

## PREVALENCE OF MUSCULOSKELETAL DISORDERS IN RESTAURANT WORKERS

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### ABSTRACT

The aim of this study was to find out the prevalence of musculoskeletal disorders (MSDs) in restaurant workers which included waiters and chefs. The study used the Modified Nordic Questionnaire to find out the most frequently affected body part, whether their work was affected due to their problem in last 12 months and if they had any problem in the last seven days. The result showed that 90% of the workers suffered from an MSD of which wrist (27%) and shoulder (20%) was maximally involved followed by lower back (10%) and knee pain (10%). This was due to their respective job demands where both the work profiles demanded for maximum upper limb use. Also a comparison of commonly affected joints was done between waiters and chefs where both of them suffered from maximum upper limb problems despite having different job profiles but chefs had a higher rate of problems. Also maximum workers suffering from MSD were working for 6-10 years.

**KEYWORDS:** musculoskeletal disorders; restaurant workers; waiters; chefs; upper limb

### INTRODUCTION

Musculoskeletal disorders (MSDs) are defined as “physical work activities or workplace conditions on the job that are reasonably likely to be causing or contributing to injuries and disorders of the muscles, nerves, tendons, ligaments, joints, cartilage, and spinal disc (e.g., carpal tunnel syndrome)”<sup>1</sup>. Work-related musculoskeletal disorders (WMSD) affect almost all body parts especially the back, neck and upper limbs, depending upon the physical movement characteristics, and the ergonomic and mechanical design of work tasks<sup>2</sup>. WRMSDs usually occur when there is a mismatch between the requirements of the job and the physical capacity of the human body, depending upon the physical movement characteristics, ergonomics and mechanical design of work tasks. They range from acute traumas, such as fractures, that occur during an accident in the workplace to cumulative disorders (that usually take months or even years to develop) that result from repeated exposure to high or low intensity loads over a long period of time<sup>3</sup>. Restaurant workers include waiters/servers and cooks. Both the working populations have different task demands.

**Task Analysis Of A Waiter** - The duties of a waiter, wait staff or server is very hectic but

at the same time vital for the restaurant. Such duties include prepping section before guests sit down, offering cocktails or specialty drinks, recommending options for food, requesting special chef items, pre-clearing the tables, and serving food and beverages throughout the shift<sup>4</sup>.

**Task Analysis Of A Cook** – The different tasks a chef needs to perform includes inspection of food preparation and serving areas to make sure that safe food practices are being carried out, to stir food in large quantities so as to ensure even cooking, observing and testing food to check for adequate cooking, measuring or weighing and mixing ingredients according to recipes, using heavy kitchen utensils and equipments at times of large orders. Also they have to serve food to waiters, substitute for other cooks at times of emergency/absence<sup>5</sup>, to hold utensils for extended periods of time, toss woks, and barbecue meat, all of which demand a lot of repetitive movements of the upper limbs and standing for long hours without sufficient breaks<sup>6</sup>.

The hotel restaurant workers have a wide range of task demands as mentioned above. There are a few studies done on the different musculoskeletal problems in restaurant workers. Thus the need of study is to explore more about this occupation in India.

### AIM

To find out the prevalence of musculoskeletal problems in restaurant workers.

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**OBJECTIVES**

- To find out different areas of musculoskeletal problems.
- To find out the most commonly affected part of the body in restaurant workers.
- To compare the result between waiters and cooks.

**METHODOLOGY**

**Study design:** Cross sectional survey

**Sample size:** 400

**Sampling design:** Purposive sampling

**Study population:** Restaurant workers

**Study set up:** Pune and Mumbai city.

**Outcome measure:** Modified Nordic Questionnaire

**INCLUSION CRITERIA**

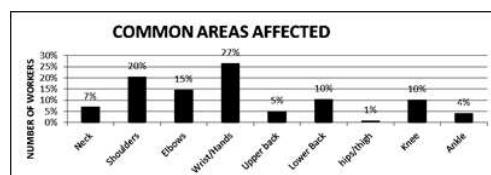
- Restaurant workers working for more than 1 year in the restaurant and willing to participate in the study.
- Age group: 25 to 55 years, male.

**EXCLUSION CRITERIA**

- Workers who have had recent injuries in last 6 months.
- Workers having any musculoskeletal or neurological problem.
- Bartenders and Hotel Managers.
- Part-time workers.
- Additional job workers.
- People playing any aggressive sports.

**TECHNIQUE**

The participants ( $N = 400$ ) of the study were restaurant workers (200 chefs and 200 waiters). The mean of the age group was 32.62 and standard deviation (SD) was 7.5793. Modified Nordic Questionnaire was used for this study which had questions related to the objectives of the study. The study was approved by the Institutional Review Board. Restaurant workers who fulfilled the selection criteria were explained the need of the study before filling the consent form in the language they best understood. A written consent was taken from the participants and they filled the questionnaires during their working hours. A pilot study was carried out on 10 workers and then the required changes were made. The identity of the workers was not revealed and confidentiality was maintained. After data collection, the data was analyzed using Microsoft Excel (2007) and results were obtained.

**RESULTS**

**GRAPH 1: COMMONLY AFFECTED BODY PARTS IN RESTAURANT WORKERS**

**TABLE 1: COMPARISON OF DIFFERENT BODY PARTS AFFECTED IN WAITERS AND CHEFS**

Body parts	Waiters (%)	Chefs (%)
Neck	8	6
Shoulders	18	22
Elbows	15	15
Wrists/hands	26	27
Upper back	5	5
Lower back	11	10
Hips/thighs	1	0
Knees	11	9
Ankle	5	4

**DISCUSSION**

This study found out that 90% of the restaurant workers faced some or the other musculoskeletal problem. This finding is supported by the study of Khaleda Y where almost 78% of the restaurant workers were suffering from musculoskeletal disorders. The most common risk factors responsible for the development of musculoskeletal disorders are repetitive work, painful positions, carrying or moving heavy loads, other risk factors such as prolonged standing or walking<sup>7</sup>.

Maximum workers (54.75%) are in the age group of 25 – 30 years and about 32.75% restaurant workers who are having musculoskeletal disorders are in this profession for 6 – 10 years<sup>7</sup>. This study also found out that 65% of the workers work for almost 56 – 60 hours per week which means that the working hours is almost 8 -10 per day and 6 days a week which is a normal work schedule in most of the restaurants<sup>8</sup>.

Out of the total 400 restaurant workers, maximum complained of having upper limb problems where wrist/hand (27%) problems were the highest followed by shoulders (20%) and elbows (15%) which is seen in graph 1. This result holds true owing to the type of work the restaurant workers have to do. Upper limbs (the hand, wrist, elbow and shoulder), the neck and lower back are particularly vulnerable to MSDs. According to Khaleda Y's study, application of manual force to move objects causes tremendous stress on muscles and tendons of both the arms. Also repetitive work done using the same muscle/muscle groups and tendons continuously

for a prolonged period of the working day may be the reason for fatigue and injuries. It also states that in awkward postures (with the hands above shoulder height or with the wrists noticeably bent) the joints of the body are more vulnerable to injuries and the muscles therefore are less efficient for exerting force<sup>7</sup>. Second commonly involved body part was the low back due to awkward postures attained by the workers.

A comparative result between the commonly affected joints of chefs and waiters in table 1 showed that both the professions had maximum upper limb (wrists) involvement but chefs were more susceptible to problems due to their work profile. In chefs, 27% wrist involvement, 22% shoulder and 15% elbow problems were noticed. Xu YW et al described in their study the onsite ergonomics and task analysis of the cooks in the restaurants which supports this finding<sup>6</sup>. Also a study in Hong Kong says that the gross motor functions such as hand grip, elbow flexion and extension, and wrist pronation and supination were the commonly used positions of the upper limbs during cooking. Other reasons for upper limb problems were use of excessive force in chopping of food and repetitive actions of the forearm and/or the wrist required in chopping /cutting food. The main musculoskeletal risks of cooks are as follows:

- Raised left upper arm and abducted, neck flexed
- Left upper arm to rotate the wok quickly
- Left hand to hold the wok for a long time
- Alternate and quick left wrist extension and flexion
- Raised and abducted right upper arm
- Right upper limb to stir the food in the wok
- Quick right wrist pronation and supination
- Repetitive and quick task
- Frequent neck flexion
- Right arm frequently at the shoulder level to reach objects<sup>9</sup>.

Among 200 waiters, 26% had wrist problems, 18% had shoulder problems and 15% had elbow problems again suggesting that even waiters face a maximum of upper limb problems. A study done in Turkey supports this finding by stating that the highest mean pain intensity score was found in the forearm region<sup>10</sup>. Also waiters have to work by forward bending their neck, pronating and supinating their right hand usually which explain the finding where 67.5% have unilateral elbow involvement. They attain a bent posture when placing dish on the desk or collecting dish after eating, where the range is between 20 and 60 degree<sup>9</sup>.

Even the chefs most frequently use their right hand for cooking and other activities which affect their dominant elbow causing unilateral involvement. The workers also have to lift with

awkward postures and do overhead lifting, frequently overexert in handling overloaded serving trays and serving with one hand only<sup>11</sup>.

Out of the total shoulder problems, maximum (68%) of them have bilateral involvement. Similarly, about 66.5% have bilateral wrist involvement. It so happens due to the job profile of both waiters and chefs where the waiter has to carry a tray in one hand and serve or clean with the other simultaneously<sup>4</sup> and the chefs also use both the hands for different tasks as explained above.

Both the lower limbs also showed a bilateral involvement where 57.14% is for hips, and 83% is for both ankles and knees. Both the chefs and the waiters have to stand for prolonged periods of time. Standing for long periods of time can cause the posture to worsen progressively. Typically, workers will slowly begin to slouch and shift their weight from one foot to another to distribute the strain caused. Slouching causes a posture which is static and causes the worker to become less alert and active. If this uncomfortable position is maintained for a long duration, it can lead to circulation problems such as swollen feet and legs. When muscles are constricted, blood flow to the load-bearing muscles is hampered. These are the muscles which help in maintaining an upright position. This causes muscular strain in the legs, back and neck<sup>6</sup>.

Out of the total 90% workers who complained of having musculoskeletal problems, 79% of them could continue with their work despite of the discomfort caused by the pain. A study in Hong Kong states that in the catering industry, workers make an attempt to use awkward postures to lift or carry heavy objects, despite of them having an understanding or having the knowledge of how to ergonomically perform manual handling tasks in the workplace. The reason for this might be due to overlooking the severity of consequence of using incorrect postures, or they are habituated to use their incorrect postures to perform their daily work for a long period of time. They do not experience any discomfort or pain or injury by doing so, or even they have the experiences of discomfort but they are used to this discomfort<sup>9</sup>. Only 21% of the restaurant workers considered their work capacity to be affected by their problem<sup>2</sup>.

Only 27% of the total restaurant workers experienced some musculoskeletal disorder in the last 7 days but the remaining 73% did not face any problem in the last seven days.

## CONCLUSION

There is a high prevalence of musculoskeletal disorders amongst restaurant workers where in 90% suffer from some or the

other musculoskeletal problems. Of these, the highest problems are in the wrist (27%), shoulder (20%) and the elbow (15%). The chefs and the waiters both showed a similar result of having maximum upper limb problems despite of different job profiles. Maximum workers who had an MSD were working for 6-10 years and for 6 days a week. Most of the workers (79%) could continue with their work despite of having some pain/problem.

## ACKNOWLEDGEMENT

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## CLINICAL APPLICATION

The hotel restaurant workers have a wide range of task demands as mentioned above. There are a few studies done on the different musculoskeletal problems in restaurant workers. But there is a need to explore more about this occupation in India. Hence this study would help us find out different MSDs in restaurant workers and also compare the result between waiters and cooks in India.

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