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## Carpal Tunnel Syndrome Correlated With Medical Leave of Work

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### Abstract

**Introduction:** Carpal tunnel syndrome (CTS) is the most common occupational disease. It is directly related to the activities of the upper limbs, occurring due to general causes, rather than local post-traumatic deformation.

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**Objective:** To evaluate carpal tunnel syndrome correlated with absence from work, as this pathology causes a considerable amount of sick leave. **Material and method:** This study constitutes a systematic review, classified as exploratory and descriptive. The preparation of the research was a bibliographical search in electronic databases on methods associated with RSL (Systematic Literature Review) and the applications of SMARTER (Simple Multi-Attribute Rating Technique using Exploiting Rankings).

**Results:** A comprehensive systematic search of the literature yielded a total of 852 articles relating to the topic. Of these, 15 articles were eligible to be part of this systematic review. **Conclusion:** Preventive activities and early diagnosis favor less invasive therapies with less time away from work activities.

### Keywords

Carpal Tunnel Syndrome; Leave from Work; Work Activity.

## Introduction

Carpal tunnel syndrome (CTS) occurs due to compression of the median nerve by repetitive and prolonged movements of the wrist, causing parenthesis in part of the affected hand. It is the most common occupational disease and causes many difficulties in activities of daily living, making it extremely important to diagnose it as soon as possible [1]. It is pathology with a high incidence rate, making it an important health problem and is associated with work disability [2].

CTS is directly related to the activities of the upper limbs, occurring due to general causes, rather than local post-traumatic deformation. People who perform extreme repetitive movements with their wrists and direct external force are at the highest risk of developing this pathology. CTS are a dominant factor in work overload syndromes in the upper limbs. Patients who present symptoms of CTS demonstrate a decrease in their ability to carry out their work-related activities, making it clear that it will probably end up making them unfit for work. Patients often neglect pain in regions innervated by the n. average, although it is an important clinical characteristic [3].

In the United States, its incidence varies from 0.1% to 10% of the working population and the medical costs related to the disease are more than US\$2 billion, amounting to over 400 to 500,000 carpal tunnel release procedures every year. The average time individuals are away from work is 27 days [4].

Studies carried out by [5] and [6], demonstrated that the prevalence of CTS is related to different occupational areas, and depending on the work area, this pathology affects from 1 to 61% of workers. The highest prevalence (61%) was found among industrial workers who mainly use grinding tools, while the lowest prevalence (1%) occurred in industrial workers, who despite making vigorous use of their hands do not perform repetitive efforts. The disability-generating symptoms related to CTS result in extraordinarily high medical and non-medical expenses. CTS has been shown to be the most common

cause of sick leave, decreased productivity and personal financial losses among different types of compressive neuropathies [5-6].

The objective of this study was to evaluate carpal tunnel syndrome correlated with absence from work, as this pathology causes a considerable amount of sick leave. Its etiology is multifactorial, involving occupational and personal risk factors. Few prospective cohort studies on occupational risk factors have examined the general working population, which justifies the choice of topic.

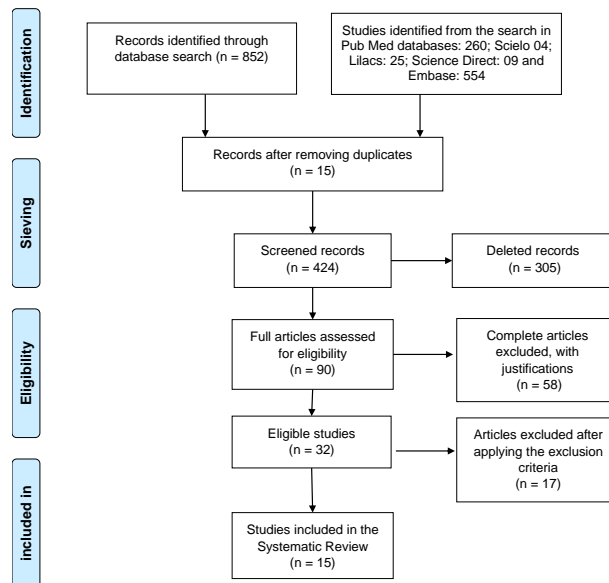
## Material and Method

This study constitutes a literature review, classified as exploratory and descriptive. The preparation of the research was a bibliographical search in electronic databases on methods associated with RSL (Systematic Literature Review) and the applications of SMARTER (Simple Multi-Attribute Rating Technique using Exploiting Rankings). The work carried out is of a qualitative and quantitative nature. Qualitative data analysis is carried out intuitively and inductively during the survey of the theoretical framework. It is also quantitative through the use of the multi-criteria method. In addition, there is also a numerical experimental study in order to simulate an article selection situation based on the observed criteria. Based on bibliographical research, located in the following databases: US National Library of Medicine (Pub Med), Scientific Electronic Library online (SCIELO), Latin American Caribbean Health Sciences Information System (LILACS), Science Direct (Elsevier) and Embase.

The search in the databases was carried out using the terminologies registered in the Health Sciences Descriptors created by the Virtual Health Library developed from the Medical Subject Headings of the US National Library of Medicine, which allows the use of common terminology in Portuguese, English and Spanish. The keywords used in English to search the databases were: “carpal tunnel syndrome”, “absence from work” and “work activity”. As a tool to support decision-making in the selection and prioritization of articles, a set of criteria were considered essential to represent the state of the art of the topic under study. This method has the following characteristics: (i) rigorous logic allows the acceptance of the method as a decision support tool; (ii) simple to understand and apply with easy-to-interpret results.

## Results

Eight hundred and fifty-two articles were identified in the databases referring to CTS between the years 2020 and 2022. From this, we chose the SMARTER method (Simple Multi-Attribute Rating Technique using Exploiting Rankings). Of the 852 articles found by combining descriptors, 32 were selected for reading the full text and only 15 articles were included for descriptive data analysis. In (Figure 1), we describe the strategy for selecting articles on the topic in question.



**Figure 1:** Article search strategy

The prevalence of CTS was really high and frequently working with pain was associated with greater chances of worsening of STC. Workers who use their hands and wrists in their work activities with repetitive movements, without an adequate break, have a high chance of presenting CTS.

CTS causes the patient to have pain and paresthesia in specific portions of the hand, causing significant functional limitation to carry out work and daily life activities, demonstrating the importance of early diagnosis of the disease. The diagnosis of CTS is clinical, so the history and specific physical examination (Tinel and Phalen tests) have good sensitivity. Among the complementary tests, electroneuromyography is usually very useful and can assist in the diagnosis when nerve fibers are compromised. Magnetic resonance imaging and ultrasound of the wrist are also complementary exams used, with ultrasound being more used as it is a quick, dynamic and low-cost examination.

## Discussion

CTS affects around 3% of the general population and is considered the most common compressive mononeuropathy. It is a rare pathology in children and mainly affects females (3:1), increasing in severity and prevalence according to age. Several diseases have been associated with CTS, such as connective tissue diseases, arthritis, obesity, diabetes mellitus, among others, but repetitive efforts and wrist vibrations are important factors to observe in certain professions [7].

Despite being an idiopathic syndrome, there are risk factors associated with its prevalence, such as excessively extended positions in flexion or extension of the wrist, dull use of the flexor muscles and exposure to vibration [8].

The prevalence of CTS is estimated by the National Health Interview Study (NHIS) to be 3.6 times more common in women than in men, in women over 55 years of age. The most prevalent age group is between 25 and 64 years old, but the disease generally begins between the ages of 20 and 60 years old, increasing with age. It is generally higher in the 25 to 34 age group (89.2%). The high prevalence rate leads to high costs for medical treatment, rehabilitation, loss of working hours and training of new workers. This makes this pathology a major problem in the field of work [9].

A study carried out by Gomes (2019) with 100 workers from a university center who used computers and telephones at work daily, in which they responded to an identification questionnaire. Workers who had CTS responded to the Visual Analogue Scale (VAS) and the Boston Questionnaire (BCTQ). The study demonstrated that 4% of workers had CTS, of which the majority reported moderate intensity pain (75%) and mild and moderate scores on the BCTQ [10].

A literature review study carried out by Nevis and collaborators (2022) on the physical and ergonomic risks of dental practice, demonstrated that the dental surgeon's working posture for long periods of time are the main causes of risk for the growth of disorders musculoskeletal disorders and musculoskeletal disorders developed as a result of their work activity are the most worrying [11]. Current research shows that these professionals have a high risk of developing CTS due to frequent pressure from wrist movements, leading to compression of the median nerve and inflammation of the flexor tendons [12-14].

The impact this pathology causes is not only economic in terms of diagnosis and treatment; Individuals with this syndrome may become unable to perform work tasks, often having to suspend their professional activities for a long time, also leading to increased costs for the employer. Treatment begins conservatively with physiotherapy, use of anti-inflammatory and corticosteroid injections, but with persistence it can lead to surgical treatment for carpal tunnel decompression [15].

## Conclusion

CTS is a common medical condition that remains one of the most frequently reported forms of compression of the median nerve, and the one that most often causes work disability. It is a syndrome that presents modifiable risks, but preventive activities and early diagnosis favor the less invasive treatments and less time away from work activities.

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