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# PROFILE OF PATIENTS WITH CARPAL TUNNEL SYNDROME: A STUDY IN A TERTIARY CARE HOSPITAL

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**ABSTRACT**

**Background:** Carpal tunnel syndrome (CTS) is one of the most common 'peripheral neuropathy which is usually associated with the compression of the median nerve at the level of carpal tunnel. CTS is generally characterized by tingling, numbness, weakness of the thumb, and thenar atrophy. In Bangladesh, we do have not enough research-based data regarding the features and presentations of carpal tunnel syndrome.
**Aim of the study:** This study aimed to determine the features and demography of patients with carpal tunnel syndrome (CTS).
**Methods:** This prospective observational study was conducted in the Department of Physical Medicine & Rehabilitation, Cumilla Medical College Hospital, Cumilla, Bangladesh during the period from January 2019 to January 2020. In total 100 patients with carpal tunnel syndrome were included as the study subjects of this study. This study was approved by the ethical committee of the mentioned hospital. Proper written consent was taken from all the participants before data collecting. All data were collected, processed and analyzed by using MS Office and SPSS version 23 programs as per need.
**Results:** The mean (±SD) age of the participants was found 47.25±9.50 years. The male-female ratio was 1:3. The mean (±SD) BMI (kg/m2) was 26.9±4.77. Most of the participants were married which was 62% (n=62). We found paraesthesia weakness in thenar eminence, numbness,

**ORIGINAL RESEARCH ARTICLE**

nocturnal pain, pain after physical activity and sensitivity alteration were associated in more than 75% of patients. Among all the participants, more than half (53%) of the patients were mild in condition. Besides this, 43%, 8% and 4%of patients were in moderate, severe and very severe condition respectively.

**Conclusion:** Women are most vulnerable to carpal tunnel syndrome. Most of the cases for CTS are found in middle age group. Paraesthesia may be considered the most common symptom of this disease. Early diagnosis may reduce the suffering of patients with carpal tunnel syndrome.

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## 1. INTRODUCTION

Carpal tunnel syndrome (CTS) is one of the most common 'peripheral neuropathy which is usually associated with the compression of the median nerve at the level of carpal tunnel. In the human body, the most common form of median nerve entrapment is carpal tunnel syndrome (CTS) [1] and it aitsingributes to 90% of all entrapment neuropathies. [2] It (Carpal tunnel syndrome) was first described by Paget in 1854, [3] and is defined as a mononeuropathy because of a compressive force distorting the carpal tunnel, [4] in 3.8% of the general population. [5] Incidence of carpal tunnel syndrome is up to 276:100,000 per year, [6] with a prevalence of 94% in females and 6% in males [7] with a peak age incidence of 40 to 60 years. [8] The factors that contribute to its (Carpal tunnel syndrome) causation are a congenital predisposition, injury, heavy work, fluid retention, and development of any mass lesions in the tunnel. [9] The main features of CTS (Carpal tunnel syndrome) include pain in the hand, numbness in the distribution of the median nerve, and tingling sensation. [10] weakness of the grip strength and decreased functional capacity of the affected hand. [11] Patients are generally more distressed at night and complain of clumsiness with activities requiring wrist flexion. [12] They often claim the 'flick sign' in which shaking their wrists relieves symptoms. In the Panel test, of carpal tunnel syndrome (CTS) patients, there will be paraesthesia in the median nerve innervating area following wrist flexion for 30-120 seconds. [13] The nerve conduction study of carpal tunnel syndrome patients is certainly a diagnostic tool for such patients. [14] As the examples of conservative treatment for carpal tunnel syndrome patients, oral and injectable steroids, electrotherapy, physical therapy, night splinting and workplace alteration may be mentioned. [15]

## 2. OBJECTIVE

**General Objective**:

- To determine the features and demography of patients with carpal tunnel syndrome (CTS).

**Specific Objective:**

- To assess the socio-demographic status of participants.
- To evaluate the clinical features of participants.
- To assess the severity status of participants.

## 3. METHODOLOGY

This prospective observational study was conducted in the Department of Physical Medicine & Rehabilitation, Cumilla Medical College Hospital, Cumilla, Bangladesh during the period from January 2019 to January 2020. In total 100 patients with carpal tunnel syndrome were included as the study subjects of this study. This study was approved by the ethical committee of the mentioned hospital.

Proper written consent was taken from all the participants before data collecting. As per the inclusion criteria of this study only patients with one or more clinical features of median nerve compression at the level of the carpal tunnel were included from several ages. On the other hand, as per the exclusion criteria, patients who underwent any type of intervention of the median nerve at carpal tunnel level and/or with known neurological disorders were excluded. Moreover, people, who presented cognitive or mental alterations which made the interview impossible were excluded from this study. To characterize the sample and to disseminate the results, qualitative variables like age, sex, marital status, smoking, affected limb, and comorbidities were recorded. A predesigned questionnaire was used in data collection. All data were collected, processed, and analyzed by using MS Office and SPSS version 23 programs as per need.

## 4. RESULT

In this study, the mean (±SD) age of the participants was found 47.25±9.50 years. Among a total of 100 participants, 25% were male whereas 75% were female. So female participants were dominating in number and the male-female ratio was 1:3. The mean (±SD) BMI (kg/m2) of participants was 26.9±4.77. Most of the participants were married which was 62% (n=33). Besides this 17% and 9% of participants were single and widows/widowers respectively. In analyzing the educational status of the participants we observed 21%, 38%, 25%, and 8% participants taken education up to the primary, high school, college and graduate-level education respectively whereas only 9% were found illiterate. About half (49%) of the participants were smokers whereas 15% were former smokers and 36% were fully non-smokers. In this study, in analyzing the clinical features among participants we observed paraesthesia, weakness in thenar eminence, numbness, nocturnal pain, pain after physical activity and sensitivity alteration were associated in more than 75% of patients. On the other hand, radiation of pain to the upper limb, sleeping disorder and tinel's sign were associated in more than 50% but less than 75% of participants. Among all, more than half (53%) of the patients were mild in condition. Besides this 43%, 8% and 4% of patients were moderate, severe and very severe in condition respectively.

**Table 1:** Socio-demographic status of participants (N=100)

| Variables | n | % |
|---|---|---|
| Gender distribution | | |
| Male | 25 | 25% |
| Female | 75 | 75% |
| Age of participants in year | | |
| Mean (±SD) | 47.25±9.50 | |
| BMI (kg/m2) of participants | | |
| Mean (±SD) | 26.9±4.77 | |
| Marital status of participants | | |
| Single | 17 | 17% |
| Married | 62 | 62% |
| Divorced | 11 | 11% |
| Widow/Widower | 9 | 9% |
| Educational status | | |
| Illiterate | 9 | 9% |
| Primary level | 21 | 21% |

| | | |
|---|---|---|
| High School level | 38 | 38% |
| College level | 25 | 25% |
| Graduation level | 8 | 8% |
| Smoking habits | | |
| No | 36 | 36% |
| Yes | 49 | 49% |
| Former smoker | 15 | 15% |

**Table 2:** Clinical features among participants (N=100)

| Clinical Features | n | % |
|---|---|---|
| Paraesthesia | 94 | 94% |
| Weakness in the thenar eminence | 91 | 91% |
| Numbness | 89 | 89% |
| Nocturnal pain | 89 | 89% |
| Pain after physical activity | 89 | 89% |
| Sensitivity alteration | 79 | 79% |
| Radiation of pain to upper limb | 57 | 57% |
| Sleeping disorder | 53 | 53% |
| Tinel's sign | 51 | 51% |

**Table 3:** Severity status of participants (N=100)

| Category | n | % |
|---|---|---|
| Mild | 53 | 53% |
| Moderate | 43 | 43% |
| Severe | 8 | 8% |
| Very severe | 4 | 4% |

## 5. DISCUSSION

This study aimed to determine the features and demography of patients with carpal tunnel syndrome (CTS). As per the findings of a study conducted in London, 1:1000 people are diagnosed each year with carpal tunnel syndrome (CTS). [16] In this current study, the mean (±SD) age of the participants was found 47.25±9.50 years. Among the total of 100 participants, 25% were male whereas 75% were female. So female participants were dominating in number and the male-female ratio was 1:3. In a study, the higher predominance of carpal tunnel syndrome CTS was found in women with a ratio of 5.2:1 which was closer to that of some other studies where this ratio was observed to be 5.6:1, 5.4:1, 5:1 and 4.9:1. [17, 18, 19] Saboor A, et al. in their study, observed that, the female gender was in predominance with 86.3% study population being women. [20] Malibary HM, et al. in their study of Arabia recruited 336 subjects and observed the mean age in females was 52.4 years and 48.5 years in males. [19] Likewise, Abumunaser LA, et al. in their study reported the mean age in females to be 45.5 years and 48.5 years in males [21] which is much closer to our results. In our study, in analyzing the clinical features among participants we observed paraesthesia, weakness in thenar eminence, numbness, nocturnal pain, pain after physical activity, and sensitivity alteration was associated in more than 75% of patients. These findings were

observed as almost the same with paraesthesias in all and weakness in a similar ratio of subjects by Azevedo JWV, et al. [14] In our study, among all, more than half (53%) of the patients were mild in condition. Besides this 43%,8% and 4% of patients were moderate, severe and very severe in condition respectively. In another study, [22] mild form of carpal tunnel syndrome (CTS) was the commonest form noticed in 126 (50.4%) of subjects, followed by moderate form.

**LIMITATION:**

This was a single-centered study with a small-sized sample. So, the findings of this study may not reflect the exact scenario of the whole country.

## 6. CONCLUSION & RECOMMENDATION

Women are most vulnerable to carpal tunnel syndrome. Most of the cases for CTS are found in the middle age group. Paraesthesia may be considered as the most common symptom in this disease. Early diagnosis may reduce the suffering of patients with carpal tunnel syndrome. For getting more specific findings we would like to recommend conducting similar studies with larger-sized samples in several places.

## REFERENCES


1. Pfeffer GB, Gelberman RH, Boyes JH, Rydevik B. The history of carpal tunnel syndrome. J Hand Surg Br 1988 Feb;13(1):28-34.
2. Aroori S, Spence RA. Carpal tunnel syndrome. Ulster Med J 2008 Jan;77(1):6-17.
3. Alfonso C, Jann S, Massa R, Torreggiani A. Diagnosis, treatment and follow-up of the carpal tunnel syndrome: A review. Neurol Sci 2010 Jun;31(3):243-52. DOI: 10.1007/s10072-009-0213-9. Epub 2010 Feb 10.
4. Paget J. Lectures on Surgical Pathology. 1854. Lindsay and Blakiston, Philadelphia.
5. Atroshi I, Gummesson C, Johnsson R, Ornstein E, Ranstam J, Rosen I. Prevalence of carpal tunnel syndrome in a general population. J Am Med Assoc 1999 Jul 14;282(2):153-8.
6. Mondelli M, Giannini F, Giachhi M. Carpal tunnel syndrome incidence in a general population. Neurology 2002 Jan 22;58(2):289-94.
7. Rask MR. Anterior Interosseous nerve entrapment: (Kiloh-Nevin syndrome) a report of seven cases. Clin Orthop Relat Res 1979 Jul- Aug;(142):176-81.
8. Phallen GS. The carpal-tunnel syndrome. Seventeen years experience in diagnosis and treatment of six hundred fifty-four hands. J Bone Joint Surg Am 1966 Mar;48(2):211-28.
9. National Institute of Neurological Disorders and Stroke (NINDS), Carpel Tunnel Syndrome Fact Sheet. [Cited on: January 2017]. Accessed from: http://www.ninds. nih.gov/disorders/carpel_tunnel/de tail_carpal_tunnel.htm#68963049.
10. Solomon L, Warwick DJ, Nayagam S. Apley's concise system of orthopedics and fractures. March 31, 2005. CRC Press, London. ISBN: 9781444165517.
11. Zyluk A, Kosovets L. An assessment of the sympathetic function within the hand in patients with carpal tunnel syndrome. J Hand Surg Eur Vol 2010 Jun;35(5):402-8. DOI: 10.1177/1753193409361292.
12. Dorwart BB. Carpa l tunnel syndrome: A review. Semin Arthritis Rheum 1984 Nov;14(2):134-40.
13. Krendel DA, Jobsis M, Gaskell PC Jr, Sanders DB. The flick sign in carpal tunnel syndrome. J Neurol Neurosurg Psychiat 1986 Feb;49(2):220-1.
14. de Azevedo JW, de Oliveira AB, Nascimento Vd, de Paiva HR Jr, Viecili L, Rocha MA. Profile of patients on sick leave with carpal tunnel syndrome. Acta

Ortop Bras 2015 Sep-Oct;23(5):244-6. DOI: 10.1590/1413-785220152305145784.

15. Sternbach G. The carpal tunnel syndrome. J Emerg Med 1999 May-Jun;17(3):519-23.
16. McCornick A, Fleming D, Charlton J. Morbidity statistics from general practice: Fourth National Study 1991-1992. London: H.M.S.O; 1995. Print.
17. Bahou YG. Carpal tunnel syndrome: A series observed at Jordan University Hospital (JUH), June 1999- December 2000. Clin Neurol Neurosurg 2002 Jan;104(1):49-53.
18. Al-Suleiman AA, Ismail HM. Carpal tunnel syndrome: A clinical and electrophysiological study of 220 consecutive cases at King Fahd Hospital of the University, Al-Khobar. Saudi Med J 1997;18(1):59-63.
19. Malibary HM, Al-Najjar AT, Yassen DM, Abuhussain HAA, Radhwi OO, Alfares ZR. Clinical profile of carpal tunnel syndrome in a teaching hospital. Pak J Med Sci 2013 Jan;29(1):119-21. DOI: 10.12669/ pjms.291.2946.
20. Awan AS, Khan A, Afridi SA, Khan IU, Bhatti SN, Ahmed E, et al. Early response of local steroid injection versus mini-incision technique in the treatment of carpal tunnel syndrome. J Ayub Med Coll Abbotabad 2015 Jan-Mar;27(1):192-6.
21. Abumunaser LA. Demographic pattern of carpal tunnel syndrome in western Saudi Arabia. Neuroscience (Riyadh) 2012 Jan;17(1):44-7.
22. Amir S, Qadir M, Usman M. Clinical profile of patients with carpal tunnel syndrome. Khyber Med Univ J 2018;10(1):36-39.