquired about the comfort aspect of the sickle in terms of weight, grip, handle, size, blade, the result revealed that more than two third workers were comfortable with weight/grip of sickle, less than three fourth workers were comfortable with handle. More than half workers were comfortable with size of the sickle. More than three fifth were not comfortable with the blade of sickle as it needs more sharpening and the reasons could be that they are so habituated to working with the same sickle every day that they don't feel the weight, grip and handle uncomfortable. Distribution of respondents according to extent of pain areas in hand. Pain in Plam (Sickle) (Refer the Poster)

Upper palm - Greater than one-third women had mild pain, less than one-third had moderate pain, and very few had severe pain while one third had no pain in distal phalanx. One-third women had mild pain or no pain in middle phalanx while less than one -fifth had moderate pain or severe pain in middle phalanx. Two- fifth women had mild pain, less than one -third had moderate pain, greater than one- tenth had severe pain while less than one fifth had no pain in proximal phalanx. Middle palm - One-third women had mild pain, greater than two-fifth had moderate pain, less than one-fifth has severe pain while less than one tenth had no pain in distal phalanx. Greater than one-third had mild pain; one-third had moderate pain, and less than one -third had severe pain while very few had no pain in proximal phalanx. Less than one fifth had mild or moderate pain, greater than three- fifth had severe pain while very few had no pain in thenar. Less than one-tenth had mild pain, less than one fifth had moderate pain, greater than seven tenth had severe pain while very few had no pain in hypothenar. Less than one-tenth had mild pain, less than one fifth had moderate pain, greater than seven tenth had severe pain while none had no pain in palmar digital. Less than one third had moderate pain, seven tenth had severe pain while none had no pain or mild pain in palmar. Lower palm - Less than one-tenth women had mild pain, one-fifth had moderate pain, seven tenth had severe pain while very few had no pain in wrist crease.

Pain intensity (hand diagram) (Refer the Poster)

Table:4: Distribution of respondents according to subjective feeling of fatigue after the days works with sickle.

Sr no	Pain assessment	F(N=40)	%
1	No pain	4	10
2	Can be ignored	15	37.5
3	Interfere with tasks	4	10
4	Interfere with concentration	15	37.5
5	Interfere with basic needs	2	5

When the respondents were asked about their level of perceived exertion working with sickle after the day's work is over the data revealed that approximately two-fifth of respondents have pain that can be ignored and other two-fifth have exer-tion which interfere in the concentration while doing any house hold work. The reason may be that they are habituated doing these job and don't feel the exertion.

Distribution of respondents according to action level (Refer the Poster)

Less than one-third of respondents had medium risk, more than half had high risk postures while less than one-fifth had very high risk postures while working with sickle. Investigation,

posture change and implement change is recommended. Observations made by investigator on the respondents while working with sickle. While workers used sickle it was observed that in case of loose blade small pieces of wood were inserted to tighten the blade. If the blade was not sharpened then the user had to apply more strength. In case of smooth handle sickle slipped due to perspiration hence handle is to be held more tightly, due to which rashes occur and corn also develops. The grip of the handle is by thumb and first finger hence pain is felt the most by these fingers. Continuous jerk is to be applied while working with sickle. As the end of the handle is held in middle of the palm it receives maximum effect of jerk. All the workers have maximum pain in middle of the palm. In place below fingers the skin may get thick and corn may develop. (Refer the Poster)

Very risky postures adopted by farm women while working with sickle. Posture Diagram (Refer the Poster)

5. Conclusion

Mostly farm women use sickle while working in farm. The most common post-ure adopted by the women while using sickle is in sitting or bending position. More than three-fourth of the sickle workers adopt squatting postures while working. One tenth workers adopt straight leg posture with bent back and neck. The farm rural women performs their dual role of working in farm and in household as well, which leads to continuous work without rest leading to fatigue Women experience mental fatigue, physical fatigue and sleep related fatigue. While working in the farm with sickle; the tool was found unfit for them especially the size and blade. The hand analysis of pain areas show that maximum pain is in the middle palm while working with sickle. When the rate of perceived exertion was assessed two fifth of the respondents pain interfere with their day to day household work. The positive analysis of the respondents with respect to using sickle in the farm displayed that 70% of the posture were risky or very risky on REBA score. The observations done at their workplace showed working with con-tinuous work and many times skin cuts, scrapes, corns in palmar region of the hand. The sickle which causes discomfort or injury should be modified. The tool (sickle) should be in proper proportion to the hand grip of the women users to maximize the work. Sickle should not create i.e. it should not demand unusual postures. Tools must be designed to increase the strength and work capacity of the women users.

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