



PREVALENCE OF MUSCULOSKELETAL INJURIES IN VEGETABLE VENDORS

An observational study

¹Dr Apeksha Unawane, ²Dr Shruti Mulaokar

¹BPTH, Late Shree Fakirbhai Pansare Education Foundation College of Physiotherapy, Nigdi, Pune, Maharashtra, India.

²Associated professor of Musculoskeletal Physiotherapy Department, Late Shree Fakirbhai Pansare Education Foundation College of Physiotherapy, Nigdi, Pune, Maharashtra, India.

1. **Abstract:** Musculoskeletal injuries consists of conditions such as pain, inflammation, tingling and numbness involving tendons, cartilage, ligaments and joints. Repetitive activities like awkward postures, bending, twisting may lead to pain at different joints, muscle imbalance and decrease functional activities which may affect work and hence also affects daily income. In the profession of vegetable vendor is to stand for longer duration with minimal break hours. This study will help to determine the prevalence of work related musculoskeletal injuries in vegetable vendors using Nordic Musculoskeletal Questionnaire(NMQ).
2. **Method** - Observational study was conducted on 101 Subjects. According to the inclusion and exclusion criteria. Subjects were selected and explained about the procedure and informed consent was taken from all the included subjects and The questionnaire was explained to the Participant and response was noted. Then data was collected and analyzed further .
3. **Result** - : In the study, total no of participants are 101, Result of study is made by using Nordic scale, questionnaire was explained to the patients and response was noted. Female participants 36 which is 36% and male participants 65 which is 64% Participants between the Age group 25-35 years are 38 participants and between the age group 36-45 years are 63 participants.
4. **Conclusion** – The study suggest that there is prevalence of work related musculoskeletal injuries in vegetable vendors with severely affecting ankle joint and moderately affecting knee joint and mildly affecting lower back and hip joint.

Index Terms – Musculoskeletal Injuries, Nordic Questionnaire, Vegetable Vendors.

I. INTRODUCTION

Street Vegetable vendors are the most visible section of an Informal economy. Street vegetable vending is a profession that has existed in India since time immemorial. Because of poverty and lack of profitable employment in rural areas drive the people to move towards urban centers, as it requires low skills and small financial input.

People belonging to the vending population have to spend more than 8-11 hours daily. ⁽²⁾

In their vending task, repetitive motions are as follows:

- 1) Long hours of standing, there is no place to sit.
- 2) Sometimes they sit on the cart itself to avoid standing, hence their back is not supported ⁽³⁾
- 3) Awkward postures like bending and twisting. ⁽⁴⁾

Such activities need a tremendous amount of work done by the various muscles in the body, due to repetitive use of these muscles can cause pain and discomfort in different body parts. So it may cause muscle weakness. Hence vegetable vendors are susceptible for musculoskeletal injuries. It consists of conditions such as pain, inflammation, tingling and numbness involving tendons, cartilage, ligaments and joints. ⁽⁵⁾ Due to overuse and overexertion, vegetable vendors may feel fatigue and decrease their functional activities. So it may affect their work and also their daily income. ⁽⁶⁾

II. METHODOLOGY

Observational study was conducted on 101 Subjects. According to the inclusion and exclusion criteria. Ethical approval was taken. Subjects were selected and explained about the procedure and informed consent was taken from all the included subjects and the questionnaire was explained to the Participant and response was noted. Then data was collected and analyzed further.

A INCLUSION CRITERIA

Vegetable vendors in Pune

Both male and female genders

Age group – 25-45 years.

Duration – At least 2 years of experience ⁽¹⁰⁾

B EXCLUSION CRITERIA

Pregnancy

Not willing to participate

Recent Fracture

Recent Trauma

Any systemic condition

III. OUTCOME MEASURE

Nordic musculoskeletal questionnaire

Validity – 86%

Reliability – 0.945%

Procedure

Ethical clearance was taken.

Subject was chosen on the basis of inclusion and exclusion criteria.

Written and signed consent was taken from the participant.

The questionnaire was explained to the Participant and response was noted.

Then data was collected and analyzed further.

Section 1:

A general questionnaire of 40 forced-choice items identifying areas of the body causing musculoskeletal problems. Completion is aided by a body map to indicate nine symptom sites being neck, shoulders, upper back, elbows, low back, wrist/hands, hips/thighs, knees and ankles/feet. Respondents are asked if they have had any musculoskeletal trouble in the last 12 months and last 7 days which has prevented normal activity.

Section 2:

Additional questions relating to the neck, the shoulders and the lower back further detail relevant issues. Twenty-five forced choice questions elicit any accidents affecting each area, functional impact at home and work (change of job or duties), duration of the problem, assessment by a health professional and musculoskeletal problems in the last 7 day



Fig:1



Fig:2

IV. STATISTICAL ANALYSIS

Data was collected and analysed.

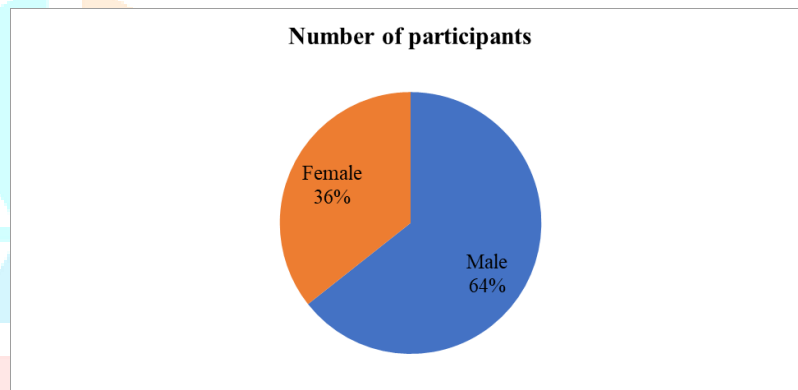
V. RESULTS

Gender wise distribution

Chart :1

| Gender | Number of participants |
|--------|------------------------|
| Male | 65 |
| Female | 36 |
| | |

Table: 1



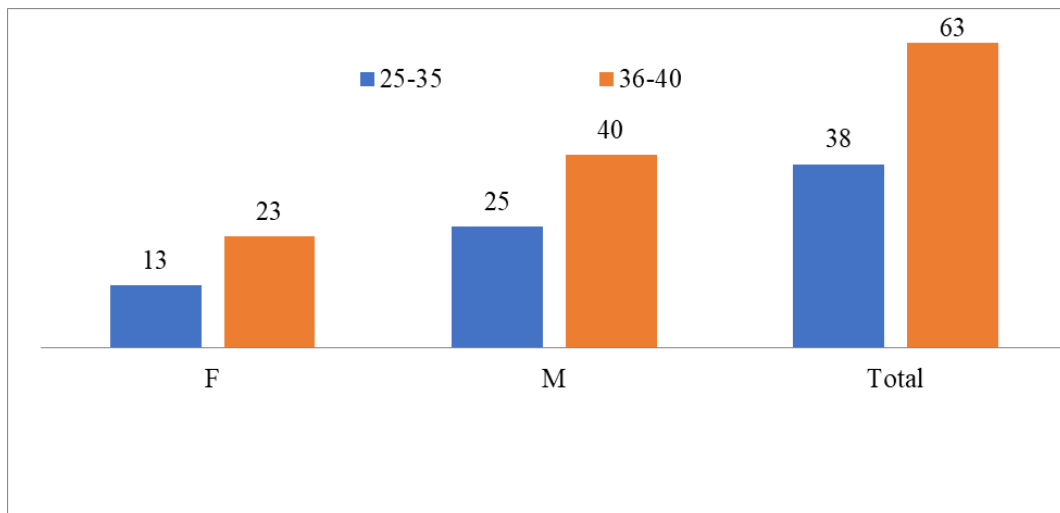
Interpretation : Table 1 shows female participants 36 which is 36% and male participants 65 which is 64%

Age wise distribution

Chart:2

| Age group | Number of participants |
|-----------|------------------------|
| 25-35 | 38 |
| 36-45 | 63 |
| | |

Table : 2



Interpretation : Table 2 and Fig 2 shows, Participants between the Age Group 25-35 years are 38 participants and between the Age Group 36-45 years are 63 participants

VI. DISCUSSION

The main purpose of this study is to find the prevalence of musculoskeletal injuries in vegetable vendors in Pune. The objectives are to identify the musculoskeletal injuries in vegetable vendors in Pune and to find prevalence of problems according to the standardized Nordic musculoskeletal questionnaire. Musculoskeletal injuries are a condition that can affect your muscle problem among workers due to intensive manual work. Musculoskeletal injuries include hip pain, knee pain, ankle pain & Back pain is the most common reason for sick absence from work. Musculoskeletal injuries include symptoms such as pain, numbness, and tingling sensation as well. In the study, total no. of participants are 101. According to age group wise distribution, in the age group 36-45 years of vegetable vendors found musculoskeletal injuries with severely affecting knee joint, moderately affecting ankle joint, minimally affecting hips and lower back.

These injuries were basically produced due to improper posture, abnormal forces acting on the spine and all other body structures as well, repetitive movements, muscle fatigue, muscle pain & malalignment of structures.

During lifting weight there will be co-contraction of flexors (anterior deltoid, pectoralis major, biceps brachii, coracobrachialis), extensors (Posterior deltoid, latissimus dorsi, teres major, pectoralis major), abductors (supraspinatus, middle deltoid) and adductors (Posterior deltoid, latissimus dorsi, teres major, pectoralis major) muscle group which provide good stabilization at proximal and distal joint, also shoulder stabilizer like rotator cuff muscles (supraspinatus, infraspinatus, teres major, subscapularis) and static stabilizers of the shoulder, the retractor of the scapula works to draw the scapula backward so that the glenoid cavity faces more or less laterally. All the muscle groups mentioned above help stabilize the shoulder girdle and upper back in the antero-posterior direction, along with the lateral muscle which help to balance and maintain equilibrium during movement.

The muscles mainly involved are latissimus dorsi, trapezius, levator scapulae, & rhomboids.

The trapezius help to stabilize the scapula, the upper fibers elevate & upwardly rotate the scapula along with neck extension. The middle fibers adduct the scapula & lower fibers depress the scapula.

Hence as data collected it has been observed that due to continuous neck forward bending and upper trunk muscle strain present.

The low back pain is due to continuous forward bending wherein the erector spinae (deep – longissimus thoracis pars lumborum, iliocostalis pars lumborum, superficial – Longissimus thoracis pars thoracis, iliocostalis lumborum pars thoracic), multifidus along with gluteal muscles help holding the spine erect & the abdominal muscles allow spine forward flexion, lifting activities during bending.

During forward bending, there is concentric contraction of abdominals and eccentric contraction of back muscles. But due to weak abdominals (spine stabilizers) back extensors it leads to number of injuries at low

back region can be due to disc herniation, because of improper posture and abnormal loading on the spine ,also mechanical low back pain due to muscle weakness was observed .

In hip joint , due to long standing hours which is a closed chain function , the hip extensors work to maintain hip extension & balance the pelvis on femoral head, slight action of the lateral rotators of hip is associated with bracing of legs & arches of foot, there will be cocontraction of the hip flexor (iliopsoas , quadriceps femoris, sartorius) and extensor(hamstrings & gluteus maximus , biceps femoris) compartment along with adductors (adductor brevis , longus & magnus gracilis) and abductors (gluteus medius & minimus , tensor fascia lata, piriformis), lateral rotators(gluteus maximus , piriformis , obturator internus & externus , sartorius) , medial rotators (gluteus medius , minimus & TFL) muscle group as well to maintain the hip joint in neutral during standing position.

In knee joint the knee extensors (vastus lateralis medialis & intermedius, rectus femoris) work concentrically to maintain standing posture required for the work.

In standing, the intrinsic muscles of the feet working to stabilize the feet & to prevent curling of toes so that the flexors of the interphalangeal joints can press the balls of the toes to the ground. the plantarflexors of ankle, working to balance the lower leg on the foot.

The evertors, working to counterbalance the action of invertors(tibialis anterior & posterior),and in case of peroneus longus, to press the ball of the great toe to the ground.

Nicole L holder Holly A Clark, John M DiBlasio, Carol L Hughes, John W Sacherpf, Linn Harding, Katherine F In which they

concluded that bending, stooping, lifting, sitting without support for longer duration because of these repetitive activities such awkward postures they are prone for musculoskeletal injuries.

In study by Debdulal Saha in 2011 concluded that working in vending profession who all were having working hours of around 8 to 11 hrs. / day.

In study by Diane J West and Dianne Gardner in 2001 concluded that Musculoskeletal injuries can result from activities like stooping, awkward postures like bending and twisting. Sitting without back support for longer duration can cause low back pain.

In a study by McCulloch J in 2002, summarized findings from 17 studies that involved standing for more than 8 hours per day can cause major health risks identified were musculoskeletal pain in lower extremity and lower back region.

VII. CONCLUSION

The study suggest that there is prevalence of work related musculoskeletal injuries in vegetable vendors with severely affecting ankle joint and moderately affecting knee joint and mildly affecting lower back and hip joint.

VIII. LIMITATION OF STUDY

BMI was not taken into consideration

IX. RECOMENDATION AND FUTURE SCOPE OF STUDY

The study can be performed by taking BMI in consideration.

X. REFERENCES

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