# PREVALENCE OF DE QUERVAINS SYNDROME AMONG TAILORS AND BARBERS

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Abstract: De Quervains syndrome is the painful condition affecting the tendons on the thumb side of the wrist. These muscles includes extensor pollicus brevis and abductor pollicus longus. the primary pathological observation is reactive fibrosis and thickening of the retinaculum where its overlies over the first wrist extensor compartments . The pain is the main reason which get worse with abduction of thumb, grasping action of hand and ulnar deviation of the hand.

Objective: To determine the prevalence of de quervains syndrome using franklein test among tailors and barbers.

Methodology: A descriptive cross sectional study was carried out involving tailors and barbers from shops, houses and saloons. The study duration was 6 months. probability convenient sampling Non technique was used and a total of 333 individual were elevated. Only males females are included aged between 25 to 50 years. To calculate the prevalence of de quervains syndromes using franklien test among barbers and tailors.

Results: The participants in this study comprise of tailors barbers. The tailors and barbers aged between 25 to 50 years were included which comprised a total of 333 participants. Out of 333 participants which 212(63.7) were males in and 121(36.3) were females in which 215(64.6) were aged between 25 to 33, and 88 (26.4) were aged between 34 to 42 and 30(9) were aged between 43 to 50 vears. The prevalence studied the was using Finkelstein test, which is an active test commonly used to detect presence of DeQuervain' s Tenosynovitis. 0n performance of the test, it was found that 80% of the total population had overall positive result i.e. 80% of the total population.

Conclusion: The study concluded that the prevalence of de quervains syndromes is more among tailors and barbers due to their working patterns.

*Keywords:* Wrist pain, numeri pain rating scale, *PRWE*, *Finkelstein test* 

#### **INTRODUCTION**

Despite being commonly referred to as a single joint, the wrist is actually a composite articulation, with overall motion coming from the interactions of the various carpal bones with one another, the bases of the metacarpals, and the distal articulating surfaces of the radius and ulna/triangular fibrocartilage complex.<sup>1</sup> The wrist and hand are made up of 27 bones, including 8 carpal, 5 metacarpal, and 14 phalange bones, as well as more than 20 joints. The mechanism of injury is when the wrist is compressed while it is extended, such as during a fall or block. Here, the wrist's forced extension, axial loading, and compression all contributed to the damage.

The abductor policies longus and extensor pollicis brevis tendons at the wrist, as well as the tendinopathy (TP) of these tendons, are all part of De Quervain's syndrome. It can develop in conjunction with diabetes mellitus, rheumatoid, psoriatic, or other inflammatory arthritic disorders, localised trauma, pregnancy, or the postpartum period and is most prevalent in women between the ages of 30 and 50. The tendon sheath as it passes across the radial styloid beneath the extensor retinaculum may thicken and stenosis as a result of repetitive exercise that requires vigorous thumb Xexion during radial and ulnar deviation of the wrist.<sup>2</sup>

De Quervain syndrome, also known as De Quervain's tenosynovitis, is an inflammation of the first extensor compartment that is made worse by the mechanical interaction of the extensor pollicis brevis (EPB) and the abductor pollicis longus (APL) tendons inside the first extensor compartment's constrained space. Pain over the radial styloid process, made worse by ulnar wrist deviation, is the primary presenting symptom. The first course of treatment is conservative and consists of refraining from using the thumb repeatedly, wearing a splint, and receiving corticosteroid injections into the first extensor compartment. If symptoms do not subside, surgical intervention may be considered.<sup>3</sup>

The entrapment of the tendons extensor policis brevis (EPB) and abductor policis longus (APL) in the first dorsal compartment is known as DE quervain's tenosynovitis. Two tendons pass through the first dorsal compartment, which is situated on the radial side of the wrist.<sup>4</sup> and was initially described in 1895 by the Fritz De Quervain.<sup>5</sup> This condition results from the tendons being repeatedly and continuously strained as they pass beneath the thickened and enlarged extensor retinaculum. The radial styloid area is where the patient complains of pain and irritation. Extensor brevis and abductor policis longus tendons in the first dorsal compartment were inflamed by the repetitive movements associated with texting, leading to De Quervain tenosynovitis.

Tenderness, soreness at the base of the thumb, swelling, and discomfort or pain that extends to the lateral forearm were among the signs and symptoms.<sup>6</sup> The likelihood of ulnar physeal injury, degenerative changes, dequervain, tenosynovitis, tendonitis, and/or ligament injuries rises as the ulnar side of the wrist sustains progressive damage.<sup>7</sup>

Hairdressers and barbers frequently experience musculoskeletal discomfort, pain, or injury, which affects their work performance and productivity, causes them to take more time off, and even causes them to retire early.

Examining 221 UK women seeking treatment at orthopaedic clinics for upper-limb soft-tissue illnesses revealed that hairdressers suffer from shoulder and ganglion injuries far more frequently than workers in other professions evaluated the prevalence of work-related symptoms in hairdressers.<sup>8, 9</sup> 184 employees at hair salons in 6 districts of Pusan City made up the exposed group, and 119 residents of the same regions made up the non-exposed group. According to their findings, Korean hairdressers were more likely to experience musculoskeletal complaints in their neck (59.9%). shoulder (76.6%), upper back (41.2%), lower back (72.2%), arm and elbow (31.3%), wrist (44.2%), finger (35.0%), and leg (71.1%). The exposed group's fingers had the highest age-adjusted odd ratio (4.83) when compared to the non-exposed group. More than 50,000 people were worked as hairdressers in salons or barbershops in Taiwan, according to the Bureau of Labor Statistics.

When technology is advancing so quickly, it is important to consider the health of the workforce. If we ignore humanity's role as an active stimulant, we will not be able to advance technology. Therefore, it is crucial to pay close attention to the workers' physical and emotional wellbeing.<sup>10</sup>

Musculoskeletal illnesses are one of the most common issues with workplace health (MSDs). It is sufficiently established that ergonomic risk factors including repetition, Work-related musculoskeletal diseases are a result of improper posture and intolerable levels of contact stress and force (WMSDs).<sup>11</sup> Operators of sewing machines are exposed to high risk factors for these illnesses, as shown by investigations conducted in Bangladesh by Habib. The procedure entails sewing and mending various textiles, blankets, and goods made of cloth. Sewing machine workers frequently use their hands to operate and manipulate the equipment, and they do the same movements repeatedly for extended periods of time.<sup>12, 13</sup>

Two additional risks involving anatomical factors that can happen during De Quervain's surgery, but have gotten much less attention in the literature, include the failure to recognise and release all tendon slippage.<sup>14</sup> First, during surgical release, there is a risk to the superficial branch of the radial nerve (SBRN). Second, the tether holding the EPB and APL tendons in the first dorsal compartment has been cut once the retinaculum has been loosened. This may cause the tendons to volar sublux postoperatively. Six studies on prevalence, five studies on incidence, and one study on risk factors were found in the search. The prevalence of wrist pain was 32-73%, and the prevalence of wrist overuse injuries was 10-28%. The incidence of wrist pain was 7-9%, while the incidence of wrist overuse injury was 0.02-26%.15,16

This study will investigate the frequency and disability of dequervain tenosynovitis among the tailors and barbers in Pakistan. Previous research has shown the prevalence of MSK disorders of upper limb joints injuries and impairments among golfers, as well as in other athletic areas (GUJRAWALA). Repetitive hand and wrist motion has been linked to wrist injuries for the past few years, and the number of instances has been sharply rising. Numerous variables, including overuse injuries and an increase in the prevalence of dequervain syndrome in athletes during occupational activities. contribute to wrist disabilities.

#### METHODOLOGY

To examine wrist disability in barbers and tailors, a cross-sectional study involving 261 participants was carried out. The nonprobability handy sampling approach was used to choose the data. The survey's subjects was voluntarily chosen, and agreement was be obtained before the interview even begins. In addition to the questionnaire, the Patient Rated Wrist Evaluation questionnaire was used to evaluate pain and impairment (PRWE). Cronbach alpha value was 0.78-0.950.<sup>17</sup>

The 15 items on this questionnaire was used to assess wrist pain and impairment. It has two subscales, one for pain and one for function, and it allows patients to rate their wrist discomfort and functional impairment on a scale from 0 to 10. The subscale pain contains five items. Specific activities (containing six items) and common activities (having two parts) are further split into the function scale (having 4 items). For pain in the wrist and thumb, the Numerical Pain Rating Scale will be employed. Finkelstein tests was conducted on those who have reported experiencing pain.

Their information was not divulged to anyone, and the procedure was quickly explained to them. The gathered data was examined using SPSS 21.0. For quantitative variables, standard deviation was also be determined, and for qualitative variables, frequency and percentages was required.

Finkelstein's now-famous test, according his theory, were caused bv the to introduction of the muscle bellies of the pollicis brevis extensor (EPB) and abductor pollicis longus (APL) tendons into the first extensor compartment.

The patient must first take a seat on the in a relaxed examination table and position. comfortable Examine the patient's raised hand next, with the other hand resting close to the body. The patient is then instructed to produce an ulnar deviation while making a fist with their thumb. The test is changed so that patient calmly the must sit and comfortably on the examination table. The patient must raise the hand that is injured and place the unaffected hand

against his or her body. The patient's injured hand is held by the therapist, who rotates it in an ulnar deviation. The patient's thumb is moved across the palm of the hand by the doctor. The thumb's extensor tendons are put under increased strain as a result.

NPRS was used to measure ROM. NPRS Reliability was  $(0.97 \text{ and } 0.99)^{.18}$ 

#### RESULTS

The participants in this study comprise of tailors and barbers. Tailors and barbers aged between 25 to 50 years were included which comprised a total of 333 participants. The data was collected from barbers shops ,saloons tailors shops and tailoress houses from Gujranwala city and analyzed carefully for the prevalence of de quervains in barbers and tailors. Out of 333 participants in which 212(63.7) were males and 121(36.3) were females.in which 215(64.6) were aged between 25 to 33, and 88 (26.4) were aged between 34 to 42 and 30(9) were aged between 43 to 50 years.

The Finkelstein test, an active test frequently used to identify the existence of DeQuervain's Tenosynovitis, involved having the subject create a fist with their fingers together and then deviate their wrist in the direction of their ulnar side. The extensor pollicis brevis and abductor pollicis longus tendons become irritated by this.

DeQuervain's Tenosynovitis was present in a percentage of the population of the entire population evaluated, as shown in the tables. The goal of the current study was to find out how common DeQuervain's Tenosynovitis was among 333 tailors and barbers between the ages of 25 and 50. According to the inclusion criteria of years of work as a tailor and amount of working hours, the population was chosen. The Finkelstein test, an active test frequently used to identify the existence of DeQuervain's Tenosynovitis, involved having the subject create a fist with their fingers together and then deviate their wrist in the direction of their ulnar side. The extensor pollicis brevis and abductor pollicis longus tendons become irritated by this. In terms of test performance, it was discovered that 80% of the population as a whole had overall positive results, meaning that 80% of the population as a whole got positive test results regardless of side. Thus, it was determined that DeQuervain's Tenosynovitis is significantly more common in tailors.

Table 1: Gender of participants

Frequency			Percent	Valid Percent	Cumulative Percent
Valid	Male	212	53.0	63.7	63.7
	Female	121	30.3	36.3	100.0
	Total	333	83.3	100.0	
Total		333	100.0		

Gender

Table 2: Age of participants

Age

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					Cumulative
Frequency			Percent	Valid Percent	Percent
Valid	25-33	215	53.8	64.6	64. 6
	34-42	88	22.0	26.4	91. 0
	43-50	30	7.5	9.0	100. 0
	Total	333	83. 3	100. 0	
Total		333	100. 0		

Table 3: Results of finkelsteins test

					Cumulative
Frequency			Percent	Valid Percent	Percent
Valid	positive	268	67.0	80. 5	80. 5
	negative	65	16.3	19. 5	100. 0
	Total	333	83. 3	100. 0	
Total		333	100.0		

#### Table 4: NPRS scale

Frequency				Valid Percent	Cumulative
			Percent		Percent
Valid	5.00	27	6.8	8.1	8.1
	6.00	32	8.0	9.6	17.7
	7.00	38	9.5	11.4	29.1
	8.00	130	32.5	39.0	68.2
	9.00	82	20.5	24.6	92.8
	10.00	24	6.0	7.2	100.0
	Total	333	83.3	100.0	
Total		333	100.0		

## DISCUSSION

The tailors and barbers aged between 25 to 50 years were included which comprised a total of 333 participants. The data was collected from barbers shops ,saloons tailors shops and tailoress houses from city gujrawalan and analyzed carefully for prevalence of de quervains syndromes among barbers and tailors.

The goal of the current study was to find out how common DeQuervain's Tenosynovitis was among 333 tailors and barbers between the ages of 25 and 50. The population was chosen based on the inclusion criteria of

number of working hours and years of experience as a barber or tailor. The Finkelstein test. an active test frequently used to identify the existence of DeQuervain's Tenosynovitis, involved having the subject create a fist with their fingers together and then deviate their wrist in the direction of their ulnar side. The extensor pollicis brevis and abductor pollicis longus tendons become irritated bv this. Ιt was discovered that 80.5% of the population as a whole scored favourably on the test. Consequently, it was determined that DeQuervain's Tenosynovitis is significantly more common in tailors. According to the Dwivedi et al. study, the shoulder, neck, wrist, and hand are the most commonly affected MSK areas in tailors. The study by Jamro et al. concluded that the primary complaints of tailors were pain and muscular weakness as a result of over injuries, soft tissue disorders, cumulative trauma disorders, and repetitive strain and motion injuries to engage in excessively long labour hours and activities. DeQuervain's tenosynovitis is a condition that is linked to extremely repetitive work that requires sustained wrist bending over an extended length of time. The repetitive and boring tasks listed above are part of the job of a tailor, and the majority of them include wrist, forearm, and hand movements when cutting. assembling, stitching, etc. According to Banerjee et al2016 .'s study, 65.45% of tailors who completed such demanding duties developed MSK problems, as measured by the Nordic Questionnaire scale. All of the aforementioned data provide credence to the idea that DeQuervain's Tenosynovitis is а significant issue that tailors deal with

on a daily basis. The relationship between the hand and forearm has been noted.

Even Ranney et al., in their study on highly repetitive employees, found that 23% workers experienced muscular of soreness and tenderness at the hitherto unknown region of the forearm/hand. They recommended that DeQuervain's Tenosvnovitis, one of the most common disorders of the distal forearm, he researched just as thoroughly as neck or shoulder difficulties due to the load on these regions' muscle tissues.

Since forearm and hand problems have traditionally been undervalued in favour of neck and shoulder disorders, a study that demonstrates the definite prevalence of DeQuervain's Tenosynovitis in tailors this study was conducted under the assumption that the majority of a tailor's daily tasks would involve extensive use of the forearm, wrist, hand, and fingers, as well as the knowledge that DeQuervain's Tenosynovitis is a reactive fibrosis that is known to be brought on by repetitive trauma to the relevant tendons. Therefore, regardless of the severity of the condition, it is highly likely that there is a connection between the occurrences of DeQuervain's tenosynovitis and the type of job that tailors often conduct. The overall favourable outcome of 75% clearly the demonstrates necessity for а straightforward treatment regimen that tailors can follow, as well as ergonomic guidance that not only focuses on The overall favourable outcome of 75% clearly demonstrates the necessity for а straightforward treatment regimen that tailors can readily follow, as well as ergonomic guidance that not only emphasises posture and lengthy periods of

sitting but also on the care for wrist and hand activities and position.

LIMITATIONS: Study was only conducted on barbers and tailors. Time duration was very short. Since the sample size for this study was rather limited, future research can increase the number of test subjects for a more accurate conclusion. Those who employ machines have a modest advantage over tailors who must perform every task manually. Since it is uncommon to come across such completely manual workers, they were not classified as a separate category even though their prevalence is unaffected. The aforementioned considerations can be made if the degree of damage or pain severity is being examined.

RECOMMENDATIONS: Machine users have a modest advantage over tailors who must perform all tasks manually. Dominant hand bring minimal alterations can when studying bilateral scenarios because it is also employed for the majority of other activities. Gender specificity was not but it can be in future considered. research if it turns out that women or men are more likely to develop DeQuervain's Tenosynovitis because the tendon's collagen composition and production change with age in both sexes.

#### CONCLUSION

By using Finkelstein test, 80.5% of total population was founded positive so that why it is concluded due to their particular working habits, it is determined that tailors and barbers.

#### Conflict of Interest

There was no conflict of interest.

#### Financial Statement

No fundings were given by any authorities; it was a project thesis of doctor of physical therapy.

#### Data availability

Data will be provided on the demand by corresponding author.

#### REFERENCES

1. Berger RA, Garcia-Elias M. Biomechanics of the wrist joint. Biomechanics of the wrist joint: Springer; 1991. p. 1-22.

2. Kaparov A, Uludag M, Sari H, Akarirmak Ü. De Quervain's syndrome associated with osteopoikilosis: a case report and review of the literature. Rheumatology international. 2011;31(6):809-13.

3. Lee Z-H, Stranix J, Anzai L, Sharma S. Surgical anatomy of the first extensor compartment: a systematic review and comparison of normal cadavers vs. De Quervain syndrome patients. Journal of Plastic, Reconstructive & Aesthetic Surgery. 2017;70(1):127-31.

4. Ilyas AM, Ast M, Schaffer AA, Thoder J. De quervain tenosynovitis of the wrist. JAAOS-Journal of the American Academy of Orthopaedic Surgeons. 2007;15(12):757-64.

5. Cheimonidou AZ, Lamnisos D, Lisacek-Kiosoglous A, Chimonas C, Stasinopoulos D. Validity and reliability of the finkelstein test. Trends in Medicine. 2019;19(2):1-7.

6. Matzon JL, Graham JG, Lutsky KF, Takei TR, Gallant GG, Beredjiklian PK. A prospective evaluation of the anatomy of the first dorsal compartment in patients requiring surgery for De Quervain's tenosynovitis. Journal of Wrist Surgery. 2019;8(05):380-3.

7. Caine DJ, Russell K, Lim L. Handbook of sports medicine and science: Wiley Gymnastics; 2013.

8. Alpass F, Mortimer R. Ageing workforces and ageing occupations: A discussion paper: Department of Labour Wellington; 2007.

9. Chen H-C, Chang C-M, Liu Y-P, Chen C-Y. Ergonomic risk factors for the wrists of hairdressers. Applied ergonomics. 2010;41(1):98-105.

10. Aghili M, Asilian H, Poursafa P. Evaluation of musculoskeletal disorders in sewing machine operators of a shoe manufacturing factory in Iran. J Pak Med Assoc. 2012;62(3 Suppl 2):S20-5.

11. Mehrparvar AH, Heydari M, Mirmohammadi SJ, Mostaghaci M, Davari MH, Taheri M. Ergonomic intervention, workplace exercises and musculoskeletal complaints: a comparative study. Medical journal of the Islamic Republic of Iran. 2014;28:69.

12. Habib M. Ergonomic risk factor identification for sewing machine operators through supervised occupational therapy fieldwork in Bangladesh: A case study. Work. 2015;50(3):357-62.

13. Kaergaard A, Andersen JH. Musculoskeletal disorders of the neck and shoulders in female sewing machine operators: prevalence, incidence, and prognosis. Occupational and environmental medicine. 2000;57(8):528-34.

14. Mazurek MT, Shin AY. Upper extremity peripheral nerve anatomy: current concepts and applications. Clinical Orthopaedics and Related Research®. 2001;383:7-20.

15. Collins ED. Radial ridge excision for symptomatic volar tendon subluxation following de Quervain's release. Techniques in hand & upper extremity surgery. 2014;18(3):143-5.

16. Kox LS, Kuijer PPF, Kerkhoffs GM, Maas M, Frings-Dresen MH. Prevalence, incidence and risk factors for overuse injuries of the wrist in young athletes: a systematic review. British journal of sports medicine. 2015;49(18):1189-96.

17. Hemelaers L, Angst F, Drerup S, Simmen BR, Wood-Dauphinee S. Reliability and validity of the German version of "the Patient-rated Wrist Evaluation (PRWE)" as an outcome measure of wrist pain and disability in patients with acute distal radius fractures. Journal of Hand Therapy. 2008;21(4):366-76.

18. Kahl C, Cleland JA. Visual analogue scale, numeric pain rating scale and the McGill Pain Questionnaire: an overview of psychometric properties. Physical therapy reviews. 2005;10(2):123-8.

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