

Prevalence of Carpal Tunnel Syndrome Symptoms Among Dentists in Benghazi City - Libya

Research Article

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Abstract

Introduction: Many diseases may affect the nerves of a wrist. One of them is Carpal Tunnel Syndrome (CTS). It is defined as “A painful disorder in the wrist and a hand that is caused by compression of the median nerve within the carpal tunnel of the wrist”. In the general population the frequency of CTS prevalence ranged between 3% and 6%.

Objectives: To demonstrate the prevalence of CTS symptoms among dentists who working in Benghazi city -Libya.

Methods: A cross sectional study conducted in Benghazi - Libya in 2019. 205 dentists worked in 14 deferent dental clinics across the city were included. They were required to fill in a questionnaire regarding the symptoms of CTS.

Results: Out of 205 questionnaires were distributed, only 132 dentists (64.4 %) were responded. Of those 132 dentists, 73 were male (55.3%) and 59 (44.7%) were female. The results of the study shows that 32 dentists (24.2%) of the total participating experienced hand or wrist pain has been at night, whereas 42 dentists (31.8%) complained about hand or wrist pain at daytime. In addition, 19 dentists (14.4%) of them felt hand numbness and 34 (25.8%) suffered from hand weakness during work. Moreover, hand tingling problems were observed in 23 dentists (17.4%), and the difficulty with grasping and using small objects were reported in 19 dentists (14.4%). Finally, the difficulty of handling manual devices and surgical forceps was detected in 12 dentists (9.1%) and 37 dentists (28%) respectively.

Conclusion: This study shows a significant number of dentists who have symptoms of Carpal Tunnel Syndrome.

Abbreviations: CTS: Carpel Tunnel Syndrome; GDP: General Dental Practitioners.

Introduction

One of the most common peripheral neuropathy of the median nerve is carpal tunnel syndrome (CTS).[1] It is a compression to the median nerve that characterized generally by different symptoms such as pain, numbness, and paresthesia. These symptoms occur in the area supplied by the median nerve such as thumb, index, and middle fingers, in addition to the lateral half of the ring finger.[2] The main cause of this syndrome is unknown, but it could be a consequences of median nerve vein circulatory disorder and increasing internal canal pressure which indeed results in ischemia to the median nerve. Moreover, it may take place due

to tenosynovitis of the tendons that close to the median nerve.[3] In addition, wrist bone fracture or dislocation, connective tissue disorder, obesity, pregnancy, infections, and metabolic disease may also lead to this syndrome.[2]

However, among the general population, the prevalence of CTS are ranged between 3% and 6%,[4] while among pregnant women it reaches 19%,[5] whereas among diabetic patients it reaches up to 20%.[6] The working population has showed more prevalence of this syndrome than the non-working population. Occupationally, this syndrome happens frequently with the jobs that include chronic bending movements of the wrist during forceful catch-

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ing of devices.[4] Practicing dentistry is one of these jobs, which include repetitive twisting of the wrist especially during manual dental root canal treatment, scaling, tooth preparation, and extraction. Among dental practitioners, the commonness of CTS symptoms in Karachi city of Pakistan, is 10.31%,[7] while in Riyadh city of Saudi Arabia it almost 30.5%.[4] In Libya, the prevalence of this syndrome among dental practitioners has not yet been known. Therefore, the aim of this study is to demonstrate the prevalence of CTS symptoms among dentists who work in Benghazi.

Material And Methods

A cross-sectional study was conducted in Benghazi – Libya in 2019. A total of 205 dentists from 14 different polyclinics and private dental clinics were included. Those participants were asked to answer a questionnaire regarding CTS.

A two parts of self-administrated questionnaire was used. The socio-demographic data was included in the first part of the questionnaire, which include questions related to age, gender, years of experience, degree level, specialty, working time and medical condition. The second part of the questionnaire include nine different questions related to the symptoms of CTS and its severity as seen in Table 1. All data were analyzed by using IBM SPSS software version 22.

Results

Out of 205 questioners were distributed, only 132 dentists (64.4 %) responded, with a dropout rate of 73 dentists (35.6 %). Regarding gender, 73 dentists (55.3%) were male and 59 dentists (44.7%) were female (Figure 1). The highest number of participants 45 dentists (34.1%) was in the age group 30 – 34 years old and 44 dentists (33.3%) was in the age group less than 30 years

old, whereas the lowest number of participants 3 dentists (2.3%) was in the age group 40 – 44 years old (Table 2). 52 dentists (39.4%) have less than five years work experience, while 35 dentists (26.5%) have an 5-to-10 work experience. Moreover, 26 dentists (19.7%) and 19 dentists (14.4%) were reported to have 10 to 15 years of experience and ≥ 15 years of experience respectively. Regarding medical condition of participants, 5 dentists (3.8%) were reported to have type II diabetes mellitus, 2 dentists (1.5%) have hypothyroidism and 2 dentists (1.5%) have hypertension. However, no one seemed to suffer from rheumatoid arthritis or other joint diseases. In relation to pregnancy, only 3 dentists (2.3%) were pregnant.

It was found that 94 dentists (71.2%) of the participants were graduated dentists, 31 dentists (23.5%) have master degree and only 7 dentists (5.3%) have a PhD degree. The highest percentage of the participants 93 dentists (70.5%) work as a general dental practitioner (GDP), while the other participants were distributed among other work specialties (Table 3).

It was found that 32 dentists (24.2%) of the total participants experienced hand or wrist pain at night, in which the severity of the pain was distributed into 19 dentists (59.4%), 12 dentists (37.5%), and 1 dentists (3.1%) for mild, moderate and severe pain respectively. Nevertheless, the percentage of dentists' ages who complained about hand or wrist pain at daytime were more than that at night with 42 dentists (31.8%) and 32 dentists (24.2%). Some of them 27 dentists (64.3%) complained about mild pain and 15 dentists (35.7 %) had moderate pain, while there was no severe pain reported meanwhile during daytime. In addition, 19 dentists (14.4%) of the total participants showed that they suffered from numbness that were classified into 36.8% for mild, 57.9% for moderate, and 5.3% for severe form of hand numbness.

Moreover, 34 dentists (25.8%) were reported the symptom of hand weakness during work. The majority of them 24 dentists

Figure 1. Gender distribution.

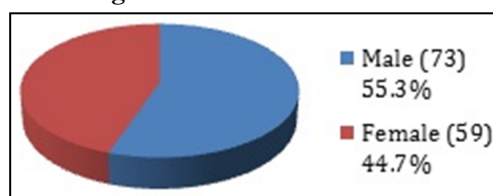


Table 1. The CTS symptoms for a typical twenty-four hour period during the past three months (mark one answer to each question).

	QUESTION	Yes	No	If yes, is it		
				mild	Moderate	Sever
1	Do you have hand or wrist pain at night?					
2	Do you typically have pain in your hand or wrist during the daytime?					
3	Do you have numbness (loss of sensation) in your hand?					
4	Do you have weakness in your hand or wrist?					
5	Do you have tingling sensations (وخ) in your hand?					
6	Do you have difficulty with the grasping and use of small objects such as endodontic files ?					
7	Do you have difficulty with the grasping of manual instruments such as (excavator ,carver or manual scaling instrument) ?					
8	Do you have difficulty with the grasping surgical forceps during dental extraction?					
9	Do you have difficulty with grasping of dental hand piece?					

Table 2. Age distribution.

Age	Frequency	Percent
less than 30	44	33.3
30-34	45	34.1
35-39	25	18.9
40-44	3	2.3
45-49	4	3
50+	11	8.3
Total	132	100

Table 3. The distribution of work specialties.

Specialty	Frequency	Percentage
Dental anatomy	1	0.8
Endodontic	5	3.8
Aesthetic	2	1.5
Fixed prosthodontic	3	2.4
GDP	93	70.5
Oral surgery & Implant	5	3.8
Restorative Dentistry	6	4.6
Oral medicine	3	2.3
Oral pathology	1	0.8
Orthodontic	3	2.3
Pedodontic	5	3.8
Periodontic	3	2.3
Removable prosthodontic	2	1.6
Total	132	100

Table 4. Numbers and severity of CTS symptoms.

Symptom	Total	Mild	Moderate	Sever
	No. (%)	No. (%)	No. (%)	No. (%)
Hand or wrist pain at night	32 (24.2%)	19 (59.4%)	12 (37.5%)	1 (3.1%)
Hand or wrist pain at daytime	42 (31.8%)	27 (64.3%)	15 (35.7%)	0 (0%)
Hand numbness	19 (14.4%)	7 (36.8%)	11 (57.9%)	1 (5.3%)
Hand weakness during work	34 (25.8%)	24 (70.6%)	9 (26.50%)	1 (2.9%)
Hand tingling	23 (17.4%)	13 (56.5%)	9 (39.10%)	1 (4.3%)
Difficulty in grasping and usage of small objects	19 (14.4%)	11 (57.9%)	7 (36.80%)	1 (5.30%)
Difficulty in handling of manual instrument	12 (9.1%)	7 (58.3%)	4 (33.30%)	1 (8.30%)
Difficulty in handling of surgical forceps	37 (28%)	24 (64.9%)	12 (32.4%)	1 (2.7%)

(70.6%) were reported with mild form of hand weakness. Moreover, the hand tingling was reported by 23 dentists (17.4%) (Table 4).

However, 19 dentists (14.4%) reported to have the difficulty with grasping and handling of small objects. Finally, the difficulty in handling of manual instruments and surgical forceps recorded by 12 dentists (9.1%) and 37 dentists (28%) respectively (Table 4).

Discussion

This cross sectional study evaluated the median nerve neuropathy

among 132 dentists with different ages, years of working experience and work specialties.

Occupational musculo-skeletal complains in dentistry usually occurs with upper body movements in sitting or standing positions during dental work.[8, 9]

A considerable proportion of the participants 81 dentists (61.3 %) had one or more symptoms of CTS. This was much higher than other studies with similar aim like Karachi study (10.3%),[7] Riyadh study (30.5%),[4] Isfahanian study (16.7%),[2] Shiraz study (17.5%),[10] Chennai study (25.7%),[11] United States army

dentists study(28%),[12] Australian study (34%).[13] Malaysian study 21.2%, [14] and Lahore study (15.5%).[15] The explanation of this could be due to lack of knowledge about CTS and how it could be prevented as CTS was not taught during undergraduate and even in postgraduate years, also considerable proportion of the participants 60 dentists (45.5%) were working full time which can attribute to development of CTS.

60 dentists (75 %) with CTS symptoms were working as general dental practitioner (GDP) and that can explained by the large number of GDP participants in this study. In regarding to dental speciality and CTS, it was found that 4 endodontists (80%), 3 periodontists (100%), 3 pedodontists (60%) and 4 restorative dentists (66.6%) had CTS symptoms, similar results were found in other studies like Karachi study, [7] Riyadh study, [4] and Chennai study. [11] Gender distribution of dentists with symptoms of CTS was 43 female dentist (53%) and 38 male dentist (47%). Female dentist was slightly found to be more prone to CTS than male dentist and this tendency could be due to smaller wrists and potentially smaller carpal tunnel volume.[16]

Unlike other studies, [17] the symptoms of pain related to CTS were more during daytime than that of nighttimes, the explanation of that could be attributed to rest movement during dental work which increases the compression of the median nerve as it passes through the carpal tunnel.

Conclusion

This study shows a significant number of dentists who may have Carpal Tunnel Syndrome in the city of Benghazi. General dental practitioners, endodontists, periodontists and pedodontist are more prone to CTS. It is, therefore, important to draw a serious attention to CTS and its risk factors. In addition, to increase the awareness and knowledge about CTS among dental students and working dentists. Further studies include larger sample size and more different cities across Libya should be conducted.

Clinical Significance

This paper demonstrates the relationship of Carpal tunnel syndrome among dentists as an occupation that requires wrist movement and bending which is a significant cause of the syndrome.

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