

Prevalence of Carpal Tunnel Syndrome and its Severity and Functional Status in Male Hairdressers

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Abstract:

Background: CTS (carpal tunnel syndrome) is the most common entrapment neuropathy of the upper limb. This condition occurs when one of the major peripheral nerves to the hand i.e., the median nerve is compressed at the level of the wrist in the carpal tunnel. Many physiological and pathological factors contribute to the development of this disease. It affects people of almost all occupations with repetitive hand movements and many researches have been conducted on its prevalence and occurrence in many occupations. However, there isn't enough evidence to support the frequency and severity of CTS in male hairdressers.

Objective The study aimed to determine the prevalence and severity of Carpal Tunnel Syndrome in male hairdressers.

Methodology: A cross-sectional survey was conducted among male hairdressers in Lahore. 400 male hairdressers were included by using a non-probability convenient sampling technique. The duration of the study was 4 months. The data was collected from different male salons in Lahore using the Boston Carpal Tunnel Questionnaire (BCTQ). The data was analyzed using the SPSS version 25 software.

Results: The data was calculated from a total of n=400 participants by using standard BCTQ. The BCTQ symptom severity scale showed that there were 245(61.3%) asymptomatic cases, 99(24.8%) mild cases, 46(11.5%) moderate cases, and 10(2.5%) severe cases. The total functional status scale showed that there are 316(79.0%) asymptomatic cases, 64(16.0%) mild cases, 17(4.3%) moderate cases, 2(0.5%) severe cases and 1(0.3%) very severe case.

Conclusions: The current study concluded that a maximum number of male hairdressers in Lahore were asymptomatic. The male hairdressing community was not particularly affected by CTS, but they should be advised about safety precautions to prevent symptoms associated with CTS or any other musculoskeletal disease that could negatively impact their ability to earn a living due to involvement in occupations demanding repetitive movements.

Keywords: Amyotrophy, Carpal Tunnel Entrapment Neuropathy, Carpal Tunnel Median Neuropathy, Compression Neuropathy, Thenar

Introduction:

Carpal tunnel syndrome (CTS) is an entrapment neuropathy that occurs as a result of compression of the median nerves due to the increase in the pressure in the carpal tunnel. It can be portrayed by both sensory and motor disturbances due to median nerve compression (1). Sustained or high carpal tunnel pressure impairs microcirculation in the median nerve, resulting in decreased action potentials, demyelination of the nerve, and axonal degeneration.

Confirmation of CTS needs objective validation of median nerve abnormalities within the carpal tunnel. Electro-diagnostic investigations are the most dependable technique for obtaining this objective validation (2). The importance of ultrasound (US) assessment as a diagnostic tool in the evaluation of CTS is related to the fact that it can effectively measure thickening of the median nerve, flattening of the nerve within the tunnel, and bowing of the flexor retinaculum

Symptoms of the musculoskeletal system frequently outweigh pathophysiology. More often than not, symptoms are correlated with stress, discomfort, and ineffective coping mechanisms rather than pathophysiology. This situation makes it difficult to diagnose or determine the level of pathophysiology using symptoms alone (3).

CTS is a very common condition. Many patients suffer from this common peripheral nervous compressive syndrome, regardless of occupational burden (4). Most of the risk factors for CTS are subjective, including older age, female sex, obesity, rheumatoid arthritis, diabetes mellitus, hypothyroidism, acromegaly, pregnancy, and trauma. Nevertheless, numerous researches have pointed to a significant connection between jobs and CTS (5). There is growing scientific evidence that highly repetitive manual jobs, uncomfortable hand/wrist postures, hand flexion and extension, intense exertion, or hand/arm vibration during work all contribute to the development of CTS. Given the nature of their employment, some occupational groups are more vulnerable than others. Most of these jobs require heavy physical exertion and frequent use of hand-held vibratory instruments.

The repetitive hand and wrist movements required in hairdressing may contribute to the development of CTS. In Lahore, hairdressers make up a significant proportion of the workforce. Reduced productivity at work, absenteeism, and higher medical expenses can all be consequences of CTS. Nevertheless, the frequency and severity of CTS in male hairdressers are not well supported by the available data. The data from the current research can be used for comparative analyses with other demographics and vocations in future studies to better understand the etiology, development, and management of CTS. This research aims to determine the frequency and severity of CTS among male hairdressers in Lahore.

Methodology:

This cross-sectional study was conducted on Male hairdressers in Lahore. The complete duration for the conclusion of this study was over 4 months. The non-probability consecutive sampling technique was used. The eligibility criteria included the hairdressers who had been working for a minimum of 5 years and were aged between 20 to 50 years. The hairdressers with any pre-existing health conditions like osteoarthritis, R.A., or any other musculoskeletal disorder involving hands and wrists were excluded. The Boston Carpal Tunnel Syndrome questionnaire was used for data collection for the prevalence and severity of Carpal Tunnel Syndrome. Written consent was taken from the hairdressers and the significance of the study was explained before filling the questionnaires. Data was analyzed through Statistical Package for Social Sciences Software (SPSS) 25 version (6).

Results:

The number of participants included in this study was n=400. The descriptive statistics of the data for the age, BMI, working hours, and years of experience. The Mean \pm SD of age was 30.46 ± 7.95 with a minimum age of 20 and a maximum age of 49 years.

Table 1:

Variables		Frequency (n)	Percentage (%)
Age (Years)	20-29	227	56.8
	30-39	115	28.8
	40-49	58	14.5
Body Mass Index	<18 (underweight)	14	3.5
	18.5 - 24.9 (normal)	254	63.5
	25 - 29.9 (overweight)	114	28.5
	30 - 39.9 (obese)	18	4.5
Working Hours	5-10 hours	231	57.8
	11-15 hours	163	40.8
	>16 hours	6	1.5
Experience (Years)	5-10	240	60.0
	11-15	73	18.3
	16-20	34	8.5
	21-25	22	5.5
	>25	31	7.8
Total		400	100.0

The data shown in Table 1 indicates that out of the 400 participants, 227 (56.8%) fell between the 20-29 years age range, 115 (28.8%) between the 30-39 years age range, and 58 (14.5%) between the 40-49 years age range. In terms of BMI, the participants were, in order, underweight (14; 3.5%), normal (254; 63.5%), overweight (114; 28.5%), and obese (18; 4.5%). Out of 400 participants, 231 (57.8%), 163 (40.8%), and 6 (1.5%) worked for 5-10, 11-15 and more than 16 hours respectively. Of the total number of participants, 240 (60%), 73 (18.3%), 34 (8.5%), 22 (5.5%), and 31 (7.8%) had 5-10, 11-15, 16-20, 21-25 and more than 25 years of experience.

Table 2:

Total Symptom Severity	Frequency	Percent
1-11 (Asymptomatic)	245	61.3
12-22 (Mild)	99	24.8
23-33 (Moderate)	46	11.5
34-44 (Severe)	10	2.5
45-55 (Very severe)	0	0
Total	400	100.0

This table shows the interpretation of the symptom severity scale. BCTQ symptom severity scale values were reported based on the following scores: asymptomatic (1-11), mild (12-22), moderate (23-33), severe (34-44), and very severe (45-55). There are 245 (61.3%) asymptomatic cases, 99 (24.8%) mild cases, 46 (11.5%) moderate cases, 10 (2.5%) severe cases and no case was reported as very severe.

Table 3:

Total Functional Severity	Frequency	Percent
1-8 (Asymptomatic)	316	79.0
9-16 (Mild)	64	16.0
17-24 (Moderate)	17	4.3
25-32 (Severe)	2	0.5
33-40 (Very severe)	1	0.3
Total	400	100.0

This table shows the interpretation of the functional status scale. BCTQ functional status values are based on the following score: asymptomatic (1-8), mild (9-16), moderate (17-24), severe (25-32) and very severe (33-40). There were 316 (79.0%) asymptomatic cases, 64 (16.0%) mild cases, 17 (4.3%) moderate cases, 2 (0.5%) severe cases, and 1 (0.3%) very severe cases.

Discussion:

Beibei Feng et al conducted a study in 2021 in China among young office workers. Results showed that the clinically confirmed CTS prevalence was 9.6% only. The prevalence of wrist and hand symptoms was 22 and 15%, respectively. The results are the same way as in the current study. CTS is prevalent among different occupations but the percentage may vary among different age groups (7).

Melissa Airem Cazares-Manríquez et al conducted a review of Carpal Tunnel Syndrome and Its Association with Age, Body Mass Index, Cardiovascular Risk Factors, Hand Dominance, and Sex in 2020. Results of this review showed that the prevalence of CTS increases with age and it is similar to the current study in which most participants were young and CTS was not a common problem (8).

In 2019, Faisal Ahmed Alhusain et al in the year concluded that thirty percent of dentists working in Riyadh had experienced severe or mild symptoms related to CTS because of the forceful maneuvers and repetitive nature of the job. In contrast, the current study showed that hairdressing was also an occupation of intense and repetitive maneuvers but the majority of participants in this study were asymptomatic and very few had mild symptoms (9).

Conclusion:

The current study concluded that a maximum number of male hairdressers in Lahore were asymptomatic. The male hairdressing community was not particularly affected by CTS, but they should be advised about safety precautions to prevent symptoms associated with CTS or any other musculoskeletal disease that could negatively impact their ability to earn a living due to involvement in occupations demanding repetitive movements.

References:

1. Lee S, Cha E, Yang M, Lee J, Lee J, Lee S, et al. The Effects of Acupotomy Therapy on Carpal Tunnel Syndrome: A Report of 4 Cases. *Journal of Acupuncture Research*. 2018;35:4-10.

2. Nathan PA, Keniston RC, Myers LD, Meadows KD, Lockwood RS. Natural history of median nerve sensory conduction in industry: relationship to symptoms and carpal tunnel syndrome in 558 hands over 11 years. *Muscle & Nerve: Official Journal of the American Association of Electrodiagnostic Medicine*. 1998;21(6):711-21.
3. Hegmann KT, Merryweather A, Thiese MS, Kendall R, Garg A, Kapellusch J, et al. Median Nerve Symptoms, Signs, and Electrodiagnostic Abnormalities Among Working Adults. *JAAOS - Journal of the American Academy of Orthopaedic Surgeons*. 2018;26(16):576-84.
4. Spahn G, Wollny J, Hartmann B, Schiele R, Hofmann G. Metaanalysis for the evaluation of risk factors for carpal tunnel syndrome (CTS) Part I. General factors. *Zeitschrift für Orthopädie und Unfallchirurgie*. 2012;150(5):503-15.
5. Möllestam K, Englund M, Atroshi I. Association of clinically relevant carpal tunnel syndrome with type of work and level of education: a general-population study. *Scientific reports*. 2021;11(1):1-6.
6. Demiryurek BE, Aksoy Gündoğdu A. Prevalence of carpal tunnel syndrome and its correlation with pain amongst female hairdressers. *International journal of occupational medicine and environmental health*. 2018;31(3):333-9.
7. Feng B, Chen K, Zhu X, Ip W-Y, Andersen LL, Page P, et al. Prevalence and risk factors of self-reported wrist and hand symptoms and clinically confirmed carpal tunnel syndrome among office workers in China: a cross-sectional study. 2021;21:1-10.
8. Cazares-Manríquez MA, Wilson CC, Vardasca R, García-Alcaraz JL, Olguín-Tiznado JE, López-Barreras JA, et al. A review of carpal tunnel syndrome and its association with age, body mass index, cardiovascular risk factors, hand dominance, and sex. 2020;10(10):3488.
9. Alhusain FA, Almohrij M, Althukeir F, Alshater A, Alghamdi B, Masuadi E, et al. Prevalence of carpal tunnel syndrome symptoms among dentists working in Riyadh. *Annals of Saudi medicine*. 2019;39(2):104-11.

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