

Prevalence of De Quervain's Tenosynovitis among Medical Students: A Cross-Sectional Analytical Study

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ABSTRACT

Background: De Quervain's tenosynovitis (DQT) is a common condition characterized by the narrowing of the tendon sheaths in the wrist's first dorsal compartment. With the increasing dependence on digital devices such as smart phones, tablets, and laptops, medical students are at high risk due to prolonged screen time, extensive note taking, and clinical tasks requiring repetitive hand use. Therefore, this study was helpful in determining the prevalence of De Quervain's tenosynovitis that causes pain and disability that had impacted their functioning capacity, academic performance, and clinical abilities.

Method: A cross-sectional study was conducted on 135 medical students using Finkelstein Test to evaluate prevalence of De Quervain's Tenosynovitis and those who scored positive were then asked to complete the Quick Dash scale and NPRS. Descriptive statistics were used to summarize demographic characteristics, and Spearman's correlation test was employed to analyze the relationship between NPRS and QuickDASH due to non-normal data distribution.

Results: Out of 135 students, 45 (33.33%) participants exhibited positive Finkelstein test while 90 indicated negative Finkelstein test. Spearman's correlation analysis revealed a statistically significant correlation between NPRS and QuickDASH ($p=0.01$), indicating that individuals with higher NPRS are more likely to have higher QuickDASH score.

Conclusion: This study concluded that De Quervain's tenosynovitis is common among medical students due to abnormal usage of thumb musculature during hand movements as in prolonged writing, frequent usage of mobile phones for texting and other overuse conditions can increase the likelihood of De Quervain disease in this population.

Keywords: De Quervain's tenosynovitis, Finkelstein test, Pain, Disability, Students

INTRODUCTION

According to the World Health Organization (WHO), a work-related musculoskeletal disorder (WRMSD) is any sickness that is brought on by or made worse by physical activity or job, ranging from acute, transient conditions to permanent injuries and impairments.^[1,2]

Thumb pain is secondary to underlying disease, aside from conditions like carpal tunnel syndrome and osteoarthritis. Factors like thumb joint hyper mobility or an inability to stabilize the joints of thumb during physiotherapy techniques and prolonged working may cause a change in underlying structures that results in thumb pain^[1,3]. The abductor pollicis longus (APL) and extensor pollicis brevis (EPB)

tendons, which travel through the wrist's first dorsal compartment, are primarily affected by De Quervain's tenosynovitis ^[4].

A rising number of people are experiencing this severe ailment that affects the wrist tendons, specifically by inflammation of the sheaths covering the two tendons near the base of the thumb. By putting pressure on surrounding nerves, this inflammation results in pain and numbness. ^[5] As the APL and EPB tendons travel beneath a thicker and enlarged extensor retinaculum, they are repeatedly and continuously strained, which is the cause of this condition. Patients complain of pain and irritation in the radial styloid region when they 1st arrives. With a clenched fist and thumb metacarpophalangeal (MP) joint flexion, movements and activities that need ulnar deviation aggravate this pain. ^[4]

Stapling, writing, shaving, combing one's hair, using cutlery, and even gripping the steering wheel of a car can all make symptoms worse or if someone used a cell phone to send more than 250 text messages.

^[6] In addition to pain, the patient may also have other related symptoms as cramping, burning, tingling, numbness, and dysesthesias. A positive Finkelstein test result is the most common finding in De Quervain's tenosynovitis. Consequently, people who perform repetitive tasks with their hands—particularly their thumb—are more likely to develop De-Quervain's. ^[7]

Even though De Quervain's tenosynovitis is a fast-increasing ailment among young individuals, there hasn't been enough research done to support and increase awareness of the issue up to this point ^[8]. Intercarpal instability, scaphoid fracture, superficial radial neuritis (Wartenberg's syndrome), 1st C6 cervical radiculopathy, and osteoarthritis of 1CMC are among the differential diagnoses for de Quervain's tenosynovitis. ^[9]

Early treatment options include analgesics, ultrasonic radiation, and wrapping the wrist in a slab or crepe bandage. There are some circumstances where hydrocortisone needs to enter locally. Chronic diseases may need slitting and excision of a part of the tendon sheath ^[10]. Although there is no proof of their efficiency, a growing range of DQT therapeutic alternatives are becoming accessible, including acupuncture, laser therapy, extracorporeal shockwave therapy, hyaluronic acid injections, and ultrasonographic therapy. Because there are numerous therapy methods available and their potential combinations, management decisions might be difficult ^[11].

New developments in imaging and therapy, as well as emerging rehabilitative strategies such graded tendon-loading procedures, demonstrate a move toward more accurate and patient-centered care. Even with improvements, there are still issues with long-term functional recovery and therapy protocol optimization. To enhance patient outcomes, lower recurrence rates, and better diagnostic and treatment approaches, further research is necessary. ^[12] The aim of this study is to determine the prevalence of De Quervain's tenosynovitis among medical students and to examine the association between pain intensity and upper limb disability.

SIGNIFICANCE OF THE STUDY

De Quervain's Tenosynovitis is a common repetitive strain injury affecting the thumb and wrist involving repetitive hand and wrist movements. With the increasing dependence on digital devices such as smartphones, tablets, and laptops, medical students are at high risk due to prolonged screen time, extensive note-taking, and clinical tasks requiring repetitive hand use. Despite its increasing importance, little is known about its prevalence and contributing variables, particularly among medical students- a group that faces significant intellectual, psychological, and physical demands. Therefore, this study was helpful in determining the prevalence of DQT that causes pain and disability that had impacted their

functioning capacity, academic performance, and clinical abilities. Thus, the need for conducting this study arises.

AIM AND OBJECTIVES

Aim

- To assess the prevalence of De Quervain's tenosynovitis among medical students and to examine the association between pain intensity and upper limb disability.

Objectives

- To determine the prevalence of De Quervain's tenosynovitis among medical students using Finkelstein test.
- To measure the intensity of pain in students diagnosed with De Quervain's tenosynovitis using the Numerical Pain Rating Scale (NPRS).
- To evaluate upper limb functional disability in the affected students using the QuickDASH questionnaire.
- To analyze the correlation between NPRS scores and QuickDASH disability scores among students with De Quervain's tenosynovitis.

METHODOLOGY

STUDY DESIGN

Cross-Sectional Analytical study

SAMPLING METHOD

Convenient sampling

SAMPLE SIZE

135 medical students from various medical colleges

STUDY DURATION

6 Months

DATA COLLECTION TOOL

QuickDash Scale

MEASUREMENT TOOL

Finkelstein Test

INCLUSION CRITERIA:

- Students currently studying in an undergraduate medical program at a recognized medical institution.
- Aged between 18 and 24 years.
- Willing to participate and able to provide voluntary written informed consent.
- Competent to comprehend and respond to standardized assessment tools for pain and disability evaluation.
- Students who regularly used mobile phones, tablets or laptops for long durations each day for academic or clinical purposes, involving sustained and repetitive movements of the thumb and wrist.

EXCLUSION CRITERIA:

- Presence of other upper limb musculoskeletal conditions that may confound pain or disability outcomes.
- Diagnosis of any neurological or systemic condition that may impair upper limb function or influence

e pain perception.

- Current use of medications that significantly alter pain sensitivity.
- History of acute trauma, recent fracture, or surgical intervention involving the wrist, thumb, or forearm within the preceding six months.
- Inability to comprehend the study language or complete assessment tools due to cognitive, sensory, or language impairments.

PROCEDURE

The study was conducted following standardized research protocols. Participants were recruited from various medical colleges using convenient sampling methods. Prior to participation, written informed consent was obtained from all individuals. A total of 135 medical students, aged between 18 to 24 years, who met the inclusion criteria, were enrolled in the study.

The Finkelstein Test was used to evaluate the participants, and those who scored positive were then asked to complete the Quick Dash scale and NPRS. The Quick Dash scale comprised the following three sections:

1. Informed Consent - A consent form outlining the study purpose, procedures, and confidentiality.
2. Demographic Information Questions pertaining to participants' age, gender, occupation, dominance side, BMI and average daily duration of Smart phone use.
3. The QuickDASH scale - consists of 11 questions covering 6 domains (daily activities, symptoms, social function, work function, sleep, and confidence). Each item is rated on a 5-point Likert scale, from 1 (no difficulty) to 5 (unable).

Upon completion of data collection, responses were scored in accordance with the QuickDash scoring protocol to calculate physical function and symptoms in people with upper limb musculoskeletal disorders. Based on the scores, participants were classified in which higher scores indicate a greater level of disability and severity, whereas, lower scores indicate a lower level of disability. The score on test ranges from 0 (no disability) to 100 (most severe disability). These categories served as the basis for the analysis of physical activity prevalence among medical students.

STATISTICAL ANALYSIS AND RESULT

Statistical analysis was done using IBM SPSS version 21.0. Descriptive statistics and graphical representations have been used to summarize the findings.

Demographic Characteristics of Participants:

Table 1: Characteristics of Participants

Characteristics	mean $\pm$ SD
Age	20.07 $\pm$ 1.25
Height	157.83 $\pm$ 7.49
Weight	51.69 $\pm$ 11.32
BMI	20.85 $\pm$ 4.40

Table 1 shows the descriptive statistics of age, height, weight and BMI for all the 135 students.

A total of one thirty-five medical students participated in the study with a mean age of participants was 20.07 years and standard deviation was 1.25. The mean height of the participants was 157.83cm and standard deviation was 7.48. The mean weight of the participants was 51.69kg and standard deviation

was 11.32. The mean Body Mass Index (BMI) of the participants was 20.85 and standard deviation was 4.40 placing the average individual within the normal range according to WHO classification.

Demographic description of Dominant and Affected side of Participants in Percentage:

Table 2: Dominant and Affected side

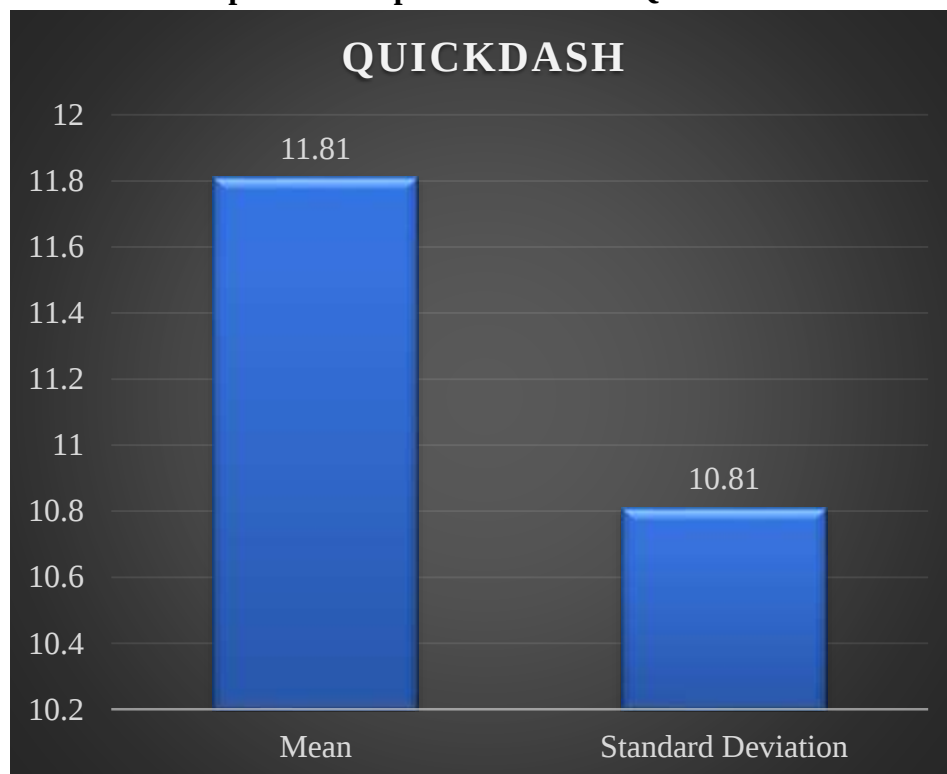
Dominance Side	Percentage (n)
Right (n)	86.66% (39)
Left (n)	13.33% (6)
Affected Side	Percentage (n)
Right (n)	71.11% (32)
Left (n)	28.89% (13)

Table 2 shows the descriptive statistics of dominance side and affected side distribution among all the 135 students.

The frequency of right and left side as a dominance of 86.66% and 13.33% respectively while the frequency of right and left side as an affected of 71.11% and 28.89% respectively.

Descriptive Statistics of Quick Dash

Graph 1: Descriptive Statistics of Quick Dash



Graph 1 descriptive statistics of Quick Dash shows the mean Quick Dash score was 11.81 and SD was 10.81.

Prevalence of De Quervain Tenosynovitis:

Table 3: Prevalence of De Quervain Tenosynovitis

Finkelstein Test	Frequency (n)	Percentage (%)
Positive	45	33.33
Negative	90	66.66
Total	135	100

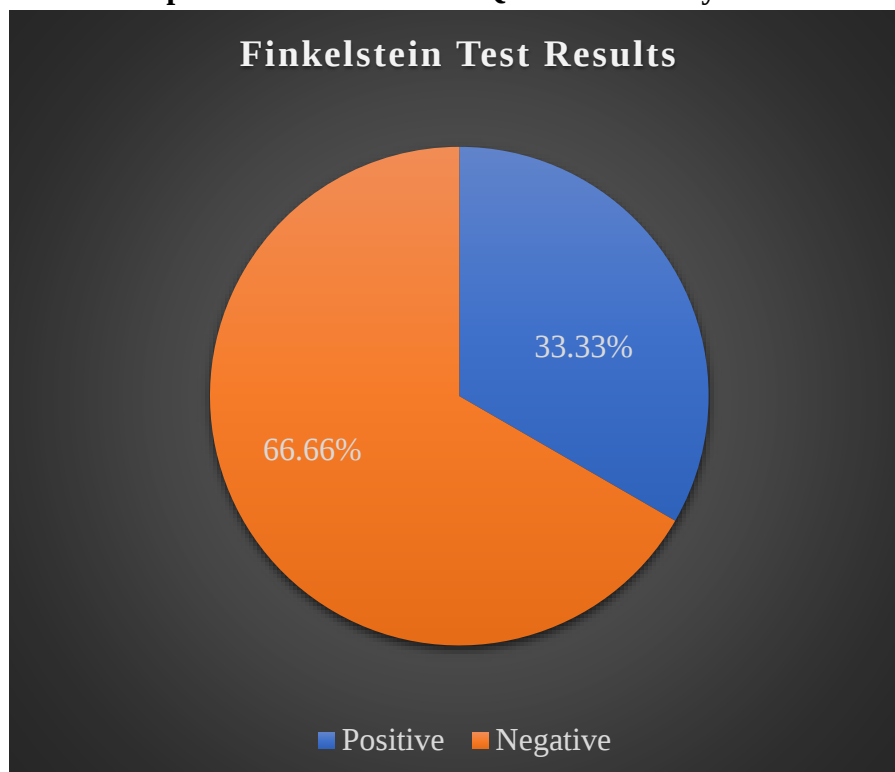
Interpretation:

Based on Finkelstein test, the prevalence of De Quervain Tenosynovitis was resulted positive and negative. As presented in table 3, it was observed that:

- 33.33 % (n=45) of the participants had positive result indicating the prevalence of De Quervain Tenosynovitis.
- 66.66% (n=90) of the participants had negative result indicating no prevalence of De Quervain Tenosynovitis.

These findings suggest that predominant possibility of De Quervain Tenosynovitis among medical students which maybe a concern of impacting their functioning capacity, academic performance, and clinical abilities.

Graph 2: Prevalence of De Quervain Tenosynovitis



Graph 2 illustrates the prevalence of De Quervain Tenosynovitis among the medical students based on Finkelstein test.

Correlation between NPRS and QuickDash:

Table 4: p-value of NPRS and QuickDash

Spearman test		
Variables	p-value(<0.05sig)	Null hypothesis
NPRS	0.01	Rejected
QuickDash		

Interpretation of Spearman test:

- The p-value was calculating 0.01, considered statistically significant correlation between both variables. So, null hypothesis was rejected.

DISCUSSION

The given cross-sectional study aimed to determine the prevalence of De Quervain's tenosynovitis among medical students and to examine the association between pain intensity and upper limb disability. A total of 135 medical students were assessed using Finkelstein test and functional disability in affected students was assessed by the QuickDASH questionnaire.

The descriptive statistics showed that the mean BMI of participants was 20.85 ± 4.40 , placing the average individual within the Normal range according to WHO classification. Moreover, the mean height was 157.83 ± 7.49 , mean weight was 51.69 ± 11.32 and mean age was 20.07 ± 1.25 .

The findings demonstrated a statistically significant correlation ($p= 0.01$) between pain and disability suggesting the individuals with higher pain scores tends to have more upper limb functional disability.

Among the 45 participants who had a positive Finkelstein's sign, 32 students i.e 71.11% reported that the pain was more intense in the dominant hand. Because most activities are usually performed using the dominant hand that involve many wrist movements, pinching, and grasping, the use of the dominant hand while using a smartphone might be considered a risk factor for developing De Quervain's tenosynovitis.

According to the current study, De Quervain's Tenosynovitis was present in 33.33% of medical students. These findings are consistent with research that shows different occupations have different frequencies, such as 67% of medical students^[15], 75% of tailors^[46] and 50.45% of carpenters.^[47]

This study's findings also resonate with those of **Sharan et al.**, who identified a high prevalence of musculoskeletal disorders among young adults engaged in prolonged mobile phone use. The study's demographic focus on female undergraduate students is particularly relevant, as women are generally more susceptible to DQT due to factors such as hormonal changes and fluid retention, which may exacerbate the effects of repetitive strain.^[52]

The findings of our study indicate a higher prevalence of De Quervain's tenosynovitis among medical students, which can be explained by a combination of occupational, behavioural, and ergonomic factors. Medical students frequently engage in prolonged smartphone use for academic and personal purposes, involving continuous thumb scrolling and repetitive wrist deviations that increase friction over the abductor pollicis longus and extensor pollicis brevis tendons. These repetitive strain activities lead to inflammation within the first dorsal compartment of the wrist, resulting in pain and functional limitations characteristic of De Quervain's tenosynovitis. Furthermore, academic stress and limited rest periods may delay tissue recovery, making students more susceptible to tendon irritation. Overall, these findings suggest that lifestyle demands and study-related habits significantly contribute to the increased incidence of De Quervain's tenosynovitis in medical students.

CONCLUSION

The present study evaluated the prevalence of De Quervain's tenosynovitis among medical students. The findings revealed that Finkelstein's sign, a marker that De Quervain's illness is widespread, was present in 33.33% of participants indicating high prevalence of smartphone usage, repetitive wrist movements and the lifting of heavy objects, particularly when transferring patients in this group of people causing significant hand disability among medical students.

It has been concluded that De Quervain's tenosynovitis is common among medical students due to Abnormal usage of thumb musculature during hand movements as in prolonged writing, frequent usage of mobile phones for texting and other overuse conditions can increase the likelihood of De Quervain's disease in this population.

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