

An ergonomic study on traditional and modern tools used for vegetable plucking activity

■ HARPINDER KAUR AND SHIVANI SHARMA

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See end of the paper for authors' affiliations

Correspondence to :

SHIVANI SHARMA
Department of Family
Resource Management
Punjab Agricultural
University,
LUDHIANA (PUNJAB)
INDIA

E-mail: shivani.sharma6@gmail.com

■ **ABSTRACT** : Women in rural India play a major role in shaping the economy of the country. They participate in different production and post production agricultural operations. But no mechanization has been introduced for farm women dominated farm operations to reduce their drudgery at work. Therefore, under All India Coordinated Research Project (AICRP) on Home science of Indian Council of Agricultural Research, New Delhi on ergonomic evaluation of vegetable plucking activity (especially cucurbitaceous family *i.e.* Bottle Gourd, Ridge Gourd and Palmyra fruit) was done by taking 30 farm women in the age group of 21-35 years by using both traditional (ordinary knife) and improved hand tool (ring cutter). The ergonomic study was done in the vegetable fields by using Standard Ergonomic Technique by using physiological (heart rate, energy expenditure, physiological cost of work and cardiac cost of work) and muscular parameters (grip strength and musculoskeletal problems). Ergonomic assessment of both the methods showed that by using ring cutter, physiological and muscular stress of workers in terms of heart rate, energy expenditure, total cardiac cost of work, physiological cost of work and grip fatigue were reduced as compared to traditional method *i.e.* ordinary knife. Therefore, this new handy tool is found beneficial to improve work efficiency of farm women.

■ **KEY WORDS** : Ergonomic evaluation, Physiological cost of work, Muscular stress, Energy expenditure, Grip fatigue

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Rural women in developing countries like India are potentially involved in farm and allied activities. They are employed mostly in drudgery prone activities which include transplanting, weeding, harvesting, grain cleaning, storage etc (AICRP, 2009). The tools/ implements available have been primarily developed for male workers and given for use to women workers which result in less efficiency and occupational health problems. This is due to the reason that women have different physical needs than men due to their anthropometric requirements, education, experiences, skills etc. Therefore, 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)

on Home Science of Indian Council of Agricultural Research (ICAR) New Delhi to do the ergonomic study on vegetable plucking activity by using traditional tool (ordinary knife) and newly introduced modern tool (ring cutter).

■ RESEARCH METHODS

Ergonomic assessment of vegetable plucking activity (especially cucurbitaceous family *i.e.* Bottle Gourd, Ridge Gourd and Palmyra fruit) with traditional and modern hand tool was done by using standard ergonomic techniques given by (Oberoi and Singh, 2007). A sample of 30 rural women for vegetable plucking activity in the age group of 21-35 years were taken and the health status of the selected women involved in the experiment was assessed by using the following parameters given by Oberoi and Singh (2007).