

# The Frequency of Thumb Pain Among Physiotherapists Practicing Spinal Manual Therapy in Lahore, Pakistan

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**Abstract:** Physical therapists deal with many patients daily. They apply different manual techniques for treating various disorders especially in spinal diseases. These manual techniques which they perform on spine involves the use of hands specially thumb compare to other body parts. The objective of this research study was to evaluate the frequency of thumb pain in physiotherapists who practice spinal manual physical therapy in Lahore, Pakistan. A descriptive observational study was conducted on spinal manipulative therapists practicing spinal manual therapy. Total sample of 216 participants was enrolled by non-probability purposive sampling. Data was collected on especially designed proforma. Results showed that in age wise distribution majority 95.8 (95.83%) of respondents were 25-31 years old. While the regarding a number of practice years in manual therapy, 95.8 (95.83%) having 0-5 years' experience while rest were seniors. The status of experiencing pain was positive in 68.5 (68.52%). The results showed that best desirable approach to manage pain when it becomes too severe to perform manual therapy was change their treatment technique in 39.8 (39.81%) while 19 (19.0%) reduce hour of patient contact. This study concluded that majority of physiotherapists experience thumb pain while performing spinal manipulations, however, the intensity of pain was mild to moderate. Unilateral PA technique was the leading cause of pain. The most frequent remedy to deal with such pain reported was changing or modification of their treatment techniques.

**Keywords:** Frequency, Spinal Manipulation, Thumb Pain, Physical Therapy, Physiotherapist

## INTRODUCTION

Thumb pain is the most common complaint nowadays in physiotherapists performing manual therapy. Physiotherapists are highly susceptible to numerous musculoskeletal disorders which are linked to their professional activities. Hand and wrist pain is very frequent in physiotherapist. A study revealed that physiotherapists who performed manual therapy and other techniques suffer more from work-related musculoskeletal disorder. Thumb pain is the second most observed pain in physiotherapists after low back pain (1).

Pain at the base of thumb occurs in various conditions. The main causes of thumb pain

include arthritis such as osteoarthritis, rheumatoid arthritis, fractures, sprains, strain, ligamentous instability, generalized laxity, overuse, carpal tunnel syndrome, injury, or trauma etc.

The use of thumb inappropriately during the performance of manual techniques for the physical therapy results in hypermobility of metacarpophalangeal joints which ultimately is a major cause of osteoarthritis of CMP joints later on. According to a study hypermobility and hyperextension laxity at metacarpophalangeal joint allow more forces to direct on palmer surface of carpometacarpal joints of the thumb. These osteoarthritis changes at the carpometacarpal joint can be reduced by keeping

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the metacarpophalangeal joint in flexion and by stabilization(2).

The results of some studies have shown that repetition of the same task and performing manual therapy techniques causes pain in different body areas. There was a higher prevalence of low back pain and 2.4% respondent had thumb pain (3).

Various suggestions have been reported to effectively prevent the work-related musculoskeletal disorders. It includes the steps to decrease work-load on physiotherapists, modification of work-related practices, improving the environment of work, education to create awareness in physiotherapist for the adaptation of healthy posture and manual techniques(4).

## MATERIAL AND METHODS

It was a descriptive Observational Study. The Data was obtained from the physiotherapist of private and government sector, Lahore city Pakistan. The Study period was 4 months. A sample of 216 spinal manipulative physiotherapists was enrolled for this research study through non-probability purposive sampling on the basis of inclusion and exclusion criteria. The Inclusion criteria was composed of respondents having age between 25–45years, male and female both genders, physical therapists serving in government and private sectors, Physical therapists that hold at least one year of working experience in a section of spinal manual physical therapy and exclusion criteria was composed of Physiotherapists who were suffering from wrist and arm pain or discomfort, Pregnant females, Physiotherapists suffering from extensor tenosynovitis, Dequervain's tenosynovitis, game keeper's thumb or suffering from any other disorder of musculoskeletal origin, physiotherapists suffering from any other diagnosed neurological disease, physiotherapist suffering from any malignant disorders, Physiotherapists suffering from osteoarthritis, rheumatoid arthritis, or any other bone disease, Physiotherapists who were not practicing spinal manual therapy at least for the last one year.

With the assistance of a well-planned Questionnaire data was collected about the

variables like age, sex, the pain of thumb, causative elements, professional experience of a physiotherapist, duration of working hours, intensity and duration of thumb pain, aggravating factors and management procedures. Visual A of analog Scale was utilized to evaluate the intensity of thumb pain. Frequency distribution, percentages, graphs, charts, and tables were used to describe the results of the collected data after statistical analysis. Mean, standard deviation of the qualitative variables and proportions (%) of the Qualitative variable were also evaluated. The collected Data was processed and analyzed both for descriptive and inferential statistics by utilizing Statistical Package for the Social Sciences (SPSS)22.

## RESULTS

According to the results of data analysis, age-wise distribution in a class interval between 25-31 years was reported as 95.8 (95.83%) and in the class interval 32-38 as 0.5 (0.46%) out of 216 registered participants. The percentage of gender wise distribution of females were recorded as 63.9 (63.89%) and males as 36.1 (36.11%) out of 216 patients. According to hand dominance wise distribution, the percentage of left-handed participants were reported as 5.1 (5.09%) and right-handed participants as 94 (94.91%). Number of practice years in manual therapy yearwise distribution was 95.8 (95.83%) 0-5 years and 0.5 (0.46%) 6-10 years. Hours of treatment per week wise distribution showed that 62.5 (62.5%) 16-30 hours, 32.9 (32.87%) <15 hours, 0.5 (0.46%) 31-45 hours. The results showed that status of experiencing pain while performing manual therapy techniques were recorded Yes in 68.5 (68.52%) participants and No in 31.5 (31.48%) participants. The results showed that according to involvement of the side of the body, right side of body was symptomatic in 50 (50%) participants, left side of the body was symptomatic in 3.7 (3.7%) participants, both side of the body was reported in 13.4 (14.35%) of the participants and 31.9 (31.94%) participants didn't reported any side of the body. The results showed that site of thumbs involved was recorded as IP Joint 27 (27.31%) participants,

MCP Joints in 25.46 (25.46%) participants, CMC Joints 15.28 (15.28%) participants and no joint involvement was reported in 31.94 (31.94%) of the participants. The results showed that episode of pain was recorded as 4-6 times in 50 (50.93%) of the participants, 1-3 times in 2.8 (2.87%) of the participants, more than 7 times in 14.4 (14.35%) of the participants, and 31.9 (31.94%) of the participants didn't reported any episode of pain. The result showed the highest intensity of pain on VAS was 3.66 (SD+ 2.716). The curve was skewed normally. The study also found that the duration for which symptoms last were 1-2 weeks in 63.4 (63.43%) of the participants, 0-1 weeks in 4.6 (4.63%) of the participants and no duration of pain was reported in 31.9 (31.94%) of the participants. Physiotherapists that regularly perform central PA thumb pressure was recorded as yes in 14.4 (14.35%) of the participants, No in 0.9 (0.9%) of the participants, and 84.7 (84.7%) participants did not reported Yes or No. The results showed that regularly unilateral thumb pressure was reported as Yes in 63 (62.96%) of the participants, No in 0.5 (0.5%) of the participants and 36.9 (36.94%) of the participants didn't reported Yes or No. The results showed that regular application of transverse thumb pressure was reported as Yes in 17 (17.6%) of the participants, No in 0.5 (0.5%) of the participants and 81.9 (81.94%) of the participants didn't reported Yes or No. The results showed that regular application of PAC grip was reported yes in 0.5 (0.5%) of the participants, No 0.5 (0.5%) of the participants and 99.1 (99.91%) of the participants didn't not reported Yes or No. The results showed that regular application of lumbrical grip was reported Yes in 15.3 (15.28%) of the participants and 84.72 (84.72%) of the participants didn't reported Yes or No. The results showed that regular soft tissue massage was recorded yes in 25.5 (25.46%), No in 0.5 (0.5%) of the participants and 74.1 (74.07%) did not reported Yes or No. According to the scale of the awareness about the symptom aggravating factors in participants, strong grade pressure was reported as 52 (52.31%), longhours work per day as 2.3 (2.3%), increased number of repetition performed 13.4 (13.43%), and not applicable as 31.9 (31.94%). The percentage of highly desirable

procedures to manage pain when it became very unbearable to execute manual therapy was reported change in treatment technique as 39.8 (39.81%), use of splint or tapping to control symptoms as 2.3 (0.24%), seek intervention from a physiotherapist as (6.9%) and reduce working hours as 19 (18.98%) and application of no procedure as 31.9 (31.94%). The Frequency distribution and percentage of gender is shown in table no. 01. Status of experiencing pain, while performing manual therapy technique is shown in table no. 02. Site of thumb involved in pain is shown in table no. 03. The frequency and percentage of intensity of pain on visual analogue scale is shown in graph no. 1. Perception of symptoms aggravating Factors is shown in graph no. 2.

**Table No. 1: Frequency distribution of gender**

S.No	Gender	Frequency	Percentage %
1	Female	138	63.9
2	Male	78	36.1
3	Total	216	100

**Table No. 2: Status of Experiencing Pain while Performing Manual Therapy Technique**

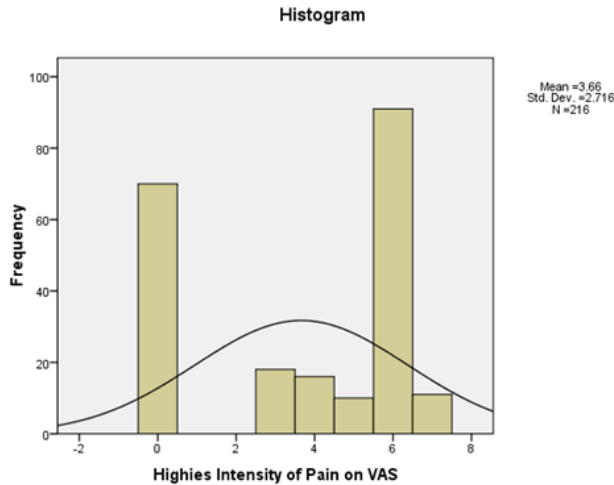
S.No	Gender	Frequency	Percentage %
1	Yes	148	68.5
2	No	68	31.5
3	Total	216	100.0

**Table no.3: Site of Thumb Involved in Pain**

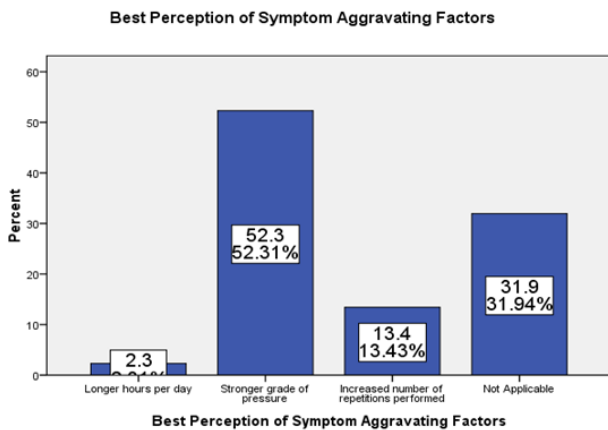
S.No	Gender	Frequency	Percentage %
1	IP Joint	59	27.3
2	MCP Joint	55	25.5
3	CMC Joint	33	15.3
	Not Applicable	69	31.9

Total	216	100.0
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**Graph No. 1: Intensity of pain on Visual Analogue Scale**



**Graph No.2: Perception of symptoms aggravating Factors**



**DISCUSSIONS**

As for as, demographic variables are concerned, majority of the respondents were females. This reflects exactly the ratio of female physiotherapists overall in the field and study. Keeping our cultural and house hold routines in context, the female population may confound the result due to their multi-level role in house hold activities that also involve use of thumb and lumbricals for completion of different tasks. Other demographics such as

age, the majority were young physiotherapists below age of 30 years. Without doubt, it is an age of high demand work. This is the age when skill is in developing phase, professionals and clinicians learn over the time through their experience and mistakes i.e. learning from their self-reflection. Same thing is reflected in number of practice years.

According to the results of this study, 148 participants stated pain and 68 participants stated no thumb pain. The participants who replied with yes (68.5%) on the inquiry of thumb pain were further asked about the site and side thumb pain which is consistent with findings of previous study that pain of thumb intensified 83% due to the practice of spinal manipulation (5). Among these manual therapist’s the most effected side of the pain was right thumb as (50%) then Interphalangeal joint as (27.3%) and then Metacarpophalangeal joints as (25.5%). Very small data was received who had complains of thumb pain on CMC as (15.3%) which is inconsistent with previous study (6). The high frequency of pain at thumb and Interphalangeal joints indicates the application of inappropriate procedures by applying high pressure on the tip of thumb which ultimately put pressure on MCP and CMC joints resulting in pain in thumb and interphalangeal joints. CMC joint is mainly affected in old age which is consistent with Moulton et al. findings that weakness, demineralization and instability of these joints is the cause of early degeneration and pain in thumb. Another research study of Moulton et al. (2001) revealed that the hyperextension of MP joint during the application of manual technique leads to the development of osteoarthritis of CMC joints (7). Multiple spinal manipulation procedures are the cause of thumb pain. Unilateral PA (thumb pressure) (63%) technique performance is the leading cause of pain which is consistent with Wajon and Ada. Symptoms of thumb pain increased when they applied stronger Grade of pressure (52.3%), greater number of repetition performed (13.4%) and 2.3% when they work for longer hours which is consistent with findings of West and Gardener (2001) (8) which described three risk factors of thumb pain, dealing with

greater number of patients at one time, repetition, and wrong technique selection. Strategies used by Physiotherapist to cope pain are to change or modify treatment technique (39.8%), reduce contact hours with patient (19%) and 6.91% seek intervention from physiotherapists which are supported by previous study (9).

## CONCLUSION

This study concluded that majority of physiotherapists experience thumb pain while performing spinal manipulations, however, the

intensity of pain is mild to moderate. Unilateral PA technique was the leading cause of pain. The most frequent remedy to deal with such pain reported was reduction in frequency of causative technique.

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