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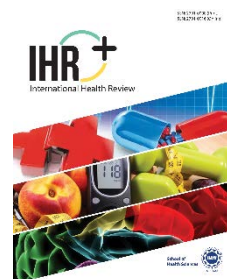
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Title: Association of Use of Different Type of Manual Therapy Approach with Upper Extremity Pain in Manual Therapists of Lahore

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Association of Use of Different Type of Manual Therapy Approach With Upper Extremity Pain in Manual Therapists of Lahore

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Abstract

This study was conducted to assess the upper limb pain in manual physiotherapists by using different manual therapy techniques. There was no such type of study in Pakistan and also there was less literature found on this study internationally. It was a cross sectional study. Data was collected from the manual physiotherapists of Lahore from different clinical settings. The data collection was done by using Non probability convenient sampling technique. The Sample size was 126, calculated from (“Raosoft” software). The questionnaire used to assess pain was Standard Nordic musculoskeletal questionnaire. For the statistical analysis, SPSS 20 software was used to find the association of use of different type of manual therapy approach with upper extremity pain in manual therapist. The mean age of physiotherapists was 34.6 (SD = 5.996). Out of 126, male physiotherapist were 66 and 60 were female. Mostly Physiotherapists who were included in this study had working experience more than 5 years and practicing more than 3 hours a day had upper limb pain. Physiotherapists using manual therapy techniques Kalterborn technique had more pain in neck, shoulder, elbow, wrist and hand than physiotherapists using Mulligan and Maitland. There was no association of any technique used by physiotherapists with shoulder, elbow, wrist/hand and neck pain ($p > 0.05$). This study concluded that physiotherapists using Kalternborn technique reported more upper limb pain than therapists using maitland and mulligan techniques. There was no association of any technique used by physiotherapists with shoulder, elbow, wrist/hand and neck pain.

Keywords: musculoskeletal manipulation, neck pain, shoulder pain, physical therapists, manual approaches, musculoskeletal disease

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Introduction

Physical therapists are experts in the human services group who 'assess, prevent and treat human movement disorder. It is a highly skilled profession which helps to restore normal function in adults and children or minimize damage to the body dysfunction and pain, so that they can achieve the highest possible independence level in their lives to prevent repeated injury and disability in the workplace, at home or in leisure activities and community health services for all age groups. Physical therapist uses manual therapy techniques are at the risk of developing the production of works of hand and wrist related musculoskeletal disorders treatment of musculoskeletal disorders in the treatment of hand. There are different manual physiotherapy approaches used in Pakistan. Most common approaches are Kalternborn, mulligan and maitland [1]. WMSD and injuries are found to be the significant issue in the health care sector [2]. It has also been studied that the persistent musculoskeletal pain is a health related issue worldwide. It is affecting individuals' wellbeing and thus substantial costs to society [3]. Physiotherapy profession has a very important role being a profession integral to acute care, rehabilitation, health promotion and prevention [4]. Interest in manual therapy appears to continue to grow among Physical therapy clinicians and educators have more interest in manual therapy throughout the world and thus they continue to grow in this field of knowledge [5]. It is a better practice to add up manual physical therapy with supervised exercise than exercise alone [6]. In frozen shoulder, Kaltenborn and Maitland mobilization techniques are effective for improving pain and range of motion. It is suggested by the literature that many physiotherapists suffer from work-related musculoskeletal disorders (WMSDs) [7]. Some of the risk factors according to health professionals included: patient related factors, work related postures, lifting or carrying and repetitive tasks [8]. The physical therapists in the western world are more vulnerable to work-related conditions including musculoskeletal injury. Physical therapy practice and patient care-related involve in the performance of many of the labor intensive tasks. These include lifting, bending, torsion, read, performing manual therapy, a long time, exercise mat, transfer patients and use heavy equipment to help maintain an awkward situation, these tasks at risk for acute and cumulative musculoskeletal pain in therapists [9]. The surveys the State of Victoria, Australia, found a physical therapist, and work-related pain or discomfort

has gone from 91% respondents. In USA 61% graduates work-related musculoskeletal disorders [10].

It is suggested that 60% of physical therapists experience work-related pain and discomfort worldwide. The prevalence for these disorders is high (about 80%). Physical therapists among under 35 years of age [11]. Diane JWest et.al (2001) conducted a research which focused on musculoskeletal injuries. The results showed that the work related injuries were affecting almost half of the population taken under study. The injuries reported most of them were neck and hand injuries and specifically injuries to the CMC joint of thumb and the wrist [7]. In Malaysia, a cross-sectional study was conducted to measure the prevalence of work-related injuries among physiotherapists, injury level was significantly higher than many other countries in comparison between Malaysian physiotherapists. Researcher concluded that there was high presence of MSK injuries among Female physiotherapists, those who were working in paediatrics department [12]. In another study, a higher incidence of work-related musculoskeletal disorders were reported by female therapists but these disorders were found to be more common among therapists working in the pediatric department [13] Another study concluded that the most affected part of the body in physical therapists who were working in acute care, pediatrics and geriatrics was the low back [14]. It was reported by a prevalence study about the work-related musculoskeletal disorders (WRMSDs) among physiotherapists, that these disorders were as high as 91% in them, especially in recently qualified clinicians [15].

A study was conducted to assess occupational health and safety implications for physiotherapy students. Out of 25 students, only two were able to maintain the required position while applying almost a 2 kg force through their thumbs. 23 (92%), 4 (56%) could reach the target force, but were not able to maintain that position. The other nine (36%) neither could reach the target force nor maintained the thumb in the recommended position [16].

According to a cross sectional study which focused on the incidence of thumb pain disorders in Australia, Australian physiotherapist practice was more effective. The overall incidence of thumb pain disorders was 65% and the present frequency was 41%. Therapists have more chances to develop thumb problems due to overuse of thumb joint or improper thumb joint position while applying physiotherapy techniques. Some respondents who had thumb problems, 19% of those who changes their practice area and 4%

left the profession to prevent their self from thumb related pain and injuries [17].

A prospective cohort study conducted to find out work-related musculoskeletal disorders which were prevalent in physical therapists. Physical therapist who was exposed to manual therapy were at high risk of developing work related disorders. Baseline survey response rate was 67%. Who responded to the questionnaire at baseline to 97% of subjects in response to the follow-up questionnaire. WMSDs 1-year incidence of 20.7%. This increased the risk of injury factor was the change in position from one location to another, and other factors, such as soft tissue injury [18].

Objective

This study was aimed to to determine the association of use of different types of manual therapy approaches with upper extremity pain in manual therapists of Lahore.

Methodology

This study was a cross sectional survey .The data was collected from the manual physiotherapists from different clinical settings of Lahore, Ehsan rehabilitation center Mansora hospital Mid city Hospital Sports and spine center PSRD and Rasheed Hospital The data collection was done within 3 months after the ethical approval The sample size calculation was done by using the online Raosoft sample size calculator. Non probability convenient sampling technique was used.Inclusion criteria:Physiotherapy graduates, both genders. The physiotherapists using manual techniques presently or had previously treated musculoskeletal conditions using these techniques, were included in the study. Physiotherapists, who worked 3 or more hours continuously Exclusion criteria :Recent Surgery or Trauma Frozen shoulder Neurological disorders involving brachial plexus. All other physiotherapists who had non-work related causes such as structural deformities or injuries to the upper limbs or with diseases affecting the hands, were excluded. Standard Nordic musculoskeletal questionnaire (Extended version) was used to assess pain (back, neck and shoulder pain). Reliability of NMQ ranges from 0 -23%.Sensitivity of this tool is 66 -92% while specificity is between 71 -88%.Data was enanalysed through SPSS 21 software . Ethical considerations:The patient's data was only used for the research purpose.The researcher would follow all the ethics of the medical field.

Results

This study included a total of 126 participants. The mean age taken of physiotherapists was 34.6 (SD=5.996). Out of 126, 66 were male physiotherapists and 60 were female. According to results Physiotherapists have working experience more than 5 years were 65 and 73 physiotherapist were working >3 hours. Results of cross tabulation of techniques applied by physiotherapists and shoulder pain showed that out of 88 respondents who used kaltenborn technique of manual therapy, majority (n=67) reported pain in shoulder joint, (n=21) respondents who used maitlands technique (n=88) reported shoulder pain and (n=38) respondents who used mulligan techniques had shoulder pain. Chi square test of association between techniques applied by physiotherapists and Shoulder pain showed that there is no association of any technique used by physiotherapists with shoulder pain ($p>0.05$). Most of the physiotherapists who were using Kaltenborn technique (n=67) had more elbow as compared to other techniques. Analysis showed that (n=67) physiotherapists who were using Kaltenborn technique had Hand/wrist. Chi square test of association between techniques applied by physiotherapists and Hand/wrist pain showed that there is no association of any technique used by physiotherapists with Hand/wrist pain ($p>0.05$).

Table 1. Cross Tabulation of Techniques Applied by Physiotherapists and Neck pain

Techniques applied by physiotherapists	Response	Neck pain		Total
		No	Yes	
Kaltenborn	No	34	25	59
	Yes	40	27	67
Mulligan	No	52	36	88
	Yes	22	16	38
Maitland	No	62	43	105
	Yes	12	9	21

Table 2. Chisquare Test of Association Between Techniques Applied by Physiotherapists and Neck pain

Techniques applied by physiotherapists	Pearson Chi-square		
	Value	df	P value
Kaltenborn	0.056	1	.812
Mulligan	0.016	1	.900
Maitland	0.026	1	.871

Table 3. Cross Tabulation of Techniques Applied by Physiotherapists and Shoulder Pain

Techniques applied by physiotherapists	Response	Shoulder pain		Total
		No	Yes	
Kaltenborn	No	18	41	59
	Yes	20	47	67
Maitland	No	32	73	105
	Yes	6	15	21
Mulligan	No	26	62	88
	Yes	12	26	38

Discussion

Work related musculoskeletal injuries were very common in physiotherapists. Previous studies concluded that physiotherapists who work manually and practice more had more chances of work related musculoskeletal injuries.

The physiotherapists who mostly use manual therapy techniques, suffer more from work-related thumb pain. This pain usually depends on two factors that are CMC mobility and thumb strength. Thus these factors should be the focus of researchs that are conducted to assess the effectiveness of interventions for work-related thumb pain [19]. The prevalence of WRTP for lifetime in the physiotherapists was reported to be 65.3%. The manual techniques included all of the transverse glides applied to the spine, grade II–IV oscillations, unilateral and central PA glides to the spine. These techniques were overall reported by most of the physical therapists as the cause of their thumb pain. Upper limb is more affected in work related musculoskeletal injuries due to manual therapy. But there is no material found on the injuries using different types of manual therapy

techniques [6]. The neck was the most frequently affected segment in dentists, the hand/wrist in dental hygienists and in laboratory technicians, and the neck and shoulders in nurses. Lower prevalence was reported in physiotherapists [20]. But in this study 67 % physiotherapists who used kalkanborn technique reported neck pain another research was conducted in Saudi Arabia. A highest prevalence of low back injury (33%) and neck (29%) was reported by the Saudi PTs where the most common cause of back and neck pain was the bending and twisting (21%) in an incorrect way [21]. It was reported that upper limb was more affected than lower limb within 12 months of WRMSDs and also the ratio was same in the recent 7 days (2). It was agreed by the Pain Group that the performance of manual techniques affect physiotherapists' thumb the most. While using a valid and reliable questionnaire, it was demonstrated by this study that the thumb pain was more evident in physiotherapists, experiencing higher levels of disability in their working life. This study also suggests that physiotherapists with work-related thumb pain reported hypermobility at their right thumb CMC joint, decreased strength in tip pinch of the right hand, and a lower BMI. In this sample of physiotherapists, all the factors that were thought to be affecting thumb, were not found to be significant in producing thumb pain such as the way of applying manual technique or the amount of patients treated frequently [19]. As a physiotherapist, it was reported that the work-related musculoskeletal injury was the pain that lasted more than three days. The work-related injury was reported to be 55% whereas 40% reported that they had injury in the previous year. The low back, hands and neck were reported to be among the most common areas affected. Among these 56% of the respondents experienced this injury within five years duration of graduation. There were some risk factors reported by the physiotherapist related to work such as manual therapy techniques, sustained demanding postures, repetition, working with injured thumb of hand and extra workloads. They are at risk because they do not take time off from work or have surgery and continue to work with injured hand. It was also reported that 38% of respondents changed their work settings. On the other hand some of the physiotherapists took time to modify their techniques and continued to work in a better way. It is suggested that preventative strategies should be developed by doing further research on this physiotherapist related issue [22]. Another study involved 322 physiotherapists after taking their electronic consent. The standardized Nordic Musculoskeletal Questionnaire (NMQ) was used and non

parametric tests were done to analyze the data. There was no statistically significant relationship between the increase in work experience and work-related MSDs prevalence in the present study [23]. Females (68.63%) were reported to have more prevalence than that of the males (61.19%). Most of the physiotherapists reported MSDs of lower back (41.30%) and that of the neck (37.58%) region [24].

This study suggested that physiotherapists who use Kalternborn techniques, were found to have more chances of getting affected by musculoskeletal pain.

Conclusion

This study conclude that Manual physiotherapists who work more than three hours are more prone to developing upper limb pain. Physiotherapists who were working more than 5 years had more upper limb pain than physiotherapists who were working less than 5 years.

This study also conclude that physiotherapists using Kalternborn technique have more chances to developing upper limb pain than therapists using maitland and mulligan techniques. There is no association of any technique used by physiotherapists with shoulder, elbow, wrist/hand and neck pain.

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