



Journal Homepage: - www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI: 10.21474/IJAR01/14134

DOI URL: <http://dx.doi.org/10.21474/IJAR01/14134>



RESEARCH ARTICLE

PREVALENCE OF THUMB PROBLEMS IN THE PHYSICAL THERAPISTS OF ALEXANDRIA-EGYPT

Sarah M. Sheiha¹, Abdelrahman Chabara², Ahmad H. Azzam³ and Karim Ghuiba⁴

1. Physical Therapist at Rashid Public Hospital Elbehira Egypt.
2. Professor at Department Of Physical Therapy For Musculoskeletal Disorders And Its Surgery, Faculty Of Physical Therapy, Cairo University, Giza, Egypt.
3. Professor at Department Of Orthopaedic Surgery And Traumatology, Faculty Of Medicine, Cairo University, Cairo, Egypt.
4. Lecturer at Department Of Physical Therapy For Musculoskeletal Disorders And Its Surgery, Faculty Of Physical Therapy, Cairo University, Giza, Egypt.

Manuscript Info

Manuscript History

Received: 30 November 2021

Final Accepted: 31 December 2021

Published: January 2022

Key words:-

Prevalence, Physical Therapy,
Physiotherapist, Thumb Pain, VAS,
Quick DASH, Pinch Gauge

Abstract

Background: Work-related injuries to the thumb area have become a well-recognized problem of physical therapists that use various manual techniques in the treatment of patients with musculoskeletal disorders, which can lead to a change in the conduct of treatment technique, changes in the choice of treatment technique, reduction in working hours. , Reduction in the number of patients treated.

Objective: To determine the prevalence of thumb problem in physical therapists of Alexandria-Egypt.

Study Design: a descriptive, cross-sectional study in a clinical setting

Material & Methods: A cross-sectional study was conducted at different physical therapy clinical setups of Alexandria-Egypt. To collect data from the concerned participants, 100 questionnaires were distributed using convenience sampling. All participants responded positively, in which 65 were male and 35 were female. Visual analog scale (VAS) was used to measure the pain. Quick DASH to measure functional disability, Pinch gauge to measure thumb power. SPSS version 20 was used for data analysis.

Results: Results showed that 48(48%) subjects have thumb pain while 52(52%) do not experience thumb pain. One hundred physical therapists participated in this study. They recruited from different hospitals and health care institutions in Alexandria-Egypt , age of the study group was 29.82 ± 3.02 years with a minimum of 27 years and a maximum of 42 years.

Conclusion: The prevalence of thumb problems in physical therapist of Alexandria-Egypt appears to be high and can be of sufficient severity to impact on careers.

Copy Right, IJAR, 2022., All rights reserved.

Introduction:-

The World Health Organization (WHO) classifies occupational or work-related musculoskeletal diseases (WRMSD) as a disease, ranging from mild short-term diseases to irreversible disability promoted by work and injuries relevant

Corresponding Author:- Sarah M. Sheiha

Address:- Physical Therapist At Rashid Public Hospital Elbehira Egypt.

environment (**Jäger PDIM, et al. 2003**). Although physical therapists are professionally familiar with injury management, they are also prone to work-related musculoskeletal diseases (WRMSD), Work-related injury to the thumb has become an accustomed problem in the handling of patients with musculoskeletal disorders (**Cromie JE, et al, 2000, West DJ, et al, 2001**). Thumb problems are more common among physical therapists, and their incidence is second only to back/neck pain (**Glover W. 2002**).

Among physical therapists, all structures within the thumb joints are most susceptible to biomechanical and work-related injuries due to manual therapy techniques that recurrently compress the thumb joint. The first metacarpophalangeal (MCP) and the carpometacarpal (CMC) joints are the most frequent areas of thumb pain among manual physical therapists (**Barnes R et al., 2011**).

Materials and Methods:-

One hundred physical therapists participated in this study. They recruited from different hospitals and health care centers in Alexandria-Egypt. The age of the study group was 29.82 ± 3.02 years with a minimum of 27 years and a maximum of 42 years. Physical therapists who have been working for at least three years from the beginning of the work were eligible to participate in the study. Inclusion criteria were age limit within 25-45 years and manual physical therapists working at any public or private clinic having more than 3-year experience of the clinic. (Mehboob, H. et al., 2018). Exclusion criteria included refusal to participate in the study, Physical therapists with a history of fractured thumb, Physical therapists having diseases affecting the thumb, physical therapists having any rheumatic disease like rheumatoid arthritis, physical therapists having no experience in manual therapy and, undergraduate physiotherapy students. (**Mahajan, R. et al., 2020**)

Recruitment took place in different hospitals and physical therapy clinics at Alexandria, Egypt. All participants signed a written informed consent and agreed with the study in advance.

Measurement Procedures:-

All participants were familiarized with the objectives and procedures of the study. 100 Physical therapists participated in the study. Participants were screened for inclusion and exclusion criteria. A duly signed consent form was obtained from the subjects after a thorough explanation of the procedure. Descriptive data for age, gender, handedness, years of experience, working hours per week, thumb power measurement, thumb pain measurement on VAS (visual analog scale), and its consequences on work were obtained. The ethical approval was obtained from the Department of the ethical committee of Cairo University.

Pain on VAS:

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. It is a highly subjective way of measurement (**Gould et al., 2001, Jensen MP et al., 2003**).

Quick DASH score

The Quick-DASH score represents the disability/symptom score, which includes 11 items from the original DASH's 30 questions.

Quick DASH had been individually assessed and shown to be accurate in identifying individuals or workplaces with a high musculoskeletal risk (**Stover et al., 2007**). It had also been suggested as a useful screening and monitoring tool in the working population (**Fan ZJ et al., 2008**).

Pinch gauge

Clinicians and researchers used pinch force to compare patient strength with normative data, characterize upper limb weakness, and record improvements in strength and function overall performance, goal setting, and suggesting appropriate interventions (**Ranganathan VK et al. 2001**).

Data Analysis:-

Descriptive statistics of mean, standard deviation, frequencies, percentages, and confidence interval (CI) were utilized in presenting the subject's demographic and measured data. Chi-square statistics were utilized to examine associations between thumb pain and risk factors. Quick dash and pinch strength were compared between subjects

with thumb pain and free subjects by unpaired t-test. The level of significance for all statistical tests was set at $p < 0.05$. All statistical measures were performed through the statistical package for social studies (SPSS) version 25 for windows.

Results:-

Subjects characteristics

One hundred physical therapists participated in this study. They were recruited from different hospitals and health care providers in Alexandria-Egypt. Age of the study group was 29.82 ± 3.02 years with minimum of 27 years and maximum of 42 years. Table 1 showed the subject characteristics.

Prevalence of thumb pain among participants

The prevalence of thumb pain of the study group was 48% with a 95% CI of 38.46- 57.68%. (table 2).

Association between thumb pain and subject characteristics:

There was no significant association between thumb pain and sex, hand dominance, working years, and working hours per week ($p > 0.05$). (table 3).

Impact of thumb pain on function

The mean $\pm$ SD Quick DASH of subjects with thumb pain was $24.51 \pm 13.76\%$ with minimum of 0 and maximum of 77.27%. 32 (66.7%) subjects with thumb pain had no disability while 16 (33.3%) had a disability.

Comparison of Quick dash and pinch strength between subjects with thumb pain and free subjects:

There was a significant increase in the Quick dash of subjects with thumb pain compared with that of free subjects ($p < 0.001$). There was no significant difference in tip pinch, chunk and lateral pinch between subjects with thumb pain and free subjects ($p > 0.05$). (table 4).

Table 1:- Participants' characteristics.

	N	%
Sex		
Females	35	35%
Males	65	65%
Hand dominance		
Right	94	94%
Left	6	6%
Working years		
3- 6 working years	51	51%
7- 20 working years	49	49%
Work hours per week		
<15 h/week	13	13%
16-30 h/week	45	45%
31-45 h/week	26	26%
>45 h/week	16	16%

Table 2:- Prevalence of thumb pain of the study group.

	Prevalence of thumb pain	95% CI
Thumb pain	48 (48%) PT	38.46- 57.68%

CI, Confidence interval

Table 3:- The frequency distribution of thumb pain and association with risk factors.

	Prevalence of thumb pain		χ^2 value	p -value
	Pain	Free		
Sex				
Females	18 (51.4%)	17 (48.6%)	0.25	0.61
Males	30 (46.2%)	35 (53.8%)		
Hand dominance				

Right	44 (46.8%)	50 (53.2%)	0.89	0.42
Left	4 (66.7%)	2 (33.3%)		
Working years				
3- 6 working years	26 (51%)	25 (49%)	0.37	0.54
7- 20 working years	22 (44.9%)	27 (55.1%)		
Work hours per week				
<15 h/week	7 (53.8%)	6 (46.2%)	4.79	0.18
16-30 h/week	23 (51.1%)	22 (48.9%)		
31-45 h/week	8 (30.8%)	18 (69.2%)		
>45 h/week	10 (62.5%)	6 (37.5%)		

χ^2 , Chi squared value; p value, Probability value

Table 4:- Comparison of Quick DASH, tip pinch, chunk and lateral pinch between subjects with thumb pain and free subjects.

	Subjects with thumb pain	Free subjects	MD	t- value	p-value
	Mean $\pm$ SD	mean $\pm$ S D			
Quick dash (%)	24.51 $\pm$ 13.76	11.46 $\pm$ 8.62	13.05	5.72	0.001
Tip pinch	7.97 $\pm$ 2.72	8.53 $\pm$ 3.21	-0.56	-0.93	0.35
Chunk	13 $\pm$ 4.39	14.53 $\pm$ 4.59	-1.53	-1.71	0.09
Lateral pinch	16.16 $\pm$ 4.11	16.78 $\pm$ 4.58	-0.62	-0.71	0.47

SD, Standard deviation; Md, mean difference; p value, Probability value

Discussion:-

The study aimed at finding the incidence of thumb pain in physical therapists practicing manual therapy in hospitals and manual therapy clinics in Alexandria-Egypt.

The present study demonstrated that out of 100 Physical therapists, 48% physical therapists had thumb pain where as 52% physical therapists had no thumb pain.

Kareem, I et al.,(2021) concluded that the frequency of thumb pain among physical therapists in Lahore is 35.26%.

In previous studies, the prevalence of work-related thumb pain in physical therapists reported was 44% (**Van de Velde K et al.,2013**) , 57% (**Paul Reglar et al.,1999**)

According to the study by **Van de Velde K, Cattrysse E in 2013**, 40% of physical therapists reported that they were having thumb pain.

It was reported that 83% complained that thumb pain was made worse by performing manipulative therapy techniques.(**Wajon A et al.,2003**)

Correlation between thumb pain and gender :

The results showed that there was no significant difference in the prevalence of thumb pain between females and males.The present results agreed with the study of **Wajon A et al.,(2003)** in which found that there is no significant relationship between thumb pain and gender.

Cromie JE.,(2000) did not find that gender was a risk factor for developing thumb pain.

Abbas Z et al., (2018) found that no association between gender and thumb pain.

Another study found that the prevalence of thumb problems was significantly higher in males.(**McMahon M et al., 2006**)

Akram A et al.,(2020) didn't find any significant association between thumb pain and gender but **Rossettini G et l.,(2016)** reported that females were 2.6 times more prone to develop thumb pain in their careers than males.

Correlation between thumb pain and quick DASH.

There is a significant association between thumb pain and quick DASH according to our findings which affect ADL.

Thumb pain is significantly associated with impairment in ADL and those who feel more pain tend to experience more difficulties in daily activities than others (Rossettini, G et al., 2016).

The PTs who had injured their neck/upper back avoided ADL/leisure activities; however, fewer took time off, similar to other studies (Holder NL et al., 1999; Cromie et al., 2000).

Limitations

As all cross-sectional designs, the findings can only recognize risk factors.

Area of study was limited

The fact that the majority of the participants never got prevention advice about thumb pain shows that this is an underestimated disorder. In the future, prevention advice should be included in the education of future therapists.

Clinical relevance of the study

The present study helps the therapists to predict the pain outcome and its consequences in the 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 physical therapists performing manual therapy and the time period for weekly manual therapy can be controlled.

Conclusion:-

This study found that the prevalence of thumb problems in the physical therapist of Alexandria-Egypt appears to be high and can be of sufficient severity to impact careers.

References:-

1. Abbas Z, Ahmad A, Burq AIS, Gilani AS, Bashir SM, Noor R.(2018) Association of Length and Muscle Strength of Thumb with Thumb pain among Manual Physical Therapists. *J Med Sci* , 26: (3) 250-253.
2. Akram A, Sharif F, Ahmed A.(2020) Workrelated thumb pain and associated risk factors among manual .physiotherapists . khyber Med Univ J ; 12 (2) : 149 - 53 .
3. Barnes R, Colyn H, Moolman C, Roux Z, Shabort D, Yzel M, et al. (2011)The lifetime prevalence of work-related t h u m b a n d w r i s t p a i n a m o n g physiotherapists in Bloemfontein. *O c c u p H e a l t h S o u t h A f r i c a*;17(4):16-22.
4. Barnes R, Colyn H, Moolman C, Roux Z, Shabort D, Yzel M, et al. (2011)The lifetime prevalence of work-related t h u m b a n d w r i s t p a i n a m o n g physiotherapists in Bloemfontein. *O c c u p H e a l t h S o u t h A f r i c a*;17(4):16-22.
5. Cromie JE, Robertson VJ, Best MO.(2000) Work-related musculoskeletal disorders in physical therapists: prevalence, severity, risks, and responses. *Physical therapy*. 80(4):336-51.
6. Fan ZJ, Smith CK, Silverstein BA. (2008) Assessing validity of the QuickDASH and SF-12 as surveillance tools among workers with neck or upper extremity musculoskeletal disorders. *J Hand Ther*;21:354–365.
7. Glover W.(2002) Work-related Strain Injuries in Physiotherapists: Prevalence and prevention of musculoskeletal disorders. *Physiotherapy*;88(6):364-72.
8. Gould, D., Kelly, D., Goldstone, L., & Gammon, J. (2001). Examining the validity of pressure ulcer risk assessment scales: developing and using illustrated patient simulations to collect the data INFORMATION POINT: Visual Analogue Scale. *Journal of clinical nursing*, 10(5), 697-706. ISO 690
9. Holder NL, Clark HA, DiBlasio JM, Hughes CL,Scherpf JW, Harding L, Shepard KF(1999). Cause, prevalence and response to occupational musculoskeletal injuries reported by physical therapists and physical therapists assistants. *Physical Therapy*; 79: 642–652.
10. Jäger PD-IM, Griefahn B, Liebers F, Steinberg D-IU, für Arbeitsschutz B. (2003)Preventing musculoskeletal disorders in the workplace.
11. Jensen MP, Chen C, Brugger AM. (2003)Interpretation of visual analog scale ratings and change scores: a reanalysis of two clinical trials of postoperative pain. *The Journal of Pain*. 4(7):407-14.
12. Jensen, M. P., Chen, C., & Brugger, A. M. (2003). Interpretation of visual analog scale ratings and change scores: a reanalysis of two clinical trials of postoperative pain. *The Journal of pain*, 4(7), 407-414.

13. Kareem, I., Amjad, F., Arif, S., & Batool, S. (2021). Prevalence of Thumb Pain Among Physiotherapists Perform Manual Techniques During Clinical Practice. *Pakistan Journal of Physical Therapy (PJPT)*, 09-14
14. Mahajan, R., Singh, M., Fahim, T., & Singh, A. K.(2020) Thumb Pain in Physiotherapists Practicing Manual Therapy: Prevalence and Consequences. Available at SSRN.
15. Mehboob H, Bashir MS, Noor R.(2018) Prevalence of thumb pain in physical therapists practicing spinal manipulative therapy. *Rawal Medical Journal*.;43(3):479-82.
16. Paul Reglar, Gill James. (1999)Thumb pain in physiotherapists: a preliminary study. *British Journal of Therapy and Rehabilitation*.;6,(10).
17. Rossetini G, Rondoni A, Schiavetti I, Tezza S, Testa (2016)M. Prevalence and riskfactors of thumb pain in Italian manual therapists: An observational cross sectional study. *Work*;54(1):159-69. DOI: 10.3233/WOR-162289.
18. Stover B, Silverstein B, Wickizer T, Martin DP, Kaufman J.(2007) Accuracy of a disability instrument to identify workers likely to develop upper extremity musculoskeletal disorders. *J Occup Rehabil*;17:227–245.
19. Van de Velde K.Cattrysse E. ,) 2013 (Work-related thumb pain in physiotherapists: Prevalence, risk factors and prevention, an observational study. *Int J Physiotherapy*.;3(4):145-53.
20. Wajon A, Ada L.(2003) Prevalence of Thumb Pain in Physical Therapists Practicing Spinal Manipulative Therapy. *Journal of Hand Therapy*.;16(3):237–2.