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Prevalence of Musculoskeletal Disorders in Farmers of Ahmednagar District

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Abstract:

Background: *Ahmednagar is an agro based district. The farmers have to adapt to the various uncertainties like environmental changes, physical stress, psychosocial problems, type of work, etc. Work-related musculoskeletal disorders (WMSDs) are a product of acute injuries from a one-time trauma or multiple traumas. There are several studies showing that farmers have a higher risk of developing MSDs than any other group of people. However, there are hardly any studies that focus on the country's farming community, which constitutes more than 58 percent of the Indian work force. Therefore this study is being carried out to analyze the prevalence of musculoskeletal disorders in farmers.*

Aim: *To find out the prevalence of musculoskeletal disorders in farmers of Ahmednagar district.*

Method: *A study was conducted in Ahmednagar district on 100 farmers aged 30-60 years using the Nordic Musculoskeletal Questionnaire. The demographic data such as Age, Sex, Height, Weight, BMI etc. was taken for each subject and the subjects was interviewed regarding the, present and past history, occupational history, family history and surgical history if any. The data was collected by using Nordic Musculoskeletal Questionnaire in local language (Marathi).Data was recorded on assessment sheets.*

Results: *The knee joints [25%], followed by the low back region [24%] were the commonest areas affected in the subjects. The neck region [14%] and shoulders [14%] were equally affected. The elbow [3%] and wrist [5%] were the least affected areas comparatively.*

Conclusion: *From this study we can conclude that there is a high risk of developing musculoskeletal disorders in farmers especially in the knees and low back region.*

Keywords: ***Farmers, musculoskeletal disorders, Nordic musculoskeletal questionnaire.***

1. Introduction

Ahmednagar district is emerging in the co-operative movements in our country owing to its 16 sugar factories. Sugarcane, bajra and jawar are grown here in large quantities aiding its economic activities. Amongst the total population in the district, 46.27% are farmers and 22.27% are agricultural workers; hence Ahmednagar is an agro based district.[1]

The farming occupation is unique as it is not an organized sector. The farmers have to adapt to the various uncertainties like environmental changes, physical stress, psychosocial problems, type of work with respect to the crop, viruses associated with the changing weather and new forms of chemical fertilizers and insecticides, etc.[2,3,4] They are exposed to a variety of physical movements: lifting and carrying heavy loads, kneeling, working with the trunk in prolonged flexion during picking, risk of trips and falls on slippery and uneven farm ground, unexpected actions of livestock, and exposure to vibration from farm vehicles, which makes them prone towards musculoskeletal disorders[5,6,7].

Musculoskeletal disorders are injuries and disorders that affect the human body's movement or musculoskeletal system i.e. muscles, tendons, ligaments, nerves, discs, blood vessels, etc. These musculoskeletal disorders lead to pain, disability to carry out work, illness and decreased productivity[8]. Work-related musculoskeletal disorders (WMSDs) are a product of acute injuries from a one-time trauma or multiple traumas such as repetitive motion, excessive force, sustained abnormal postures, prolonged squatting and standing in the course of work[5].

There are several studies showing that farmers have a higher risk of developing MSDs than any other group of people. The farming activities lead to a number of low back disorders, knee osteoarthritis, shoulder disorders and various other cumulative trauma disorders[9]. K. Walker found that

DOI: 10.23958/ijirms/vol02-i03/12

the strongest evidence of high risk exists for osteoarthritis of hip. Various studies concluded that the farmers require better information regarding the use of health care facilities appropriately.

However, there are hardly any studies that focus on the country's farming community, which constitutes more than 58 percent of the Indian work force[2]. Therefore this study is being carried out to analyze the prevalence of musculoskeletal disorders in farmers.

2. Methodology

Study design: Observational study
Study setting: Ahmednagar district
Sample size: 100
Sampling Method: Simple random sampling
Materials:
Nordic Musculoskeletal Questionnaire
Duration of the study- 6 months
Ethical clearance: From Institutional Ethical Committee, DVVPF's College of Physiotherapy, Ahmednagar

Selection Criteria -

1) Inclusion Criteria:

- Both males and female subjects
- Age between 30 to 60 years
- Understanding local language Marathi

2) Exclusion criteria

- Part time farmers who were also doing some other job besides farming
- Subjects with congenital deformities or deformities due to fractures
- Farmers having diabetes
- Any diagnosed psychiatric illness
- Farmers who are known to have spinal fracture resulting from tumours, infections or any major trauma to the spine
- Farmers having Neurological or cardiovascular problems

PROCEDURE

- After obtaining ethical committee approval the subjects were selected based on the inclusion and exclusion criteria.
- The purpose and the procedure of the study was explained to each subject and informed consent was obtained from them. The demographic data such as Age, Sex, Height, Weight, BMI etc. was taken for each subject and the subjects was interviewed regarding the, present and past history, occupational history, family history and surgical history if any.
- The data was collected by using Nordic Musculoskeletal Questionnaire in local language (Marathi).
- Subjects were given clear cut instructions about filling the questionnaire and after that no prompting or assistance was given.
- Data was recorded on assessment sheets.

Nordic Musculoskeletal Questionnaire

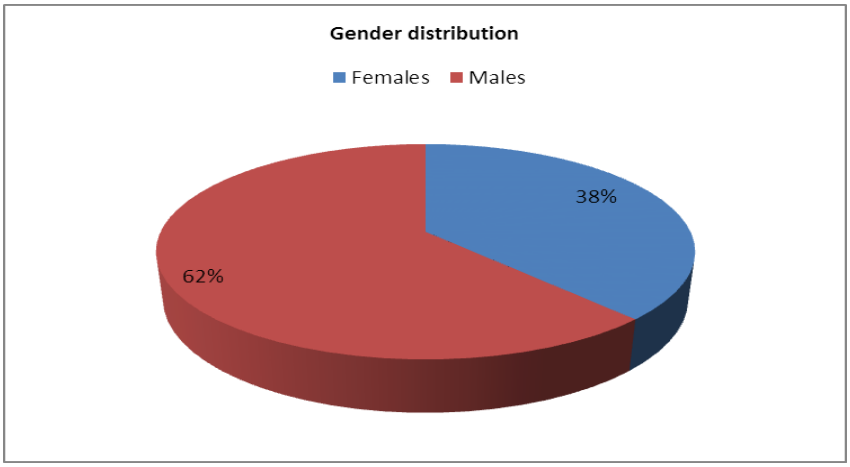
The Nordic Musculoskeletal Questionnaire is suitable for application in work places and for a large number of workers very quickly and cheaply. This questionnaire included nine body areas including neck, shoulders, back, elbows, wrist/hands, thighs, knees, and ankles. Depending on the Reponses the result was analyzed.[16]

3. Data Analysis and Graphical Representation

Table no. 1 Distribution of subjects

SR NO.	MALES	FEMALES
	62	38
PERCENTAGE %	62%	38%

GRAPH 1:



DOI: 10.23958/ijirms/vol02-i03/12

Table 2: Distribution of subjects according to BMI

BMI RANGE		FEMALES	MALES	Total
Less than 18.5	Underweight	4	5	9
18.5 to 24.9	Healthy	18	36	54
25 to 29.9	Overweight	13	18	31
30 to 34.9	Grade-1 obesity	2	3	5
35 to 39.9	Grade -2 obesity	0	0	0
More than 40	Grade -3 obesity	1		1
	Total-	38	62	100

GRAPH 2:

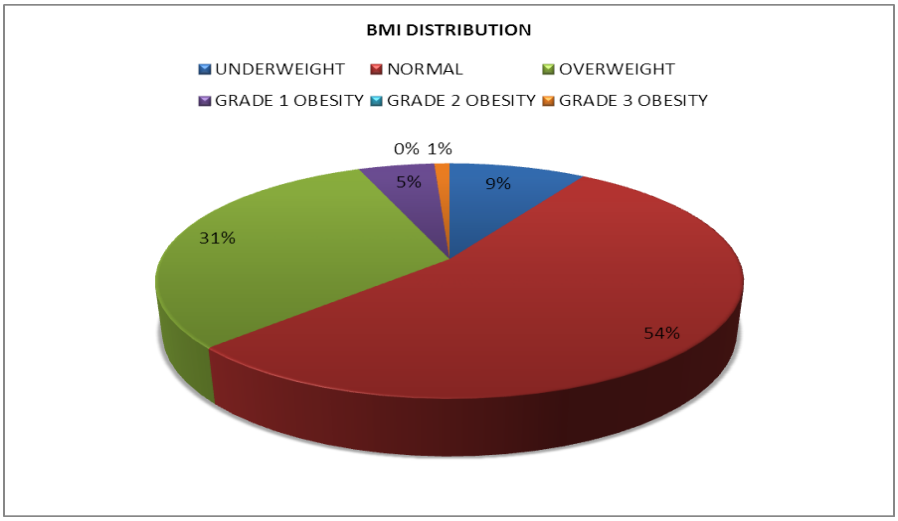
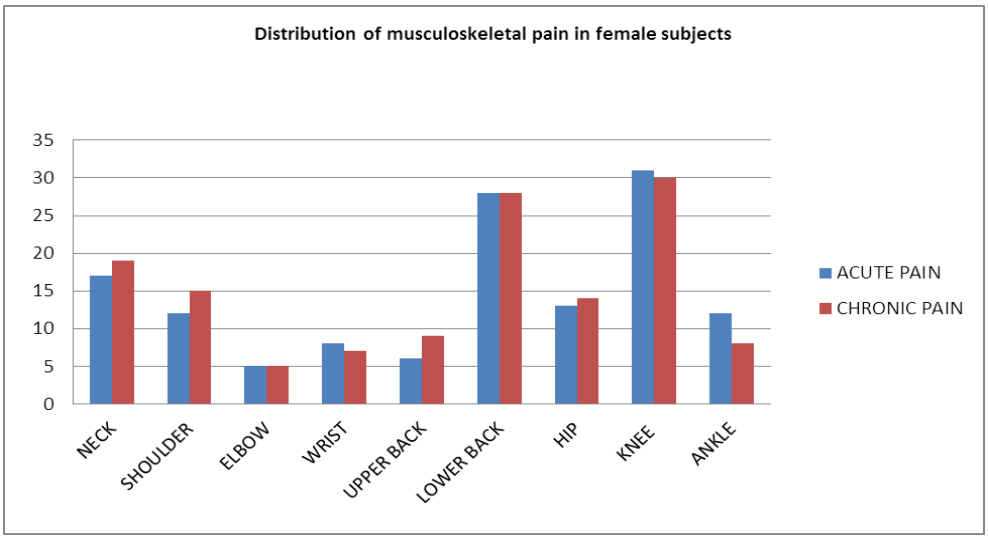


Table 3: Distribution of musculoskeletal pain in female subjects

FEMALES	ACUTE PAIN	CHRONIC PAIN
NECK	17	19
SHOULDER	12	15
ELBOW	5	5
WRIST	8	7
UPPER BACK	6	9
LOWER BACK	28	28
HIP	13	14
KNEE	31	30
ANKLE	12	8

GRAPH 3:



DOI: 10.23958/ijirms/vol02-i03/12

Table 4: Distribution of musculoskeletal pain in male subjects

MALES	ACUTE	CHRONIC
NECK	23	27
SHOULDER	29	30
ELBOW	2	4
WRIST	7	8
UPPER BACK	4	7
LOWER BACK	46	46
HIP	18	20
KNEE	45	43
ANKLE	20	19

GRAPH 4

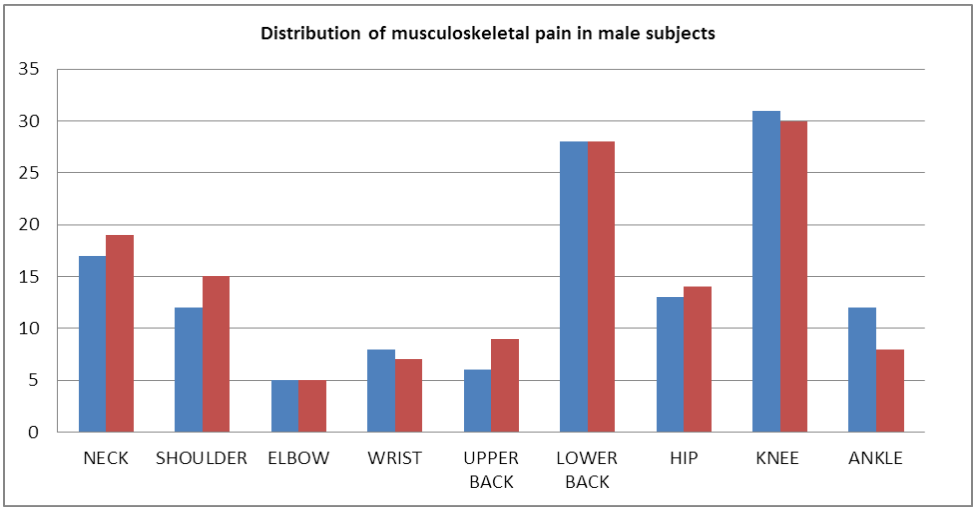
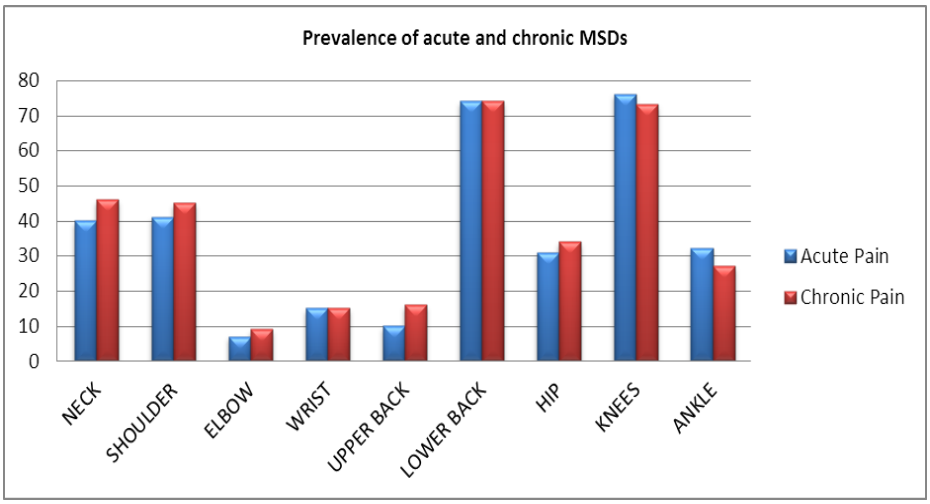


Table 5: Distribution of acute and chronic pain areas

	ACUTE	CHRONIC
NECK	40	46
SHOULDER	41	45
ELBOW	7	9
WRIST	15	15
UPPER BACK	10	16
LOWER BACK	74	74
HIP	31	34
KNEE	76	73
ANKLE	32	27

GRAPH 5:

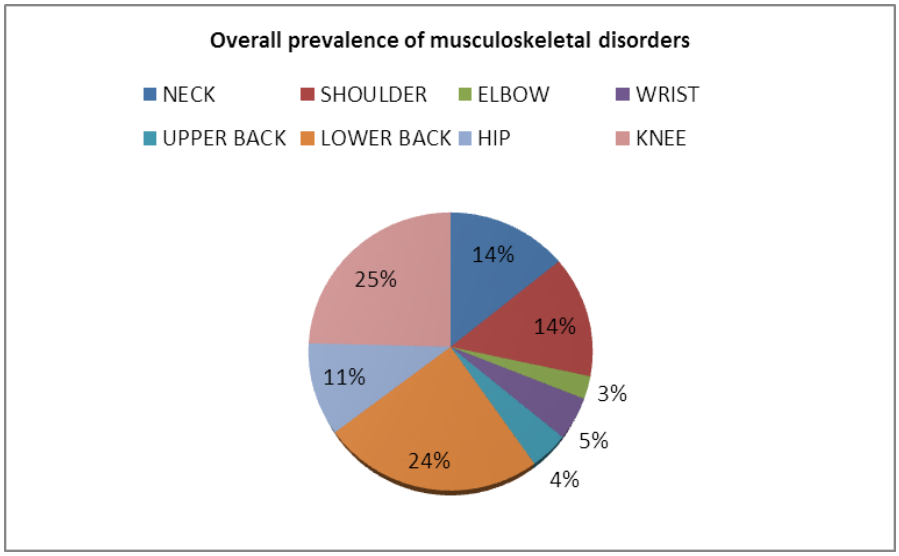


DOI: 10.23958/ijirms/vol02-i03/12

Table 6: Overall distribution of musculoskeletal disorders

SR. NO.	AREA	TOTAL NUMBER
1	NECK	86
2	SHOULDER	86
3	ELBOW	16
4	WRIST	30
5	UPPER BACK	26
6	LOWER BACK	148
7	HIP	65
8	KNEE	149
9	ANKLE	59

GRAPH 6:



4. Results

Table no. 1: Shows the gender wise distribution of subjects as males and females

Graph 1: shows the percentage of subjects, 62% are males and 38% are females

Table 2: shows classification of subjects based on BMI.

Graph 2: shows classification of subjects based on BMI in which 9 subjects were underweight, 54 were healthy , 31 were overweight ,5 had grade 1 obesity and 1 subject had grade 3 obesity.

Table 3: shows distribution of musculoskeletal pain in female subjects

Graph 3: shows distribution of musculoskeletal pain in female subjects in which firstly for the prevalence of acute pain in different parts of the body according to Nordic musculoskeletal questionnaire in females, knee pain [n=31] was a common complaint followed by low back pain [n=28] and different parts.

Secondly for the prevalence of chronic pain in different parts of the body according to nordic musculoskeletal questionnaire in females, knee pain [n=30] was a common complaint followed by low back pain [n=28] and different parts.

Table 4: shows distribution of musculoskeletal pain in male subjects

Graph 4: shows distribution of musculoskeletal pain in male subjects in which the prevalence of acute pain in different parts of the body according to Nordic musculoskeletal questionnaire in males, low back pain [n=46] was a common complaint followed by knee pain [n=45] and different parts.

The prevalence of chronic pain in different parts of the body according to Nordic musculoskeletal questionnaire in males, low back pain [n=46] was a common complaint followed by knee pain [n=43] and different parts.

Table 5: shows the distribution of acute and chronic pain areas in the subjects

Graph 5 shows the prevalence of acute and chronic MSDs. The most common MSDs in the acute stage were found to

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be in the knees, low back region followed by shoulder, neck, hips and ankle. In the chronic stage, knees, low back, neck, shoulder and hip were commonly involved. In the knees and ankle region, prevalence of acute MSDs was higher whereas in the neck, shoulder, hip and upper back there was a greater incidence of chronic MSDs.

Table 6: shows Overall distribution of musculoskeletal disorders

Graph 6: The overall prevalence of musculoskeletal disorders in farmers of Ahmednagar district is seen majorly in the knee joint followed by low back region, neck and shoulder according to Nordic musculoskeletal questionnaire.

5. Discussion

India is an agricultural country. Most of the population are engaged in farming activities. These farmers are exposed to many risky conditions like extreme temperatures, dust and situations that involve excessive bending, kneeling, squatting, twisting, carrying heavy loads, repetitive movements of the hand, etc. These are potential risk factors that lead to musculoskeletal disorders.

According to the results of our study, 76% of the farmers complained of pain in their knees and more than 70% complained of pain in their low back region. This can be attributed to their continuous and repetitive bending and twisting movements that leads to a high incidence of musculoskeletal disorders. A similar study done by Ahmadi Omran et al. also found a high incidence of back pain among the farmers[13]. In a study done by Kirkhorn et al, reported the prevalence of osteoarthritis which could be due to repetitive motion as seen in farmers.[14] Neck pain and shoulder pain were the next common complaints of the farmers. This could be due heavy weight lifting on their heads and repetitive movements that are carried out during field work. Gupta and Tarique identified four most common musculoskeletal disorders affecting the farmers in Kanpur - lower back pain (60%), knee pain (39%), shoulder pain (22%), and neck pain (10%). Knee pain can be attributed to continuous bending and squatting postures for a long time[8].

Observation of the persistence of pain it is seen that once pain in a particular part of body develops, it is bound to remain over a long time and become chronic. This basically might happen due to negligence and unavailability of proper health care facilities and lack of proper ergonomics. In our study, we found that males had a higher risk of developing musculoskeletal disorders than females. Although females reported to have a higher incidence of wrist pain than males. This can be due high repetitive motion, abnormal postures and technique, use of heavy tools, etc.[15]

Improving the work conditions for the farmers will help to reduce the potential dangers of the environment. There is a need of appropriate health care services and ergonomic lessons for the farmers to reduce their risk of developing musculoskeletal disorders.

6. Conclusion

From this study we can conclude that there is a high risk of developing musculoskeletal disorders in farmers especially in the knees and low back region.

7. Reference

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