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## Grip and pinch strength of farm women while harvesting flowers using improved ring cutter: A pre and post evaluation

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### Abstract

Flower harvesting is a labor intensive work which requires continuous physical effort. Mostly Women are found involved in harvesting activity, especially in floral crops, who use their bare hands to pick the flowers without using any protective aids. As a result of it, they encounter many skin related allergies and pain in their fingers while and after harvesting the flowers. In view of this, the present study was carried out to evaluate the grip and pinch strength of farm women fingers before and after using ring cutter to harvest flowers. A sample of 30 farm women was selected for the study, who was involved in harvesting of chrysanthemum flowers with minimum of 10 years of work experience. The results revealed that improved ring cutter not only improved the grip and pinch strength of the fingers by reducing the discomfort and also by avoiding the injuries that were caused while harvesting flowers. Therefore, use of improved ring cutter technology in while harvesting chrysanthemum flowers has not only improved the strength, thereby increased the efficiency of the farm women worker.

**Keywords:** grip, pinch strength, farm women, ring cutter

### Introduction

Indian rural women are extensively involved in performing agricultural works where the percentage of women who rely on agriculture for a living is as high as 84 per cent. Women work longer and harder than men though they are paid less (Shanabanu H., *et al.*, 2019) <sup>[1]</sup>. However, the farm mechanization has rapid increase and the operations performed by men are mostly mechanized and female still works in traditional agriculture methods. The participation of farmwomen was higher in activities like manual harvesting, weeding, transplantation, pruning, seed treatment, raising nursery, grain storage, collection of animal dung, picking of vegetables, and transportation to fields (Kumar S., *et al.*, 2018) <sup>[2]</sup>. Jobs demanding repetitive, violent, or prolonged hand exertions; frequent or heavy lifting, pushing, dragging, or hauling of large things; and extended uncomfortable postures are all examples of ergonomic risk factors. (Gandhi. S., *et al.*, 2014) <sup>[3]</sup>. Harvesting of flowers is also one of such task which is repetitive, as a result causes drudgery. Hence, farm women are given improved ring cutter for harvesting flowers and pre and post test was conducted to know the impact of intervention so as to improve their grip strength and reduce drudgery.

### Methodology

30 farm women from Southern Telangana Zone were selected as sample who was involved in flower harvesting activity for minimum of 10 years. Standardized tools were used evaluate the grip and pinch strength. Comparison was done between conventional and improved method before and after the work.

### Results

#### Comparison of grip strength of respondents while performing flower harvesting operation in conventional and improved method

Grip strength testing is the standard method used for decades to determine functional grasp strength. The tests are used initially and in periodic retests to demonstrate improvement in the strength available to grasp (Linda J. Klein, 2007).

**Table 1:** Distribution of sample by grip strength of respondents while performing flower harvesting operation in conventional and improved method (N=30)

Parameters	Conventional Method Mean+ SD		Improved Method Mean+ SD	
	Right Hand	Left Hand	Right Hand	Left Hand
Before work (sr)	23+7.1	20.6+ 4.40	24+4.49	20.2+5.11
After Work (Sw)	18.2+6.86	17.2+5.37	20.6+4.84	18.8+4.09
Percentage change in grip strength (%)	79.13	83.49	85.83	93.06

The grip strength of respondents was compared in both conventional and improved method. The data was collected before and after harvesting flowers in both methods. The data in the above Table 1, indicated that, there was difference in strength of the hand grip before and after performing the harvesting task by using both the hands. The percentage change in the grip strength of both the hands states that, the grip strength has increased when the respondents has used improved ring cutter while harvesting flowers compared to conventional method. The increase in the grip strength revealed that, the respondents did not experience discomfort with intervention (improved ring cutter) given to reduce the

drudgery while harvesting the flowers.

**Comparison of Pinch Strength of respondents while performing flower harvesting operation in conventional and improved method**

The pinch strength of respondents was studied to know the discomfort caused in fingers while harvesting flowers. The Two-point pinch (tip to tip pinch) test was done by placing pinch meter between the tip of the thumb and tip of the index finger and instructed the respondent to pinch as hard as possible.

**Table 2:** Distribution of sample by pinch strength of respondents while performing flower harvesting operation in conventional and improved method (N=30)

Parameters	Conventional Method Mean+ SD		Improved Method Mean+ SD	
	Right Hand	Left Hand	Right Hand	Left Hand
Before work (sr)	38.5+5.3	36+5.97	41+2.46	39.1+2.84
After Work (Sw)	36+5.05	35+4.40	40.5+2.56	38.5+2.65
Percentage change in pinch strength (%)	93.5	90.9	98.7	97.4

From the above Table 2, the findings indicated that in both conventional and improved method there was a change in pinch strength of fingers of the respondents. The Percentage change in pinch strength in conventional and improved

method indicated that, the improved ring cutter has proved to be reducing the discomfort caused while harvesting the flowers.



Testing Pinch strength of the farm women

Testing Grip strength of the farm women

Farm women harvesting Flowers using improved ring cutter

**Conclusion**

The farm women who were involved in harvesting were found be having drudgery while performing the task. The improved ring cutter which was given as intervention to reduce the physical strain and improve the grip and pinch strength of farm women was found efficient. Therefore, use of improved ring cutter technology in while harvesting

chrysanthemum flowers has not only improved the strength, thereby increased the efficiency of the farm women worker by avoiding the injuries that were caused while harvesting flowers.

**References**

1. Shanabanu Malek H, Sisodia SS, Vikas Kumar. A Study

- on Drudgery of Farm Women in Agricultural Activities in Udaipur District of Rajasthan, India. *Int. J Curr. Microbiol. App. Sci* 2019;8(06):1584-1589.
2. Kumar S, Srivastava AK, Mishra SB, Chaudhary RC. Reducing Drudgery of Farmwomen through Appropriate Farm Implements in Uttar Pradesh, India. *International Journal of Agriculture Sciences* 2018;10(7):5761-5764.
  3. Gandhi S, Mehta M, Dahiya R. Occupational Health Hazard in *A.esculentus* (Bhindi) Picking and Mitigating Measures. *Adv Crop Sci Tech* 2014;2:135.
  4. Linda Klein J. *Fundamentals of Hand Therapy* (Second Edition), 2014.