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PREVALENCE OF DE QUERVAIN'S TENOSYNOVITIS AMONG CLINICAL PHYSICAL THERAPISTS IN PESHAWAR, PAKISTAN; A CROSS SECTIONAL STUDY

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ABSTRACT

De Quervain's tenosynovitis is an idiopathic condition characterized by pain on the radial (thumb) side of the wrist. It is also described as an overuse disease caused by repetitive hand and wrist movements and continued strain. Activities like stapling, writing, brushing hair, shaving, using eating utensils, or even grasping the steering wheel of vehicle may exacerbate pain. Physical therapy is most physically demanding profession because of this physiotherapists are more prone to develop work-related musculoskeletal problems. ***Objectives*** *To determine the Prevalence of de quervain's tenosynovitis among clinical physical therapist.* ***Methodology*** *This was descriptive cross sectional study. A total of 189 clinical physical therapists was included in this study and the sample size was taken by Roasoft software, the data was collected through standard based questionnaire. The data was analyzed through SPSS 2.0. The Pearson chi-square test was used for testing the association between the various predictors and the diagnosis of De Quervain's tenosynovitis.* ***Results*** *A total of 189clinical physical therapists participated in the study. The statistical analysis shows that 27% of the clinical physical therapists were affected by De Quervain's tenosynovitis.* ***Conclusion*** *This research highlights the significant prevalence of De Quervain's tenosynovitis among clinical physiotherapists. A substantial portion of this professional group reports experiencing symptoms or receiving a diagnosis of the condition. This underscores the importance of implementing preventive measures, making ergonomic workplace adjustments, and providing continuous education about this ailment to safeguard the well-being of clinical physiotherapists*

Keywords: *Wrist pain Physical therapist Clinical Physical Therapist, De Quervain's tenosynovitis, Finkelstein test work-related musculoskeletal disorder*

INTRODUCTION

Physiotherapy is a health care profession mainly worried about the amendatory of impairments with disabilities and the up gradation of mobility, functional capability, the standard of life and movement possible through assessment, diagnosis, and physical interventions(1)The World Health Organization (WHO) defines a work-related musculoskeletal disorder (WRMSD) as a form of illness ranging from acute transitory disorders to irreversible injuries and disabilities that are caused or worsened by work or physical activities It is found that WRMSD is a universal problem which causes chronic pain and physical disability which affects the contemporary workforces(2)The highest percentage of WRMSD's are among physical

therapists. Previous literature suggests that the prevalence of WRMSD among physical therapists is 32%(3)A Study shows that the lifetime prevalence of work-related musculoskeletal disorders among physical therapists is 91%, with a higher prevalence in younger therapists(4)The physical therapist experiences various work-related musculoskeletal injuries especially in the hand, as repetitive movement and loading of small joints is a major requirement of manual therapy intervention(5)Among physiotherapists, all structures within the thumb joints of a hand are most susceptible to biomechanical and job-related injuries due to manual therapy techniques that recurrently compress the thumb joint.(6) The first metacarpophalangeal (MCP),and the carpometacarpal (CMC) joints are the most frequent areas of thumb pain among manual physiotherapists.(7) The most important functional element of muscle framework is the setting of muscle fibers associated to the axis of pressure generation.(8) Physical therapy is most physically demanding profession because of this physiotherapists are more prone to develop work-related musculoskeletal problems.(2, 9)

The musculoskeletal conditions are treated by manual techniques to get the good outcome so while treating the patients with manual techniques thumb is involved and due to ligamentous laxity of thumb, manual physiotherapists are more prone to develop thumb pain and hypermobility of joints of hand(10)

De Quervain's tenosynovitis is an idiopathic condition characterized by pain on the radial (thumb) side of the wrist.(11)The entrapment tendinitis/tenosynovitis of the abductor pollicis longus and extensor pollicis brevis tendons at the level of dorsal styloid process of radius is known as De Quervain's tenosynovitis(12)The abductor pollicis longus and extensor pollicis brevis tendons are located in the first dorsal wrist compartment, which is separated from the other five compartments by a synovial sheath(13)It is considered one of the most well-known tendonitis associated with the forearm.(14)

Fritz De Quervain's defined de Quervain's tenosynovitis in 1895 as pain in the wrist caused by stenosing tenosynovitis of thumb abductors around the radiostyloid process(15)

De Quervain's tenosynovitis is also described as an overuse disease caused by repetitive hand and wrist movements and continued strain and is also called Blackberry thumb, Gamer's thumb, washer woman's sprain, or texting thumb.(16)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. 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.(17)Movement of the thumb and wrist exacerbates the pain, which may spread to the thumb or forearm.(18)Activities like stapling, writing, brushing hair, shaving, using eating utensils, or even grasping the steering wheel of vehicle may exacerbate pain.(19)

De Quervain's as reported by studies are related to overuse and repetitive activity of the affected thumb. Also Working with a sore thumb in the same position for long periods may aggravate the disease.(20)The diagnosis of de Quervain's based on clinical assessment. This includes pain in the lateral side of the thumb, tenderness at the base of the thumb and pain at the base of the thumb with ulnar deviation of a fist with the thumb directed inward. i.e. Finkelstein test.(21)

The Finkelstein's test, which requires patients to flex their thumb and enclose it in a closed fist, is the diagnostic procedure for DQT.(22)The therapist maintains this particular hand posture while the patient actively or passively performs ulnar deviation of the wrist.(23)A positive sign of DQT is pain felt on the radial side of the wrist, close to the radial styloid process.(24)

The treatment of De Quervain's tenosynovitis is usually based on pain management and immobilization at the thumb joint. By using thumb Spica 24 hours a day for 4 to 6 weeks.(25) Most patients respond well to non-operative management, which includes immobilization of the thumb, non-steroidal anti-inflammatory drugs, physiotherapy, and local corticosteroid injection.(26)

In severe cases, oral Steroids or local anesthetic injections into the tendon sheath are quite effectively used.(27)Rehabilitative interventions, including resting splint, physiotherapy programs with mobilization and stretching exercises, and physical modalities.(28-30)

Surgical treatment is recommended only when conservative therapies fail.(31)Surgical release is effective, but may lead to complications, and especially abductor pollicis longus and extensor pollicis brevis tendon subluxation.(32)

There was limited literature available on the prevalence of De Quervain's Tenosynovitis among clinical physical therapists in Peshawar, Khyber Pakhtunkhwa (KPK).Hence, in the field of physical therapy the physical therapists always use his hands and mostly both thumbs in mobilization and soft tissue release and their professional techniques including, manual therapy, ischemic pressure release, mobilization, and gliding techniques due to which physical therapists are more prone towards de quervain's tenosynovitis. This study was help to identify the thumb condition in physical therapists and take step to overcome and prevent causing further damage. The physical therapist prevent it with stretching and strengthing exercises, as well as by not taking the workload.

METHODS AND PROCEDURE

To determine the Prevalence of de quervain's tenosynovitis among clinical physical therapist in Peshawar a cross sectional study was conducted in government, private hospitals and private clinics of Peshawar. The sample size was calculated by using Roasoft software, Census sampling technique was used for recruitment of data by using standard based questionnaire, which was divided into four sections and the questionnaire was filled through interview.Sections contains demographic related questions, work related information, information regarding De Quervain's Tenosynovitis signs and physical examination. The data was collected from following hospitals PiHMS, Hayatabad Medical Complex (HMC),Lady Reading Hospital (LRH),Khyber Teaching Hospital (KTH),Northwest General Hospital, Rahman Medical Institute (RMI),Peshawar Institute of Cardiology (PIC),Paraplegic Center Peshawar, Peshawar General Hospital (PGH), Maqsood Medical Complex General Hospital (MMCGH),Habib Medical Center Peshawar, Nasirullah Khan Babar Memorial Hospital Peshawar, Shahab Orthopedic Hospital Peshawar, Police and Service Hospital, PIMS Peshawar, City hospital Peshawar, and several private clinics of Peshawar. The inclusion criteria was Age between 25 to 45, Clinical Physical therapist, Both male and female physical therapist, Minimum of having 1 year working experience and the exclusion criteria was Less than 25 and greater than 45, Academic physical therapist, Physical therapist gone through any kind of wrist surgery or any inflammatory diseases, Pregnant physical therapist. After approval of our study topic from the research committee, took approval letter from the concern department of mentioned hospitals. We submitted all the required documents in hard form to the head of Physical Therapy departments of regards our research project on account of ethical approval. Consent forms were signed from the subjects and collected data from (189) clinical physical therapists.The data was analyzed by using version 25.0 of the statistical package for social sciences (SPSS) and present in frequencies, percentages, charts and graph.

RESULTS

DEMOGRAPHIC VARIABLES

The mean age of 189 clinical physiotherapists was 29 years .Among 189 clinical physiotherapists, 96 (50.8%) were males, and 93 (49.2%) were females and 78 (41.3%) were married, while 111 (58.7%) were unmarried.

Table I DEMOGRAPHIC VARIABLES

Age of physicaltherapist

Clinical physical therapists			Frequency	Percent	Valid Percent	Cumulative Percent
25-30	Valid	positive	46	32.2	32.2	32.2
		negative	97	67.8	67.8	100.0
		Total	143	100.0	100.0	
31-35	Valid	positive	5	17.2	17.2	17.2
		negative	24	82.8	82.8	100.0

		Total	29	100.0	100.0	
36-40	Valid	negative	9	100.0	100.0	100.0
41-45	Valid	negative	8	100.0	100.0	100.0

Gender of physical therapist

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	96	50.8	50.8	50.8
	Female	93	49.2	49.2	100.0
	Total	189	100.0	100.0	

Martial status of physicaltherapist

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Married	78	41.3	41.3	41.3
	Unmarried	111	58.7	58.7	100.0
	Total	189	100.0	100.0	

Experience,Clinical settings, working hours

Out of a total of 189 clinical physical therapists, 143 (75.7%) were employed in hospitals, while the remaining 46 (24.3%) worked in clinics. There are 106 clinical physical therapists, which constitutes 56.1% of the total, with 1 to 4 years of experience. Additionally, 41 clinical physical therapists, or 21.7% of the total, possess 4 to 6 years of experience, while 42 clinical physical therapists, accounting for 22.2% of the total, have more than 6 years of experience.

Out of the 189 physiotherapists, 78 (41.3%) work for 1-2 hours per day, another 78 (41.3%) work for 3-4 hours per day, and 33 (17.5%) work for 4-6 hours per day.

Table II Experience, Clinical settings, working hours

Work setting of physical therapist

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Clinic	46	24.3	24.3	24.3
	hospital	143	75.7	75.7	100.0
	Total	189	100.0	100.0	

Experience of physical therapist

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	(1-4) YEARS	106	56.1	56.1	56.1
	(4-6) YEARS	41	21.7	21.7	77.8
	6 and more	42	22.2	22.2	100.0
	Total	189	100.0	100.0	

Working hours of physicaltherapist

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-2 hours per day	78	41.3	41.3	41.3
	3-4 hours per day	78	41.3	41.3	82.5
	4-6 hours per day	33	17.5	17.5	100.0
	Total	189	100.0	100.0	

Information Regarding De Quervain's Tenosynovitis:

Within the group of 189 clinical physical therapists, 60 (31.7%) reported experiencing pain in the base of their thumb, while 129 (68.3%) reported having no pain while the 38 (20.1%) reported feeling pain while gripping, whereas the majority, 159 (79.9%), experienced no pain

Among the 189 clinical physical therapists, 24 (12.7%) of them reported experiencing swelling, while the vast majority, 165 (87.3%), did not report any swelling.

Among the clinical physical therapists, 41 (21.7%) reported feeling pain that worsened with wrist movement, while the remaining 148 (78.3%) had no pain while the 49 (25.9%) reported feeling pain that worsened with prolonged use of their wrist, while the majority, 140 (74.1%), did not experience any progression of pain. Among the 189 clinical physical therapists, 19 (10.1%) had already been diagnosed with De Quervain's tenosynovitis, while the vast majority, 170 (89.9%), had not received such a diagnosis

Table III Information Regarding De Quervain's Tenosynovitis

		Frequency	Percent	Valid Percent	Cumulative Percent
Pain	Yes	60	31.7	31.7	31.7
	No	129	68.3	68.3	100.0
	Total	189	100.0	100.0	
		Frequency	Percent	Valid Percent	Cumulative Percent
Pain while grasping	yes	38	20.1	20.1	20.1
	No	151	79.9	79.9	100.0
	Total	189	100.0	100.0	
	yes	24	12.7	12.7	12.7
	No	165	87.3	87.3	100.0
	Total	189	100.0	100.0	
	yes	41	21.7	21.7	21.7
	No	148	78.3	78.3	100.0
	Total	189	100.0	100.0	
	yes	49	25.9	25.9	25.9
	no	140	74.1	74.1	100.0
	Total	189	100.0	100.0	

		Frequency	Percent	Valid Percent	Cumulative Percent
Pre dignosed	yes	19	10.1	10.1	10.1
	no	170	89.9	89.9	100.0
	Total	189	100.0	100.0	

PHYSICAL EXAMINATION:

Among the 189 physical therapists, 63 (33.3%) experienced pain, while 126 (66.7%) did not having the pain on examination and 27 (14.3%) had tenderness present, while the majority, 162 (85.7%), had no tenderness. Among the 189 physiotherapists, 8 (4.2%) had redness, while 181 (95.8%) did not have any redness. Among the 189 clinical physiotherapists, 42 (22.2%) had weakness, while the majority, 147 (77.8%), had no weakness.

Among the 189 clinical physiotherapists, 51 (27.0%) tested positive, while 137 (72.5%) tested negative.

Table IV PHYSICAL EXAMINATION:

		Frequency	Percent	Valid Percent	Cumulative Percent
Pain	present	63	33.3	33.3	33.3
	absent	126	66.7	66.7	100.0
	Total	189	100.0	100.0	
tenderness	Present	27	14.3	14.3	14.3
	Absent	162	85.7	85.7	100.0
	Total	189	100.0	100.0	
		Frequency	Percent	Valid Percent	Cumulative Percent
Redness	present	8	4.2	4.2	4.2
	absent	181	95.8	95.8	100.0
	Total	189	100.0	100.0	
		Frequency	Percent	Valid Percent	Cumulative Percent
weakness	present	42	22.2	22.2	22.2
	absent	147	77.8	77.8	100.0
	Total	189	100.0	100.0	

		Frequency	Percent	Valid Percent	Cumulative Percent
Finkelstein test	positive	51	27.0	27.0	27.0
	negative	138	73.0	73.0	100.0
	Total	189	100.0	100.0	

CROSS TABULATION

The chi-square analysis showed that there is statistically significant association between the results of the Finkelstein test and the age of clinical physical therapists (p = 0.022).

The results revealed a statistically significant association (p = 0.037), indicating that the use of such tools may have an influence on the likelihood of a positive or negative Finkelstein test result While the others have no statistically significant association.

This result shows that the age of physical therapist are highly significant with the condition of De Quervain's tenosynovitis, and also by repetitive Use of tools and equipment's can be cause of condition of De Quervain's tenosynovitis, and also it can effect the result of Finkelstein test.

Table V CROSS TABULATION

Risk factors	p-value	Association
Age	p=0.022	significant
Gender	p = 0.532	insignificant
Experience:	p = 0.177	insignificant
Clinical settings	p = 0.351	insignificant
Repetitive hand and wrist movements	p = 0.123	insignificant
Use of tools and equipment's	p = 0.037	significant
Number of clinical hours	p = 0.196	insignificant

SUMMARY

Among the 189 clinical physiotherapists surveyed, there was a fairly even gender distribution with 96 (50.8%) being males and 93 (49.2%) being females. In terms of marital status, 78 (41.3%) were married, while 111 (58.7%) were unmarried. Experience levels varied, with 106 (56.1%) having 1 to 4 years of experience, 41 (21.7%) possessing 4 to 6 years of experience, and 42 (22.2%) having more than 6 years of experience. The majority, 143 (75.7%), were employed in hospitals, while 46 (24.3%) worked in clinics. When it comes to physical discomfort, 60 (31.7%) reported pain in the base of their thumb, 38 (20.1%) experienced pain while gripping, 24 (12.7%) had swelling, 24 (12.7%) reported difficulty in moving their thumb and wrist, 40 (21.2%) felt pain while twisting their hand or wrist, 41 (21.7%) experienced pain that worsened with wrist movement, and 49 (25.9%) felt pain that worsened with prolonged use of their wrist. Additionally, 85 (45.0%) engaged in activities involving repetitive hand and wrist motions, and 63 (33.3%) used equipment requiring force. Work hours were fairly evenly distributed, with 78 (41.3%) working 1-2 hours per day, another 78 (41.3%) working 3-4 hours per day, and 33 (17.5%) working 4-6 hours per day. A small percentage, 18 (9.5%), had experienced a previous wrist-related injury, while 19 (10.1%) had been diagnosed with De Quervain's tenosynovitis. Health-wise, 63 (33.3%) experienced pain, 9 (4.8%) had swelling, 27 (14.3%) had tenderness, 8 (4.2%) had redness, 42 (22.2%) had weakness, and 51 (27.0%) tested positive for an unspecified condition, while the majority did not exhibit these symptoms or conditions, as 126 (66.7%) did not experience pain, 180 (95.2%) had no swelling, 162 (85.7%) had no tenderness, 181 (95.8%) had no redness, 147 (77.8%) had no weakness, and 137 (72.5%) tested negative.

DISCUSSION

Among the 189 clinical physiotherapists surveyed, there was a fairly even gender distribution with 96 (50.8%) being males and 93 (49.2%) being females. In terms of marital status, 78 (41.3%) were married, while 111 (58.7%) were unmarried. Experience levels varied, with 106 (56.1%) having 1 to 4 years of experience, 41 (21.7%) possessing 4 to 6 years of experience, and 42 (22.2%) having more than 6 years of experience. The majority, 143 (75.7%), were employed in hospitals, while 46 (24.3%) worked in clinics. When it comes to physical discomfort, 60 (31.7%) reported pain in the base of their thumb, 38 (20.1%) experienced pain while gripping, 24 (12.7%) had swelling, 24 (12.7%) reported difficulty in moving their thumb and wrist, 40 (21.2%) felt pain while twisting their hand or wrist, 41 (21.7%) experienced pain that worsened with wrist movement, and 49 (25.9%) felt pain that worsened with prolonged use of their wrist. Additionally, 85 (45.0%) engaged in activities involving repetitive hand and wrist motions, and 63 (33.3%) used equipment requiring force. Work hours were fairly evenly distributed, with 78 (41.3%) working 1-2 hours per day, another 78 (41.3%) working 3-4 hours per day, and 33 (17.5%) working 4-6 hours per day. A small percentage, 18 (9.5%), had experienced a previous wrist-related injury, while 19 (10.1%) had been diagnosed with De Quervain's tenosynovitis. Health-wise, 63 (33.3%) experienced pain, 9 (4.8%) had swelling, 27 (14.3%) had tenderness, 8 (4.2%) had redness, 42 (22.2%) had weakness, and 51 (27.0%) tested positive for an unspecified condition, while the majority did not exhibit these symptoms or conditions, as 126 (66.7%) did not experience pain, 180 (95.2%) had no swelling, 162 (85.7%) had no tenderness, 181 (95.8%) had no redness, 147 (77.8%) had no weakness, and 137 (72.5%) tested negative.

In 2023, a study conducting by SHAMAAS IRFAN et al. in Islamabad, Pakistan, This study showed a 26.73% prevalence of De-Quervain's among Clinician physical therapists which is similar to findings of our study which is 27.0%. The main contributing factor found in both studies was repetitive motion of small joints. In both studies, no significant association was observed between De Quervain's syndrome and the gender of clinical physical therapists.(5)

In 2023, a study conducting by SHAMAAS IRFAN et al. in Islamabad, Pakistan, this study showed that the most prevalent age group of clinical physical therapists was from 25-30 years (77.9%) which is similar to this study i.e. the most prevalent age group in this study was 25-30 years (32.2%).(5)

In 2020, Ihsan Kareem et al. conducted a study in Lahore, Pakistan, which concluded that the frequency of De Quervains tenesynovitis among physiotherapists working in various hospitals in Lahore was found to be 35.26%, this study shows that the gender distribution was not identical and they having the prevalence rate of thumb pain which is not similar to this study, which is reported a prevalence of 27.0%.(34)

In 2018, Mehak Imtiaz et al. conducted a study in Lahore, Pakistan, which revealed that the Finkelstein test was positive in 56% of the respondents. This percentage is higher than the findings in this study (27%), because there study was conducted in civil secretariat officers, profession which requires significant manual work i.e. writing. (36)

In 2020, Bandar Hetaimish et al. conducted a study in Saudi Arabia. The Finkelstein test showed positive results in 67% of the students (n=238). This percentage is higher than the findings in our study (27%), which is due to higher sample size in the population included in their study was different from this population i.e. students.(37)

Conclusion

This research highlights the significant prevalence of De Quervain's tenosynovitis among clinical physiotherapists. A substantial portion of this professional group reports experiencing symptoms or receiving a diagnosis of the condition. This underscores the importance of implementing preventive measures, making ergonomic workplace adjustments, and providing continuous education about this ailment to safeguard the well-being of clinical physiotherapists. Further studies and initiatives are warranted to gain a deeper understanding of the risk factors and to formulate effective strategies for the prevention and management of this condition within the profession.

Recommendations

This study can be conducted on larger sample size.

Study can be conducted on ward physiotherapist as well as they were not included in this study

Preventive steps: Avoid repetitive movements, reduce the stress on the wrists, and take frequent breaks.

What is already known about this topic; In 2023, a study conducting by SHAMAAS IRFAN et al. in Islamabad, Pakistan, This study showed a 26.73% prevalence of De-Quervain's among Clinician physical therapists which is similar to findings of our study which is 27.0%. The main contributing factor found in both studies was repetitive motion of small joints.

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