

Prevalence of Thumb Pain Among Physiotherapists Perform Manual Techniques During Clinical Practice

Ihsan kareem¹, Fareeha Amjad¹ and Samia Arif¹, Sana Batool²

¹University Institute of Physical Therapy, The University Of Lahore, Lahore, Pakistan

²Physical Therapy Department, Newports Institute of Communications and Economics, Karachi

*Ihsankareem49@gmail.com

Highlights:

- Thumb pain among the physiotherapists is common occupational hazards.
- Physiotherapists may develop thumb pain due to their professional techniques including, manual therapy, ischemic pressure release, massage, mobilization, and gliding etc.
- Thumb pain may irritate the physiotherapists and may alter their way to perform the manual techniques

Abstract

Background:

Thumb pain among the physiotherapists is common occupational hazards. The physiotherapists working in their fields perform repetitively manual techniques, massage, mobilization and glides etc. This occupation needs to find out the number of physiotherapists having thumb pain due to manual work they perform during clinical practice in different rehabilitation centers.

Objectives:

To determine the frequency of thumb pain among physiotherapists perform manual techniques in clinical practice; a cross sectional study

Methods:

A cross-sectional study design with convenient sampling technique was used, with sample size 190 to determine the frequency of thumb pain among physiotherapists in Lahore and data was analyzed by SPSS, mean and standard deviation was calculated for the quantitative variable while qualitative variable was presented in the form of frequency and percentage.

Results:

In the present study a self-made questionnaire

was distributed among 190 physiotherapists. Among 190 participants 58(30.5%) were male and 132(69.5%) were Females. 40(21.1%) felt pain while performing ischemic pressure release from thumb. 38(20.0%) felt pain while giving massage. 12(6.3%) felt pain while holding an object between thumb and index finger. 2(1.1%) felt pain in circumduction. (5.3%) felt pain while making snuff box. 24(12.6%) felt pain in isometric exercises of thumb. 27(14.2%) felt pain in hyper flexion at DIP. 17(8.9%) felt pain in hyper flexion at PIP. 51(26.8%) rated 3 pain and 15(7.9%) rate 5 pain on VAS.

Conclusion:

Study concluded that frequency of thumb pain among physiotherapists working in different hospitals of Lahore was found to be 35.26%. This thumb pain was due to their professional techniques including, manual therapy, ischemic pressure release, massage, mobilization, and gliding etc.

Key Words:

Thumb Pain, frequency, manual techniques, Physiotherapists

Introduction:

Work related musculoskeletal problems mostly thumb pain has become a common problem for professional manual physiotherapists deal with patients of different musculoskeletal disorders. Thumb pain may irritate the physiotherapists and may alter their way to perform the manual techniques. On average, 43% to 91% of therapists alter their special manual skills due to their work related thumb pain. Alteration in the manual techniques due to their work related thumb pain may decrease required effectiveness in treating the patients rather than to enhance the treatment benefits leading towards less effective and less

benefitted treatment which ultimately increase the treatment cost¹. Over use of thumb or inappropriate use of thumb during the performance of manual techniques during therapy causes the hypermobility of the metacarpophalangeal (MCP) joints which is ultimately a major cause of osteoarthritis of the MCP joints later on². Thumb pain is the most common problem among physiotherapists doing clinical practice. Because they always use their distal hand especially thumb for applying manual techniques during mobilization and massage in physiotherapy department³. Many other risk factors associated with thumb pain includes mishandling the patient, shifting the dependent patient in ICU, during abrupt movement response by obese patient while applying manual therapy, confined work places, age and gender. Such kind of factors may injure the practitioner³. In the field of physiotherapy the physiotherapists always use his hands and mostly both thumbs in mobilization and soft tissue release. Continuous pressure on thumb causes micro trauma to the small joints. Micro trauma changes the anatomy of the small joints. Alternative methods should be adopted to use the manual techniques; it may helps the therapist to prevent himself from injury⁴. By using both thumbs physiotherapists can produce the spinal movements by applying anteriorly directed force on spinus process while patient is in prone position⁵. The physiotherapists must consider the possible cause of work related problems and pain and should take proper preventive measures⁶. Thumb pain is a most commonly seen professional risk for physical therapists, with the occurrence second most to back and neck pain and principally found in clinical practices that frequently affecting the thumb joints. The World Health Organization (WHO) deliberates work-related musculoskeletal complaints; as all musculoskeletal complaints are caused by work and the conditions of its presentation. This description reflects chronic and acute both complications, with or without a cause-effect association. This teaching methodology is satisfactory in order to improve the essential

skills of practitioners to avoid them from injury⁷. According to a study highly injured area of the body was found to be hand. This study was done on Canadian massage therapist, it was more frequent in the overweight respondents⁸. Work related musculoskeletal disorders are common among the physiotherapists in personnel in Lusaka, Kitwe and Ndola districts of Zambia⁹. According to an other study the risk factors associated with thumb and back pain among physiotherapists working in hospital settings are lifting the patients, bending, twisting, stooping, pushing or pulling, carrying and prolonged standing¹. Record of international labor organization show that work related disorders have high influence on civilization, in relations to loss of health status and social prices¹¹. Even though some for Safety and Health at Work discoveries it is tough to measure and link work related disorders prices, some readings have expected the rate of work-related upper-limb musculoskeletal disorders among 1% and 3% of Gross National Product¹². Whereas the prevalence of problems related to thumb in different populations of Australian physiotherapists has been explored. Furthermore, it is inadequate study about the problem causing factors for thumb problems among physical therapists and their influence on physical therapists' careers¹³. As compare to the high rate for civilization, work related thumb problems is a new division of study, frequently present in professionals. Afferent discharge is associated with spinal manipulation giving by the physiotherapist¹⁴. Work related thumb problems inhibition among healthcare employees are not broadly examined. In most physiotherapists 'work related disorders are positioned in upper limb ends. Ratios are seen to be higher when linked to a wide usage of physical practices. These findings show a study on physiotherapists to fully observe work-related wrist and hand area illnesses. In relations to thumb pain, the stated one-year occurrence ranges from 11.1% to 83%. There were no past studies examining occurrence and danger aspects related with thumb pain in Pakistani

physiotherapists who work in physical rehabilitation centers¹⁵. The purpose of present study was to determine the life time and current frequency of thumb pain among physiotherapists perform manual techniques in different hospitals of Lahore. The second aim was to investigate the nature of thumb pain and factors associated with them.

Methodology:

A cross sectional study design with convenient sampling technique was used. Mean and standard deviation were calculated for the quantitative variables while qualitative variables were presented in the form of frequency and percentage. Self-made questionnaire was used to determine frequency of thumb pain among physiotherapist in Lahore with sample size 190 physiotherapists working in university of Lahore teaching hospital, Jinnah hospital, Hamid latif hospital, doctors hospital and Farooq hospital. After taking the informed consent, the data was calculated and analyzed by SPSS.

Results:

In the present study a self made questionnaire was circulated among 190 physiotherapists and found following results. Among 190 physiotherapists 58(30.5%) were male and 132(69.5%) were female. 40(21.1%) felt pain while performing ischemic pressure release from thumb (fig.1) 38(20.0%) felt pain while giving massage (fig.2), 24(12.6%) felt pain in isometric exercises of thumb (fig.3). 51(26.8%) rated 3 pain and 15(7.9%) rate 5 pain on VAS. Frequency of thumb pain among physiotherapists who used to performed manual techniques was found to be 35.26%..

Pain felt by physiotherapist while performing ischemic pressure release	Frequency (%)
Yes	40(21.1)
No	159(78.9)
Total	190(100)

Figure: 1 The pain felt by physiotherapist while performing ischemic pressure release

The pain felt by physiotherapist while giving massage.	Frequency (%)
Yes	38(20)
No	152(80)
Total	190(100)

Table 2: The pain felt by physiotherapist while giving massage

	Frequency (%)	Percent
Yes	24(12.6)	12.6
No	166(87.4)	87.4
Total	190(100.)	100

Table 3: The pain felt by physiotherapist while doing isometric exercises of thumb.

Discussion:

The aim of present study was to determine the frequency of thumb pain among physiotherapists perform manual techniques; a cross sectional study. Results of the study show that 88% of the physiotherapists have experienced a job-associated disorder. In 33% problems were found within the first 6 years of job. The main cause of thumb pain was found in physiotherapists who were practicing with manual therapy sittings. Occupation approval and social problems were also recognized as adjacent-belongings of the financial go-slow¹⁶. Results findings show that physiotherapists who were under training commonly apply lower mean peak forces, lesser force amplitudes, and used lower frequencies than therapists who were giving the same therapies. The factors associated with manual force factors were parallel for both therapists and students. These involved gender of the therapist, student or mobilized subject, spinal stiffness at C2, mobilized subject weight, and the frequency of thumb pain¹⁷. A study conducted by Snodgrass SJ on physiotherapy students who were treating the cervical spine. Result findings show that common manipulation techniques involve postero-anterior (PA) glides in the physiotherapy departments. The manual forces applied by the

physiotherapists for learning cervical mobilization are actually not known¹⁸. However, in the present study physiotherapists who provide their services in prevention and treatment of musculoskeletal injuries were found to suffer with occupational musculoskeletal injuries which were associated with long manipulation sittings. Incidence of job associated disorders is maximum. Another study conducted by Wajon A and Ada L to find out the prevalence of thumb pain in physical therapists practicing spinal manipulative therapy. Result findings show that the techniques most commonly responsible for aggravation of symptoms were unilateral (87%) and central poster-anterior glides (85%). Maximum physiotherapists (74%) altered their way of treatment technique to reduce symptoms. Suggestions are made about the safe position of the thumb during the application of spinal manipulative therapy techniques¹⁹. However, in present study problem causing factors of thumb pain were associated with incorrect handling techniques. Based on these findings, it is recommended that the potential for thumb problems in physiotherapists, including possible risk factors, should be discussed in undergraduate and work place settings. As if physiotherapists choose to work in an area of high thumb usage, particularly if they have unstable or hypermobile thumb joints, they should modify their work practices to reduce repeated weight transmission through the thumb joints. A study conducted by Sehar B et al. show that the exact etiology of the thumb pain is due to de quervain's tenosynovitis that is caused by the acute trauma, unaccustomed new exercise. It may also be caused by certain modified risk factors like repetitive micro trauma, overuse frequent fall, psychological causes, and sedentary lifestyle, systemic diseases, fracture, risk factors and poor nutrition. Age, gender, ethnicity and postmenopausal women are non-modified risk factors. Modified risk factors can be improved by diet, active life style, daily exercisel, pharmacological and

physiotherapy treatment, but it depends upon the underline cause. Not modified risk factors are not always cured but compensated²⁰. However, in the present study among 190 physiotherapists 40 physiotherapists experienced pain on ischemic pressure release, 38 felt pain while giving massage and 24 physiotherapists have felt pain on isometric exercise. Result findings of a study show that among 81 physiotherapists who were practicing manual techniques, 40 physiotherapists were having thumb pain, 25 physiotherapists had diffused nature of pain and 16 had centralized pain²⁰. Reason of their pain was de quervais syndrome of thumb. The result of present study are also similar to a study in which 58.07% subjects, with mean age of 22.43 years using mobile phones had developed de quervais syndrome, which leads to thumb pain and inflammation²⁰. Here it is important to repeat the same procedure in different patient population that may benefit the patient from cervical manipulation with neck pain whiplash injury cervicogenic headache and lateral epicondylitis²¹. The present study concluded the frequency of thumb pain among physiotherapists in Lahore is 35.26% in physiotherapists. This study also concluded that physiotherapists showed pain in thumb was mild to moderate ranges 3 to 5 on VAS. This thumb pain was due to their professional techniques including, manual therapy, ischemic pressure release, massage, mobilization, and gliding etc. In this present study 190 questionnaire were circulated into physiotherapists, present study found following results, 58(30.5%) were Male and 132(69.5%) were Female. 40(21.1%) felt pain while performing ischemic pressure release from thumb. 38(20.0%) felt pain while giving massage. 12(6.3%) felt pain while holding an object between thumb and index finger. 2(1.1%) felt pain in circumduction. (5.3%) felt pain while making snuff box. 24(12.6%) felt pain in isometric exercises of thumb. 27(14.2%) felt pain in hyper flexion at DIP. 17(8.9%) felt pain in

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Conclusion:

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References:

- 01- Snodgrass SJ, Riyett D, Chiarelli P, Bates AM, Rowe LJ. Factors related to thumb pain in physiotherapists. *Australian Journal of Physiotherapy* 2003; 49(4): 243-50.
- 02- Mubeen M, Ans M, Ayaz S, et al. The Frequency of Thumb Pain Among Physiotherapists Practicing Spinal Manual Therapy in Lahore, Pakistan. *Pak J Med Biol Sci* 2018; 2(1).
- 03- Yaseen A, Yaseen H, Yaseen A. Work related thumb pain, its prevalence, risk factors and prevention among physical therapists.
- 04- Snodgrass SJ, Rivett DA. Thumb pain in physiotherapists: potential risk factors and proposed prevention strategies. *Journal of Manual & Manipulative Therapy* 2002; 10(4): 206-17.
- 05- Wajon A, Ada L, Refshauge K. Work-related thumb pain in physiotherapists is associated with thumb alignment during performance of PA pressures. *Manual Therapy* 2007; 12(1): 12-6.
- 06- Caragianis S. The prevalence of occupational injuries among hand therapists in Australia and New Zealand. *Journal of Hand Therapy* 2002; 15(3): 234-41.
- 07- DeMont R. Abstracts from the Canadian Athletic Therapists Association: May 29-31, 2014, Winnipeg, Manitoba, Canada. *Athletic Training and Sports Health Care* 2014; 6(3): 139-44.
- 08- Chan T, Smith J. Work-related Injury in New Zealand MNZ Massage Therapists.
- 09- Nkhata LA, Zyaambo C, Nzala S, Siziya S. Work-related musculoskeletal disorders: Prevalence, contributing factors and coping strategies among physiotherapy personnel in Lusaka, Kitwe and Ndola districts, Zambia. *Medical Journal of Zambia* 2010; 37(4): 262-7.
- 10- West DJ, Gardner D. Occupational injuries of physiotherapists in North and Central Queensland. *Australian Journal of Physiotherapy* 2001; 47(3): 179-90.
- 11- Vieira ER, Svoboda S, Belniak A, et al. Work-related musculoskeletal disorders among physical therapists: an online survey. *Disability and rehabilitation* 2016; 38(6): 552-7.
- 12- Marshall M, van der Windt D, Nicholls E, Myers H, Dziedzic K. Radiographic thumb osteoarthritis: frequency, patterns and associations with pain and clinical assessment findings in a community-dwelling population. *Rheumatology* 2010; 50(4): 735-9.
- 13- McMahon M, Stiller K, Trott P. The prevalence of thumb problems in Australian physiotherapists is high: an observational study. *Australian Journal of Physiotherapy* 2006; 52(4): 287-92.
- 14- Bialosky JE, George SZ, Bishop MD. How spinal manipulative therapy works: why ask why? : JOSPT, Inc. JOSPT, 1033 North Fairfax Street, Suite 304, Alexandria, VA ...; 2008.

- 15- Rossettini G, Rondoni A, Schiavetti I, Tezza S, Testa M. Prevalence and risk factors of thumb pain in Italian manual therapists: An observational cross-sectional study. *Work* 2016;54(1):159-69.
- 16- Anyfantis I, Biska A. Musculoskeletal Disorders Among Greek Physiotherapists: Traditional and Emerging Risk Factors. *Safety and Health at Work* 2017.
- 17- Snodgrass SJ, Rivett DA, Robertson VJ, Stojanovski E. A comparison of cervical spine mobilization forces applied by experienced and novice physiotherapists. *Journal of orthopaedic & sports physical therapy* 2010;40(7):392-401.
- 18- Snodgrass SJ, Rivett DA, Robertson VJ, Stojanovski E. Cervical spine mobilisation forces applied by physiotherapy students. *Physiotherapy* 2010;96(2):120-9.
- 19- Wajon A, Ada L. Prevalence of thumb pain in physical therapists practicing spinal manipulative therapy. *Journal of Hand Therapy* 2003;16(3):237-44.
Sehar B, Ashraf I, Rasool S, Raza A. Frequency of thumb pain among mobile phone user students.
- 20- Fernández-De-Las-Peñas C, Pérez-De-Heredia M, Brea-Rivero M, Miangolarra-Page JC. Immediate effects on pressure pain threshold following a single cervical spine manipulation in healthy subjects. *Journal of Orthopaedic & Sports Physical Therapy* 2007;37(6):325-9