INCIDENCE OF DE QUERVAIN'S TENOSYNOVITIS IN COMPUTER USERS OF GOVERNMENT COLLEGE UNIVERSITY FAISALABAD

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Abstract: De-Quervain's tenosynovitis is a disease that involves entrapment of the wrist's first dorsal compartment. However, the exact causing factor of De-Quervain's tenosynovitis is not clear; it is linked with repetitive motion of the wrist, especially movements requiring radial abduction of thumb with extension and radial deviation of the wrist joint. The objective of this study was to find the incidence of De-Quervain's tenosynovitis in computer users of the Government College University Faisalabad. A cross-sectional study was conducted on computer users of the Government College University Faisalabad. A sample size of 100 was selected for the study through convenience sampling technique. Self-administered questionnaire was used to collect data and the numeric pain rating scale (NPRS) was used to assess the severity of pain. Finkelstein test was used to De-Quervain's tenosynovitis. The collected data was analyzed through statistical package for the social sciences -18 (SPSS-18) software through applying Chi-square test. An analysis of the association between the positive Finkelstein tests among computer operators showed that 72% of people who use computer for more than 5 hours were diagnosed with De-Quervain's tenosynovitis. The statistical p-value=.000 ($P < 0.05$) showed that there was highly significant association between computer operators and De-Quervain's tenosynovitis

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INTRODUCTION

De-Quervain's tenosynovitis is a condition of stenosing tenosynovitis in the first dorsal compartment of the wrist. It is most likely caused by stiffening of the structures that covers the tendons of the Abductor Pollicis Longus (APL) and Extensor Pollicis Brevis (EPB) bringing on impaired gliding (1). The cause of De-Quervain's tenosynovitis is considered to be a trauma of acute nature or an un-accustomed exercise. However, the most common reason suggested is the repetitive micro-trauma (2). The prevalence of the de Quervain's disease is also gradually increasing by way of the new occupational as well as professional demands (3). The diagnosis is usually made through the history and physical examination of the subject. Patients typically complain of pain at the site of radial styloid while on palpation tenderness is positive and crepitations occur at the radial styloid. Finkelstein's test is typically positive in which there is pain felt with ulnar deviation of the wrist joint while making fist with the thumb inside (4).

Occupations and hobbies requiring repetitive movement of thumb abduction along with the stress of grasping motions and thumb adduction with ulnar side deviation of the wrist, e.g., typing, writing, golfing, and playing piano, can lead to chronic trauma to the tendons and tendon sheaths resulting in this condition (5).

Work-Related Musculoskeletal Disorders (WRMSDs) are known to target people in a variety of professions and are considered to be the major cause of time loss from work, disability and high costs of health care. Studies are there to prove that a number of musculoskeletal disorders affects different areas of the body in computer users, one such is the hand (6). The current literature on link between De Quervain's tenosynovitis among computer operators of is not common(7). Therefore,

it is imperative to conduct research at the very basic level of a single university which will further explores the topic and validates the outcomes for a large scale research. The study was aimed to determine the incidence and exploring the risk factors among computer users which will help to make early diagnosis, suggest possible management of De-Quervain's tenosynovitis together with its awareness.

MATERIALS AND METHODS

This study was conducted at Faisalabad, which is one of the major planned cities of the Pakistan with highly reputed public sector medical and general universities. A cross-sectional study design was selected. The duration of the study was two months from October 2018 to December 2018, after the approval from research committee of the Directorate of Medical Sciences GCUF. Male and female computer operators of both main and new campus of Government College University Faisalabad (GCUF) were included in this study. The computer users were either office based job holders or teachers. Age was between 25 to 35 years and at least 1 year of using computer for either job or teaching related purposes. The daily computer usage must be minimum of 1 hour. Recent shoulder, arm, hand or thumb injury, rheumatoid arthritis and osteoarthritis of the thumb, congenital deformities of thumb, and history of trauma to thumb were not included in the study. A sample size of 100 was selected. Data was collected through self-administered questionnaire from office job based computer operators and teachers of the GCUF who signed the consent to participate in the study. Date was collected by using convenient sampling technique. Finkelstein test was used to diagnose De-Quervain's tenosynovitis and numeric pain rating scale was used to check the severity of pain. The data was analyzed and results were deduced by using the SPSS-18.

RESULTS

72% of the 100 responders were tested positive for the Finkelstein test, showing pain in the wrist and thumb. Of those that tested positive, 46% had more pain in the dominant hand they used for computer. 2 % had more pain in their non-dominant hand while 52% experience pain in both hands while testing for the maneuver. There were 54 males and 46 female regular computer users from the total of 100 respondents. 72% of the participants showed positive Finkelstein's test whereas 28% had negative test results.

Among 100 participating computer users, 7 used computer for less than one hour a day, 25 participants used computer for more than 1 hour per day and 68 used computer for more than 5 hours in a day as shown in the Figure 1.

As per the Table.1, De Quervain's tenosynovitis is linked with the hours of using computer with greater incidence in computer operators working more than five hours. Moreover, variables like site, nature and duration of pain together with the dominant hand and thumb area also linked with the positive Finkelstein test. The p value of less than 0.05 for the mentioned variables shows that there is highly significant association of De-Quervain's tenosynovitis in computer users of the GCUF.

DISCUSSION

This research study showed that among 100 computer users of Government College University Faisalabad, 72% showed positive results for De-Quervain's and 28% showed the test results as negative. A previous research study found out that 67.3% showed positive Finkelstein's test while 32.7% had negative test results among total 147 computer users. In this research, 42.2% participants used computer for more than two hours in a day.

19.7% respondents used for greater than six hours a day and those who used computer for more than eight hours per day were 32.0%. This proved that a large number of computer users being diagnosed with De-Quervain's tenosynovitis (8). Similarly study of Ali et al. proved that symptoms of pain and weakness were felt over the base of the thumb in those having De-Quervain's tenosynovitis with a significant association between the De-Quervain's tenosynovitis and typing of text messages (9). However, another similar study was conducted on a mobile phone user in which the prevalence of De-Quervain's was 46% (10).

As we are familiar that because of the repetitive movements, force and pressure there is high risk of developing musculoskeletal disorders of the hand. It is recommended to take precautions and use ergonomic practices such as taking frequent rest intervals while working and relaxing the hand. Braces to immobilize the thumb and wrist can be suggested for those who're already experiencing pain and discomfort due to de Quervain's tenosynovitis. In severe cases, corticosteroid injections and surgical options may possibly be suggested (11).

CONCLUSION

The study concluded that the incidence of De-Quervain's Tenosynovitis was high among the computer users of GCUF. Most of the computer users were working for more than five hours per day with the keyboard typing aggravating the pain among its users.

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Table 1 Results of Finkelstein test with different variables.

Finkelstein Test of Right Hand			Finkelstein Test of Right Hand	
Variable	χ^2	p-value	χ^2	p-value
Hours Of Computer Usage	10.779[a]	.001	24.48[a]	.004
Dominant Hand	189.022[a]	.000	65.789[a]	.000
Preferred Thumb	256.079[a]	.000	270.90[a]	.000
Pain in Thumb	19.801[a]	.005	45.258[a]	.004
Site of Pain	27.057[a]	.000	50.499[a]	.001
Duration of Pain	10.145[a]	.001	10.392[a]	.000
Type of Pain	18.832[a]	.001	57.494[a]	.001
NPRS Values	390.060[a]	.000	399.980[a]	.003

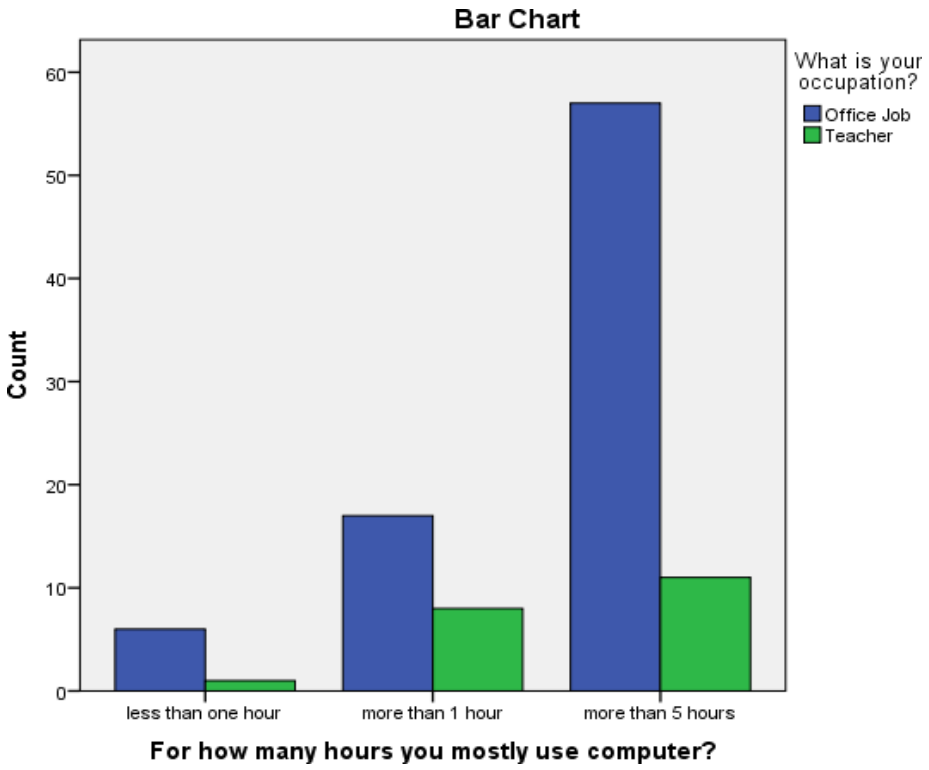

Figure 1: Hours of using computer