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ORIGINAL ARTICLE

Prevalence of Carpal Tunnel Syndrome among Dentists of Faisalabad

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ABSTRACT

Background: Dentists in their practice are daily exposed to work-related vibrations. The important cause of work disability is carpal tunnel syndrome.
Methods: 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
Results: Overall, prevalence rate of 60% of carpal tunnel syndrome among old aged dentists was observed.
Conclusion: The risk of carpel 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

INTRODUCTION

Carpel tunnel syndrome is a condition which constitutes 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 wrong 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]. Dentists who are satisfied with their jobs are reported to have less hand problem than those having dissatisfied in a study[1].

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.

The establishment of a deep arch anteriorly at the wrist for one carpal cartilages and the flexor retinaculum is called the carpal tunnel. Medially, the pisiform and the hook of the hamate form the base of the carpal arch, while alongside it is formed for one tubercles of the scaphoid and trapezium. The carpal arch is becomes the carpal tunnel when the flexor retinaculum, that is a dense connective fabric ligament, bridges the room between the median and sideways sides of the base of the arch[2].

CTS are ultimate commonly pronounced entrapment neuropathy, and it is guide a big disease burden in the peasants' compensation method. Among commonly acted roving surgical procedures of the top, CTS release was twice as commonly as rotator cuff repair[3]. The palmar cutaneous arm commonly begins 4–7cm above the wrist crease and understands along next to the median nerve for 1.6–2.5cm. It therefore enters a tunnel made by the fascia at the median edge of the FCR and emerges 0.8cm above the wrist flexion crease to stimulate the skin of the thenar eminence. The palmar cutaneous arm can cross the transverse ligament of the carpus or grant permission go to the ulnar side of the middle nerve[4].

Carpal tunnel syndrome is the most common median neuropathy that affects the general population of approximately 3-6%[5]. Approximately 70% dentists reported musculoskeletal pain includes neck, back, and shoulder each year. Among the entire musculoskeletal syndrome carpel tunnel syndrome prevalence has been reported to be highest among dental hygienist. Prevalence of CTS ranges from 6 to 8% 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.

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MATERIALS AND METHODS

Data collection tool: 1) Tinel's sign test and 2) Phalen's sign test were used to diagnosis and conformation of carpal tunnel syndrome symptoms. Both tests are used to check the compromised median nerve. It was a cross-sectional study design. A sample size of 100 was selected and was approved by expert statistician. One hundred dentists participated according to inclusion exclusion criteria. The duration of this study was 6 months after the approval of synopsis. Sample was selected by using simple random sampling technique**.** This study was conducted among dentists to enroll under government hospitals of Faisalabad**.**

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 charge of dental ward and to get better understanding of our research project. After getting approval, data was collected using self-administered questioner. 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.

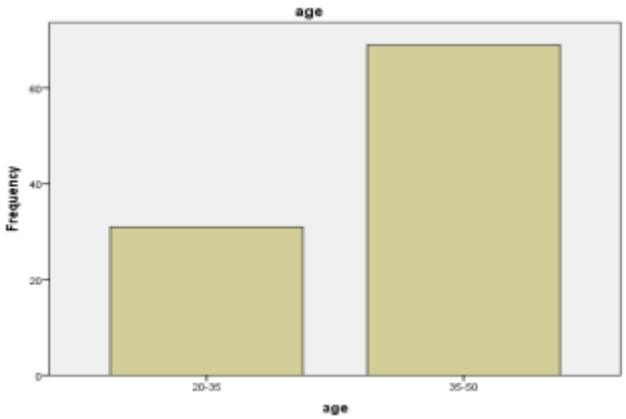
Inclusion criteria: Dentists having clinically suspected CTS; pain and paraesthesia in the median nerve innervation. Dentist with CTS greater than 3 months which give no response to 2 weeks of oral NSAID. Data was collected from the dentists in hospitals in Faisalabad only. Medical Superintendent (MS) 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 severethenar 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

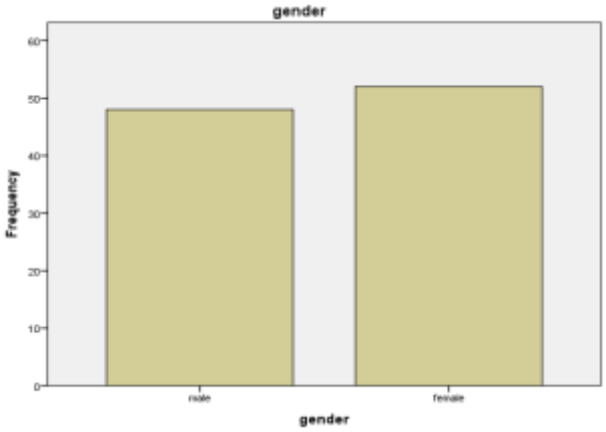
Frequency distribution of age: Results shows that 31% dentists that were enrolled in the study were between 25 to 35 years of age group and 69% dentists were between 35 to 50 years of age. Total of 100 dentists

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

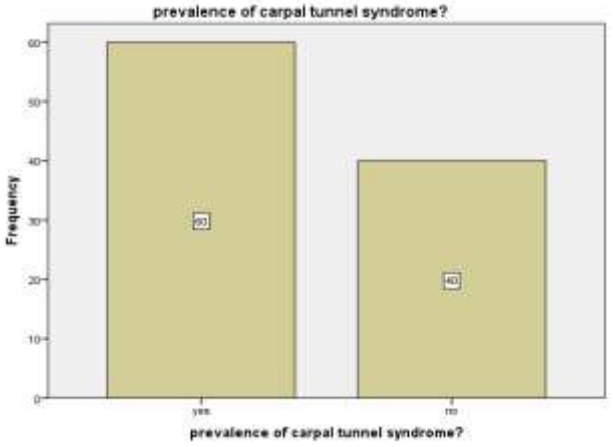


Frequency distribution of gender: Results show that 48% dentists were male and 52% dentists were female who were enrolled in the study. Thus, it indicated that more female than male participated.

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



Frequency distribution of prevalence of carpal tunnel syndrome: The study results show the prevalence of 60 dentists having 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[6].. Comparable to the results of other studies , present 60% prevalence rate was found associated with the study that reported 64% prevalence rate[7] 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[8,9]. Haman et al showed that prevalence of carpal tunnel syndrome was only 2.9 % among dentists and Haghighi et al 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.. A high prevalence rate than our study was reported in a research article and showed that 83.1% prevalence was associated among Lithuanian dentists[10].

This study results were similar to our present study that prevalence rate of carpal tunnel syndrome was high among dental practitioner than general population. The supposed prevalence of CTS between the population is betwixt 4% and 5%, particularly moving individuals middle from two points 40 and 60 years adult.4 In 2008, 127,269 individuals old 20 years and over were conducted to treat CTS in metropolitan France, delineating an incidence of 2.7/1000 (women: 3.6/1000; males: 1.7/1000). There were two peak repetitions: the first and higher of bureaucracy between 45 and 59 age of age (75% female); and the second betwixt 75 and 84 years (64% female) A extreme prevalence rate than our study was stated in a research article[4].

Thirty allotment of dentists working in Riyadh had knowledgeable severe or temperate symptoms related to CTS were inferior this study[11]. Prevalence of CTS with routine EDX tests and corresponding tests was observed as 16% and 24%, individually. Diagnostic sensitivity for PWMC, D4SOLC and 2L IMLC was 69.23% 76.92%, and 92.31%, individually. 2L IMLC was observed as most impressionable and D4SOLC was observed as most particular comparison tests for EDX of CTS in diabetic inmates was lower than this study[12].

It is a cross-localized study. We evaluated 106 dentists from dental schools in Tehran. We calm data by a common questionnaire, gift diagram, and medical examination. A nerve conduction speed (NCV) test was used to confirm the disease of CTS. The prevalence of CTS between dentists was 17.9% was lower than this study[13].

A closed-end questionnaire was delivered to 100 dental practitioners from Dakshina Kannada and Coorg sectors of Karnataka, India. Analyses were carried out utilizing Chi-square test and Fisher's exact test. The study found that 86% of the total public of dentists practicing for in addition to 5 years presented symptoms of CTS and 54.0% knowing LBP was higher than this study[14].

In this cross-sectional study, 361 dentists in Saudi Arabia have completed an connected to the internet questionnaire of three parts: mathematical and health dossier, the Thumb Disability Exam (TDX), and the Boston Carpal Tunnel Syndrome Questionnaire (BCTQ). Univar ate and multivariate studies of logistic regression were acted to investigate the partners' predictors of the first CMC joint osteoarthritis and Carpal Tunnel Syndrome. The level of significance was judge α = 0.05 for all tests. Thumb disability was considerably associated with the female neuter (or 2.21; 95% CI 1.31-3.56) and dentists old 50 or older (aOR 9.63; 95 portion CI 1.05-88.47). The symptom asperity scale (SSS) part of BCTQ was significantly guide increased risk in the female grammatical rules applying to nouns that connote sex or animateness (aOR 1.62; 95% CI 1.62-2.58). Limiting the clinical work to 10-20 hours per temporal length of event or entity's existence showed a meaningful

reduction in the probability of reporting CTS syndromes in SSS (aOR 0.44; 95% CI 0.21-0.90). CTS-related help disability was more inclined be reported for one female gender (aOR 2.21; 95% CI 1.36-3.57) and less inclined be reported by endodontic doctors (aOR 0.15; 95% CI 0.04-0.58) was higher than this study[15].

Among the dentists the one participated in the study, 63.3% were women, the maximum number of dentists was in the age group of 30–40 age, and 52.5% held a master strength. 61.7% of dentists work for 7–8 h moment of truth. A total of 25.7% of dentists reported accompanying symptoms of CTS, between them 15% stated mild restriction, 9.1% reported moderate restriction, and 1.6% reported harsh disability. Periodontics was most troubled specialty (41.66%) understood by endodontics (33.33%) was lower than this study[16].

The predominance of CTS among dental pupils was 13.3%. It was higher in women 10% compared to male 3.3%. There was a meaningful relationship 'tween the body bulk index (P= 0.03) with thin category by bearing a higher predominance of CTS. The use of finger pinch grip showed an opposite association accompanying CTS (P=0.04) was lower than this study[17].

A total of 132 dentists performed in this research exhausted whom 65 (49.2%) were males while 67(50.8%) were females. Total 28 (21.2%) dentists stated the symptoms of repetitive stress injury. Fifteen (11.4 %) dentists had mild pain and 13(9.8%) had moderate pain. Most of the parties aged 'tween 25 and 30 years (66.7%); 107(81.1%) partners had a working occurrence of less than 10 age. Ninety-one (68.9%) dentists were active for 6-8 hours per day and 57(43.2%) of the partners had a normal carcass mass index (BMI) percentage was higher than this study[18].

Among 90 dentists CTS was establish to be 82.2%. Among all the individual of those the one participated, the results of Functional Status Scale (FSS) in what way 20% of participants had no trouble, 54.4% have slight difficulty, 18.9% of things have moderate difficulty and 6.7% have forceful difficulty was taller prevalence of CTS than this study[19].

Limitations of study: Some limitation that this study faced during conducting research has impacted our study results.1)the young participants were not cooperative and due to this we faced some difficulties collecting data. 2) Lack of availability of participants.3) Few participants were not willing to use measuring tool, Phalen's sign test and Tinel's sign test.4) Female dentists showed less interest to fill the questioner than male dentists.

CONCLUSION

This study concluded that the risk of carpel 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 carpel 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.

RECOMMENDATIONS

Our study results would be much better if we use NCS (nerve conduction study). But due to shortage of time we could not do this test and it is recommended to conduct more research through NCS to find better prevalence rate of CTS. It is recommended that, for future research, the associated factor like the 'size of gloves' in causing CTS is needed to further investigate. Intervention programs should be conducted regarding the proper ergonomic use of wrists and instruments during working hours, like patient handling, wrist positions

Soft gripping of instruments and use of proper leverage while gripping will not put stress on your wrist and hand therefore reduce risk of the development of CTS. Dentists, who experience carpal tunnel syndrome symptoms, can modify their working positions of wrists for the prevention of activity limitation. Old aged dentists should have proper musculoskeletal examination once a year in order to prevent any symptoms in the initial stages. Wrist stretching like wrist bend, rubber ball squeeze , wrist flexing, and half finger bend for six to eight weeks daily may help in the prevention and management of the CTS.

Obesity increase the chance of development of CTS so use of proper diet and exercise may prevent the development of CTS

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