
Analysis of Musculoskeletal Disorders of Agricultural Workers

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ABSTRACT

Agriculture is considered the most important sector in India. The contribution of Agriculture and allied sector in the Gross Domestic Product (GDP) of the country has reached about 14 percent in 2011-12. Agriculture is the major occupation in rural area of Madurai district. It has 1.36 lakh ha of cultivable land. About one hundred fifty samples are selected in rural area of Madurai district for the study. The mean age of the agriculture workers was 47 years (± 9.69). Majority of the workers were female (79%) and rest were male (21%). Musculoskeletal disorders (MSD) are common among agriculture workers. Analysis of the MSD's indicates that Low Back Pain (72%) was the most predominant discomfort followed by knee (70%), leg (69%) and head (62%). Further analysis of low back pain indicates that 32% of the workers faced extreme discomfort, followed by severe discomfort (34%). Thirty six percent of the workers reported extreme discomfort in knee, while 32 percent indicated severe discomforts. Extreme discomfort and severe discomfort in leg was reported by 26 percent and 35 percent respectively. These discomforts may be due to prolonged standing work and also other agriculture operation which necessitated frequent bending. Use of improved agricultural tools for varied agricultural operations may mitigate this problem. Governmental efforts are also aimed to address these issues.

Key words : Occupational health, Agriculture, Workers, Musculoskeletal disorders

INTRODUCTION

Agriculture is considered the most important industry in India. Total population of India according to census 2001 was 1.025 billion ⁽⁵⁾. Agriculture is the main occupation in India giving employment to about 58 percent of the people. The contribution of Agriculture and allied sector in the Gross Domestic Product (GDP) of the country has reached about 14 percent in 2011-12⁽¹⁾.

According to the International Labour Organization (ILO), the agricultural sector is one of the most hazardous sectors to health worldwide. Agriculture work possesses several characteristics that are risky for health: exposure to the weather, close contact with animals and plants, extensive use of chemicals and biological products, difficult working postures and lengthy hours, and use of hazardous agricultural tools and machinery⁽²⁾. Agricultural workers involve several strenuous activities like ploughing, spading, carrying, uprooting, planting, weeding, cutting, shafting, threshing, sweeping, etc⁽³⁾.

Musculoskeletal disorders are common among farmers. Farmers handle heavy workloads often in awkward posture and experiencing some work related problems. They experience high rates of low back, shoulder, hand, knee and upper extremity disorders⁽⁴⁾. Musculoskeletal problems and discomforts are among the major occupation hazards perceived by the farm workers as farming is a physically demanding occupation. This has been observed to impose a great impact on health of millions of Indian workers engaged in agriculture. Each and every activity in agriculture brings about certain stress and strain on bone and muscles causing discomforts and leading to Work Related Musculoskeletal Disorders (WMSD) which individually may not form but their cumulative effects can lead to several permanent diseases and disorders⁽⁷⁾.

Traditional tools, unergonomic work methods like working painful or awkward postures and positions heavy, repetitive and forceful work, repetition of body motion and handling of heavy loads will always lead to musculoskeletal problem and body pain among the agriculture farm workers. Agriculture workers often view pain as a normal part of work and seek care when the condition becomes severe or disabling. But such problems may represent a main cause for absence from work and may lead to considerable cost for the agriculture workers⁽⁷⁾.

METHODS

Selection of Area: Agriculture is the major occupation in rural area of Madurai district. It has 1.36 lakh of cultivable land. The rural areas of Madurai district were selected for the study. This area was chosen due to the easy accessibility and co operation rendered by the respondents.

Selection of the sample: One hundred and fifty agricultural workers from rural area in Madurai have been selected for the study by random sampling method.

Interview with the workers: A well structured and pre-tested interview schedule was prepared to collect information by direct interview. Interview schedule consisted details regarding socio economic status, occupational status and musculoskeletal disorder and recovery pattern, Information obtained through this method will be more accurate and the interviewer can clear up the doubts pertaining to certain questions. In addition to it, observation as a tool of research can also be adopted for the study.

RESULTS AND DISCUSSION

The Table-1 gives a picture of the social status of the family.

Table 1: Socio Economic Status of the Workers

Sl.No	Particulars	No. of Workers(N=150)	Percentage
1.	Age (in years)		
	<30	6	4
	31-40	35	23
	41-50	58	39
	51-60	41	27
	>60	10	7
2.	Gender		
	Male	31	21
	Female	119	79
3.	Education Status		
	Illiterate	98	6
	Primary School	25	16
	Secondary School	18	12
	High School	10	7
4.	Earner Status		
	Main Earners	62	41
	Supportive Earners	88	59
5.	Family Income(Rs)		
	<10000	104	69
	10001-20000	43	29
	>20000	3	2

Table 2 represent the work and work experience of agriculture workers.

Table 2: Work and Work Experience

Sl.No	Particulars	No. of Workers(n=150)	Percent
1.	List of Task		
	All Works	31	21
	All Work Except Ploughing	95	63
	Weeding & Transplanting	13	9
	Weeding, Transplanting & Harvesting	11	7
2.	Work Experience(in years)		
	<10	18	12
	10-20	40	27
	20-30	52	34
	30-40	24	16
	>40	10	11

The workers in the targeted population were involved in majority of works namely ploughing, irrigating, weeding, carrying, pesticide application, herbicide application, inter-cultural operation, etc. It is noted that sixty three percent or majority of the worker perform all work except ploughing, twenty one percent of the workers perform all works, nine percent of the worker were involved in weeding and transplanting and seven percent of the workers did weeding, transplanting & harvesting. Thirty four percent or majority of the worker had 20-30 years of work experience, twenty seven percent of the workers had 10-20 years, sixteen percent of the workers had 30-40 years, twelve percent of the worker had less than ten years and eleven percent of the workers had greater than 40 years of work experience. It is clear that majority of agriculture workers performed all tasks and had a work experience about 20-30 years.

Table 3 represents the tools that were used in agriculture field.

Table 3 states that twelve percent of the worker used spade in their field, eleven percent of the workers used hand hoe, ten percent of the workers used sickle, sprayer and crowbar were used by two percent of the workers and only one percent of the worker used the country plough for performing the task.

Table 3: Tools Used in agriculture operation

Sl.No	Particulars	No. of Workers(n=150)	Percentage
1.	Sickle	14	10
2.	Hand hoe	17	11
3.	Spade	18	12
4.	Sprayer	3	2
5.	Crowbar	3	2
6.	Country Plough	2	1

Table 4 gives the picture about the musculoskeletal discomfort level in agriculture workers.

Table 4: Musculoskeletal Discomforts of Agriculture Workers

Sl.No	Body Parts	Percentage of Workers(n=150)				
		ND	M.D	MoD	SD	ED
1.	Head	38	3	15	29	15
2.	Neck	66	8	5	18	3
3.	Shoulder	61	5	8	23	3
4.	Upper Back	69	1	6	18	6
5.	Lower Back	26	-	7	36	31
6.	Upper Arm	67	9	7	13	4
7.	Fore Arm	74	7	7	11	1
8.	Finger and Palm	83	5	7	4	1
9.	Thigh	87	1	1	10	1
10.	Knee	30	-	1	31	38
11.	Leg	31	1	5	36	27
12.	Foot	51	1	4	29	15

ND- No Discomfort, MD-Mild Discomfort, MoD- Moderate Discomfort, SD-Severe Discomfort, ED-Extremely severe Discomfort

Analysis of comfort indicates that agriculture workers had exposed that discomfort in lower extremities and in the low back region was high when compared with other parts. The degrees of discomforts varied from mild to extreme and almost one third of the workers report extreme discomfort in low back, knee and leg since the activities performed by these workers necessitated frequent bending and long hours of standing in the agricultural fields.

Table 5: Recovery Pattern for Extremely Severe Discomfort

Sl.No	Recovery	Low back	Knee	Leg	Foot
1.	Short break	-	-	-	1
2.	Overnight rest	1	1	1	1
3.	Medical consent	1	3	2	2
4.	Pain balm	7	5	11	7
5.	Taking pain reliving pills	3	3	4	1
6.	Medical const, pills& palm	5	7	3	1
7.	Pain balm & pills	14	19	7	3

Study conducted by Vyas and Singh (2005) also conforms the result of the present study. Since majority of the agriculture operations involves lifting, pulling, twisting and bending motions increased the rate of incidence of MSD has been reported⁽⁶⁾.

Table 5 reveals that the recovery pattern used by the agriculture workers.

The recovery pattern used by the agriculture workers for extremely severe discomfort in low back, knee, leg and foot regions. Pain balm and pills were used by fourteen percent of the

workers for low back pain, seven percent used pain balm, five percent used medical consent, pills with balm and three percent used pain relieving pills. Nineteen percent of the workers used pain balm and pills for knee discomfort, seven percent of the workers used medical consent, pills with pain palm, pain balm and pain relieving pills were used by three percent of the workers. For leg eleven percent of the workers preferred pain balms, seven percent were used pills & pain balm, four percent were used only pain relieving pills and three percent were used medical consent, pills with balm. Seven percent of the workers used pain balm for foot pain, three percent people used pain balm with pills, two percent were going for medical consent, short break, overnight rest, medical consent, pills with balm and three percent of the workers were used pain balms and pills respectively.

The major health problem among agriculture workers was musculoskeletal disorder. Farmers handle heavy workload and awkward postures which leads to musculoskeletal disorders. This can be reduced by mechanization of activities. Proactive measures such as worker education, use of appropriate hand tools for the selected operations and job rotation will help them to mitigate these discomforts.

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