

Prevalence of Work-Related Thumb Pain in Physiotherapists

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ABSTRACT

Background: Physiotherapy is associated with job tasks that are physically challenging and some of the routine procedures include manual therapy and soft tissue mobilizations which require higher levels of force and may be performed in hazardous or awkward postures. This study was done to find out the prevalence of work-related thumb pain amongst Physiotherapists and also to assess the awareness about the thumb pain and ergonomic strategies to reduce the same.

Objectives: 1. To find the prevalence of Work-Related Thumb Pain (WRTP) in Physiotherapists
2. To assess the awareness of ergonomics related to WRTP in Physiotherapists
3. To find the coping strategies used by the Physiotherapists for WRTP

Methods: 94 Physiotherapists from various setups in Pune city, with a basic qualification in B.P.Th. having a work experience of minimum 2 years and having minimum 20 hours of clinical duties per week and performing manual therapy techniques on patients were included in the study.

Results: The overall prevalence came to 68.1%. 94.7% of the respondents were aware about the ergonomic strategies to prevent/reduce thumb pain and 5.3% were not aware about the same. Multiple coping strategies were used by the Physiotherapists, of which changing or modifying their treatment, modifying either the patient's position or their position, asking to help handle a heavy patient were the most common ones.

Conclusion: This study indicates that thumb problems are common in Physiotherapists.

Keywords: Physiotherapists, thumb pain, ergonomic strategies, coping strategies

INTRODUCTION

The World Health Organization (WHO) (1985) defined a Work-Related Musculoskeletal Disorder (WRMD) as one that arises when an individual is exposed to work activities and work conditions that significantly contribute to its development or exacerbation, but which do not act as the sole determinant of causation.^[1] Wrist and thumb pain is considered as a Work-Related Musculoskeletal Disorder. Physiotherapy is considered as a moderate-to-high-risk profession for work-related musculoskeletal disorders.^[2] Physiotherapy is associated with job tasks that are physically challenging and

the elements of practice demand continuous bending, repetitive movements, quick response to unanticipated movements by patients and maximum patient support during treatments. Some of the routine procedures include manual therapy and soft tissue mobilizations which require higher levels of force and may be performed in hazardous or awkward postures.^[3] A hands-on approach of manual therapy is primarily used in Physiotherapy outpatient departments or private practices treating musculoskeletal disorders. Increased use of their hands puts these physiotherapists at risk of developing WRMD of the wrists and

hands. The lifetime prevalence of work-related thumb problems (WRTP) ranged from 62.5% to 83% in studies focusing on wrist and thumb disorders in PTs.^[4] In Physiotherapists, the wrist and hand is rated the second highest anatomical area of injury after low back injuries (Bork et al 1996, Cromie et al 2000, Holder et al 1999).^[5] Physical therapists may routinely perform manual therapy such as soft tissue mobilization. The upper limb is also exposed to the risk factors associated with musculoskeletal as well as neurovascular disorders.^[6] The three primary risk factors that have been associated with WRTP are repetitive movement, awkward postures, and high force levels. Physical therapists who indicated that they routinely performed manual therapy were 3.5 times more likely to have wrist or hand symptoms than those who did not perform these techniques.^[7]

These work-tasks put the therapists at risk for both acute and cumulative WRMD. Musculoskeletal disorders cover a wide variety of phenomena and experiences such as discomfort and pain.^[8] The high, repetitive workload and performing passive accessory movements or soft tissue techniques are the work-related factors most commonly associated with thumb problems.^[9] Literature has indeed suggested that physiotherapists are particularly susceptible to WRMDs because of the nature of their profession which is often repetitive, labour intensive and involving direct contact with patients.^[10] WRMDs do not happen as a result of a single accident or injury that only last a short time, but develop gradually as a result of repeated trauma that lead to long lasting injuries to joints, muscles, ligaments, tendons, peripheral vessels or nerves.^[11] Of all the structures in the hand, the thumb joints are the most vulnerable to biomechanical and work-related injuries in physiotherapists.^[12-17] This is due to manual therapy techniques that are a major source of upper limb musculoskeletal stress as well as techniques that repeatedly compress the thumb joint.^[18] 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.^[19-22]

The application of many manual techniques, including, manipulation and massage, requires practitioner-generated hand forces. Frequently these forces are transmitted specifically through the thumb to the patients. The thumb is used as a pseudo- weight-bearing-joint when force is transferred through the thumb. The physiotherapist usually generates forces using her body weight, while the distal end of the thumb is met by the resistance of the tissue being treated. The thumb is not designed for this function and may lead to repetitive strain injuries.^[13] Thumb pain may cause physiotherapists to alter the way they perform manual techniques. In fact, 43% to 91% of physiotherapists with thumb pain alter their manual techniques because of work-related thumb pain. Changes to treatment applications due to musculoskeletal pain in the treating therapist, rather than to enhance the treatment benefit, may decrease the effectiveness of manual therapy techniques and lead to less efficient and less successful treatment of patients, potentially increasing healthcare costs.^[23] Although physiotherapists have expert knowledge of musculoskeletal injuries and injury prevention strategies because of their training and continuous professional development, physiotherapists still report a high incidence of work-related injuries during their professional practice.^[24] One reason for the increase in WRMDs in physiotherapists may be that, there are no profession-specific guidelines to assist them despite of the frequent need for physiotherapists to use manual handling and awkward postures in the course of their work.^[25]

There is research done which indicated that injured physiotherapists tended not to take time off work due to their disorders or to seek sick leave or workers' compensation as well.^[26] It is seen that most therapists treated themselves or sought treatment from a colleague. Aggravating factors for therapists that experienced pain in the last year were: continuing to work with a sore thumb, followed by working in the same position for long periods. Their management strategies were: Altering practice techniques and changing position frequently. Electro-physical agents were used as treatment to manage pain in a considerable number of cases, and a substantial improvement was perceived mainly when using laser therapy.^[27]

Thumb pain can be disabling for the PTs with respect to patient handling, gripping, palpation and manual therapy techniques which not only deteriorates the productivity but also may affect the Physiotherapist in their ADLs too. This study was done to find out the prevalence of work-related thumb pain amongst Physiotherapists and also to assess the awareness about the thumb pain and ergonomic strategies to reduce the same.

The objectives of the study were:

1. To find the prevalence of WRTP in Physiotherapists
2. To assess the awareness of ergonomics related to WRTP in Physiotherapists
3. To find the coping strategies used by the Physiotherapists for WRTP

METHODS

Study design: Cross-sectional observational study

Study population: 94 Physiotherapists of both genders with basic qualification in B.P.Th. having a work experience of minimum 2 years and minimum 20 hours of clinical duties per week and performing manual therapy techniques on patients were included in the study. Physiotherapists with

any illnesses causing joint pain, traumatic injuries to the thumb, musculoskeletal disorders of the thumb other than WRMDs and pregnant physiotherapists were excluded from the study.

Procedure: Physiotherapists from multiple setups from Pune city were recruited by the means of convenience sampling. A detailed information sheet along with a copy of the questionnaire was sent to the Physiotherapists via e-mail after taking their consent. The Questionnaire^[28] was adapted from Standardized Nordic Musculoskeletal Questionnaire and face validity was done by the veterans in the field. Physiotherapists were explained about the questionnaire that they as participants of the study would have to fill. The questionnaire was self-administered and was used for the study which consisted of questions focusing on causes of WRMDs related to the thumb, most common risk and causative factors and coping strategies used by the subjects. The questionnaire consisted of 20 close ended questions, most of which were to be answered compulsorily by the Physiotherapists.

Statistical analysis:

Statistical analysis was done by the Department of Community Medicine at Smt. Kashibai Navale Medical College and General Hospital, using the 95% confidence interval, percentiles, means and percentages. The statistical level of significance was set at $p < 0.05$ for tests of association.

RESULTS

The overall prevalence of WRTP was 68.1%. Most of the participants [46.2% (n=36)] reported WRTP in the first 5 years after graduation. It was seen that 94.7% respondents were aware about the ergonomic strategies to prevent/reduce thumb pain and 5.3% were not aware about the ergonomic strategies.

Have you ever experienced work-related pain/discomfort in your thumb, that lasted for more than 3 days in the past 12 months?
94 responses

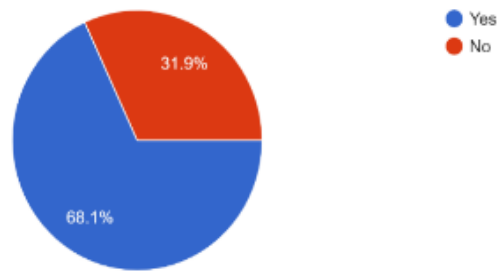


FIGURE 1: PREVALENCE OF WRTP IN PTs

It was seen that the prevalence of WRTP was 68.1%, (n=64 from 94 PTs)

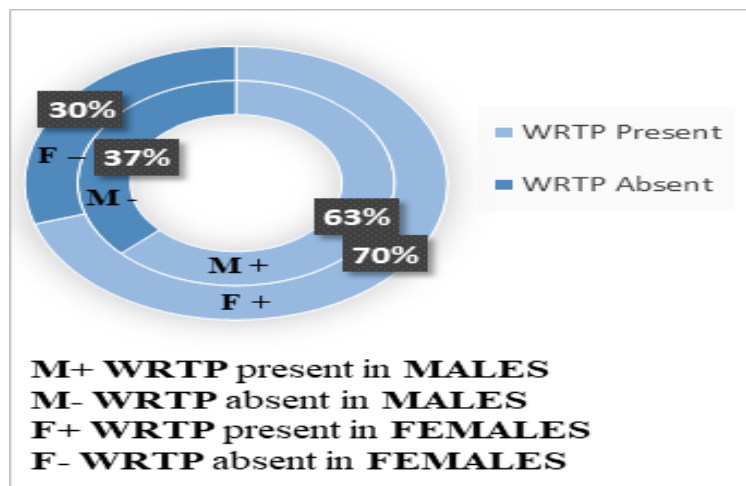


FIGURE 2: GENDER

Out of 94 respondents, 71% were females (n=67) and 28.7% were male PTs(n=27), out of which 47 females and 17 males reported presence of WRTP

When did you first experience this work-related thumb pain (WRTP) or discomfort? (If you've marked yes for the previous question)
78 responses

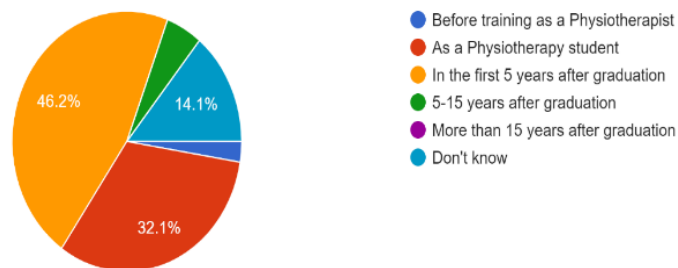


FIGURE 3: INCIDENCE OF WRTP

46.2% (n=36) reported WRTP in the first 5 years after graduation,

32.1% (n=25) as a Physiotherapy student,
14.1% (n=11) reported don't know as the cause of WRTP,
4.25% (n=4) reported WRTP in 5-15 years after graduation,
2.12% (n=2) reported WRTP before training as a Physiotherapy student
17% (n=16) reported no WRTP

Are you aware about the ergonomic strategies to prevent/reduce the thumb pain?
94 responses

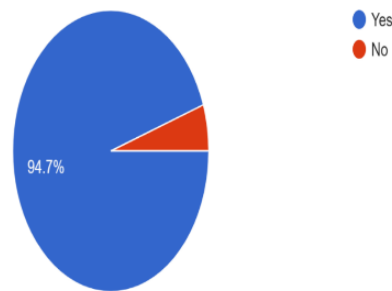


FIGURE 4: AWARE ABOUT ERGONOMIC STRATEGIES

It was seen that 94.7% respondents were aware about the ergonomic strategies to prevent/reduce thumb pain and 5.3% were not aware.

Did your training include ways to alter your environment or body position(ergonomics) TO REDUCE THUMB STRAIN?
94 responses

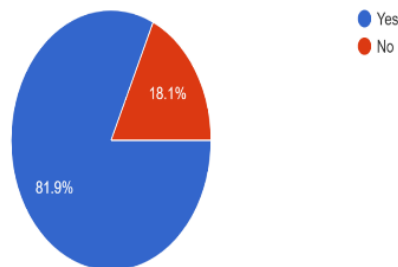


FIGURE 5: TRAINING ABOUT ERGONOMIC STRATEGIES

81.9% respondents stated that their training included ways to alter the environment or body position (ergonomics) to reduce thumb strain and 18.1% respondents' training did not include ergonomics to reduce thumb strain.

DISCUSSION

The study identified a 68.1% lifetime prevalence of work-related thumb pain at some time during their working life in physiotherapists investigated from Pune

city. This is similar to the findings of the study in Bloemfontein, South Africa by Barnes et al. in 2011 which also reported a lifetime prevalence of 62.5% in a sample of South African Physiotherapists.^[1] Other international studies have reported prevalence of 71% (Italy),^[17] 65% (Australia).^[9] Females [71%(n=67)] were better represented than males [29%(n=27)] in the study as Physiotherapy has been seen as a predominantly female profession in our work area. A total of 75 respondents out of

94 reported to have WRTP, of which majority of the respondents [73.3%, (n=55)] stated that they had a gradual onset of WRTP while some [21.3%, (n=16)] had sudden onset of WRTP and a few of them [4%, (n=4)] reported to have developed WRTP as a result of an accident during their practice. Physiotherapists appear to be particularly likely to experience WRTP within the first 5 years after graduation. In this study, 46.2% (n=36) PTs first experienced WRTP in the first five years after graduation compared with 47.7% in Barnes's and 46% in Adegoke's^[10] studies. Therefore, it could be assumed that an increase in the workload after graduation might have contributed to the prevalence of work-related injuries due to overuse of the thumb joints during physiotherapy practice. The reason for the increased prevalence rates in physiotherapists within the first five years of graduation, according to Cromie et al.(2000), is the reluctance of novel physiotherapists to ask for help.^[12] It could also be linked to the increased workload or inability to stabilize their thumbs during the application of manual therapy techniques. Novel physiotherapists seem to suffer thumb pain more often probably as a consequence of less experience in positioning hands and fingers and applying adequate amount of force while performing manual therapy. From a total of 67 female participants, 70% (n=47) reported presence of WRTP whereas in a total of 27 male physiotherapists, 63% (n=17) reported an affirmative response. We also observed the prevalence of WRTP to be higher among physiotherapists that were older than 30 years of age [34%,(n=32)], followed by physiotherapists of the age group 25-30 years, which was 32% (n=30). This finding is inconsistent with those of Salisk and Ozcka in Turkey,^[6] Glover et al in the United Kingdom,^[2] West and Gardner in Australia^[26] which reported a higher prevalence of WRMDs among physiotherapists younger than 30 years of age. Years of practice also affected the prevalence of WRTP, as the

Physiotherapists with a work-experience of 5-10 years reported the maximum positive response of 61%, (n=57) whereas 7.5% (n=7) physiotherapists who reported WRTP had an experience of 10-15 years.

Thus, age, gender and years of practice were identified as risk factors for developing WRTP in the current study which is similar to the study done by Adegoke et al, but contradicts with the results of the studies done by Barnes et al and McMahon et al^[9] which did not identify these factors as risk factors for developing WRTP. The reason for a higher prevalence in females may be that they are comparatively over-represented in the musculoskeletal area of practice, thus spending more time performing manual therapy techniques and increasing the risk of WRTP. Work status in the past 12 months also affected the occurrence of WRTP in Physiotherapists, as it was seen that 74.5% (n=70) therapists were working as a full-time therapist, out of which 68.5% (n=48) reported Yes as an answer for experiencing WRTP while 25.5% (n=24) were working as a part-time therapist and 17 of them said yes for experiencing WRTP. The workplace may also play an important role in the causing of thumb problems, because most of the respondents with WRTP reported working in a Hospital 42.6% (n=40) followed by private practice 38.3% (n=36) and the least reported working as freelancers 19% (n=18). This is in concurrence with Bork et al. who found out that physiotherapists working in hospitals had a higher prevalence of WRMDs. Our findings are similar to the findings of McMahon et al. who stated that working in the area of administration was associated with a relative high risk for WRTP.

Highest risk of WRTP in physiotherapists was orthopaedic out-patients in the study done by McMahon et al, while Cromie et al found that physiotherapists working in private practice had reported significantly more pain/discomfort than working in other areas. Though 94.7% (n=89) of the respondents

were aware of the ergonomic strategies to prevent/reduce thumb pain and 81.9% (n=77) respondents stated that their training included ways to alter the environment or body position (ergonomics) to reduce thumb strain, it can be assumed that the physical nature of the work inclines to injury rather than a lack of education or advice regarding protection. More than one physiotherapy technique eliciting the pain was reported by the participants. Performing the same task over and over was found out to be the most significant factor in causing WRTP [39.36%,(n=37)] followed by bending or twisting your thumb and wrist in an awkward way [32.97%,(n=31)] and Continuing to work when hurt or injured [27.65%,(n=26)]. Whereas, treating a large number of patients in a day [42.55%,(n=40)] and performing manual orthopaedic techniques (joint or soft tissue mobilization) [42.55%,(n=40)] were reported to be moderately significant risk factors.

80% (n=75) respondents said that they had to either change or modify their treatment as a result of work-related discomfort which is in correspondence to the findings of West and Gardener, who reported 86% participants changing or modifying their treatment whilst Cromie et al found 73% participants had changed or modified their treatment at some point. 63% (n=59) respondents said that almost always, they modified either the patient's position or their position in order to avoid WRTP which was followed by 60% (n=56) participants mentioning of Sometimes asking someone to help handle a heavy patient and 52% (n=49) therapists stated that they always adjusted the bed/plinth height before treating the patient. These were the three main coping strategies used by the physiotherapists to avoid/reduce WRTP. The higher prevalence found in our study suggests that physiotherapy practice highly predisposes to WRTP. This may be due to the conditions under which physiotherapists practice in India. Based on these findings, it can be recommended that the potential for work-related thumb problems in PTs, the

potential risk factors and ergonomic strategies to prevent the same should be discussed in undergraduate as well as the workplace settings. If physiotherapists select to work in an area of high thumb usage, particularly if they have unstable or lax or hypermobile thumb joints, they should consider modifying their work practices to reduce repeated weight transmission through the thumb joints.

CONCLUSION

This study concludes that there is a prevalence of 68.1% Work-Related Thumb Pain in Physiotherapists in Pune city.

The most reported risk factors were performing the same task over and over, bending or twisting the thumb and wrist in an awkward way, continuing to work when hurt or injured, treating a large number of patients in a day and performing manual orthopaedic techniques (joint or soft tissue mobilization).

The most used coping strategies reported were changing or modifying their treatment, adjusting the bed/plinth height before treating the patient, modifying either the patient's position or their position in order to avoid WRTP, asking someone to help handle a heavy patient.

Future Scope Of The Study:

To find the exact reason for WRTP in Physiotherapists. Further research is needed to investigate whether modification of work practices can reduce the prevalence of thumb problems, and to evaluate the effectiveness of interventions. A larger area can be considered to carry out the study as it will help cover various setups. The study can be continued to find out the effect of coping strategies used by the physiotherapists in order to reduce/avoid WRTP. Research can also be done to find out what preventive strategies should be included in the UG course, which will help to prevent/reduce the occurrence of WRTP in novel physiotherapists. Further research is required to build up effective and preventive or ergonomic strategies that may

be applied to the workplace to decrease the occurrence of WRTP and WRMDs.

Acknowledgement: None

Conflict of Interest: None

Source of Funding: None

Ethical Approval: Approved

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How to cite this article: Shah H, Agrawal H, Sahasrabudhe P. Prevalence of work-related thumb pain in physiotherapists. *Int J Health Sci Res*. 2021; 11(6): 15-23. DOI: <https://doi.org/10.52403/ijhsr.20210604>
