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RESEARCH ARTICLE
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A STUDY OF PREVALENCE OF MUSCULOSKELETAL PAIN AMONG FARMERS DOING IRRIGATED LAND FARMING.

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ABSTRACT

Background Musculoskeletal pain among Farmers is very common. Prevalence of commonly affecting region in farmers is low back pain that is very high. Farmers being physically laborious occupation contribute to occurance of Musculoskeletal pain. **Study Design:** Cross sectional **Method:** In this observational study, one hundred and forty-six Farmers were included Age 20 years to 35 years were included. Farmers were given the Modified Nordic Pain Questionnarie. Here the participants were asked if they had experience any Musculoskeletal pain discomfort of any joint in the body which prevent them in performing normal activity during the past 12 months or for short and temporary period of 7 days. **Result:** In our study we found that the prevalence of musculoskeletal pain among the farmers doing irridated land farming were as follows Neck Pain was present in 45.89% (67 participant), Shoulder Pain was present in 23.97% (35 participant), Upper Back Pain was present in 28.77% (42 participant), Elbow Pain was present in 32.19% (47 participant), Wrist / Hand Pain was present in 31.51 % (46 participant) , Low Back Pain was present in 83.56% (122 participant), Low Back Pain Pain was present in 97.95 % (143 participant), Knee Pain was present in 47.95% (70 participant), Ankle and Feet Pain was present in 40.41% (59 participant).The prevalence of Low Back Pain was more than other regions which was commonly affect by the farmers dpoing irrigated land farming. **Conclusion:** The study of Prevalence of musculoskeletal pain among farmers doing irrigated land farming of age between 20 to 35years reveals, that there is higher prevalence of Musculoskeletal pain in low back region. Low Back Region plays crucial role in farmers doing irrigated land farming as the method of cultivating the crops requires more bending leading to static weight loading. Hence it is necessary to avoid the further risk of musculoskeletal condition which may be affect quality of life.

Keywords: Musculoskeletal pain, Farmers doing irrigated land farming, Low Back Pain

INTRODUCTION

Work Related Musculoskeletal Pain can be caused not only by musculoskeletal injuries but also by various forms of environmental exposure. Farmers are at great risk of such work related musculoskeletal pain due lot of bending, twisting and physically laborious occupation they are great significant to undergo injuries which leads to Low Back Pain, Neck Pain, Shoulder pain Elbow Pain, Wrist Pain, Knee Pain etc. [1] Kolhapur is an agriculturally developing district here cultivating patterns has undergone tremendous changes due to various upcoming technology, variation in high yielding seed, improvements in facilities and so on [2].

This region has large area of irrigated land apart from it crops such as Sugarcane, Rice, Sweetcorn, Wheat are most important crop grown here. [3]

Musculoskeletal pain that are caused which damage surrounding structure can be due to instantaneous activity or chronic event they are further classified as clinically well-defined disorder, less clinically well-defined and nonspecific. Musculoskeletal pain develops rapidly as with the performance of work created [4]. Agriculture, a critical food bowl supporting is a driven primarily by conventional cultivation practice in irrigated land farming methods. This method of cropping system, which dominates irrigated land cropping methods , analysis of district wise trending crops, outline of the current status, identifies the problem related to physical strains and sustainable management option to achieve developmental goals. [5]

According to the secondary data have collected from abstract that shows the Kolhapur District location, the region average rainfall is aboutr 1900mm. In this study outline of this region receive mostly in Kharif season. the region grows crops like Rice, Wheat, Jowar, Makka, Nachani, Tur, Groundnuts and gram. Cereal crops highlighted by rice (18.80%), Groundnut (12%) and Sugarcane (17.04) are the most important crops in this district. Hence, this part of belt is **Rice – Ground nut – Sugarcane region area** [3].

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Most crucial problem farmer does complain of is generalized weakness with pain in cervical \ elbow \wrist \low back pain \ knee \ankle region. This also plays important role among the industrial sectors that make tools which shall be design with the due study of Prevalence of MSDs among farmers [6].

A study of work place intervention to manage the chronic musculoskeletal symptom or to avoid the further worsening of condition effective study was done which consisted strengthening exercise or integrated ergonomic advice for health care that can decrease the pain or symptom of the condition. [7].

Rice cultivation process has plowing, seeding, pulling up seeds, transplanting, fertilizing, and harvesting methods. During this plowing stage the rice cultivating farmers performs the activity which include use of heavy tractor on uneven slippery walking surfaces. The **seedling process** require rice farmer to carry a heavy rice seed basket and walk on muddy surface. For **Planting process** rice farmers performs task of high repetitive trunk forward bending and twisting and manually pushing rice sprouts into paddy field with the tip of thumb. Planting task also require knee bending and prolong standing on muddy surface filled with water. During the **fertilizing stage** the rice farmers carry heavy fertilizer baskets and walk along the muddy surface filled with water. Thus all this can relate to various Musculoskeletal activity which involve various joints, muscular activity. This occupational related muscular loading leading to the degeneration of various joints according to wear and tear of various joint surfaces. [8]

The prevalence of the joint pain in the farmers doing rice farming which indicate the highest dysfunction of joint surface that is about (79.6%). Hamstring muscle (52.74), quadriceps muscle (44.28%), neural tissue (38. 81%), and ligament (1.99%), meniscus (1.49%). stooping with twisrting activity and carrying heavy loads were associated with the knee joint and hamstring muscle involvement. [8] Sugarcane crop is irrigated using surface, overhead, and drip irrigation methods. [10] Sweet corn progressive phenological growth may be affected by different factors. Method of

cultivating sweet corn production Sowing seed and the ripening time of the hybrid to be produced. [11]
Wheat (Triticum aestivum) is considered a vital food crop. The cultivation of wheat takes place in both an irrigated and a rainfed system. In regions with abundant rainfall, the crop is grown as rainfed, while in arid regions, it is grown using irrigation. Additionally, wheat is considered a valuable cash crop due to its high yield per unit area, its ability to thrive in a temperate climate with a moderate growing season, and the production of high-quality. method of cultivation including the planting date, cultivar ripening time, plant density, soil and meteorological data. [12]
Lack of awareness to carry the farming activity lead to increase in the stress induced factors on joints and surrounding structure. It is seen that rice cultivation requires wide range of twisting, squatting and forward bending position this highlights major disposing factor of low back pain. [13] According to the result of Nordic Questionnarie in manual sugarcane cutting farmers that reflects pain of waist (78%), back (86.5%), knee (84%). The demerits of cutting. harvesting and planting in sugarcane cultivation were seen. The study also focuses on given a alter to the agro industry to bring the concept of mechanical technique reducing the MSDs. [14] It is observed that MSDs is high among the farmers, growing incidence of MSDs among the farmers and lack of awareness predominates impact on public health as a result this study will be conducted. [15] The pain intensity rating will be indicated to prove the measurement across the body in an ergonomic, safe and user- friendly device. [16] Review state that there is difference in climatic variation method of farming, quality of crop grown, etc. Hence, high level of difference estimated to focus the study on entire body region instead of focusing on particular localized region. [17]

METHODOLOGY

A Cross sectional observational study done on farmers around Kolhapur region doing irrigated land farming for a of duration: 1.5 years, using convenient Sampling method sample size:146 subjects were selected fulfilling inclusion and exclusion criteria. **Inclusion criteria:** Age: 20 to 35 years, gender – Male and Female, group farmers who work for cultivation of sugarcane, corn, rice crops, region in and around Kolhapur Individual who are willing to participate **Exclusion criteria**: History of Musculoskeletal injuries and recent surgery, any Neurological, cardiovascular, psychiatric condition, farmers cultivating on non-irrigated crop cultivation.
The study protocol was presented for approval in front of institutional ethical committee and Protocol committee of D. Y. Patil Educational Society, after that consulting participants was selected according to inclusion criteria and explained about the study.
Written consent was taken from the participants willing to participate
Participants was questioned according by using the Nordic musculoskeletal pain questionnaire (NMQ) scale, participants was asses degree of pain by using Numerical pain rating scale.
Farmers was selected on the basis of inclusion and exclusion criteria, data collection sheets was recorded including personal details, data Analysis was done using outcome measures, participants was assessed for pain, to asses degree of pain using Numerical pain rating scale, to locate the site of pain by using Nordic Musculoskeltal pain questionnaire, it is the most commonly used unidimensional pain scale.

Procedure: The respondent selects a whole number (integers 0–10) that best reflects the intensity (or other quality if requested of his/her pain). The numericals are 0 = no pain and 10 = extreme pain/worst possible pain It is often categorised into

a. **no pain = 0, mild pain = 1-3, moderate pain = 4-6, severe pain = 7-10, To asses:**

The NPRS can be used for a single dimension of pain, commonly pain intensity, or for other dimensions such as pain distress, pain interference, etc.

NORDIC MUSCULOSKELETAL PAIN QUESTIONNARIE SCALE (NMQ) SCALE:

Nordic musculoskeletal questionnaire is flexible to use as either as a questionnaire or in the form of a structured interview.

It contains two parts, namely general questions which is used to collect general data of the subject and musculoskeletal distress specific questions which is in the form of forced choice. For easy completion and for identifying the specific body parts, a marked body map is also provide along with the second section of the questionnaire for survey.

The NMQ consists of general data part and body region specific questions.

The general data part of the questionnaire has been modified to collect the details of the riders such as age, gender, height, weight, experience and type of the two-wheeler used by the rider.

Body region specific questions are combined in a modified form to collect the data (Figure). This part of the questionnaire consists of nine body region specific questions in six sections.

First section; of the questionnaire is intended to identify the occurrence of DMSD. If the response for the first section is negative, then the subject need not go to the other sections of the same body part related questions.

Second section: identifies whether the particular DMSD is causing work interference.

Third section: The severity of the DMSD is evaluated.

Fourth section: screens the responses so that other than rider specific causes are contributing to the particular DMSD.

Fifth section: Duration of the DMSD is identified.

Sixth section: evaluates whether the subject has consulted the medical practitioner due to the persistence.

RESULTS

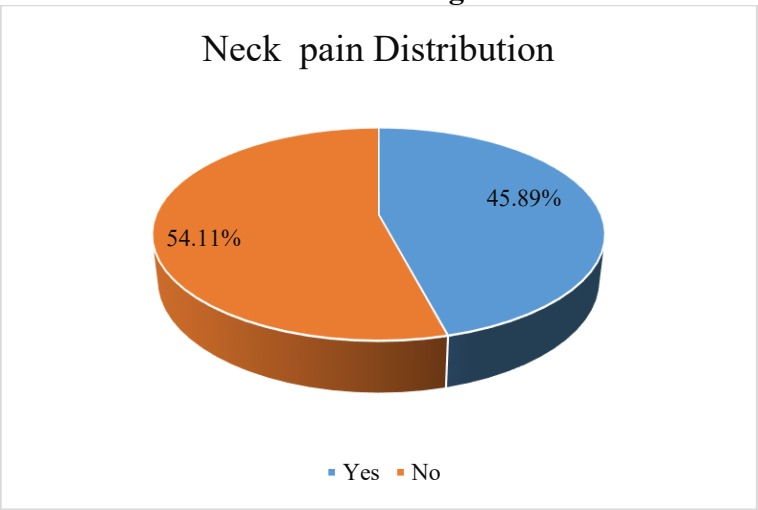
A total 146 farmers, Farmers doing irrigated land farming generally cultivating Rice, sugarcane, sweetcorn, wheat etc which are mostly cultivated in and around Kolhapur region where selected for the study. Age of the Farmers were between 20 to 35 years including both Male and Female. Farmers having any past Musculoskeletal, neurological surgery, psychological history where excluded. Farmers which work not only for about an hour but also more than it where included in this study. mean and SD of outcome measure Numerical pain rating scale and modified Nordic pain questionnaire shows the following result:

Variable	Mean	S.D.
Age	27.04	5.18
WORKING HOURS IN FARM	6.42	2.04
YEAR SINCE FARMING	8.58	5.07
NPRS	5.78	2.39

The study we found that the prevalence of Musculoskeletal pain among farmers doing irrigated land farming demonstrated that. The Farmers which irrigated land farming have same mechanism of cultivation due to which the constant loading, forward bending and weight bearing lead to highly significant Low back pain which is most prevailing among them.

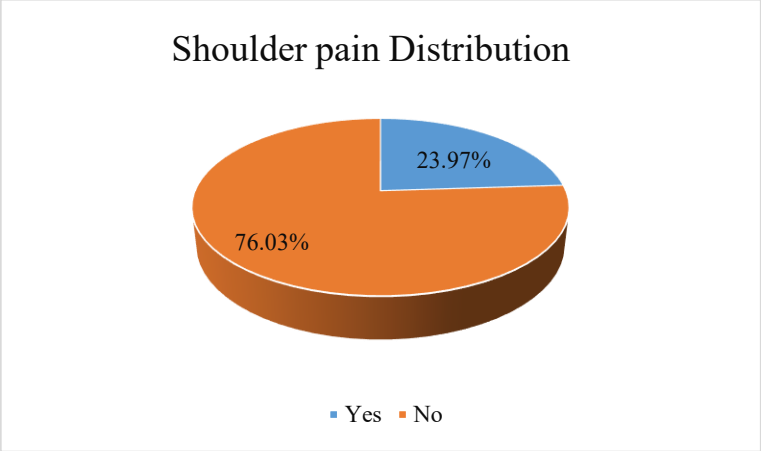
The means for the following joint is as follows:

Graph 1: - Prevalence value of NECK PAIN distribution among the farmers doing irrigated land farming.



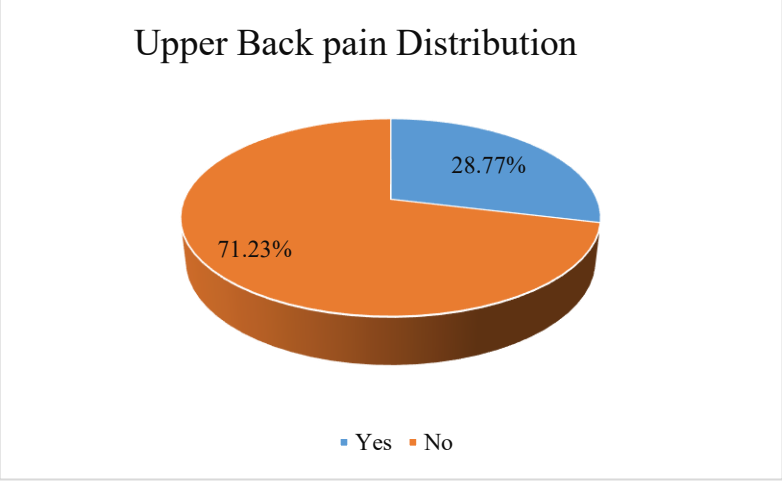
Neck Pain was present in 45.89% (67 participant),

Graph 2: - Prevalence value of SHOULDER PAIN distribution among the farmers doing irrigated land farming.



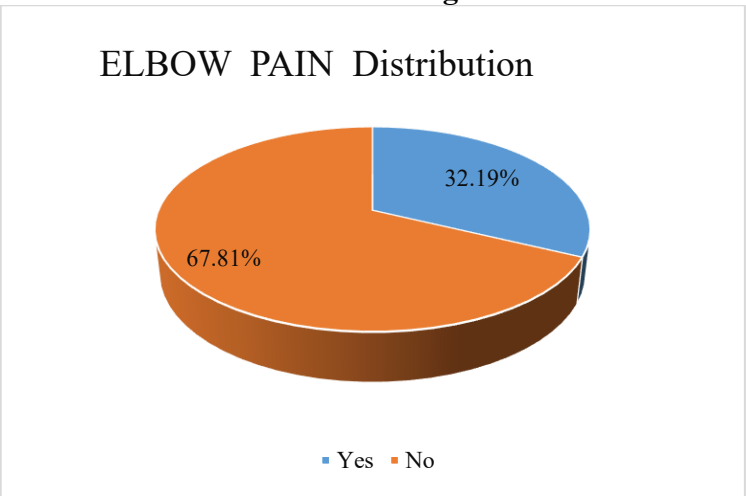
Shoulder Pain was present in 23.97% (35 participant),

Graph 3: - Prevalence value of UPPER BACK PAIN distribution among the farmers doing irrigated land farming



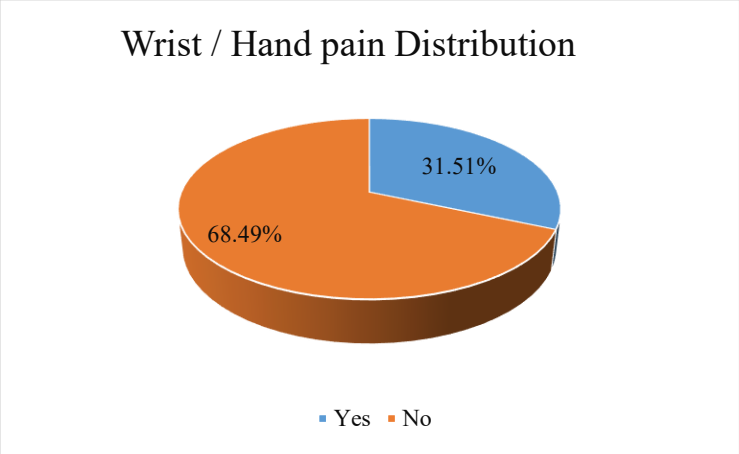
Upper Back Pain was present in 28.77% (42 participant),

Graph 4: - Prevalence value of ELBOW PAIN distribution among the farmers doing irrigated land farming.



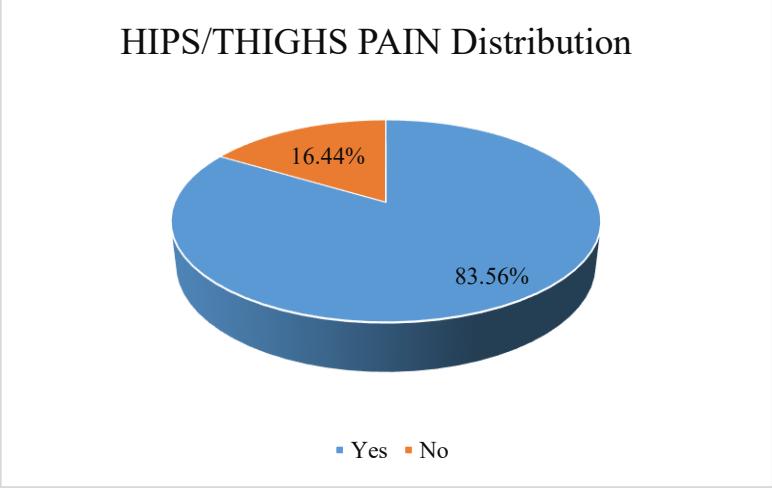
Elbow Pain was present in 32.19% (47 participant),

Graph 5: - Prevalence value of WRIST /HAND PAIN distribution among the farmers doing irrigated land farming.



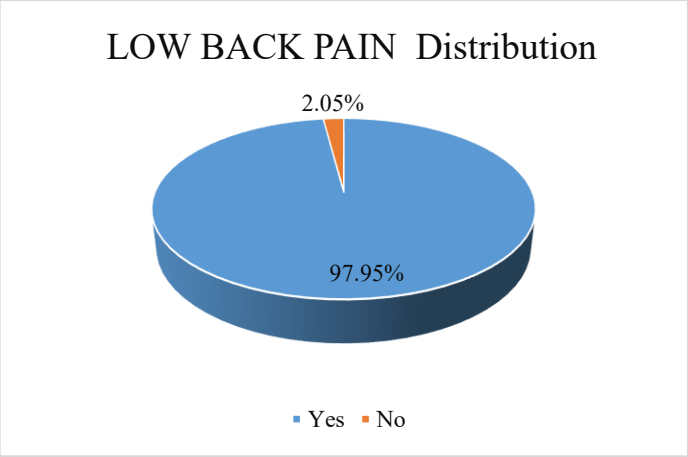
Wrist / Hand Pain was present in 31.51 % (46 participant)

Graph 6: - Prevalence value of HIPS /THIGHS PAIN distribution among the farmers doing irrigated land farming.



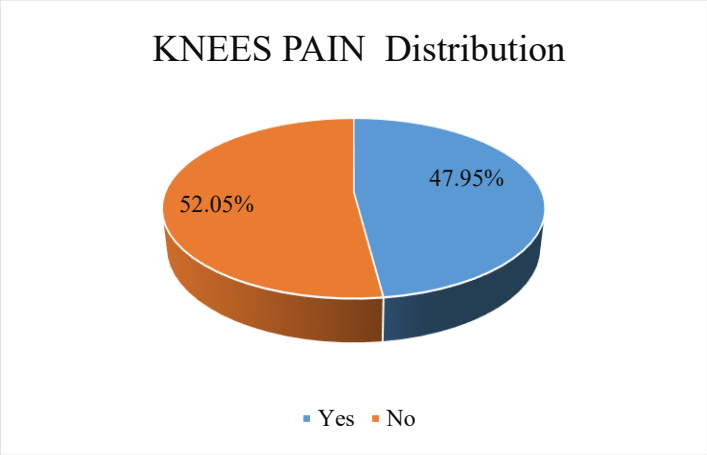
Hips /Thighs Pain was present in 83.56% (122 participant),

Graph 7: - Prevalence value of LOW BACK PAIN distribution among the farmers doing irrigated land farming



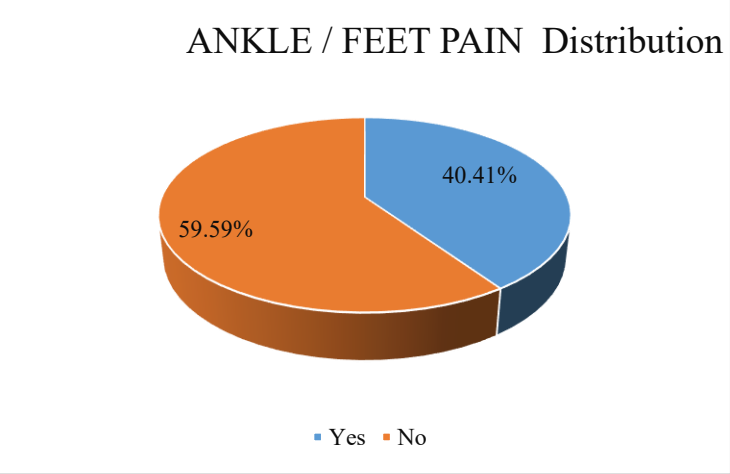
Low Back Pain was present in 97.95 % (143 participant),

Graph 8- Prevalence value of KNEE PAIN distribution among the farmers doing irrigated land farming.



Knee Pain was present in 47.95% (70 participant),

Graph 9- Prevalence value of ANKLE / FEET PAIN distribution among the farmers doing irrigated land farming.



Ankle and Feet Pain was present in 40.41% (59 participant).

The prevalence of Low Back Pain was more than other regions which was commonly affect by the farmers doing irrigated land farming.

Thus the study conducted conclude the significant Low back pain is most commonly seen in the Farmers doing irrigated Land farming.

DISCUSSUION

This study provides an in-depth investigation into the Prevalence of Musculoskeletal Pain among the farmers doing irrigated land farming, a workforce that has previously been reported to have a notably high Prevalence rate of Low Back Pain. The research involved a total of 146 respondents, among those low back pain was significantly high in incidence. This finding highlights a significant burden of this musculoskeletal disorder.

The study highlights several common method of farming in irrigated land like planting and sowing seed, plugging. The significant Strain on the lower back region wear and tear of knee joint, sustain strain on the lower extremity, vibration of the equipments, forward bending, use of wrist and hand for the ploughing and sowing process, lifing heavyweight, sudden physical activity which are bending, twisting of ankle, etc.

The high prevalence rate noted in this occupational group exceeds that reported in other professional sectors, suggesting that farmers farming in irrigates land farming occupational risks that increase their susceptibility to musculoskeletal disorders

The nature of Farmers is highly laborious Lack of awareness such as, Does and don’tto use the ergonomically designed agro equipments, avoiding the climatic changes, sustain working hours avoiding the rest interval, walking on uneven surfaces with heavy weights, overhead activity, avoiding the investigate the problem regarding the health condition which are prevailing in daily routine. This corresponds to educate and aware about the Musculoskeletal disorder which will be leading in later stage of life.

The association between various joint region that comes into consideration while doing the physical activity are neck, shoulder, elbow, wrist, upper back, lower back, knees, ankle. Due to constant posture there is sustain load on neck and upper back region may lead to upper back pain, Trapezius spasm etc,

The Heavy lifting activity and sudden movement of shoulder joint may lead to dislocation or subluxation of shoulder joint, spraying the fertilizer and pesticides int the farms corresponds to degeneration of joint surface between the elbow joint leading to pain , ploughing method of cultivation leads to constant use of wrist and hand most significantly thumb whereas the vibration of the agro equipments lead to Hand vibration syndromes , the forward bending posture has sustained weight loading on the lower back region. Walking in the muddy syrface with heavyweight lifting leading to the sustain stress on the quadriceps and hamstring muscle, weight bearing joint that is knee joint leads to osteoarthritis like condition, ankle sprain strain due to twisting activity. Create a pressure on the muscle ligament which deteriorate the quality of life in the future. These populations is the lack of ergonomic awareness and inadequate workplace modifications.

In our study we found that the prevalence of musculoskeletal pain among the farmers doing irrigated land farming were as follows: Neck Pain was present in 45.89% (67 participant), Shoulder Pain was present in 23.97% (35 participant), Upper Back Pain was present in 28.77% (42 participant), Elbow Pain was present in 32.19% (47 participant), Wrist / Hand Pain was present in 31.51 % (46 participant), Hip / thigh Pain was present in 83.56% (122 participant), Low Back Pain was present in 97.95 % (143 participant), Knee Pain was present in 47.95% (70 participant), Ankle and Feet Pain was present in 40.41% (59 participan).

The prevalence of Low Back Pain was more than other regions which was commonly affect by the farmers doing irrigated land farming.

CONCLUSION

This study identifies a notably high prevalence of Musculoskeletal pain among farmers doing irrigated land farming with of farmers being selected. The significant Low back pain with (mean: 93%) compared to the all other joint. Suggests that the strain and stress on the low back region is constantly high due to the method of irrigation in the irrigated land farming being similar the pain in other region like neck, shoulder, elbow, wrist and hand, thighs, knee, ankle and feet also is associated with comparatively with less dominance. This can be concluded as Prevalence of Musculoskeletal pain among the farmers doing irrigated land farming tends to have the pain in the particular joint such as neck, shoulder, elbow, wrist, upper back, low back, thighs, knee and ankle but the method of cultivation. for the planting this irrigated land farming crops is same with lots of forward bending and weight bearing, constant wear and tear leads to degeneration changes leading to Musculoskeletal disorder. This to avoid those in future and to minimize the significant changes in crop cultivation by various agro equipments for cultivation this study will be helpful in focusing the health related aspect facing by the farmers accordingly the designated ergonomically devices for farming can be useful for the farmers and society leading to minimizing the further corresponding changes in health. and improve quality of life.

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