

Prevalence of De Quervain's Tenosynovitis in Barbers

Rutuja Ramesh Rokade ¹ Dr.Panna shete ²,Prapti Desai³

¹ Undergraduate student / D.Y.Patil College of Physiotherapy, Kolhapur, Maharashtra , India.

² Assistant Professor, D.Y.Patil College of Physiotherapy, Kolhapur, Maharashtra , India.

³ Undergraduate student / D.Y.Patil College of Physiotherapy, Kolhapur, Maharashtra , India.

ABSTRACT

Background: De Quervain's Tenosynovitis (DQT) is a condition that affects the tendons on the thumb side of the wrist. It is typically caused by repetitive motion or overuse leading to irritation and inflammation of the tendons in the first dorsal compartment of the wrist. Barbers are at a higher risk of developing De Quervain's Tenosynovitis (DQT) due to the repetitive and frequent thumb movements required during their work. When barbers use scissors, clippers or other tools, they often make precise, continuous motions with their thumbs to grip and manipulate these instruments. **Method:** This observational study was conducted on barbers (89 Male and 32 females) using a Finkelstein's test for clinical diagnosis of De Quervain's Tenosynovitis (DQT) Participants were given Numerical Pain Rating Scale (NPRS) to analyse the degree of pain. **Result:** 71% Participant were tested positive for Finkelstein's Test. **Conclusion:** This study concludes that there is 71% prevalence of De Quervain's Tenosynovitis in barbers.

Keywords- De Quervain's Tenosynovitis, DQT, Finkelstein's Test, NPRS.

INTRODUCTION

The profession of barbering is characterized by several inherent workplace risk factors, making it one of the more precarious occupations. Barbers frequently encounter a range of hazards including physical, chemical, ergonomic and psychosocial and biological risks. As a result, they are often vulnerable to various work related disorders, particularly musculoskeletal disorders (WRMSD'S)^[1]. Barbers, though acknowledged as highly skilled professionals in their craft, face considerable challenges related to work-related musculoskeletal disorders (WMSDs) due to the physically demanding nature of their job. These disorders stem from repetitive movements, prolonged static postures, and awkward body positions necessary for hairstyling. Studies conducted globally highlight a high prevalence of WMSDs among hairdressers, with a significant impact on the back and lower limbs^[2]. Work related musculoskeletal disorders (WRMSDS) can lead to injury of the soft tissues, which

may result in pain, numbness or changes in sensation in the affected area of the body. Various prevalent musculoskeletal disorders include carpal tunnel syndrome, thoracic outlet syndrome, repetitive strain injury and rotator cuff tendonitis among barbers. These injuries to the musculoskeletal system are often caused or aggravated by occupational activities^[3]. Musculoskeletal disorders are recognized as significant contributor to physical disability, limitations, pain and various other health issues experienced millions of individual globally. This is particularly prevalent among workers engaged in manual labour, tasks requiring awkward postures or roles that involve repetitive strain, compounded by adverse psychological or social conditions ultimately leading to chronic pain or dysfunction ^[4].

Barbers are at a higher risk of developing De Quervain's Tenosynovitis due to the repetitive and frequent thumb movements required during their work. When barbers use scissors, clippers or other tools they often make precise, continuous motions with their thumbs to grip and manipulate these instruments. In essence, the repetitive nature of barber's daily tasks, which often require fine motor control and frequent gripping of tools, significantly increases the likelihood of developing this painful and limiting condition ^[5]. De Quervain's Tenosynovitis, named in honor of Swiss surgeon Fritz De Quervain, is a medical condition characterized by the entrapment of tendons within the first dorsal compartment of the wrist. This condition leads to thickening and myxoid degeneration of the tendon sheaths surrounding the Abductor Pollicis Longus (APL) and Extensor Pollicis Brevis (EPB) tendons as they traverse the fibro-osseous tunnel situated near the radial styloid at the distal end of the wrist^[6].

De Quervain's Tenosynovitis is a condition that affects the tendons on the thumb side of the wrist. It is typically caused by repetitive motion or overuse leading to irritation and inflammation of the tendons in the first dorsal compartment of the wrist, which is the space that houses the tendons responsible for moving thumb ^[7]. The pain associated with De Quervain's Tenosynovitis becomes more pronounced when there is movement of the thumb, as well as with specific motions of the wrist, such as radial and ulnar deviation. Radial deviation refers to the movement of the wrist where the hand moves toward the thumb side, while ulnar deviation involves moving the hand toward small finger side. Both of these wrist movements can exacerbate the pain because they cause the tendons in the first dorsal compartment to stretch and move in ways that increase friction within the already narrowed and thickened tendon sheaths. These motions essentially compress the inflamed tendons, amplifying the discomfort and stiffness that is typical of De Quervain's Tenosynovitis^[8]. Physical examination – upon palpation, notable findings include tenderness located at the base of the thumb and/or along the first dorsal compartment extensor tendons on the thumb side of the wrist, especially in the area surrounding the radial styloid process^[9]. There is noticeable thickening of the extensor sheaths within the first dorsal compartment, accompanied by a creaking sound from the tendons as they move through the extensor sheath^[10]. Weakness and tingling sensations in the hand^[11]. Characterized by a persistent feeling of aching, burning and pulling this sensation is exacerbated by repetitive actions such as lifting, gripping or twisting with the hand ^[12]. Standard

X-rays are not effective in diagnosing De Quervain's Tenosynovitis (DQT), but they can be helpful in ruling out other potential causes of radial wrist pain. While radiographs do not provide direct evidence of tendon inflammation, they can assist in identifying alternative conditions, such as fractures, arthritis, or other structural abnormalities, that may present with similar symptoms ^[13].

Ultrasonography has proven to be highly effective in accurately diagnosing and aiding in the treatment planning of De Quervain's Tenosynovitis (DQT). This imaging modality allows for detailed visualization of tendon abnormalities, inflammation, and fluid accumulation, which are key indicators of the condition. Additionally, ultrasonography is a more affordable alternative compared to other imaging techniques, making it a cost-effective option for patients while still providing reliable diagnostic and therapeutic guidance^[14].

The treatment options for De Quervain's tenosynovitis depend on the severity of the condition, with a strong emphasis on non-surgical management as the first line of intervention. Conservative treatment strategies aim to reduce pain, inflammation, and functional limitations while promoting tendon healing and preventing symptom progression. Pharmacological management is to prescribe Nonsteroidal anti-inflammatory drugs (NSAIDs) help to manage mild to moderate symptoms, particularly in the early stages of condition. Corticosteroid injections: if NSAIDs alone are insufficient, corticosteroid injections are often recommended, Hand or Occupational therapy. These non-operative approaches are generally successful in managing De Quervain's Tenosynovitis, particularly when initiated early. If symptoms persist despite conservative treatment, surgical intervention may be considered as a last resort ^[7,15]. Corticosteroid injections have been documented to offer nearly total relief in 52% to 90% of patients after one or two administrations^[16]. The efficacy of corticosteroid injections is enhanced when the procedure is conducted with the assistance of ultrasound guidance^[17].

Numerous alternative non-operative treatment methods have been documented, including laser therapy, therapeutic ultrasound and acupuncture; however, there remains a lack of consensus and high-quality evidence regarding the efficacy of these treatments^[18].

The implementation of physiotherapy interventions demonstrates a positive impact on the management of De Quervain's Tenosynovitis. Utilizing modalities such as low-level laser therapy, ultrasound therapy and extracorporeal shock wave therapy, taping in conjunction with various exercise regimens including eccentric exercises, strengthening exercises. The application of thumb splint and manual therapy techniques like deep friction massage has been shown to effectively alleviate symptoms in individuals with De Quervain's Tenosynovitis ^[19]. Therapeutic ultrasound therapy to decrease tendon sheath diameter and tenderness. Employing Low level laser therapy as an alternative modality for reducing inflammation. Applying thumb spica splint to immobilize the affected area, thereby minimizing stress on the tendons. Applying cold packs or ice massage during the acute phase to reduce inflammation and edema^[20].

Mobilization combined with movement has proven to be effective in alleviating pain, enhancing the range of motion and improving the functionality of a patient suffering from De Quervain's Tenosynovitis. The therapist performed a manual radial glide on the proximal row of carpals and subsequently instructed the patient to engage in radial abduction and adduction of thumb^[21]. Mobilization involving movement was conducted in three sets of ten repetitions, followed by an eccentric hammer curl exercise utilizing a theraband and high voltage electrical stimulation. This approach demonstrated effectiveness at the six month follow up^[22]. Previous studies say that there is 80% of prevalence of De Quervain's Tenosynovitis among tailors and barbers of total population. Another study says that there is 51.35% of Prevalence of De Quervain's Tenosynovitis in hair dressers because of their working pattern. But there is paucity of literature regarding Prevalence of De Quervain's Tenosynovitis in barbers specialized in hair cutting. So to know the Prevalence of De Quervain's Tenosynovitis in barbers specialized in hair cutting the above study has been conducted.

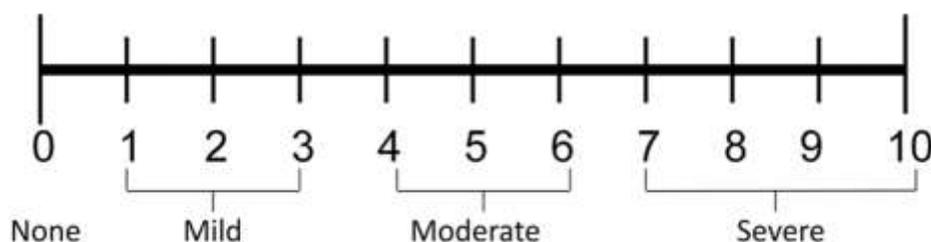
MATERIALS AND METHODS

The study protocol was presented for approval in front of the institutional ethical committee and protocol committee of D. Y. Patil Education Society, Kolhapur. After the approval from committee field work was started. The study was conducted for a period of 18 months. A total of 121 individuals were randomized into a group, according to inclusive and exclusive criteria.

Inclusion criteria: Age group between 30 to 50 years, participants of all gender, Barbers having minimum of 8 to 9 years of experience in hair cutting in Kolhapur region, willing to participate in study and ability to give informed consent.

Exclusion criteria: Any pre-existing pathological condition of upper limb, history of any injury of wrist joint or thumb in last 6 months, history of any surgery of wrist joint or thumb in last 6 months, any metal implants near wrist joint or over the thumb, open wound near wrist joint or thumb.

A brief knowledge about the whole research was given to the barbers. Written consent was taken from the participants. Participants were first provided with the data collection sheet including their personal details and study related question's. Participants with positive Finkelstein's Test were given the Numerical Pain Rating Scale (NPRS) to analyze the degree of pain. Statistical analysis was done and results were obtained.



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RESULT

Table1. Number of males and females included in the study

GENDER	FREQUENCY	PERCENTAGE
MALE	89	73.55%
FEMALE	32	26.45%
TOTAL	121	100.00%

Table 2: Sociodemographic data and occupational characteristics

Parameters	Overall, N= 121	Males, N= 89	Females, N= 32
Age	42.98±10.85	45.18±11.23	36.81±5.69
Experience	19.07 ± 8.57	20.72±8.90	14.19±5.09

Table3. Mean and standard deviation of outcome measure finkelstein's test

Finkelstein's Test	Overall , n=121, mean(SD)	Male, n=89 , mean(SD)	Female, n=32, mean(SD)
Positive	86 ± 4.99	70 ± 3.87	16 ± 2.83
Negative	35 ± 4.99	19 ± 3.87	16 ± 2.83

Table 4. Mean and standard deviation of outcome measure NPRS

NPRS (Positive Patients)			
Outcome Measure	Mean	S.D.	P-value
On Rest	1.88	1.21	1.18E-43
on Moment	6.33	1.13	

Table 5. Prevalence of De Quervain's tenosynovitis.

De Quervain's Tenosynovitis	TOTAL	PERCENTAGE
POSITIVE	86	71.07%
NEGATIVE	35	28.93%

Table 6. Prevalence of De Quervain's Tenosynovitis in males

De Quervain's Tenosynovitis	MALES	PERCENTAGE
POSITIVE	70	78.65%
NEGATIVE	19	21.34%

Table 7. Prevalence of De Quervain's Tenosynovitis in females

De Quervain's Tenosynovitis	FEMALE	PERCENTAGE
POSITIVE	16	50%
NEGATIVE	16	50%

DISCUSSION

In the above study, the mean age of the participant was 43.06. De Quervain's Tenosynovitis was assessed by Finkelstein's test. Finkelstein's test plays key role in diagnosing De Quervain's Tenosynovitis. Severity of pain analyzed by Numerical Pain Rating Scale (NPRS). De Quervain's Tenosynovitis was assessed by Finkelstein's test. Finkelstein's test plays key role in diagnosing De Quervain's Tenosynovitis. Severity of pain analyzed by Numerical Pain Rating Scale (NPRS). Previous literature by Nidhi Limbachiya, Dr. Ashish Mathur et.al ^[5], on Incidence and Prevalence of Work-Related Musculoskeletal Disorders and Their Risk Factors among

Hairdressers and Beauticians suggested that Hairdressers are widely acknowledged as artists in their craft, using their creativity and technical skills to transform hair into beautiful and stylish looks. However, their profession comes with physical demands that often lead to work-related musculoskeletal disorders (WMSDs). These health issues develop over time due to the repetitive nature of their tasks, which involve continuous hand and wrist movements, prolonged standing, and maintaining fixed postures for extended periods. Additionally, hairstylists frequently adopt awkward or strained positions to achieve precision in their work, such as bending over clients, reaching overhead, or angling their wrists and fingers in unnatural ways. The cumulative effect of these physical stresses can result in discomfort, pain, and long-term musculoskeletal conditions that impact their well-being and ability to work efficiently. This literature aims to illuminate the prevalence of work-related musculoskeletal disorders (WMSDs) within the Indian hairdressing sector by analyzing various working postures and their effects on different areas of the body. This study will offer essential insights that can inform occupational health and safety initiatives. With a prevalence rate of 88.7%, the literature highlights the significant impact of WRMSDs on the well-being of hairdressers.

Another study by Anmar Zaheer, Ayesha Ayub et.al^[6], on Frequency of Work-Related Musculoskeletal Disorders among Barbers suggested that Work-related musculoskeletal disorders (WMSDs) can cause significant damage to the soft tissues of the body, including muscles, tendons, ligaments, and nerves. These disorders often manifest through a range of distressing symptoms, such as persistent pain, tingling sensations, numbness, or an altered sense of touch in the affected areas. Such conditions are a major concern not only for the employees who experience them but also for employers and the industry as a whole, as they can directly impact workplace efficiency and overall productivity. When workers suffer from musculoskeletal discomfort or injuries, their ability to perform tasks effectively may decline, leading to reduced work output and, in many cases, an increase in absenteeism due to the need for medical attention or recovery time. If these disorders are not identified and managed in a timely manner, they can progressively worsen, potentially leading to chronic pain conditions or long-term disabilities. Older or more experienced workers may face a higher risk of developing persistent musculoskeletal issues due to years of accumulated strain on their bodies. Given these serious implications, it is essential to implement proactive preventive strategies aimed at reducing the risk of permanent disabilities. Proper ergonomic interventions, regular physical activity, posture correction techniques, and workplace modifications can play a crucial role in ensuring that employees maintain their physical well-being while continuing to perform their job responsibilities effectively. The profession of hairdressing necessitates extended periods of standing in uncomfortable positions, leading to frequent complaints of leg pain, wrist pain, and discomfort in the neck and lower back. These physical demands contribute to a significant prevalence of musculoskeletal disorders. Additionally, a mismatch between the hairdresser and their working environment may result in psychological or emotional challenges. Factors such as gender, age, hours worked, and length of employment can significantly influence the likelihood of work-related musculoskeletal disorders.

Several prevalent musculoskeletal disorders among barbers include carpal tunnel syndrome, thoracic outlet syndrome, repetitive strain injury, and rotator cuff tendonitis.

The study by Christopher G. Larsen, MD Michael J. Fitzgerald et.al^[9], concluded that De Quervain's Tenosynovitis (DQT) is defined by the thickening and myxoid degeneration of the tendon sheath located in the first dorsal compartment (FDC) of the wrist. This compartment is comprised of fibrous bands from the extensor retinaculum and houses the tendons of the Abductor Pollicis Longus (APL) and the more posterior Extensor Pollicis Brevis (EPB). Risk factors associated with the development of DQT encompass engaging in manual labor.

The above study aims to investigate the Prevalence of De Quervain's Tenosynovitis in barbers specialized in hair cutting. The findings reveal that among total 121 participants 71% tested positive for De Quervain's Tenosynovitis. The results of this research indicate a remarkably high incidence (71%) of De Quervain's tenosynovitis (DQT) among barbers who are specialized in hair cutting. This finding underscores a significant occupational health issue that warrants further investigation. The elevated prevalence is likely linked to repetitive motions of the wrist and thumb, sustained gripping, prolonged ulnar deviation, and forceful pinching, all of which are essential to hairstyling tasks such as cutting, trimming, and razor use. These findings are consistent with earlier studies that have shown occupations involving repetitive hand and wrist movements such as tailoring, gardening, knitting, and assembly line work face a heightened risk of DQT. Nevertheless, the 71% prevalence noted among barbers is considerably higher than that found in other fields, indicating that hairstylists may be especially susceptible due to the extended duration of their tasks and the force necessary for precise cutting. Additionally, ergonomic issues, including poor wrist positioning, suboptimal tool design, and extended working hours, may further exacerbate this high prevalence. Many barbers often work without sufficient breaks, resulting in cumulative stress on the Extensor Pollicis Brevis and Abductor Pollicis Longus tendons, which are primarily implicated in DQT. This highlights the significance of occupational overuse as a critical risk factor. A potential limitation of this study is the absence of a control group or a comparison with barbers engaged in other specialized activities, such as shaving or chemical treatments, which may exhibit different strain patterns. Nonetheless, the substantial percentage identified in this study strongly indicates the necessity for preventive strategies, including ergonomic adjustments to tools, regular rest intervals, stretching routines, and education on wrist health to reduce the risk of DQT.

CONCLUSION

The goal of our study was to investigate the prevalence rate of De Quervain's Tenosynovitis in barbers specialized in hair cutting. The result highlights a significant occurrence of the condition, with a prevalence rate of 71%. Additionally, the typical duration of professional experience among individuals diagnosed with De Quervain's tenosynovitis ranged from 8 to 9 years, indicating a possible correlation between extended occupational exposure and the onset of this condition. The results highlight the importance of early diagnosis and suitable physiotherapy interventions to avert the advancement of symptoms and enhance functional outcomes.

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