Original Article

Awareness of Carpal Tunnel Syndrome among Adult Population in Al-Jouf Region, Saudi Arabia: A Cross-Sectional Study

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Abstract

Carpal Tunnel Syndrome (CTS) is a medical condition due to compression of the Median bone as it travels to the wrist in the carpal tunnel. Public awareness on CTS is essential for the early seeking of the medical care for either surgical or non-surgical intervention. The aim of the present research was to study the awareness level of CTS among adult people in Al-Jouf Region, Saudi Arabia and to assess the correlation between CTS awareness and education level of other demographic characteristics of participants. 420 participants were randomly enrolled in the present cross-sectional research. A pre-tested self-administered questionnaire was used for assessment. The SPSS was used to analyze the collected data and Chi-square test was used to identify associated factors for poor awareness of CTS. Findings of the study indicated that (74.8%) of the participants had a poor level of awareness of CTS. No significant relationship was found among education level, gender, marital status, nationality, occupation and the level of awareness of CTS, while the only significant relation was between the age and the level of awareness of CTS. The awareness level of CTS was inadequate among adult population in Al-Jouf Region, Saudi Arabia. The campaigns raising awareness about CTS and its symptoms must be conducted frequently at the different public and private places. This will help the people to seek the health care at the early stages so that either surgical or non-surgical methods can be applied at the initial stages.

Keywords: Carpal tunnel syndrome, Awareness, Saudi Arabia, Median nerve

Introduction

Carpal Tunnel Syndrome (CTS) is a medical situation as a result of Median bone compression as it travels in the carpal tunnel to the wrist [1, 2]. Tingling and swelling of thumb, index finger, middle finger and thumb of thumb, and pain, are the main symptoms. They usually begin slowly and overnight. The pain can stretch the arm. Weak muscle strength is possible, and after a period of time the subcutaneous tissue may disappear. In more than 50% of the cases, it affects both hands [3-5].

The people with CTS have stress, fatigue, or burning feeling in the finger and thumb, especially the middle and index fingers and fingers of the finger, as these get their neurological and motor function (muscle control) from the Median nerve. Discomfort and ache can feel very close to the arm or upper arm [5, 6]. Unspecified signs can include ache in the hands or loss of grip and strength [6].

There are two main strategies to manage the CTS e.g. non-surgical way of surgical way. Non-surgical management way is important for the patients to improve and avoid the position that overstretch the wrist. One should wear a wrist secure to hold the hand in a neutral position at sleeping time. Patients should take medication to diminish tenderness. In several cases, steroid injections can be indicated. It is necessary to treat other fundamental health situations that contribute to the swelling in the CT, for example gout or rheumatoid arthritis. Yoga and hand therapy might be affected to treat CTS. In surgical management way which includes open surgery, the medical doctor makes a single cut over the palm surface of the wrist. Long-standing useful result of this surgical process has seen in about 70–90% of the effect persons [7, 8]. Carpal tunnel release is an appropriate option for diabetic patients with Carpal Tunnel Syndrome and peripheral neuropathy. In very recent literature, surgery has been confirmed to be improved treatment strategy for Tunnel Syndrome as compared to immobilize and other traditional treatment options [9]. There are numerous types of carpal tunnel release based on the surgical method used: e.g. OCTR, mini-OCTR,

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and Endoscopic Carpal Tunnel Release (ECTR) [10] or we have endoscopic surgery: In this process the surgeon overtakes an endoscope, a tiny scope-like apparatus with a small, attached camera, throughout small incisions in the wrist area for cutting the ligament. Endoscopic Carpal Tunnel Release (ECTR) is using either a single portal surgery or a dual portal technique [11-13]. It is a more helpful technique to cure decompression of the median nerve. A person can feel not as much of pain in the days or weeks following endoscopic surgical procedure than a person who has presently open surgery. On the other hand, no clear dissimilarity is noticeable between the two techniques [14]. Assessment of awareness of CTS and its risk factors are essential for the public to seek the medical and health care at the earliest. Hence, the proper plan of medical care can be planned. Despite that, there is very limited study available in the Kingdom of Saudi Arabia. Hence this study was planned to assess the level of knowledge about Carpal Tunnel Syndrome among adult population in Al-Jouf Region, Saudi Arabia and to identify the correlation between Carpal Tunnel Syndrome awareness and education level and other demographic characteristics of participants.

Materials and Methods

Study Design

The present research was a cross-sectional one, conducted among adult population in Al-Jouf region, Saudi Arabia toward Awareness of Carpal Tunnel Syndrome.

Study Area

This study was carried out in Al-Jouf region, Saudi Arabia from June 2020 to December 2020.

Study Population

The study population was all adult people who lived in Al-Jouf region, Saudi Arabia. The participants were volunteers and were selected after a proper informed consent was taken.

Inclusion Criteria

- Age more than 16 years
- Inclusion of both genders
- Residents of Aljouf region

Exclusion Criteria

- Age less than 16 years
- Non-Aljouf residents

Sample Size

Since this is the first of this kind of study in the region, we have taken a population proportion of 50% to calculate the sample size. Total enumeration method was utilized for inclusion of all the adult male and female agreed to answer the questionnaire in the present study. The sample size taken in the present research is according to this formula with significance adopted at p>0.05 ($n = NZ^2P\ (1 - P) / (D^2 + Z^2P\ (1 - P)$, and with the expected non-response rate, the total estimated sample was 420.

Data Collection Tools and Instruments

A validated pre-tested questionnaire was used for data collection. The questionnaire included questions about socio-demographic factors, awareness of Carpal Tunnel Syndrome among adult population. Level of awareness was categorized as good or poor based on the responses from the participants. When the respondent answers correctly less than 6 out of 12 s/he was labeled to have poor awareness, if her/his answers was more than 6 out of 12 s/he was labeled to have good awareness level.

Sampling Technique

In order to collect data from the participants, a non-probability sampling technique was applied.

Data Analysis

Data was coded, entered, and analyzed using the Statistical Package for Social Science (SPSS) version 22. The categorical variables are presented as frequency and proportions and the quantitative variables. The chi-square test was applied to find the association between awareness category and socio-demographic characteristics.

Ethical Concern

The study protocol was approved by the qurayat health affairs, Saudi Arabia (approval no.045).

Results and Discussion

A total of 420 participants were enrolled in this study and according to socio-demographic information, 209 (49.8%) were males while 211 (50.2%) were females. The age distribution of the sample shows that almost half of participants (49.5%) were in the age group of (18 - 30) years. Almost all participants were Saudi nationals (97.4%). Concerning the marital status, approximately half of participants were married, and the other half were single, and a few (1.2%) were divorced. Nearly two-third of participants had bachelor's degree and 77 (18.3%) were secondary educated. In addition, almost half of the participants (47.9%) were employed while the other half were not **(Table 1)**.

Table 1. Socio-demographic Details of the Study Population (n=420)

Data	No.	%
Gender		
Male	209	49.8
Female	211	50.2
Age group (in years)		
<18	26	6.2%
18-30	208	49.5%
31-43	129	30.7%
44-56	51	12.2%
>56	6	1.4%
Nationality		
Saudi	409	97.4%
Non – Saudi	11	2.6%

Marital status		
Single	198	47.1%
Married	217	51.7%
Divorced	5	1.2%
Level of Education		
Elementary	2	0.5%
Intermediate	9	2.1%
High School	77	18.3%
Bachelor	292	69.5%
Others	40	9.5%
Occupation		
Employed	201	47.9%
Not-Employed	219	52.1%

About the details of the syndrome, (26.2%) of participants knew that it was caused by the compression of median nerve, (29.3%) knew that the common symptoms were pain, tingling of index finger, middle finger and thumb of thumb, (20.2%) of participants knew that the symptoms began slowly and overnight and (22.9%) were informed that it could lead to stiffness and weakness of the sixth muscle if remained untreated **(Table 2)**.

Table 2. Detailed Awareness towards CTS (n=420)

	Yes	No	Do not Know
Data	**No. (%)**	**No (%)**	**No. (%)**
Have you heard of CTS	112	285	23
	26.7%	**67.9%**	**5.5%**
CTS is a syndrome caused by Median nerve compression	110	7	303
	26.2%	**1.7%**	**72.1%**
Common symptoms of CTS are pain, tingling of index finger, middle finger and thumb of thumb	123	10	287
	29.3%	**2.4%**	**68.3%**
Stiffness and weakness of the sixth muscle can happen if the condition remains untreated	96	9	315
	22.9%	**2.1%**	**75%**
Symptoms of CTS usually begin slowly and overnight	85	19	316
	20.2%	**4.5%**	**75.2%**
CTS can affect both hands	98	25	297
	23.3%	**6%**	**70.7%**
People with CTS are usually uncomfortable at night and in the morning	94	22	304
	22.4%	**5.2%**	**72.4%**
Repeated physical activities like using computer and taping is a major Risk factor of CTS	133	14	273
	31.7%	**3.3%**	**65%**
Avoid repetitive movement is a major Preventive measure of CTS	100	26	294
	23.8%	**6.2%**	**70%**
Surgical intervention is the main treatment of CTS	72	58	290
	17.1%	**13.8%**	**69%**
Do you think you suffer from CTS	36	177	207
	8.6%	**42.1%**	**49.3%**

Out of the 420 samples studied, 112 (26.7%) had heard of CTS from friends (11.6%), social media (33%) and other sources (55.4%) **(Figure 1)**.

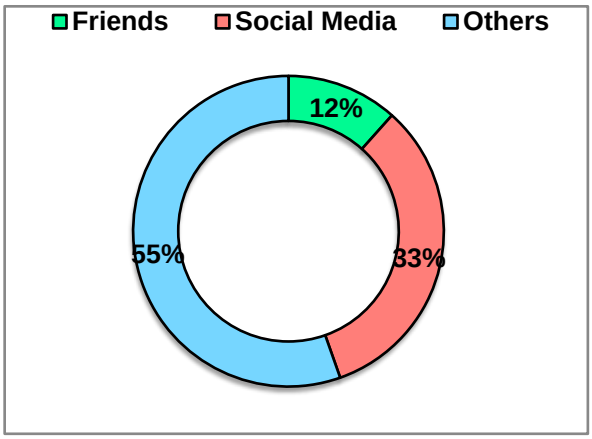

Figure 1. How did you hear about CTS?

The awareness level was classified to poor and good according to the answers of the participants. There was insufficient awareness of CTS among adult people whereas (74.8%) of the participants labeled as poor level of awareness **(Figure 2)**.

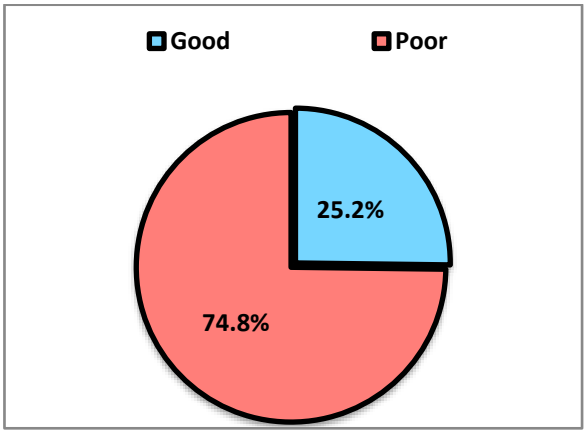

Figure 2. Awareness of Carpel Tunnel Syndrome

There is no significant value between gender, nationality, status, education level and occupation in relation to the awareness level, while there were significant differences between age and awareness level (p= 0.016). The results showed that the age group (18 - 30) years had the better level of awareness when compared with the other age groups **(Table 3)**.

Table 3. Comparison of Socio-demographic Data and Level of Awareness (n=420)

Data	No	%	No	%	P value
Gender					
Male	159	76%	50	24%	0.537
Female	155	73.5%	56	26.5%	
Age group (in years)					
<18	20	76.9%	6	23.1%	
18-30	142	68.3%	66	31.7%	**0.016**
31-43	101	78.3%	28	21.7%	
44-56	46	90.2%	5	9.8%	
>56	5	83.3%	1	16.7%	
Nationality					
Saudi	308	75.3%	101	24.7%	0.118
Non – Saudi	6	54.5%	5	45.5%	
Marital status					
Single	142	71.7%	56	28.3%	
Married	169	77.9%	48	22.1%	0.263
Divorced	3	60%	2	40%	
Level of Education					
Elementary	1	50%	1	50%	
Intermediate	7	77.8%	2	22.2%	0.479
High School	61	79.2%	16	20.8%	
Bachelor	212	72.6%	80	27.4%	
Others	33	82.5%	7	17.5%	
Occupation					
Employed	153	76.1%	48	23.9%	0.539
Unemployed	161	73.5%	58	26.5%	

In the present study, 420 participants were randomly selected to assess the level of knowledge about CTS among adult population in Al-Jouf Region, and to know the relation between gender, age, education level, marital status, nationality, occupation and the level of awareness about CTS.

The present study revealed that 26.7% of participants had heard of CTS, which was similar to the findings reported in India [15]. In their study, 27.5% of participants heard of CTS and 76.5% were unaware about the common symptoms, which was similar to our findings that the common symptoms were unknown to (70.7%) of the participants [15].

Nearly one-third (31.7%) of the participants knew that the major risk factor of CTS was repeated physical activities like using computer and typing and (23.8%) knew that the major preventive measure was to avoid repetitive movement. These findings were similar to those obtained by Alyousef *et al.* (2020) in Al Majmaah city [16].

Participants were asked if they thought they suffer from CTS, (8.6%) answered that they suffered from it, while higher percent was reported by Kandhan *et al.* (2017) who found that (83.3%) of the participants thought they suffered from CTS [15].

Collectively there was insufficient awareness about the CTS as we found that (74.8%) of the participants had a poor level of awareness contrary to the results of the research conducted by Alyousef *et al.* (2019) which concluded that the level of awareness of community was sufficient among adult population [16].

Concerning the correlation between the awareness level and the socio-demographic data, there was no significant value between gender, nationality, status, education level and occupation in relation to the awareness level contrary to the results of the research carried out by Raman *et al.* (2012) in Kuwait which found that CTS was significantly associated with female gender. In our study we found that significant differences existed between age and awareness level (p= 0.016). The results showed that the age group (18 - 30) years had better level of awareness [17].

Conclusion

The findings of the present study disclosed a low level of awareness of Carpal tunnel syndrome among adult population in Al-Jouf region, Saudi Arabia. The results showed that there was a significant relation between awareness of CTS and the age. The awareness-raising campaigns about CTS and its symptoms must be conducted frequently at different public and private places. This will help the people to seek the health care at the early stages so that either surgical or non-surgical methods can be applied at the initial stages, where the benefit of the treatment is on higher side.

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ETHICS STATEMENT: The Qurayat Health Affairs, Saudi Arabia has issued ethical clearance to conduct this study (Approval no: 045). Written informed consent was obtained from all participants prior to survey for their willingness to participate in this research.

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