

# Prevalance of Carpal Tunnel Syndrome Among Chefs Working at Restuarants and Hotels in Pune

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## Abstract:

**Background:** Carpal tunnel syndrome (CTS) is the most common entrapment neuropathy, caused by an increase in tissue pressure and compression in the carpal tunnel. Its overall prevalence in the general population is around 5%<sup>[1,2]</sup> CTS in younger individuals can occur, especially if they engage in activities or occupations that involve repetitive hand movements, forceful gripping, prolonged wrist flexion/extension, vibratory activities etc.

Similarly, chefs who are skilled and trained to cook who works in a hotel or restaurants also has the repetitive movement of hands and wrist along with twisting and turning the wrist.<sup>[3]</sup> This movement can risk the development of carpal tunnel syndrome. The study aimed to find the prevalence of carpal tunnel syndrome among chefs working in restaurants and hotels in Pune. To study the risk of developing carpal tunnel syndrome among chefs due to their repetitive action of wrist flexion and extension and their fine skills. Constant chopping, lifting, and stirring can place heightened strain on wrists, which can lead to CTS.<sup>[3]</sup>

Boston Carpal Tunnel Questionnaire (BCTQ) was used in this study to assess the functional status and intensity of symptoms in people with Carpal Tunnel Syndrome. The BCTQ, which consists of two parts: the Symptoms Severity Scale, which assess symptoms and the Functional Status Scale which evaluate the severity of functional difficulty.<sup>[6]</sup>

Total 236 samples were included in the study. The findings of the study revealed that **62.71%** of study population is positive for CTS, while **37.29%** showed negative results.

Most participants reported intense difficulty 43.92%, whereas 37.16% participants reported moderate difficulty and 18.92% could not perform any activity.

**Method:** Total 236 samples were included in the study by performing a special test i.e. phalen's test and reverse phalen's test to evaluate the participants for symptoms of CTS. Boston carpal tunnel syndrome questionnaire was given to the participants who were positive, to check the severity of the CTS. The scale contains two parts: the Symptoms Severity Scale, which assess symptoms and the Functional Status Scale which evaluate the severity of functional difficulty.

**Conclusion:** The present study concluded that 62.71% of chefs were positive for carpal tunnel syndrome and showed symptoms with varying levels of severity and functional limitation.

The severity analysis revealed that a score of 4, indicating intense difficulty, was observed in maximum number (43.92%) of participants.

**Keywords:** Carpal tunnel syndrome, Chefs, Special test, Boston carpal tunnel questionnaire.

## 1. Introduction

Carpal tunnel syndrome (CTS) is the most common entrapment neuropathy, caused by an increase in tissue pressure and compression in the carpal tunnel. Its overall prevalence in the general population is around 5%<sup>[1,2]</sup>. CTS is more common in women, older adults, and white individuals. The likelihood of developing CTS increases with age due to various factors such as age-related degenerative changes in the wrist, decreased tissue elasticity, and cumulative wear and tear on the median nerve<sup>[1-3]</sup>. Additionally, conditions such as arthritis or diabetes, which are more common in older adults, can further increase the risk of developing CTS. It can still occur in younger individuals, especially if they engage in activities or occupations that involve repetitive hand movements, forceful gripping, or prolonged wrist flexion/extension.<sup>[3-5]</sup>

The carpal tunnel is a gap in your wrist bones, it's a channel in your bones that allows tendons, ligaments, and nerves to flow through to reach your hand. Carpal tunnel syndrome is a medical ailment that causes discomfort, numbness, tingling, and weakness in your hands and wrists. Prolonged Tool Use: Repetitive tasks like typing, using a mouse, or controlling equipment can strain the wrist and lead to CTS.

**CAUSES:** Rheumatoid arthritis, Manual Labor, Improper Ergonomic, Diabetes, Obesity and Hypothyroidism.

Many occupations and jobs put people at risk of developing CTS because they require repeated hand movements, strong grasping, or prolonged wrist flexion and extension. For example, factory workers perform repetitive jobs that need frequent hand and wrist motions. Construction workers commonly use powerful grips or extended wrist motions. Musicians, particularly those who play string or percussion instruments, are also subject to repeated motions. Data entry workers frequently utilize keyboards, which require wrist flexion and extension. Hairdressers and barbers frequently use scissors and clippers, which demand repeated hand motions<sup>[4]</sup>. Furthermore, chefs and cooks frequently engage in repeated tasks such as chopping or stirring. Chefs are also heavily involved in precise work with their hands and are at risk of getting CTS owing to the repetitive wrist movements and increased pressure in the palm during preparation of meals. Similarly, chefs who are skilled and trained to cook who works in a hotel or restaurants also has the repetitive movement of hands and wrist along with twisting and turning the wrist. This movement can risk the development of carpal tunnel syndrome. Professional chefs typically have formal training from culinary schools or apprenticeships and extensive experience working in various

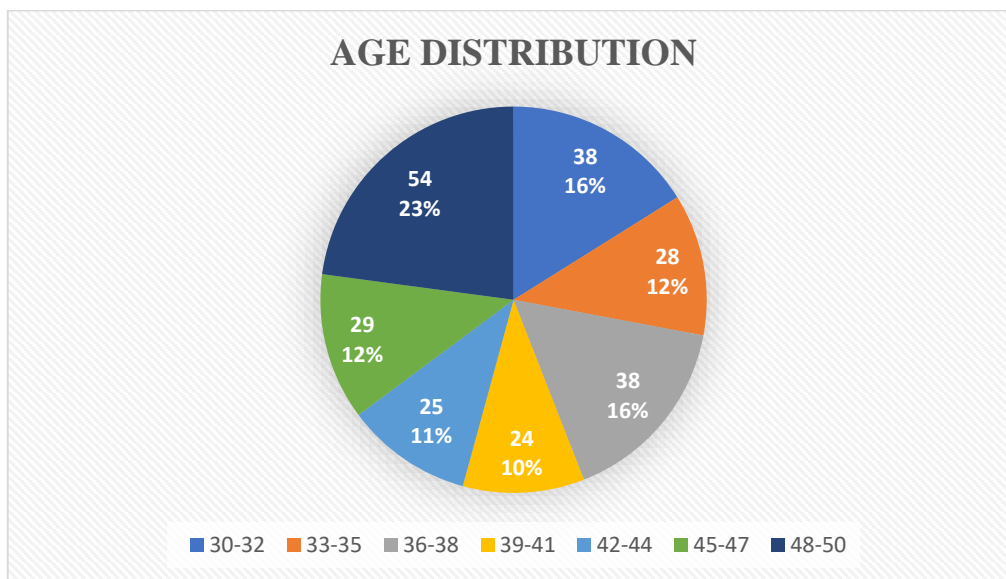
kitchen environments. Their expertise goes beyond cooking; it includes understanding food safety, ingredient sourcing, kitchen management, and maintaining high standards of quality and creativity. It is important to understand the professional paths of a chef and a cook. Chefs and cooks may have similar

overlapping tasks, but the true distinction becomes obvious once you leave the kitchen. When a cook leaves the kitchen, he or she is very much done for the day. Outside the kitchen, chefs must update their menus and ensure that all administrative responsibilities, such as timetables and payroll, are completed. Cooks have several kinds of responsibilities and will always work under a chef to keep the kitchen working. A cook's primary role is to assist the chef in executing his or her culinary vision. Personal cooks are also available. Personal chefs frequently operate in private kitchens, either alone or in small groups. They must be able to produce various sorts of dishes and create highly customized menus for their clients. A personal chef can either cook directly for a customer or prepare and mail meals to be cooked upon delivery.

**Material and Methods:** The study was carried out with total 236 participants and the results were drawn by performing a special test i.e. Phalen's test and reverse phalen's test to rule out the positive symptoms of CTS. Boston carpal tunnel syndrome questionnaire (BCTQ) was given to the participants who were positive, to check the severity of the CTS. All the data was analyzed.

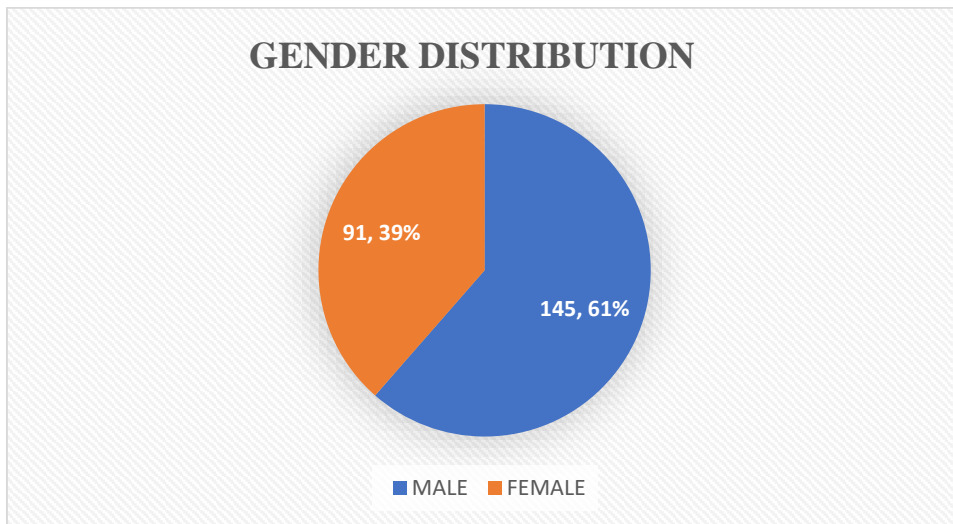
## RESULTS:

### AGE DISTRIBUTION



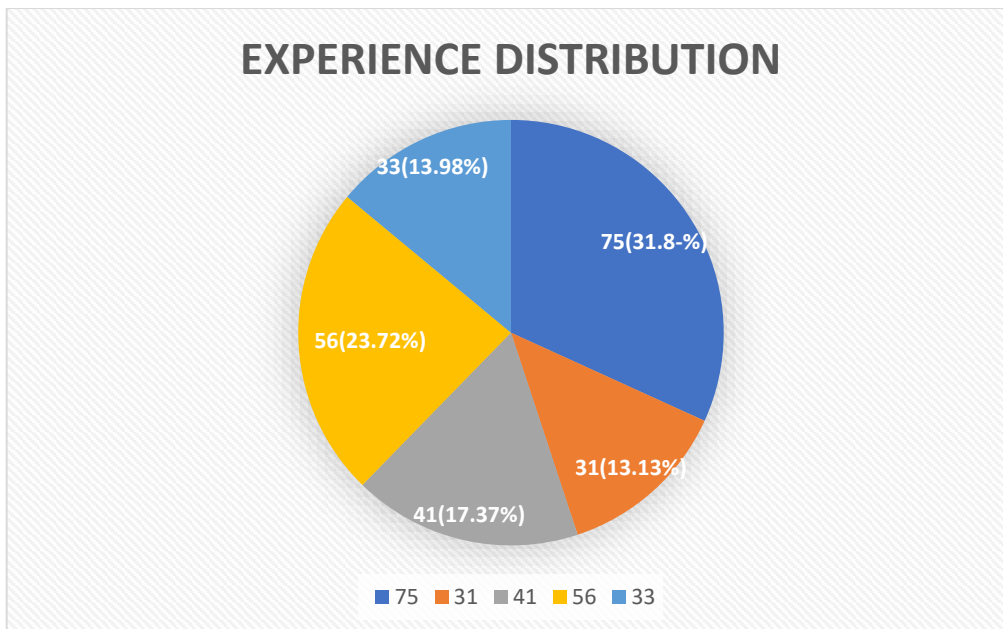
- Maximum participants were from age group between 48-50 (22.90%). Minimum participant age group was between 39-41(10.16%).

**GENDER DISTRIBUTION:**



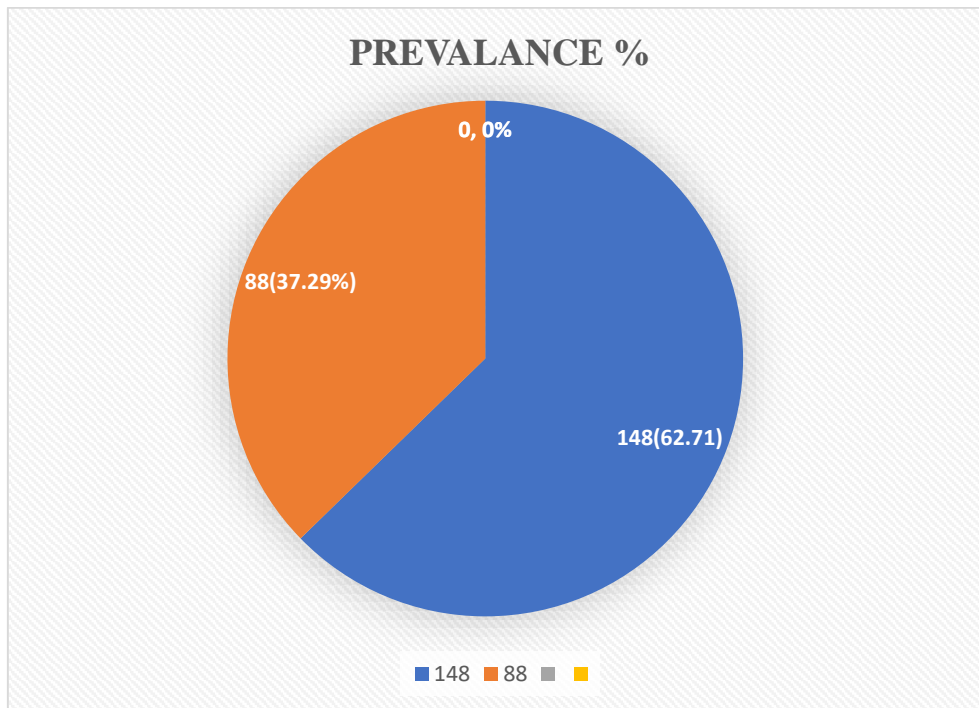
- Maximum participants were male 145(61.44%).

**EXPERIENCE:**

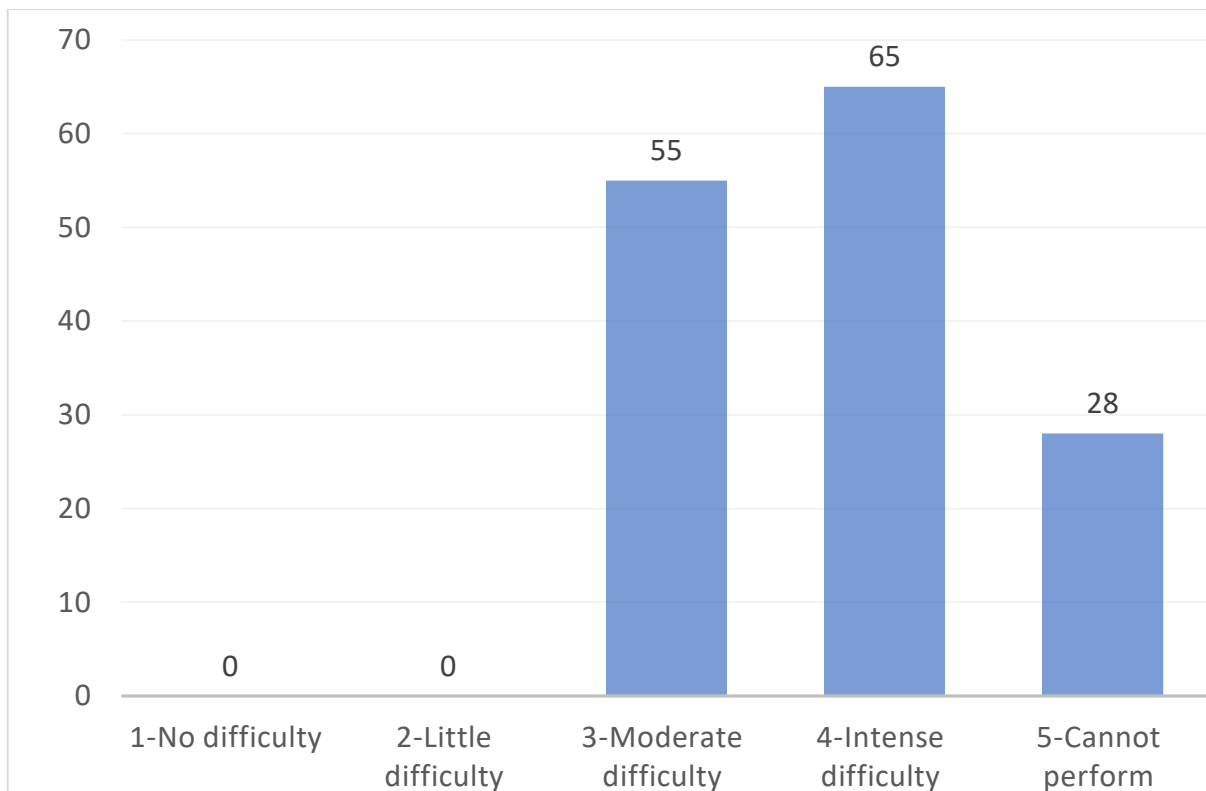


- Maximum participants were having experience of 6-10 years (31.80%). Minimum participant was in the 11–15-year group (13.13%).

**PREVALANCE:**



- 62.71% of the participants were positive for carpal tunnel syndrome (CTS), while 37.29% were negative.
- **SEVERITY:**



- Most participants reported intense difficulty 43.92%, whereas 37.16% participants reported moderate difficulty and 18.92% could not perform any activity.

## Discussion:

The present study aimed to determine the prevalence of Carpal Tunnel Syndrome (CTS) among chefs working in restaurants and hotels. A total of 236 participants were screened using clinical provocative tests, namely Phalen's Test and Reverse Phalen's Test, which are widely used for the preliminary diagnosis of CTS. The Boston Carpal Tunnel Questionnaire (BCTQ) was used in this study to assess the functional status and intensity of symptoms in people with Carpal Tunnel Syndrome. The BCTQ, which consists of two parts: the Symptoms Severity Scale, which assess symptoms and the Functional Status Scale which evaluate the severity of functional difficulty.<sup>[6]</sup> The findings highlight the occupational risk faced by chefs due to repetitive hand activities and prolonged wrist positioning during food preparation tasks.

The findings of the study revealed that 62.71% of the study population tested positive for CTS, based on the presence of symptoms and severity scores obtained through the questionnaire and clinical assessment. In contrast, 37.29% of the participants showed negative results, indicating no significant symptoms suggestive of CTS. This high percentage of positive cases suggests that chefs may be at considerable risk of developing CTS due to the occupational demands associated with their work.<sup>[4]</sup>

The findings suggest that participants with greater years of professional experience may have a higher likelihood of developing symptoms associated with carpal tunnel syndrome (CTS). One possible explanation is the cumulative effect of occupational exposure to repetitive wrist movements and forceful hand activities over an extended period of time. Professional kitchen work often involves repetitive tasks such as chopping, cutting, kneading, stirring, and lifting heavy utensils or food items. These tasks require sustained wrist flexion, extension, and gripping forces, which can place considerable mechanical stress on the wrist structures.<sup>[3]</sup>

Continuous exposure to such repetitive mechanical loading can result in microtrauma to the soft tissues surrounding the wrist joint, particularly the flexor tendons that pass through the carpal tunnel.<sup>[3]</sup> Over time, repetitive strain may lead to inflammation and swelling of these tendons and their surrounding synovial sheaths. This inflammatory process can increase pressure within the carpal tunnel, which is a narrow anatomical space bounded by carpal bones and the transverse carpal ligament. As the available space within the tunnel becomes restricted, compression of the median nerve may occur, leading to the characteristic symptoms of CTS such as pain, numbness, tingling, and weakness in the hand.

In addition to tendon inflammation, long-term repetitive occupational exposure may also contribute to structural changes in the carpal tunnel. Chronic mechanical stress can lead to thickening of the transverse carpal ligament and other connective tissues within the tunnel. Such changes may further reduce the available space for the median nerve, thereby increasing the risk of nerve compression.<sup>[2]</sup> Therefore, individuals who have worked for many years in occupations involving repetitive wrist movements may experience a cumulative biomechanical burden that predisposes them to CTS. Another observation in the present findings is the higher number of male participants with CTS. This distribution may partly reflect the gender composition typically observed in professional kitchen environments. In

many commercial kitchens, male workers often occupy senior or long-term positions, which may involve more physically demanding tasks and longer working hours. As a result, males in these roles may have greater cumulative exposure to occupational risk factors such as repetitive wrist movements, forceful gripping, and handling of heavy equipment<sup>[5]</sup>. This prolonged exposure may contribute to an increased likelihood of developing CTS symptoms over time.

Furthermore, biological and biomechanical differences between genders may also influence the risk and presentation of CTS. Males generally have greater muscle mass and upper limb strength compared to females. Increased muscle strength may enable males to perform forceful gripping or manual tasks with relatively lower perceived strain on the musculoskeletal system. However, despite this potential advantage in muscular strength, prolonged exposure to repetitive and forceful activities can still lead to overuse injuries, particularly when adequate rest periods or ergonomic practices are not maintained.<sup>[5]</sup>

Additionally, variations in wrist biomechanics, tendon loading patterns, and occupational task allocation may influence how different individuals experience cumulative strain in the wrist region. In professional kitchens, tasks requiring sustained gripping, cutting, and manipulation of tools may create repetitive loading patterns that contribute to the development of CTS over time. When such tasks are performed frequently without adequate ergonomic support, the risk of musculoskeletal disorders involving the wrist and hand may increase.<sup>[4]</sup>

Overall, the findings highlight the potential role of occupational exposure, years of professional experience, and gender-related factors in the development of CTS symptoms among individuals working in physically demanding environments such as professional kitchens. These observations emphasize the importance of implementing preventive strategies, including ergonomic modifications, task rotation, regular rest breaks, and worker education on proper hand and wrist mechanics. Such interventions may help reduce cumulative strain on the wrist structures and lower the risk of developing CTS among workers engaged in repetitive manual occupations.

## Conclusion:

- The present study concluded that 62.71% of chefs were positive for carpal tunnel syndrome and showed symptoms with varying levels of severity and functional limitation.
- The severity analysis revealed that a score of 4, indicating intense difficulty, observed in maximum number (43.92%) of participants.

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