

Thumb Pain in Physiotherapists Practicing Manual Therapy: Prevalence and Consequences

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ABSTRACT

Background: Injury pertaining to work around thumb area has become a well-recognized issue for physiotherapists who perform diverse manual techniques in the treatment of patients with musculoskeletal disorders. This may result in alteration in implementation of treatment technique, changing in choice of treatment technique, reduction in working hour, reduction in number of patients being treated, quitting the jobs etc as a result of the work-related condition. Hence this problem cannot be ignored.

Objective: The main aim of this study was to determine the prevalence of thumb pain in Physiotherapists practicing Manual therapy in Delhi-NCR in India and to determine its impact on the work.

Methods: Cross sectional survey of 118 Physiotherapists practicing Manual therapy in Hospitals and manual therapy clinics in Delhi-NCR in India was conducted and descriptive data for age, gender, handedness, years of experience, working hours per week, manual therapy techniques used, thumb pain measurement on VAS and its consequences on work were obtained.

Results: The prevalence of thumb pain was observed as 38.98% that had following impact on work practice of physiotherapists: 32.61% changed the implementation of their treatment techniques, 32.61% changed the choice of their treatment techniques, 15.22% decreased their number of patients for treatment in daily routine, 10.87% reduced their working hours and 8.70% decreased the use of manual technique.

Conclusions: In this study, incidence of thumb pain was low (38.98%) in Physiotherapists who practice manual therapy and the most important consequence was change in choices and implementation of treatment technique.

Key words: Work related thumb pain, Physiotherapist, Manual Therapy, Manual therapist, prevalence.

INTRODUCTION

With the advancement in the manual therapy techniques, the recovery time of the patients has decreased tremendously leading to satisfaction in terms of treatment, resulting in good quality of life and less healthcare costs on patients. But at the same time, application of manual therapy has resulted in various work related musculoskeletal disorders among physiotherapists. Injury pertaining to work around thumb has become a well-

recognized issue for physiotherapists who perform diverse manual techniques in the treatment of patients with musculoskeletal disorders. [1-7]

Thumb adversities are a common professional hazard for the physiotherapists, only second to the widespread prevalence of neck and back pain and is correlated with numerous activities, predominantly those techniques that continuously compress the thumb joints. [7-14] Amidst the existing structures in the hand, the thumb joints are

dominantly vulnerable to the biomechanical overload and work-related injuries in physiotherapists as the forces are often channelized directly through the thumb at the time of application of varied manual techniques. [1,4,15,16] Factors like mobility and laxity at joints of the thumb, joint integrity, thumb strength, technique of manual therapy used for treatment, position/alignment of thumb during treatment, time spent for performing the manual therapy, force, repetition, rest between the sessions of treatment, number of patients treated, awkward posture etc affects the occurrence of thumb pain. [1,2,3,12,15,17,18,19]

It has been observed in studies [2,3,4,7,8,12,15,17] that the thumb pain in physiotherapists may result in alteration in implementation of treatment technique, changing in choice of treatment technique, reduction in working hour, reduction in number of patients being treated, quitting their jobs etc as a result of their work-related condition. Hence this problem cannot be ignored. There is limited research regarding the prevalence of thumb problems in Physiotherapists in India and its impact on physiotherapists' careers. Therefore, the main aim of this study was to determine the prevalence of thumb pain in Physiotherapists practicing Manual therapy in Delhi-NCR (National Capital Region) in India and to determine its impact on the work. For the present study, thumb pain is the pain that can occur at the base of your thumb when you grip, grasp or pinch an object, or use your thumb to apply force.

MATERIAL AND METHODS

Study Design: Cross sectional survey

Sample Design: Convenience sampling

Sample Size: 118 (Physiotherapists)

Sample Source: Hospitals and manual therapy clinics among Delhi-NCR in India.

Selection criteria:

Inclusion Criteria: Physiotherapists (practicing Manual therapy) working in hospital and manual therapy clinics.

Exclusion Criteria: If they had a rheumatic disease, previous surgery to forearm or the wrist, Joint laxity/hypermobility of thumb.

Procedure

118 Physiotherapists participated in the study. Subjects were screened for inclusion and exclusion criteria. A duly signed consent form was obtained from the subjects after thorough explanation of the procedure. Descriptive data for age, gender, handedness, years of experience, working hours per week, manual therapy techniques used, thumb pain measurement on VAS (visual analog scale) and its consequences on work were obtained. The ethical approval was obtained from the Departmental ethics committee of Galgotias University.

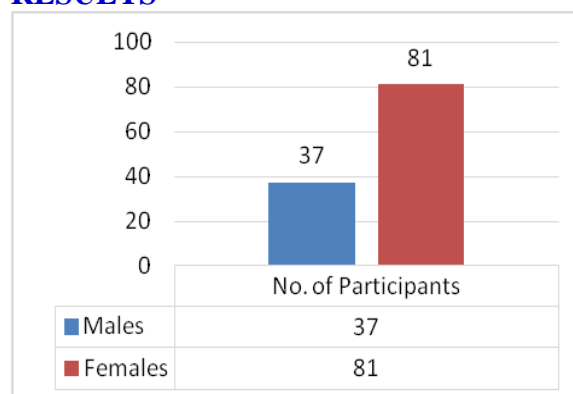
Pain on VAS: [20,21]

VAS was explained to patients using a 100 mm horizontal line with 0 representing "no pain" and 100 representing "worst pain imaginable". Subject marked a point on the line that matched the current amount of the pain he or she felt, and this rating was then measured from the left edge (= VAS score) 100-mm VAS ratings of (0 to 4 mm) can be considered no pain; (5 to 44 mm), mild pain; (45 to 74 mm), moderate pain; and (75 to 100 mm), severe pain.

Statistical analysis

Data was analysed using Microsoft Excel 2013 edition. Graphical representation too, was done using MS Excel 2013.

RESULTS



Graph 1: Graphical representation of number of participants in the study.

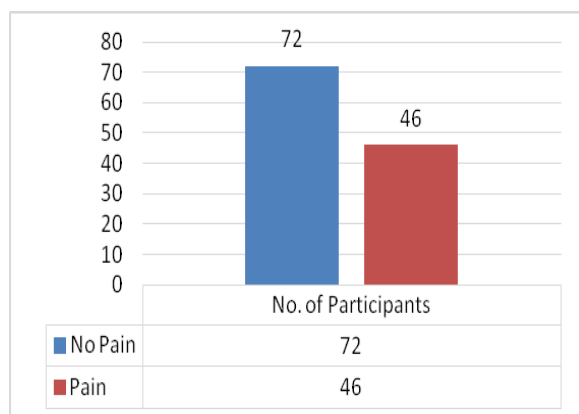
The population of 118 subjects were surveyed for the prevalence of thumb pain in the age group of 25 to 60 yrs, the demographic characteristics of which is shown in Table1.

Out of 118 Physiotherapists, there were 37 (31.35%) males and 81 (68.64%) females. (Graph 1).

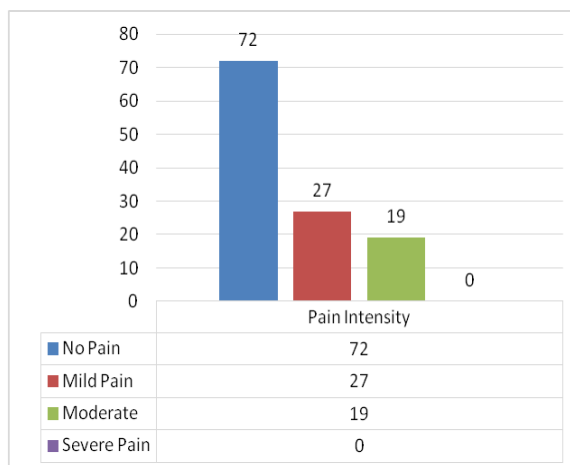
Table 1: Demographic characteristics of 118 participants

		Total participants (118) Number (%)	Total participants who reported thumb pain (46) Number (%)
Gender	Males	37 (31.36)	17 (36.96)
	Females	81 (68.64)	29 (63.04)
Age	25-29	30 (25.42)	11 (23.91)
	30-34	37 (31.36)	14 (30.43)
	35-39	30 (25.42)	10 (21.74)
	40-44	12 (10.17)	6 (13.04)
	45-49	3 (2.54)	2 (4.35)
	50-54	2 (1.69)	1 (2.17)
	55-59	4 (3.39)	2 (4.35)
Hand dominance	Right	113 (95.76)	45 (97.83)
	Left	5 (4.24)	1 (2.17)
Years worked as Physiotherapist	0-5 yrs	55 (46.61)	19 (41.30)
	6-10 yrs	48 (40.68)	18 (39.13)
	11-15 yrs	11 (9.32)	7 (15.22)
	16-20 yrs	1 (0.85)	0 (0)
	21-25 yrs	2 (1.69)	1 (2.17)
	26-30 yrs	0 (0)	0 (0)
	>30 yrs	1 (0.85)	1 (2.17)
Thumb pain	No	72 (61.02)	
	Yes	46 (38.98)	Mild: 27 (58.70) Moderate: 19 (41.30) Severe: 0 (0)
Manual therapy techniques used	Manipulation/mobilization	54 (45.76)	24 (52.17)
	Trigger point therapy	35 (29.66)	13 (28.26)
	Soft tissue manipulation	29 (24.58)	9 (19.57)
	Others (if yes, specify)	0(0)	0 (0)
Working hours (manual therapy) per week	<15 hrs	54 (45.76)	19 (41.30)
	16-25 hrs	22 (18.64)	10 (21.74)
	26-35 hrs	2 (1.69)	1 (2.17)
	36-45 hrs	12 (10.17)	7 (15.22)
	>45 hrs	28 (23.74)	9 (19.57)

Out of 118 Physiotherapists, results showed (Graph 2) percentage of participants having no pain (N=72) (61.02%) and pain (N=46) (38.98%). Therefore, prevalence of thumb pain has been observed 38.98%.



Graph 2: Graphical representation of participants with pain and without pain.



Graph 3: Graphical representation of population distribution according to pain intensity on VAS (in mm)

On further classification (Graph 3) it was found that 72 (61.02%) Physiotherapists had no pain (0-4mm), 27 (22.88%) Physiotherapists had mild pain (5-44mm),

19 (16.10%) Physiotherapists had moderate pain (45-74mm), 0 (0%) Physiotherapists had severe pain (75-100mm). This intensity variable was used here as the measure of “Thumb pain intensity”.

It was found that due to pain at the thumb 15 (32.61%) Physiotherapists changed the implementation of their treatment techniques, 15 (32.61%) Physiotherapists changed the choice of their treatment techniques, 7 (15.22%) Physiotherapists decreased their number of patients for treatment in daily routine, 5 (10.87%) Physiotherapist reduced their working hours and 4 (8.70%) Physiotherapists decreased the use of manual technique. (Table 2)

Table 2: Impact of thumb pain on work practice:

Impact	Number (%)
Changing of implementation of treatment techniques	15 (32.61)
Changing in choice of treatment technique.	15 (32.61)
Reduction in no. of patient being treated.	7 (15.22)
Reduction in working hour.	5(10.87)
Decreased use of manual technique	4 (8.70)

DISCUSSION

The study aimed at finding the incidence of thumb pain in physiotherapists practicing manual therapy in hospitals and manual therapy clinics in Delhi-NCR in India and its impact on work practice. The present study demonstrated that out of 118 Physiotherapists, 61.02% physiotherapists had no thumb pain whereas 38.98% physiotherapists had thumb pain. It further demonstrated that 22.88% physiotherapists had mild pain (5-44mm), 16.10% physiotherapists had moderate pain (45-74mm), and 0% physiotherapists had severe pain (75-100mm). In previous studies, the prevalence of work related thumb pain in physiotherapists reported was 44%, [15] 57%, [4] 65.3% [6] and 68.52%. [22] A study [3] reported that the lifetime prevalence of thumb problems was 65% and the current prevalence was 41%. Similarly, other studies observed a lifetime prevalence of wrist and thumb problems as 62.5% (amongst South African respondents) [5] and of 70.8% (among Italian manual therapists).

[23] In a study, 83% complained that their thumb pain was aggravated by performing manipulative therapy techniques. [12] Thumb pain prevalence of 66.4% (in Australia and New Zealand) [24] and 30% [18] was found amongst hand therapists.

Taking into consideration the risk factors for developing thumb problems, the current study found that the prevalence of thumb problems was significantly higher in females. The probable reason for this may be that the female participants were comparatively larger in number than the males. Although other studies did not find gender a risk factor for thumb pain. [2,12,24]

The findings of our study revealed that performing mobilization or manipulation, trigger point therapy and soft tissue manipulation, all increased the risk of thumb problem, which is in accordance with previous studies [3-7,9,12] that found an association with use of manual therapy and prevalence of thumb pain in physiotherapists. The probable reason for this is the high, repetitive workload that predisposes the thumb joints to biomechanical overload and fatigue as the forces exerted are often transmitted directly through the thumb at the time of application of varied manual techniques. [1,15,16] A study reported that physiotherapists who were able to maintain their MP and IP joints in extension during the performance of PA pressures enhanced the longitudinal transmission of force to more proximal joints and were less likely to be associated with thumb pain. [17] In a study, using pisiform and the hypothenar eminence by the therapist was considered to be a better way to apply force to patients as it may serve as an alternative method to longitudinal forces along the thumbs and would assist in preventing potential damage to thumb joints in therapists. [25] Other study advised to perform PA glide with IP joint supported in case of excessive thumb flexibility to protect the thumb joints from injury. [26] Such findings serve as a guide to the safe performance of mobilization and manual therapy techniques, both for

beginning practitioners and for experienced therapists complaining of thumb pain.

In the present study, 41.3% participants reported that they performed manual techniques for less than 15 hours per week whereas 21.74% reported for 16-25 hours that led to thumb pain. Although the number of hours spent performing manual therapy techniques was not significantly different among the respondents with or without thumb pain but a study has previously reported that 60% of the therapists who spent 21-25 hours a week performing manipulation or mobilization techniques had thumb discomfort. [7] Another study reported that physiotherapists who perform manual therapy techniques for more than 20 hours per week are 3.5 times more likely to have musculoskeletal pain symptoms in the hand or wrist than other physiotherapists. [9]

In terms of impact of thumb pain on work practice, the current study found that due to pain at the thumb majority of the physiotherapists either changed the implementation of their treatment techniques (32.61%) or changed the choice of their treatment techniques (32.61%). Few of them reduced their working hours (10.87%) whereas other decreased their number of patients for treatment in daily routine (15.22%) and rest decreased the use of manual technique (8.70%). Similar findings were observed in previous studies. Suzane Snogdras et al [2] reported that thumb pain in physiotherapists was caused by performing manual techniques due to which 88% had altered their manual techniques where as others avoided the use of some manual techniques, used different manual techniques, decreased work hours and used hand tools or ergonomic aid for administering manual therapy. In a study done by Mc Mohan et al, [3] it was observed that of those respondents who reported thumb problems, 19% changed their field of practice whereas 4% left the profession due to their thumb problems. Similarly other studies reported that 74% physiotherapists changed their choice of treatment technique,

[12] 67% change the way they perform a task at work, [4] 39.81% changed their treatment technique while 19% reduced hour of patient contact [22] to alleviate their thumb symptoms. Other studies also reported similar results where physiotherapists either left the profession or changed work setting, altered their work habits, used other techniques of treatment, reduced patient contact hours, changed the type of patient treated due to their work-related musculoskeletal disorders. [7,8,10,27,28]

Many traditional texts by authors such as Maitland, Cyriax, Kaltenborn, Brian Mulligan have focused primarily on the application of manual techniques for the treatment of various musculoskeletal disorders that require extensive use of the thumb and thumb pad to apply pressure for the application of such techniques. [29,30,31] Hence practicing manual therapy had been an important part of physiotherapy since its outset. On the other hand, the cumulative effect of forces through the repetitive use of manual techniques that require force transmission through the thumbs over years of physiotherapy practice may lead to repetitive strain injury and predisposes the joints of the thumb to osteoarthritic degenerative changes.

Since the physiotherapists tends to continue to work with pain/injury, thus, a career path change (modification of treatment techniques, changing the choice of treatment techniques, changing the profession etc) within the profession is a consequence of injury that may decrease the effectiveness of the delivery of physiotherapy services. Thus, it warrants further investigation and potentially require a combination of preventive strategies that include educating the physiotherapists about the ideal thumb position for execution of manual techniques, modification of activities, reporting of injury, proper exercise, formulation of new devices or use of splints, intervention at the level of workplace, work schedule allocation, use of less manual therapy, proper training, ongoing risk assessment and control which

may be beneficial in preventing and treating the onset of early thumb symptoms in physiotherapists. ^[1,19]

Limitations

- Less number of Physiotherapists participated in the study.
- The number of hours the physiotherapists needed to perform the manual therapy techniques to develop thumb pain couldn't be identified.
- How long the physiotherapists had to rest in order to treat their thumb pain was not investigated.

Clinical relevance of study

The present study helps us to predict the pain outcome and its consequences in treatment of various musculoskeletal disorders among physiotherapists who perform manual therapy techniques. Also the present study can be used to promote a better and healthy lifestyle for physiotherapist performing manual therapy and the time period for weekly manual therapy can be controlled.

CONCLUSION

In this study, incidence of thumb pain was low (38.98%) in Physiotherapists who practice manual therapy and the most important consequence was change in choices and implementation of treatment technique.

Abbreviations:

NCR: National Capital Region; VAS: Visual Analog Scale; PA: Posteroanterior.

Conflicts of interests

There are no conflicts of interests.

Financial support and sponsorship: Nil.

ACKNOWLEDGMENTS

The authors would like to acknowledge the physiotherapists who volunteered for their co-operation without whom this study would have not been successfully completed.

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How to cite this article: Mahajan R, Singh M, Fahim T et.al. Thumb pain in physiotherapists practicing manual therapy: prevalence and consequences. *Int J Health Sci Res*. 2020; 10(6):194-200.
