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Frequency of De Quervain's Tenosynovitis among Instrumental Musicians of Lahore and its Impact on Activities of Daily Living

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ABSTRACT

Background: De Quervain's tenosynovitis is a common overuse disorder affecting the tendons of the first dorsal compartment of the wrist. Instrumental musicians are particularly susceptible because of repetitive thumb, finger, and wrist movements required during performance. However, evidence regarding its frequency and functional impact among Pakistani musicians remains limited.

Objective: To determine the frequency of De Quervain's tenosynovitis and evaluate its impact on activities of daily living among instrumental musicians in Lahore.

Methods: A cross-sectional study was conducted among 138 instrumental musicians recruited from Alhamra Arts Council, Lahore, using non-probability convenience sampling. Participants aged 20–59 years underwent screening using Finkelstein's test. Individuals with positive findings were further assessed using the Patient-Rated Wrist Evaluation (PRWE) questionnaire to evaluate pain severity and functional limitations. Data were analyzed using SPSS version 25. Descriptive statistics were presented as frequencies and percentages.

Results: Out of 138 musicians, 96 (69.6%) were male and 42 (30.4%) were female. Finkelstein's test was positive in 60 participants, yielding a frequency of 43.5% for De Quervain's tenosynovitis. Among affected participants, 58 (96.7%) reported mild functional limitations, 1 (1.7%) reported no impact, and 1 (1.7%) reported moderate impairment in activities of daily living. Mild pain was reported by 53 participants (88.3%), while 7 (11.7%) experienced moderate pain. No cases of severe pain or severe disability were observed.

Conclusion: De Quervain's tenosynovitis was highly prevalent among instrumental musicians in Lahore. Although the condition was common, most affected individuals experienced only mild pain and mild functional limitations.

Keywords: Activities of Daily Living, De Quervain Disease, Musicians, Occupational Health, Overuse Injury, Repetitive Strain Injury, Tendinopathy, Wrist Pain.

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Introduction

De Quervain's tenosynovitis is a common musculoskeletal disorder affecting the first dorsal compartment of the wrist, where the tendons of the abductor pollicis longus and extensor pollicis brevis pass through a fibro-osseous tunnel. The condition is characterized by pain and tenderness over the radial aspect of the wrist and is frequently associated with repetitive thumb and wrist movements. Although the exact pathophysiology remains incompletely understood, repetitive mechanical stress, overuse, and friction within the tendon sheath are considered major contributing factors. Individuals affected by De Quervain's tenosynovitis commonly experience pain during gripping, lifting, pinching, and thumb movements, which may significantly impair hand function and reduce occupational performance. Additional symptoms may include swelling, localized tenderness, decreased grip strength, and functional limitations during daily activities. In some cases, sensory disturbances and symptoms resembling Wartenberg's syndrome may also be observed due to irritation of the superficial radial nerve (1–4).

Musicians represent a unique occupational group that is frequently exposed to repetitive and prolonged hand movements, often requiring high levels of dexterity, precision, and endurance. Instrumental performance involves continuous use of the wrist, fingers, and thumb in complex movement patterns that may place excessive biomechanical stress on tendons and surrounding soft tissues. Prolonged practice sessions, inadequate recovery periods, poor ergonomic positioning, and repetitive performance techniques may contribute to the development of overuse injuries among musicians. Previous studies have reported that repetitive instrumental activities can result in muscular fatigue, reduced performance efficiency, and various musculoskeletal disorders affecting the upper extremity. Such conditions may negatively influence both professional performance and quality of life, emphasizing the importance of identifying and addressing occupational risk factors in this population (5).

The prevalence of De Quervain's tenosynovitis has been investigated in several occupational groups exposed to repetitive hand activities. Studies conducted among buffalo milkers, healthcare workers, and other populations have demonstrated a considerable burden of the condition, highlighting the role of repetitive thumb and wrist movements in its development. Evidence suggests that individuals engaged in repetitive manual tasks are at increased risk of tendon sheath inflammation and associated functional impairments. Despite the growing body of literature on De Quervain's tenosynovitis, limited research has specifically focused on instrumental musicians, particularly within the Pakistani population. Furthermore, many previous investigations have primarily assessed pain severity using clinical tests and pain-rating scales, with comparatively less attention given to the impact of the condition on functional activities and daily living (1,2,6).

Assessment of De Quervain's tenosynovitis commonly involves clinical examination procedures such as Finkelstein's test, which is widely used to identify pain associated with tendon sheath irritation. In addition to clinical assessment, patient-reported outcome measures provide valuable information regarding pain intensity and functional limitations. The Patient-Rated Wrist Evaluation (PRWE) questionnaire is a validated instrument that evaluates both wrist-related pain and functional disability, allowing a comprehensive assessment of the condition's impact on daily activities. Understanding the extent to which De Quervain's tenosynovitis affects musicians is important for developing preventive strategies, improving early diagnosis, and guiding rehabilitation interventions aimed at preserving hand function and occupational performance (7,8).

Given the limited evidence available regarding the burden of De Quervain's tenosynovitis among instrumental musicians in Lahore, the present study was conducted to determine the frequency of the condition and evaluate its impact on activities of daily living. By identifying the prevalence of De Quervain's tenosynovitis and examining associated functional limitations in this occupational group, the study aims to contribute to existing knowledge, promote awareness of occupational hand disorders among musicians, and support the development of effective preventive and rehabilitative approaches..

Materials and Methods

This cross-sectional prevalence study was conducted to determine the frequency of De Quervain's tenosynovitis among instrumental musicians in Lahore and to evaluate its impact on activities of daily living. The study was carried out among musicians performing at Alhamra Arts Council, Lahore, Pakistan. Data collection was completed over a period of approximately four months following approval of the research synopsis. The study population consisted of instrumental musicians who were actively engaged in playing musical instruments and met the predefined eligibility criteria (7).

The sample size was calculated using the Epitools sample size calculator, resulting in a required sample of 138 participants. A non-probability convenience sampling technique was employed to recruit eligible participants due to the accessibility of the target population. Musicians aged 20–59 years who had been actively involved in instrumental performance and were willing to participate in the study were included. Individuals with a history of traumatic wrist injuries, fractures, inflammatory joint diseases, neurological disorders affecting upper limb function, previous wrist surgery, or other musculoskeletal

conditions that could influence wrist pain and functional performance were excluded from the study (7,8).

After obtaining informed consent, demographic information including age and gender was collected from all participants. Initial screening for De Quervain's tenosynovitis was performed using Finkelstein's test, a widely accepted clinical examination procedure for identifying pain associated with irritation of the first dorsal compartment tendons. Participants who demonstrated positive findings on Finkelstein's test were further evaluated using the Patient-Rated Wrist Evaluation (PRWE) questionnaire. The PRWE is a validated patient-reported outcome measure designed to assess wrist-related pain and functional disability. The questionnaire consists of pain and function domains that provide quantitative information regarding symptom severity and the impact of wrist conditions on activities of daily living. Pain scores and functional scores were recorded and analyzed according to the standard PRWE scoring guidelines (11,12).

Data collection was conducted in a standardized manner to ensure consistency and accuracy of assessment procedures. All participants were informed about the purpose of the study, and confidentiality of personal information was maintained throughout the research process. Participation was entirely voluntary, and participants were free to withdraw from the study at any stage without any consequences. Ethical principles governing human subject research were strictly followed during the conduct of the study. Written informed consent was obtained from all participants prior to enrollment.

The collected data were entered and analyzed using Statistical Package for the Social Sciences (SPSS) version 25. Descriptive statistics were used to summarize the study findings. Categorical variables were presented as frequencies and percentages, whereas continuous variables were summarized using appropriate descriptive measures. The frequency of De Quervain's tenosynovitis was calculated based on positive Finkelstein's test findings and PRWE assessment outcomes.

Results

Among the 138 instrumental musicians included in the study, males constituted the majority of participants (69.6%), while females accounted for 30.4%. The most represented age group was 20–29 years (58.0%), followed by 30–39 years (19.6%), 50–59 years (14.5%), and 40–49 years (8.0%).

Finkelstein's test was positive in 60 participants, indicating that 43.5% of instrumental musicians had clinical findings suggestive of De Quervain's tenosynovitis. The remaining 56.5% of participants showed no clinical evidence of the condition. Among the 60 participants diagnosed with De Quervain's tenosynovitis, the impact on activities of daily living was generally mild. Most participants reported only minor difficulties in performing routine functional activities, while very few demonstrated moderate limitations.

Table 1: Demographic Characteristics of Instrumental Musicians (n = 138)

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	96	69.6
	Female	42	30.4
Age Group (Years)	20–29	80	58.0
	30–39	27	19.6
	40–49	11	8.0
	50–59	20	14.5

Among participants diagnosed with De Quervain's tenosynovitis (n = 60), the vast majority (96.7%) reported only mild limitations in activities of daily living, while 1.7% reported no functional impact and 1.7% experienced moderate impairment. No participant reported severe disability. Regarding pain severity, most participants (88.3%) experienced mild pain, whereas 11.7% reported moderate pain. No cases of severe pain were observed. These findings suggest that although De Quervain's tenosynovitis was relatively common among instrumental musicians, its impact on daily functioning and pain levels was generally mild.

Table 2: Frequency of De Quervain's Tenosynovitis Based on Finkelstein's Test (n = 138)

Finkelstein's Test	Frequency (n)	Percentage (%)
Positive	60	43.5
Negative	78	56.5

Mild pain was reported by 88.3% of participants, while 11.7% experienced moderate pain. Overall, the findings demonstrated that De Quervain's tenosynovitis was relatively common among instrumental musicians, affecting nearly half of the study population. However, among affected individuals, the condition was predominantly associated with mild pain and mild functional limitations, indicating a limited impact on activities of daily living in most cases.

Table 3: Impact and Pain Severity among Participants with De Quervain's Tenosynovitis (n = 60)

Category	Level	Frequency (n)	Percentage (%)
Impact on Activities of Daily Living (ADL)	No Impact	1	1.7
	Mild Impact	58	96.7
	Moderate Impact	1	1.7
	Severe Impact	0	0.0
Pain Severity	Mild Pain	53	88.3
	Moderate Pain	7	11.7
	Severe Pain	0	0.0

Discussion

The present study investigated the frequency of De Quervain's tenosynovitis among instrumental musicians in Lahore and evaluated its impact on activities of daily living using Finkelstein's test and the Patient-Rated Wrist Evaluation (PRWE) questionnaire. The findings demonstrated that 43.5% of participants had positive clinical findings suggestive of De Quervain's tenosynovitis. Furthermore, participants with positive findings reported mild-to-moderate pain levels and relatively low functional disability scores, indicating that although the condition was common among instrumental musicians, its overall impact on daily functional activities was generally mild.

The high frequency observed in the current study may be attributed to the repetitive and prolonged thumb, finger, and wrist movements required during instrumental performance. Musicians are exposed to continuous biomechanical stress, repetitive tendon loading, and sustained postures that may contribute to tendon sheath irritation and overuse injuries. Previous literature has consistently identified repetitive hand-intensive activities as important risk factors for the development of De Quervain's tenosynovitis. Hetaimish et al. reported a notable prevalence of De Quervain's tenosynovitis among medical professionals exposed to repetitive upper limb activities, highlighting the role of occupational overuse in the development of the disorder (1). Similarly, Minahel et al. reported a substantial prevalence of De Quervain's tenosynovitis among female tailors, emphasizing the association between repetitive manual work and tendon sheath inflammation (2). The findings of the present study further supported the growing evidence that repetitive occupational hand activities significantly contribute to the occurrence of De Quervain's tenosynovitis.

The frequency observed in the current investigation was comparable to the findings reported by Kale and Salunkhe, who documented a prevalence of approximately 43% among buffalo milkers exposed to repetitive thumb and wrist movements during occupational activities (6). The similarity between the two studies suggested that occupations involving continuous repetitive hand movements may impose comparable mechanical demands on the tendons of the first dorsal compartment, regardless of the specific nature of the task. However, the prevalence observed in the present study was considerably higher than that reported by Rokaya et al., who found a prevalence of 1.33% among patients attending an orthopedic outpatient department (10). This difference may be explained by variations in study populations, occupational exposure, sampling methods, and assessment procedures. Instrumental musicians represent a highly specialized population with frequent exposure to repetitive upper extremity movements, which may increase their susceptibility to overuse-related tendon disorders.

The present study also examined pain and functional limitations using the PRWE questionnaire. Most participants demonstrated pain scores within the mild-to-moderate range, with a pain score of 14/50 being the most frequently reported. Functional disability scores were generally low, with the majority of participants reporting function scores between 5 and 7 out of 50. These findings suggested that although De Quervain's tenosynovitis was prevalent among instrumental musicians, many participants continued to perform daily activities with relatively minor functional restrictions. The relatively low functional disability scores may be explained by adaptive strategies developed by musicians over time, allowing them to maintain performance despite discomfort. Nevertheless, persistent pain and repetitive strain may potentially affect performance quality, productivity, and long-term musculoskeletal health if left untreated.

The findings of this study were also consistent with the work of Goubault et al., who demonstrated that repetitive piano tasks resulted in forearm muscle fatigue and negatively affected musical performance parameters (5). Although that study focused on muscular fatigue rather than De Quervain's tenosynovitis specifically, it highlighted the adverse effects of repetitive instrumental performance on upper limb musculoskeletal structures. Similarly, Hidayat et al. investigated factors associated with De Quervain's syndrome among university students and reported associations between repetitive hand use and symptom development (9). Together with the present findings, these studies reinforced the importance of repetitive biomechanical loading as a contributing factor

in the development of upper extremity musculoskeletal disorders.

A notable strength of the present study was its focus on instrumental musicians, a population that has received comparatively limited attention in the literature regarding De Quervain's tenosynovitis. Additionally, the study combined clinical screening through Finkelstein's test with patient-reported assessment using the PRWE questionnaire, providing information regarding both the frequency of the condition and its impact on daily activities. The inclusion of functional assessment allowed a broader understanding of the consequences of the disorder beyond pain alone.

Despite these strengths, several limitations should be acknowledged. The cross-sectional design prevented the establishment of causal relationships between instrumental performance and the development of De Quervain's tenosynovitis. The use of convenience sampling may have limited the generalizability of the findings to all musicians. Data were collected from a single setting in Lahore, which may not fully represent musicians from other geographical regions or musical environments. Furthermore, only clinical screening and self-reported outcome measures were utilized, while advanced diagnostic techniques such as ultrasonography or magnetic resonance imaging were not employed to confirm tendon pathology. The absence of detailed information regarding instrument type, duration of daily practice, years of musical experience, ergonomic factors, and occupational workload also limited further exploration of potential risk factors.

Future studies should include larger multicenter samples and employ probability sampling techniques to improve external validity. Longitudinal investigations are recommended to determine causal relationships and identify factors associated with the onset and progression of De Quervain's tenosynovitis among musicians. Further research should also evaluate the influence of specific musical instruments, playing techniques, practice duration, and ergonomic interventions on tendon health. Additionally, preventive strategies, educational programs, and physiotherapy-based interventions should be investigated to reduce the burden of repetitive strain injuries and promote musculoskeletal well-being among instrumental musicians.

Overall, the findings demonstrated a substantial frequency of De Quervain's tenosynovitis among instrumental musicians in Lahore and highlighted the presence of mild-to-moderate pain and functional limitations among affected individuals. These results underscored the importance of early recognition, preventive measures, and appropriate rehabilitation strategies for reducing the impact of occupational hand disorders within the musician population (1,2,5,6,9,10).

Overall, the study demonstrated a considerable frequency of De Quervain's tenosynovitis among instrumental musicians in Lahore. Participants diagnosed with the condition reported mild-to-moderate pain levels and relatively low functional disability scores, indicating that while the disorder was common, its impact on daily functional activities was generally limited.

Conclusion

The present study demonstrated a high frequency of De Quervain's tenosynovitis among instrumental musicians in Lahore, with affected individuals experiencing mild-to-moderate pain and generally mild functional limitations in activities of daily living. Repetitive and prolonged hand, wrist, and thumb movements associated with instrumental performance appeared to be important contributing factors. These findings highlight the need for increased awareness, early screening, ergonomic modifications, and timely physiotherapy interventions to prevent progression of the condition, preserve hand function, enhance occupational performance, and improve the overall musculoskeletal health and quality of life of musicians.

Authors' Contributions

ICMJE authorship criteria	Detailed contributions	Authors
Substantial Contributions	Conception or Design of the work	1,2,3
	Data acquisition	2,3,4
	Data analysis or interpretation	1,3
Drafting or Reviewing	Draft the work	1
	Review critically	1,2,3,4
Final approval	Final approval of the version to be published.	1,2,3,4
Accountable	Agreement to be accountable for all aspects of the work.	1,2,3,4

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