



## Original Article

# Prevalence of Carpal Tunnel Syndrome in Pregnancy; A Cross-Sectional Study

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## ABSTRACT

**Background:** Carpal tunnel syndrome is a common compression neuropathy of the median nerve, which can take place or aggravate during pregnancy and sometimes surgery can be required. The most common cause of complaints in pregnant women is carpal tunnel syndrome. The investigation is meant to report the prevalence of carpal tunnel syndrome in connection to pregnancy and evaluate how huge the infection was among pregnant females. **Objective:** To assess the prevalence of carpal tunnel syndrome during pregnancy. **Methods:** The study was cross-sectional and data was collected from surgical and gynecological departments of four major hospitals of Lahore which are Jinnah Hospital Lahore, General Hospital Lahore, Nawaz Sharif Social Security Hospital Multan Chungi Lahore and Children's Hospital Lahore. The study was completed 6 months after the approval of the synopsis. The size of the sample is 256 and used convenient sampling technique. Pregnant women who had been under 20 to 40 years and excluded those who had high-risk pregnancies, psychological conditions, chronic medical illnesses like cancer, cardiovascular disease, etc. A cross-sectional survey was done on 256 subjects at different hospitals in Lahore using the Carpal Tunnel Syndrome Questionnaire for wrist or hand pain to determine the prevalence rate of pregnancy-related carpal tunnel syndrome data and is analyzed through the SPSS 21 version. **Results:** About 256 pregnant women attending different hospitals and 118 (46%) women were found to have these symptoms. Most of them were in third trimester of pregnancy 55.9% (143) followed by the second trimester 21.9% (56) and the least was in the 1<sup>st</sup> trimester 22.3% (57). The most common complaint was numbness, particularly during the daytime (30%), while the least frequent was pain. **Conclusion:** Greater number of pregnant women get affected by recurrent experience of carpal tunnel syndrome during pregnancy and it is first noted during the third trimester, but only in 50% of women symptoms vanish sometime after delivery. Although pregnancy is typically viewed as a risk factor for this syndrome.

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## INTRODUCTION

Carpal tunnel syndrome (CTS) is a neuropathy characterized by compression of median nerve at the level of the carpal tunnel. The carpal passage is an anatomical space in the wrist, encompassed by the carpal bones and the transverse carpal tendon. The pressure of the middle nerve inside this passage prompts the run-of-the-mill side effects of deadness, par aesthesia and in some cases painful feelings in the patient's hand.<sup>1,2</sup> Main symptoms are paresthesia in the thumb, index finger, middle and radial half of the ring finger. CTS is ordinarily introduced in the third trimester; however, it can happen in the initial trimester. It is the most widely recognized pressure neuropathy of the furthest point. The most widely recognized side effects are shivering in the spiral course of the thumb and forefinger and deadness of the center finger, and ring finger. Other regular components Aesthetic consuming painful wrist and hold quality and loss of adaptability.<sup>3</sup> The true prevalence is not known but has been reported to be around 62%. The CTS frequently occurs as a complication of pregnancy.<sup>4</sup>

The CTS is usually idiopathic and it is also considered to be related to some physiological (menopause, pregnancy) and pathological conditions (poly neuropathies, Colle's fracture, thyroid disease). Extreme side effects can go from gentle and irritating to very painful, and they can be one-sided or two-sided.<sup>5,6</sup> At first, the manifestations display around evening time and arouse patients from sleep. When the condition advances, the side effects endure during the day and might be disturbed by (substantial) exercises including the hand or wrist. At the point when the nerve is packed for a more extended time frame, nerve degeneration and thenar decay may happen.<sup>7</sup> Proximal radiation along the forearm, main arm and shoulder, while not all that normal, is not atypical. Side effects are

frequently more terrible during the evening and can be disturbed by dynamic movement and extraordinary wrist positions. Risk factors for CTS are fatness, diabetes mellitus and rheumatoid joint pain.<sup>8</sup> Clinical examination, the standard test for the analysis of CTS is the Tinel test, Phalen test and middle nerve pressure, which causes or exacerbates the side effects. The most exact symptomatic strategy comprises electro-diagnostic directed by skillful electromyography, which has an affectability of 49-84% and a specificity of 95%.<sup>9,10</sup>

The carpal passage contains the nine flex and means tendinous structures, which somewhat enter the middle passage & line of radius. Habitual manifestations could be clarified by anatomical varieties of the middle nerve itself. The sensory branches of the radial median nerve provide the three-digit radial half-digits of the fourth digit for which the CTS symptoms feel these fingers. The palmar sensory branch of the median nerve innervates the skin of the cutaneous palm and presents, on the medial proximal, 6 cm of the transverse carpal ligament. Therefore, the palm is generally not affected in CTS. Its treatment is separated into two classes: moderate and surgical. Moderate one is normally given to patients with slight to average indications of CTS. The alternatives for such treatment incorporate oral and transvenous steroids, corticosteroids, vitamins B6 and B12, non-steroidal calming drugs (NSAIDs), ultrasound, preparation of carpal bones and utilizing hand braces.<sup>11,12</sup> Corticosteroid treatment is viable in diminishing inflammatory symptoms and edema however, there are potential side effects that must be considered in underwriting to patients with CTS. The primary reaction is to restrain the union of collagen and proteoglycans, in this manner restricting tenocytes and along these lines diminishing the mechanical quality of the

ligament. This has encouraged degeneration.<sup>13</sup> CTS surgical treatment is as carpal tunnel release; A system in which the transverse carpal ligament is embellished to expand the space in the CTS, and afterward decrease the interstitial weight. Around 70-90% of patients have greater more brilliant results after carpal tunnel release.<sup>14</sup> This study would help develop preventive strategies to prevent CTS in pregnant females.

## METHODS

The study was cross-sectional and data was collected from surgical and gynecological departments of four major hospitals of Lahore which are Jinnah Hospital Lahore, General Hospital Lahore, Nawaz Sharif Social Security Hospital Multan Chungi Lahore and Children's Hospital Lahore. The study was completed in six months after the approval of synopsis. The size of the sample is 256 and convenient sampling technique was used. Pregnant women who had been under 20 to 40 years and excluded those who had high-risk pregnancies, psychological conditions, chronic medical illnesses like cancer, cardiovascular disease etc. A cross-sectional survey was done on 256 subjects at different hospitals in Lahore using the Carpal Tunnel Syndrome

Questionnaire for Wrist or hand pain to determine the prevalence rate of pregnancy-related CTS data and is analyzed through the SPSS 21 version.

## RESULTS

The mean age with a standard deviation of 256 pregnant women was reported 27.02+3.69. The minimum age was 20 and the maximum age reported with 37. Out of 256 pregnant women, 57 (22.3%) were women in the first trimester, 56 (21.9%) in the second trimester and 143 (55.9%) in the third trimester. Out of 256 pregnant women, in

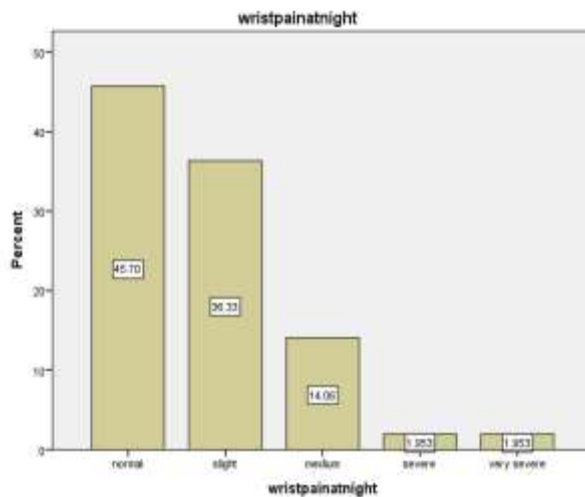
**Table 1: Frequency and Percentage of Females in Different Trimesters of Pregnancy**

Trimester of pregnancy	Frequency	Percent
First	57	22.27
Second	56	21.88
Third	143	55.86
Total	256	100.0

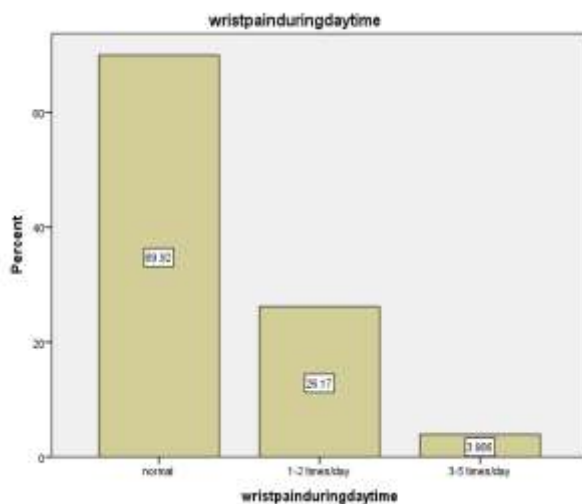
**Table 2: Frequency and Percentages of Females with Numbness, Weakness and Tingling Sensation**

Numbness, Weakness and Tingling Sensation	Frequency			Percentage (%)		
	Numbness	Weakness	Tingling	Numbness	Weakness	Tingling
Normal	138	106	118	53.9	41.4	46.1
Slight	57	83	82	22.3	32.4	32.0
Medium	40	46	35	15.6	18.0	13.7
Severe	16	16	16	6.3	6.3	6.3
Very Severe	5	5	5	2.0	2.0	2.0

**Figure 1: Frequency and Percentages of Females with Wrist Pain at Night**



**Figure 2: Frequency and Percentages of Pregnant Females with Wrist Pain During Daytime**



which 138 (53.9%) reported having no numbness (loss of sensation), 57(22.3%) had mild, 40(15.6%) had moderate, 16(6.3%) had severe and 5(2.0%) had very severe numbness (loss of sensation) in hands as also showed that 106(41.4%), 83(32.4%), 46(18.0%), 16(6.3%), 16(2.0%) had normal, slight, medium, severe and worst weakness in hand similarly also reported tingling sensation in which 118(46.1%) had normal, 82(32.0%)

mild, 35(13.7%) moderate, 16(6.3%) severe and 5(2.0%) worst tingling sensation in hand. Figure 1 showed that most of the pregnant women 117 (45.7%) had no wrist pain during night time while only 5 (2.0%) had the worst pain during pregnancy at night other had mild moderate and severe pain while in Figure 2 it was shown that 179 (69.9%) had normal pain during day time other 67 (26.25%) 1-2 times had pain and only 10 (3.9%) had 3-5 times/day at daytime during pregnancy.

## DISCUSSION

During pregnancy, hormonal changes, fluid shifts and musculoskeletal changes predispose females to CTS. These changes may bring about liquid maintenance, which can pack the middle nerve. CTS activated in pregnancy more often than not settle not long after birth. Indications might be exacerbated by constant hand developments, clasping hands in supported position or by putting weight through outstretched hands.<sup>15</sup> This study aimed to check the prevalence of CTS in pregnant women in Lahore. There is very little evidence on this particular topic in Pakistan. Previously very few researches have been conducted to check prevalence among pregnant females to check CTS. In the present study, 118 women had mild, moderate and severe symptoms, Most of them were in the third trimester. This shows the effect of the duration of pregnancy on the severity of CTS. The prevalence rate in the 1<sup>st</sup>, 2<sup>nd</sup> & 3<sup>rd</sup> trimesters was 57%, 56% and 143%, respectively Similarly, a study in Tabriz, Iran, found mild CTS in pregnancy, and another study reported the prevalence in the three trimesters at 32%, 32% and 35%, respectively.<sup>3</sup>

## CONCLUSION

A large number of pregnant women get affected from CTS during pregnancy and it is first noted during the third trimester, but only in 50% of women symptoms vanish one year after delivery. Although pregnancy is typically

viewed as a risk factor for CTS. The overall incidence of this in pregnancy in our study also was significantly less than that in the general population. Most patients have symptoms of CTS in the 3<sup>rd</sup> trimester and normal pain during day and night time, a finding predictable with past reports.

## DECLARATIONS

**Consent to participate:** Written consent had been taken from patients. All methods were performed following the relevant guidelines and regulations.

**Availability of data and materials:** Data will be available on request. The corresponding author will submit all dataset files.

**Competing interests:** None

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**Authors' contributions:** All authors read and approved the final manuscript.

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