

Prevalence of Carpal Tunnel Syndrome among Dentists of Faisalabad

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Abstract: Dentists in their practice are daily exposed to work-related vibrations. The important cause of work disability is carpal tunnel syndrome. The study aimed to determine the prevalence of carpal tunnel syndrome among dental practitioner. In this cross-sectional study data from 100 dentists was collected using convenient sampling technique. Prior to data collection consent form was sent to the respective dental section of government hospitals of Faisalabad. The dentists who met the inclusion criterion were invited to participate in the study. The diagnosis was made according to clinical tests of Phalen and Tinel. Age, sex, years of experience, working hours per week and the type of procedure were then be considered as dependent variables. Overall, prevalence rate of 60 % of carpal tunnel syndrome among old aged dentists was observed. This study concluded that the risk of carpal tunnel syndrome increases with age. It also concluded that 60% prevalence rate was found in the dentists. Older dentists of age 35-50 year were included in more risk group than younger 20-25 year.

Keywords: Carpal tunnel syndrome, Phalen's sign, Tinel's sign, endodontic file.

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INTRODUCTION

Carpel tunnel syndrome is a condition which constitute numbness pain and paraesthesia in hand or wrist occurs because of multiple comorbidities. It can originate from number of possible causes like increased work load, occupation related, poor ergonomic status, workplace environment, working with some different instruments like vibratory tools and short diameter instruments. The prevalence of CTS was highest among dentist personals than the dentist assistants. Dentist who practised more than 10 years were having more symptoms than those having less experience.(1)

Moreover, gloves restrict movement as muscle do more effort to perform task and it'll lead to the hand fatigue and CTS as the Dental hygienist continuously and forcefully grip instrument during teeth scaling to make a contact with teeth.

Carpal tunnel is a canal located in the palmar aspect of wrist. It constitutes flexor retinaculum sheath and nine tendons. The sensory supply of lateral three fingers and lateral half of ring finger provides by median nerve so that symptoms of CTS appear when it is compressed. carpal tunnel syndrome is assessed by Phalen's and Tinel's test.

Carpal tunnel syndrome is the most common median neuropathy that affects the general population of approximately 3-6 %.(2). Approximately, 70 percent dentists reported musculoskeletal pain includes neck, back and shoulder each year. Among all the

musculoskeletal syndrome carpal tunnel syndrome prevalence has been reported to be highest among dental hygienist. Prevalence of CTS ranges from 6 to 8 percent in previous studies. CTS ranked first in all occupation according to an evaluation of bureau of labour statistics data in proportion of cases of CTS per 1000 employee.

MATERIALS AND METHODS: DATA COLLECTION TOOL

Tinel's sign test and Phalen's sign test were used to diagnosis and confirmation of carpal tunnel syndrome symptoms. Both tests are used to check the compromised median nerve.

STUDY DESIGN

It was a cross-sectional study design.

SAMPLE SIZE

A sample size of 100 was selected and was approved by expert statistician, 100 dentists participated according to inclusion and exclusion criteria.

SAMPLING TECHNIQUE:

Sample was selected by using simple random sampling technique.

STUDY SETTING:

This study was conducted at government hospitals of Faisalabad to enroll dentists for the current research study fulfilling the exclusion and exclusion criteria.

SELECTION AND DESCRIPTION OF PARTICIPANTS:

This study was undertaken in government hospitals of Faisalabad to check the prevalence of carpal tunnel syndrome among dentist. Before collecting the data, informed consent was sent to the dental ward of all government hospitals in order to get approval from their respective Incharge of dental ward and to get better understanding of our research project. The actual study aim was to check the causative factors related to age. Dentists who reported carpal tunnel symptoms were evaluated by using diagnostic test i.e. Phalen's sign test and was confirmed using Tinel's sign test.

INCLUSION CRITERIA

Dentists having clinically suspected CTS, pain and paraesthesia in the median nerve innervation. Dentist with CTS greater than 3 months which gave no response to 2 weeks of oral NSAID. Data was collected from the dentists in hospitals in Faisalabad only. Medical Superintendent (MS) of respective hospitals approved the permission letters issued by Directorate of Medical Sciences, GCUF.

EXCLUSION CRITERIA

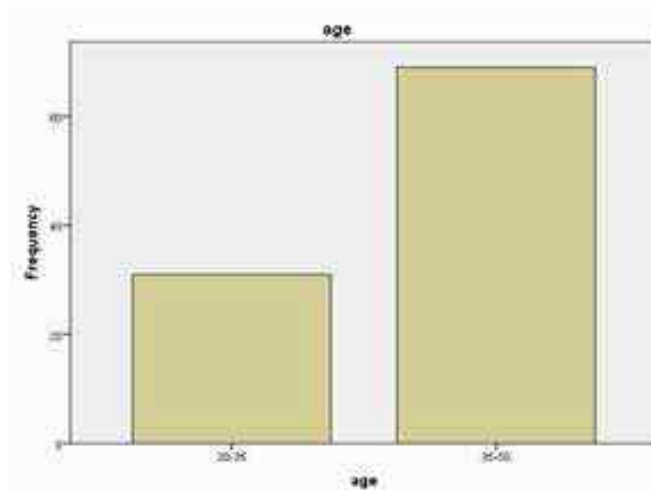
Dentists having diseases that could mimic CTS (e.g. cervical radiculopathy or severe thenar muscle atrophy) and dentists with pregnancy were not included in this study. Even after the basic information regarding research was provided to dentists who did not give consent, and who were not willing to participate, were excluded from this study. Dentists with congestive heart failure were not included in this study. Dentists having wrist fracture were excluded.

RESULTS: FREQUENCY DISTRIBUTION OF AGE

Results shows that 31 % dentists that were enrolled in the study were between 25 to 35 years of age group and 69% dentists were between 35 to 50 years of age. Total of 100 dentists.

Table.01: Frequency and percentage of age distribution

Age	Frequency	Percentage
25-35	31	31
35-50	69	69
Total	100	100



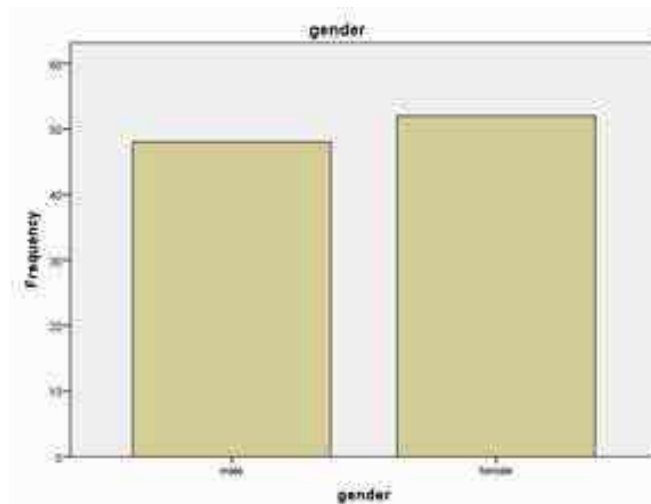
Graph.01: Frequency and percentage of age distribution

FREQUENCY DISTRIBUTION OF GENDER

Results show that 48% dentists were male, and 52 % dentists were female who were enrolled in the study. Thus, it indicated that more female than male participated.

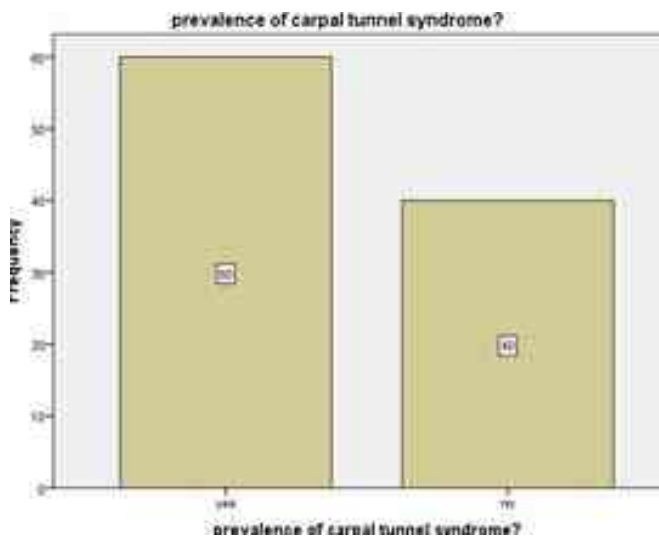
Table.02: Frequency distribution and percentage according Gender

Gender	Frequency	Percentage
Male	48	48
Female	52	52
Total	100	100



Graph.02: Frequency distribution and percent- age according to Gender **Frequency distribution of prevalence of carpal tunnel syndrome**

The study results shows the prevalence of 60 dentists having prevalence of carpal tunnel syndrome.



Graph.03: Frequency distribution of prevalence of carpal tunnel syndrome

DISCUSSION

The analysis and results of this study concluded that dentists who had a working experience of at least 2 years and above, showed symptoms of carpal tunnel syndrome which are numbness and tingling sensation in the distribution of median nerve. Dentist's age was major contributing factor in causing the CTS. The results were in favor of senior dentists, because the dentists whose age was more than 30 years, were complaining more about wrist pain.

Our study results supported the previous study in which repetitive movements of hand and wrist caused CTS symptoms. Those whose work-status involved such

wrist movements like, dentistry, golfing, knitting, gardening was found more prone to CTS (3). Comparable to the results of other studies, present 60% prevalence rate was found associated with the study that reported 64% prevalence rate (4) and another study showed 75.1% dentists having hand and wrist pain in their study (1). Duration of working- hours and dentists who treated a greater number of patients in previous studies showed high significant association with prevalence of hand and wrist pain. The prevalence of probable CTS in our study was higher than previous studies like Haman et al (2001) showed that prevalence of carpal tunnel syndrome was only 2.9 % among dentists and Haghighi et al (2012) also reported much less prevalence like 16% in Isfahanian (Iran) dentists and their diagnosis was also based on Phalen's and Tinel's sign test. Purienne et al (2008) reported a high prevalence rate of CTS than our study and showed that 83.1% prevalence was noted among Lithuanian dentists (5) This study results were also similar to our present study that prevalence rate of carpal tunnel syndrome was high among dental practitioner than general population.

CONCLUSION

This study concluded that the risk of carpal tunnel syndrome increases with age. It also concluded that 60% prevalence rate was found in the dentists. Older dentists of age 35-50 year were included in more risk group than younger 20-25 year. Dentists who spent more working hours and who treated more number of patients per day, experience more symptoms associated with carpal tunnel syndrome. In the end CTS in dentists can be prevented by taking regular short breaks, educating the dentists about proper wrist position during scaling, use of properly fitted gloves and instruments that are ergonomically designed.

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