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Prevalence of musculoskeletal disorders in upper limb in cooks working at Chinese food stall

Shraddha Ghadge and Dr. Varsha A Kulkarni

Abstract

Background: Occupational health sector deals with all aspects of health and safety in the workplace and has strong focus on the prevention of hazard. Work-related musculoskeletal disorders are supposed to be linked to mechanical overload of respective biological structures resulting from occupational activities. A work carried by a cook at Chinese food stall includes tasks such as tossing a wok, stirring, prolonged grasping etc which requires repetitive forceful body movements that causes excessive stress on biological structures leading to various work-related injuries.

Purpose: To study prevalence of Musculoskeletal disorders in upper limb in cooks at Chinese food stalls

Method: Observational study consist of 100 Chinese cooks age between 20-40 yrs.

Sampling Method: Purposive Sampling

Inclusion Criteria: Chinese Cooks both male or female aged between 20-40 yrs with minimum 6 months working experience

Exclusion Criteria: Recent fracture, injuries or deformities of upper limb, any recent surgery, Bone disease, neuromuscular disorders

Result: The result of the study shows that there is no significant prevalence of MSDs in upper limb in cooks at Chinese food stalls.

Conclusion: This study concludes that there is prevalence of musculoskeletal disorders in upper limb in cooks at Chinese food stalls and elbow joint is more prone for pain due to work-related MSDs in Chinese cooks compare to other joints in upper limb.

Keywords: Work-related Musculoskeletal Disorder (MSDs), Chinese cooks

1. Introduction

Occupational health sector deals with all aspects of health and safety in the workplace and has strong focus on the prevention of hazard^[1].

It is essentially important given that people spend on average one third of their lives in workplace where they produce all the goods and services of countries.

The most vulnerable groups are workers at small and medium sized enterprises.

Work-related musculoskeletal disorders are supposed to be linked to mechanical overload of respective biological structures resulting from occupational activities^[12].

Chinese cuisine ranks as India's most favourite cuisine, growing at 9% annually^[13].

As demand for Chinese food has increased in past few years in Indian population, there is also significant growth in Chinese food stalls in India.

The workers at Chinese food stalls works continuously every day for almost 6-8 hours.

A work carried by a cook at Chinese food stall includes tasks such as prolonged grasping of cooking utensils, tossing a wok, stirring includes forceful exertion of upper extremity specially elbows and wrist (flexion, extension & circumduction) repetitively while roasting a meal and also has to stand for long duration^[1].

This repetitive forceful body movement may put excess stress on muscles, tendons, ligaments and nerves leading to various injuries^[1].

It is important to focus on occupational health of workers as neglecting it will lead to various musculoskeletal disorders and also affects quality of life of workers.

2. Problem Statement

To study the prevalence of musculoskeletal disorders in upper limb in cooks working at Chinese food stalls.

3. Objective

To find out whether there are any signs of musculoskeletal disorders in upper limb in cooks at Chinese food stall

4. Methodology

Type of study: Observational study

Sampling technique: Convenient sampling

Sample size: 100

Study area: Pune, PCMC

Study duration: 6 months

Study material: Scales, Pen, Note pad

A. Inclusion Criteria

- Age – 20-40 years
- Working duration – Minimum 6 months
- male or female

B. Exclusion Criteria

- Recent fracture of upper limb
- Deformities of upper limb
- Any soft tissue injuries of upper limb
- Any recent surgery
- Bone disease
- Neuromuscular disorders

5. Outcome Measures

- A. RULA employee assessment scale ^[7]

(Reliability 0.93 & validity 0.61)

- B. VAS Pain scale ^[8]

(Reliability 0.94 & validity 0.78)

6. Procedure

- Ethical approval was taken.
- Subjects were chosen on the basis of inclusion and exclusion criteria.
- Written and signed consent was taken from participants.
- Participants were explained about the scale and procedure.
- A demographic data, working duration, working hours were noted of each participant.
- Assessment of posture of dominant upper limb of each worker was done using RULA employee assessment scale.
- Any musculoskeletal pain rising due to his occupation was measured using pain rating scale (VAS).
- The data was collected based on this and was analysed further.

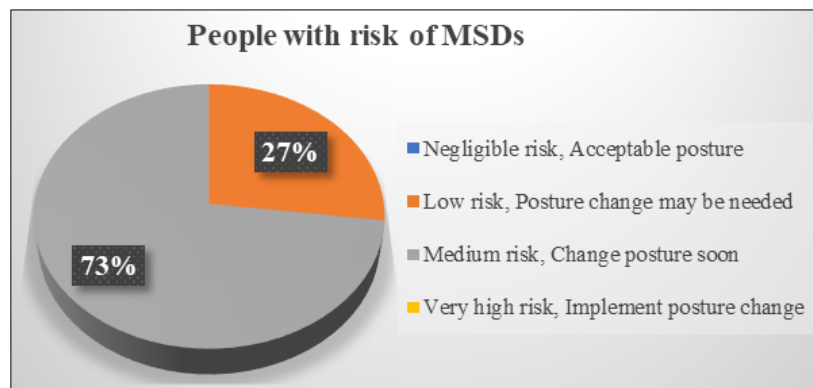
7. Data Analysis

Data was collected using RULA employee assessment scale and pain rating scale (VAS) and the score for each scale were calculated. Total score of 100 participant was added to excel sheet and descriptive data analysis was done using percentage.

8. Result & Interpretation

Table 1: Shows the No. of subjects having risk of Musculoskeletal disorders (MSDs) due to their posture during work

Score	Level of MSD Risk	Percentage
1-2	Negligible risk, Acceptable posture	0%
3-4	Low risk, Posture change may be needed	27%
5-6	Medium risk, Change posture soon	73%
7	Very high risk, Implement posture change	0%



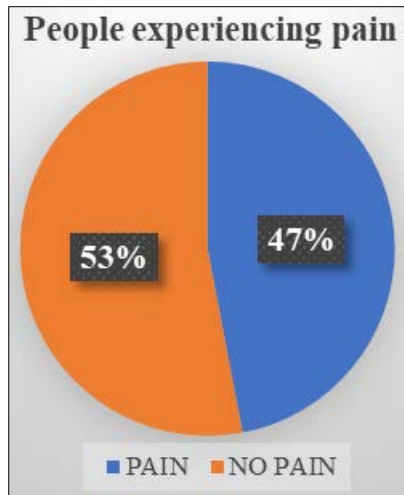
Graph 1: Shows the No. of subjects having risk of Musculoskeletal disorders (MSDs) due to their posture during work

The diagram shows results based on RULA scale. Out of 100 people, 27% people fall under category of low MSD risk & posture change may be needed and 74% people fall

under category of medium MSD risk & change posture soon.

Table 2: Shows the No. of people experiencing pain

Pain	Subjects	Percentage
Yes	47	47%
No	53	53%
Total	100	100%

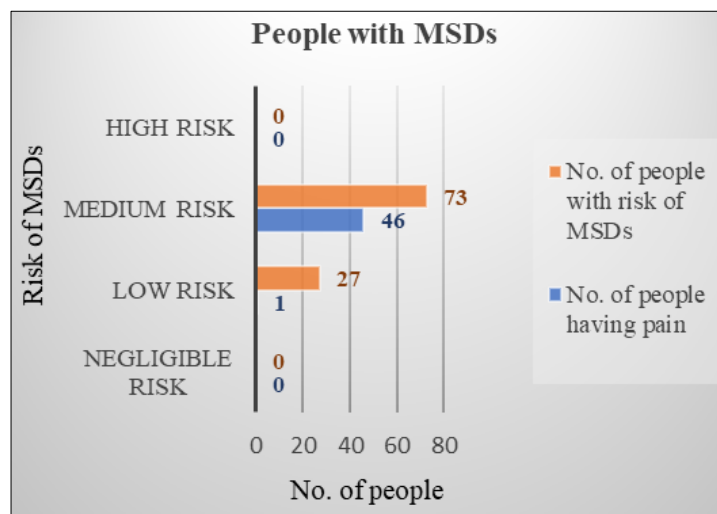


Graph 2: Shows the No. of people experiencing pain

The fig. shows no. of people experiencing pain rising due to their work. Out of 100 people, there are 47% people who are having pain and 53% people are not having pain. The diagram shows total no. of people who are at risk of having MSDs due to their occupation and those who are showing a sign & symptom of MSDs i.e., Pain. Out of 100 people, 73 people fall under medium risk of MSDs from which only 46 people are having pain & 27 people fall under low risk of MSDs from which 1 people is having pain.

Table 3: Shows people with sign & symptom of MSDs

Level Of MSD Risk	People With Risk of MSDS	People Having Pain
Negligible Risk	0	0
Low Risk	27	1
Medium Risk	73	46
High Risk	0	0

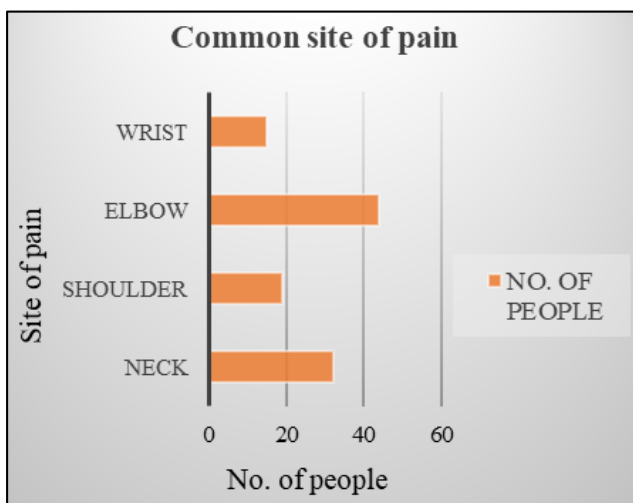


Graph 3: Shows people with sign & symptom of MSDs

Table 4: Shows commonly affected site of upper limb

Site of Pain	No. of People
Neck	32
Shoulder	19
Elbow	44
Wrist	15

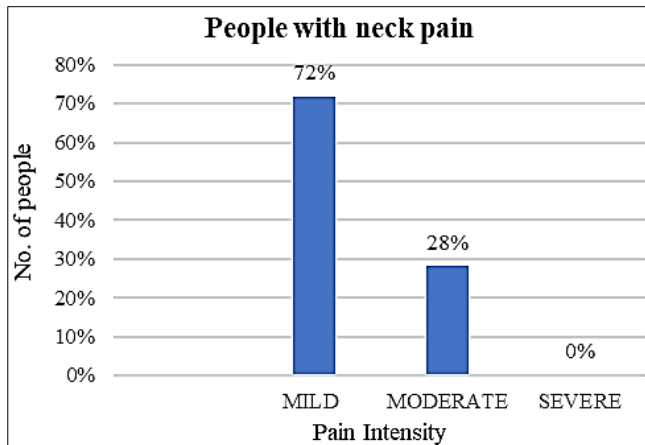
Above chart shows the common site of pain found in Chinese cooks rising due to their occupation. Out of 47% people who are having pain; 32 people are having neck pain, 19 people are having shoulder pain, 44 people are having elbow pain & 15 people are having wrist pain. This shows that out of 32 people, 23 people are having mild neck pain, 9 people are having moderate neck pain & 0 people are having severe neck pain.



Graph 4: Shows commonly affected site of upper limb

Table 5: Shows Intensity of Neck pain in Chinese cooks

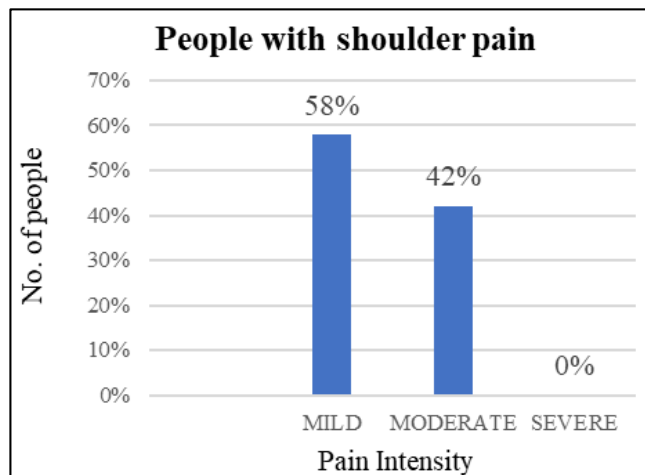
Pain Intensity	People With Neck Pain	Percentage
MILD	23	72%
Moderate	9	28%
Severe	0	0%
Total	32	100%



Graph 5: Shows Intensity of Neck pain in Chinese cooks

Table 6: Shows Intensity of Shoulder pain in Chinese cooks

Pain Intensity	People With Shoulder Pain	Score
Mild	11	58%
Moderate	8	42%
Severe	0	0%
Total	19	100%



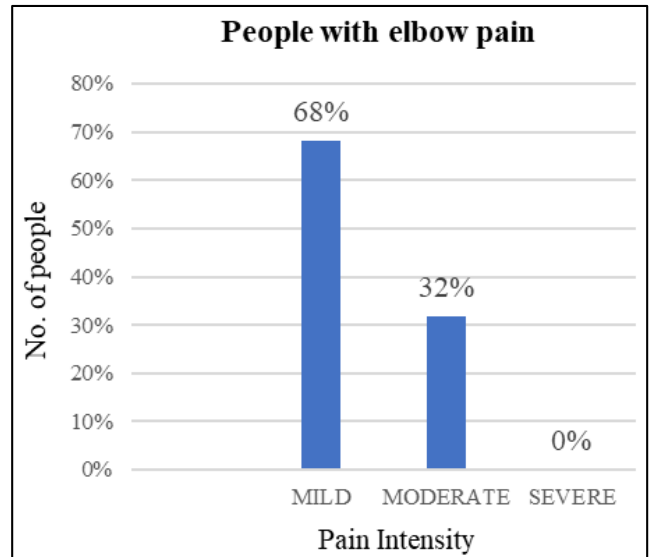
Graph 6: Shows Intensity of Shoulder pain in Chinese cooks

Above graph shows that out of 19 people, 11 people are having mild shoulder pain, 8 people are having moderate shoulder pain & 0 people are having severe shoulder pain

Table 7: Shows Intensity of Elbow pain in Chinese cooks

Pain Intensity	People With Elbow Pain	Percentage
Mild	30	68%
Moderate	14	32%
Severe	0	0%
Total	44	100%

Above graph shows that out of 44 people, 30 people are having mild elbow pain, 14 people are having moderate elbow pain & 0 people are having elbow pain.

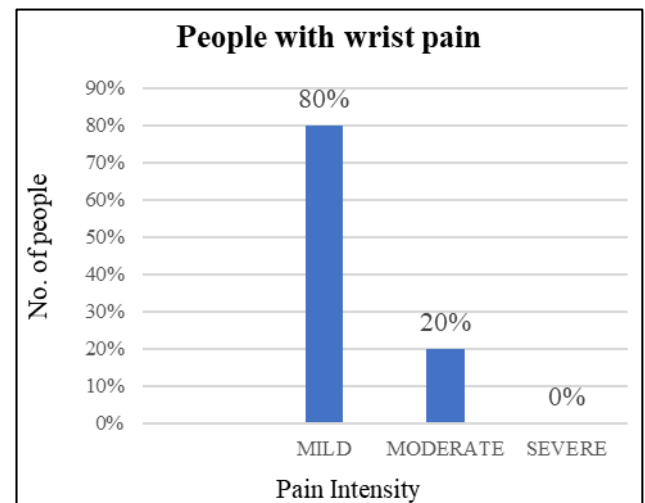


Graph 7: Shows Intensity of Elbow pain in Chinese cooks

Table 8: Shows Intensity of Wrist pain in Chinese cooks

Pain Intensity	People With Wrist Pain	Percentage
Mild	12	80%
Moderate	3	20%
Severe	0	0%
Total	15	100%

Above graph shows that out of 15 people, 12 people are having mild wrist pain, 3 people are having moderate wrist pain & 0 people are having severe wrist pain.



Graph 8: Shows Intensity of Wrist pain in Chinese cooks

9. Discussion

The purpose of this study was to know the prevalence rate of musculoskeletal disorders in upper limb in cooks working at Chinese food stalls.

Repetitive manual work, lifting & forceful movements, awkward posture & efforts are well known risk factors contributing to MSDs [1].

A cook's work is characterized by long standing hours, constant leaning forward posture of the body & repetitive motion in the upper limbs [1].

A study done by Huei Sheng Shiue *et al.* says that the incidence of MSDs in the study population (Chinese restaurant cooks) was around 25% annually in average or 59.5% in the 5 years observation period.

This study analyses that among 100 population, 26% people fall under category of low MSD risk with posture change may be needed & 74% people fall under category of medium MSD risk with change posture soon. This may be due to the awkward posture adopted by them while cooking.

Results based on VAS scale shows that out of 100 people, 47% people were having pain & 53% people were not having pain. This may be due to vigorous repetitive movements when working in awkward posture contributes to stress on muscle & joints & finally leads to pain & fatigue.

Common symptoms of musculoskeletal disorders includes pain, weakness, joint stiffness, fatigue and restricted range of motion [11].

In this study we found that, out of 100 people, 73 people fall under category of medium risk of MSDs from which only 46 people are having pain & 27 people fall under low risk of MSDs from which only 1 person is having pain. It shows that people with low to medium risk of MSDs does not necessarily have pain and this may be due to the adaptation of body to the task & awkward posture adopted by them at work.

A study done by Wen -Yu Yeh *et al.* says that there is a moderate correlation between body site specific prevalence rates & pain intensity scores, which may mean that the most frequently reported body site specific WMSD may not necessarily cause the most painful symptoms [7].

From the collected data it was also seen that as the years of working increases the intensity of pain in cooks decreases which may be due to the adaptation of body towards work.

In our study out of 100 population, 32 people are having neck pain, 19 people are having shoulder pain, 44 people are having elbow pain & 15 people are having wrist pain. This may be due to vigorous repetitive movements of upper limb such as lifting, tossing wok & stirring during preparation of Chinese food.

On subgroup analysis we found that out of 32 people with neck pain, 23 are having mild neck pain & 9 are having moderate neck pain. Out of 19 people with shoulder pain, 11 are having mild pain & 8 are having moderate pain. Out of 44 people with elbow pain, 30 are having mild pain & 14 are having moderate pain. Out of 15 people with wrist pain, 12 are having mild pain & 3 are having moderate intensity pain.

In this study we found that elbow joint was more prone for pain due to musculoskeletal disorders which may be due to maximum efforts put by the cooks are from elbow joint while cooking.

A study done by Shiao- Chi Wu *et al.* says that Chinese Restaurant Cooks with MSDs related to elbow show the highest risk [1].

For the prevention of work-related musculoskeletal pain ergonomic education, strength & endurance training programme and workplace modifications can be suggested.

10. Conclusion

This study concludes that there is prevalence of musculoskeletal disorders in upper limb in cooks at Chinese food stalls and elbow joint is more prone for pain due to work-related MSDs in Chinese cooks compare to other joints in upper limb.

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