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PREVALENCE OF WORK-RELATED MUSCULOSKELETAL DISORDERS AMONG CLINICAL AND TEACHING PHYSIOTHERAPISTS- AN OBSERVATIONAL STUDY

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ABSTRACT

Background: Physiotherapists were at high risk of getting work-related musculoskeletal disorders. However, studies prevalence of work-related musculoskeletal disorders among clinical and teaching physiotherapists in India was limited. The objective of the study is to find the prevalence of work-related musculoskeletal disorders among clinical and teaching physiotherapists.

Methods: Non-experimental design. 210 samples were taken applying both inclusion and exclusion criteria. The Nordic questionnaire was used to find the prevalence of work-related musculoskeletal disorders among clinical and teaching physiotherapists.

Result: Neck region was affected more among both clinical and teaching physiotherapists at a rate of clinical- 62.4% and in teaching- 63.8%. Teaching physiotherapists were affected more than clinical physiotherapists. Followed by back region was affected.i.e. lower back was affected more than upper back at the prevalence of lower back- 61% and upper back - 51.8%.the prevalence of knee was next to back region at the percentage of 29.1% and in the sidewise left knee was affected more than right knee (left knee-12.1, right knee - 10.6% and both knees -6.4%).

Conclusion: Therefore, the prevalence of work-related musculoskeletal disorders among both clinical and teaching physiotherapists were at a high rate.

Keywords: Work-related Musculoskeletal Disorders, NORDIC questionnaire, clinical physiotherapists, teaching physiotherapists, prevalence, neck region.

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INTRODUCTION

"WORK-RELATED MUSCULOSKELETAL DISORDERS" described as an inflammatory and degenerative diseases and disorders that result in pain and functional impairment. They arise when individuals are exposed to work activities and conditions that significantly contribute to their development or exacerbation, but which may not be their sole cause (WHO, 1985) [1]. Work-related musculoskeletal disorders are associated with work patterns that include: Fixed or constant body positions for a long duration, the continual repetition of movements, force concentrated on small parts of the body, such as the hand or wrist, a pace of work which does not allow sufficient recovery between movements.

Physiotherapist used to treat musculoskeletal diseases and pain, but they are at particular risk in this type of injuries, sustained during their work. Physical therapy can lead to work-related musculoskeletal disorders among Physiotherapists because of nature of their profession. Physiotherapists work in different work settings including Teaching, University hospital, public hospital, pediatric rehabilitation centers, home care, private physical therapy clinics, etc. The three most important risk factors that have been associated with work-related musculoskeletal disorders are repetitive tasks, uncomfortable postures, and high force levels. Physiotherapists also routinely perform activities such as transferring dependent patients admitted in ICU and wards, assisting with mat activities, and lifting heavy equipment in OPD. These work tasks put therapists at risk for both acute and chronic musculoskeletal disorders[2,5].

The Nordic Musculoskeletal Questionnaire (NMQ) was developed from a project funded by the Nordic Council of Ministers. The Nordic Musculoskeletal Questionnaire can be used as a questionnaire or as a structured interview. The authors concluded this was acceptable in a screening tool [10]. Cromie et al.(2000) reported that 1 in 6 physical therapists changed settings or left the profession due to Work-related Musculoskeletal Disorders [4].Glover et al.(2005) reported that 32% of physical therapists with Work-related Musculoskeletal Disorders lost work time. The rate of prevalence of these injuries in Australia, America, Britain, Europe and some parts of Middle East like Kuwait was reported [2,6,8].

So this study was planned to study the Musculoskeletal disorders among physiotherapists where only fewer surveys were available and also to our knowledge, only very few studies prevails to document the musculoskeletal injuries among Indian Physiotherapists. The main need of the study was Physiotherapists may get aware of high-risk areas for musculoskeletal disorders and to prevent the occurrence of musculoskeletal disorders in their lifetime by doing regular exercise programs and fit into their work.

The aim of the study was to find out the prevalence of work-related musculoskeletal disorders in clinical and teaching physiotherapists. The specific objectives were to find the prevalence of various Musculoskeletal disorders among Clinical Physiotherapists using Nordic questionnaire,to find gender-specific prevalence of various Musculoskeletal disorders among Clinical Physiotherapists using Nordic questionnaire,to find the prevalence of various Musculoskeletal disorders among Teaching Physiotherapists using Nordic questionnaire, to find gender-specific prevalence of various Musculoskeletal disorders among Teaching Physiotherapists using Nordic questionnaire ,to compare the overall prevalence of work-related musculoskeletal disorders between Clinical & Teaching Physiotherapists, to compare gender-specific prevalence of work-related musculoskeletal disorders between Clinical & Teaching Physiotherapists.

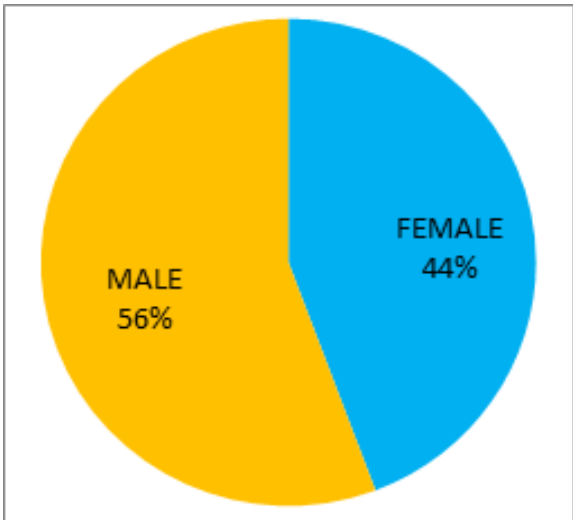
METHODOLOGY

The study design was non-experimental, and study type was the observational cross-sectional type.Institutional Ethical Committee approval and informed consent also obtained before starting the study. Inclusion criteria for selecting subjects were Physiotherapists age between 25-40 years, both male and female therapists, both clinical and teaching physiotherapists were taken with one year experience were included. Exclusion criteria for subjects were Physiotherapists with hereditary disorders, who had deformities due to previous trauma, spine fractures, osteoporosis, arthritis, neoplasm, cognitive disorder, pregnant women, any recent surgeries or recent fractures, systemic diseases like Diabetes mellitus, Hypertension and others.

PROCEDURE

Working physiotherapists were approached who were met the inclusion and exclusion criteria, the procedure was explained, and consent was taken to participate in the study. 210 samples were taken totally included both clinical and teaching physiotherapists. In clinical therapists, 141 samples were taken (males-81, females-60). In teaching physiotherapists, 69 samples were taken (males-36, females-33). The Nordic questionnaire was the questionnaire used to evaluate the musculoskeletal disorders among physiotherapists. In the questionnaire age, working experience, daily working hours were also taken as important component

Graph 1: Gender Distribtuion (n=210)



DATA ANALYSIS

Statistics were done by using IBM SPSS (version 20). Statistics were done by the answers marked in the NORDIC questionnaire by subjects. Prevalence for each region has been found among males and females physiotherapists

RESULTS

In Table 1 and Graph 2, region wise prevalence rate of clinical physiotherapists was shown. Neck region affected more in clinical physiotherapists at the percentage of 62.4%. Followed by back region was affected .i.e. lower back was affected more than upper back at the prevalence of lower back- 61% and upper back - 51.8%.The prevalence of knee was next to back region at the percentage of 29.1% and inside wise left knee was affected more than right knee(left knee-12.1, right knee - 10.6% and both knees -6.4%). The prevalence of shoulders were 28.4%, and inside wise right side, the shoulder was affected more than the left side (right side -12.8%, left side -7.8% and both shoulders -7.8%). Then the prevalence of wrist and ankles were in the same percentage of 20.6%, Prevalence of elbow region was 13.5%. And the hip region which least affected in clinical physiotherapists at the percentage of 12.8%.Sidewise prevalence of wrist, elbow and hip region were shown in Table 1.

Gender wise prevalence of clinical physiotherapists was shown in Table 1. Female clinical physiotherapists were affected more in regions of the neck, back, knee, ankle and elbow regions than male clinical physiotherapists. Male clinical physiotherapists have affected more in shoulder, wrist and hip region than female clinical physiotherapists. The prevalence rate for gender wise clinical physiotherapists was also shown in Graph 3.

In Table 2 and Graph 4, region wise prevalence rate of teaching physiotherapists was shown. As like clinical therapist Neck region as affected more in Teaching physiotherapists at the percentage of 63.8%.Then lower back was affected more than upper back in Teaching physiotherapists (lower back - 58% and upper back -52.2%). Followed by shoulder region was affected by the percentage of 34.2% and sidewise right shoulder was affected more than left shoulder(Right shoulder -21.3% and left shoulder -1.4%). And also both shoulders were also affected more at the percentage of 11.5%. The prevalence rate for knee region was 33.2% and sidewise right knee -18.8%, both knees -11.5% and left knee -2.9%.Ankle and feet prevalence rate were 17.4 % and for hip region 14.5%, and for elbows, it is 7.2%. Sidewise prevalence rate was shown in Table 4.

Gender wise prevalence of teaching physiotherapists was shown in Graph 5 and Table 2. Both males and female were equally affected in many regions only small difference were found.

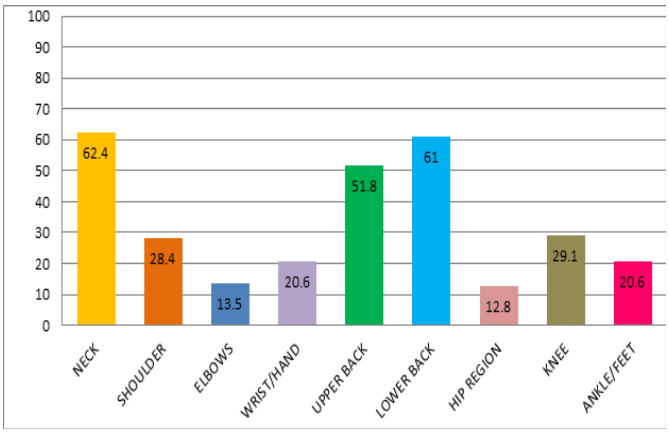
Comparison of prevalence of Musculoskeletal disorders among clinical and teaching physiotherapists was given Graph 6 and also gender wise comparison of musculoskeletal disorders were given in Graph 7 and Graph 8.

In Table 3, general prevalence among both clinical and teaching physiotherapists was given. General prevalence among both clinical and teaching physiotherapists were neck - 62.9%, lower back -60%, upper back - 51.9%, shoulder -31.4%, knee - 30.4%, wrists and hand -22.5%, ankle and feet - 19.5%, hip region - 13.4% and elbow -11.5%.

Table1: Prevalence & Gender Wise Prevalence of Ache, Pain, Discomfort & Numbness in Various Musculoskeletal Joints Among Clinical Physiotherapists in The Last 12 Months

Region	Response	Prevalence (n=141)		Prevalence Among Male (n=81)		Prevalence Among Females (n=60)	
		%	N	%	n	%	N
NECK	YES	62.4	88	55.6	45	71.7	43
SHOULDER	YES, both shoulders	7.8	11	6.2	5	10.0	6
	YES, right shoulder	12.8	18	13.6	11	11.7	7
	YES,left shoulder	7.8	11	11.1	9	3.3	2
ELBOWS	YES,both elbows	.7	1	1.2	1	10.0	6
	YES,left elbow	4.3	6	0.0	0	0.0	0
	YES,right elbow	8.5	12	9.9	8	6.7	4
WRIST/HAND	YES, both wrists/hands	6.4	9	3.7	3	10.0	6
	YES, right wrist/hand	8.5	12	11.1	9	5.0	3
	YES,left wrist/hand	5.7	8	6.2	5	5.0	3
UPPER BACK	YES	51.8	73	42.0	34	65.0	39
LOWER BACK	YES	61.0	86	59.3	48	63.3	38
HIP REGION	YES, left hip region	6.4	9	6.2	5	6.7	4
	YES, on both region	2.1	3	2.5	2	1.7	1
	YES, right hip region	4.3	6	4.9	4	3.3	2
KNEE	YES, both knees	6.4	9	6.2	5	6.7	4
	YES, left knee	12.1	17	7.4	6	18.3	11
	YES, right knee	10.6	15	9.9	8	11.7	7
ANKLE/FEET	YES,both ankles/feets	8.5	12	8.6	7	8.3	5
	YES,left ankle/feet	1.4	2	0.0	0	3.3	2
	YES,right ankle/feet	10.6	15	4.9	4	18.3	11

Graph 2: Prevalence of Musculoskeletal Disorders Among Clinical Physiotherapists (n=141)



Graph 3: Gender Wise Prevalence of Musculoskeletal Disorders Among Clinical Physiotherapists (M=81, F=60)

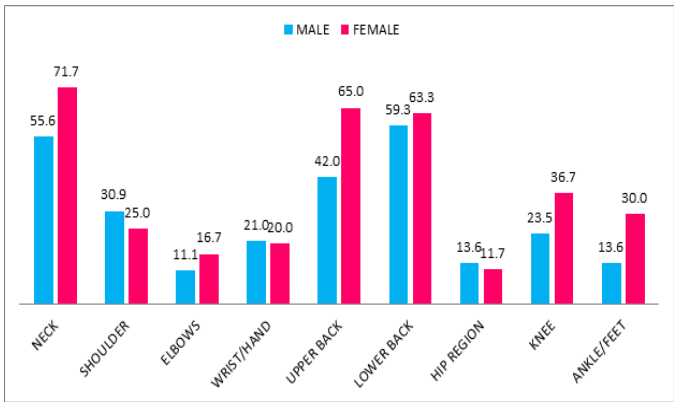
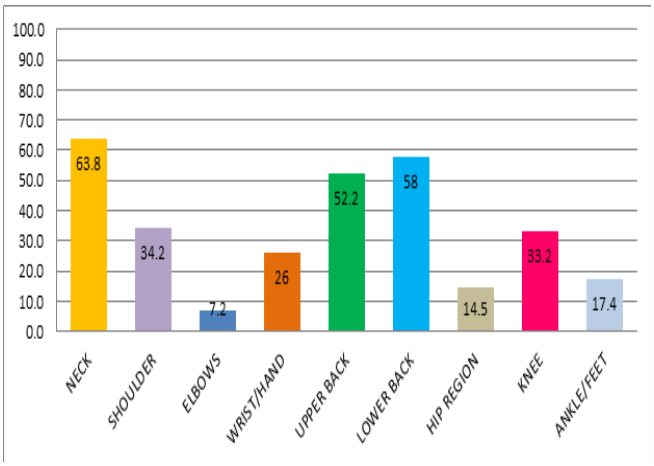


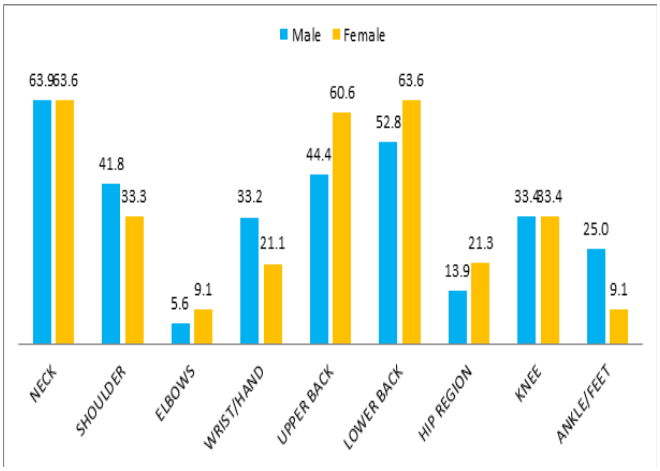
Table 2: Prevalence & Gender Wise Prevalence of Ache, Pain, Discomfort & Numbness in Various Musculoskeletal Joints Among Teaching Physiotherapists in The Last 12 Months

Region	Response	Prevalence (n=69)		Prevalence Among Males (n=36)		Prevalence Among Females (n=33)	
		%	N	%	N	%	n
NECK	YES	**63.8**	44	63.9	23	63.6	21
SHOULDER	YES, both shoulders	**11.5**	11	19.5	7	12.1	4
	YES, right shoulder	**21.3**	14	19.5	7	21.2	7
	YES,left shoulder	**1.4**	1	2.8	1	0.0	0
ELBOWS	YES,right elbow	**7.2**	5	5.6	2	9.1	3
WRIST/ HAND	YES, both wrists/hands	**4.3**	3	2.8	1	6.0	2
	YES, right wrist/hand	**21.7**	15	30.4	11	15.1	5
UPPER BACK	YES	**52.2**	36	44.4	16	60.6	20
LOWER BACK	YES	**58.0**	40	52.8	19	63.6	21
HIP REGION	YES, left hip region	**1.4**	1	2.8	1	0.0	0
	YES, on both region	**7.2**	5	8.3	3	6.1	2
	YES, right hip region	**5.8**	4	2.8	1	15.2	7
KNEE	YES, both knees	**11.5**	8	8.4	3	15.2	5
	YES, left knee	**2.9**	2	2.8	1	3.0	1
	YES, right knee	**18.8**	13	22.2	8	15.2	5
ANKLE/ FEET	YES,both ankles/feets	**10.1**	7	13.9	5	6.1	2
	YES,left ankle/feet	**5.8**	4	8.3	3	3.0	1
	YES,right ankle/feet	**1.4**	1	2.8	1	0.0	0

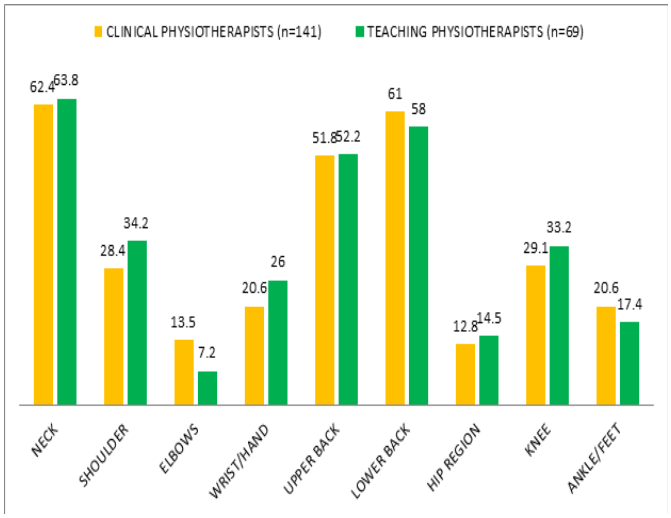
Graph 4: Prevalence of Musculoskeletal Disorders Among Teaching Physiotherapists (n=69)



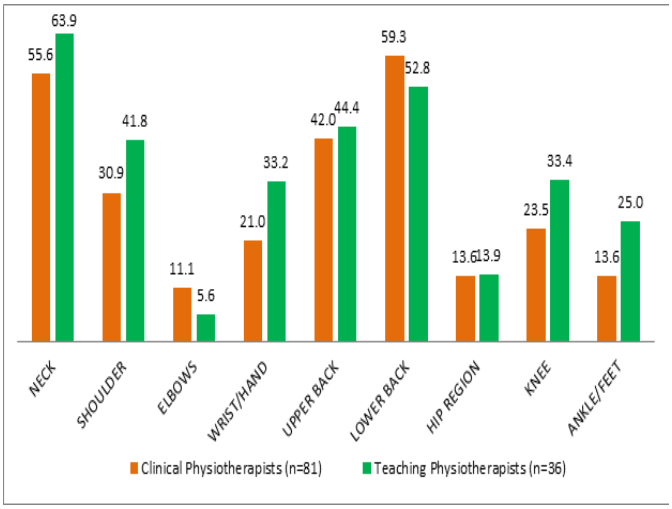
Graph 5: Gender Wise Prevalence of Musculoskeletal Disorders Among Teaching Physiotherapists (M=36, F=33)



Graph 6: Comparison of Prevalence of Work-Related Musculoskeletal Disorders Between Teaching & Clinical Physiotherapists



GRAPH 7: Comparison of Musculoskeletal Disorders Prevalence Among Males Between Clinical & Teaching Physiotherapists



Graph 8: Comparison of Musculoskeletal Disorders Prevalence Among Females Between Clinical & Teaching Physiotherapists

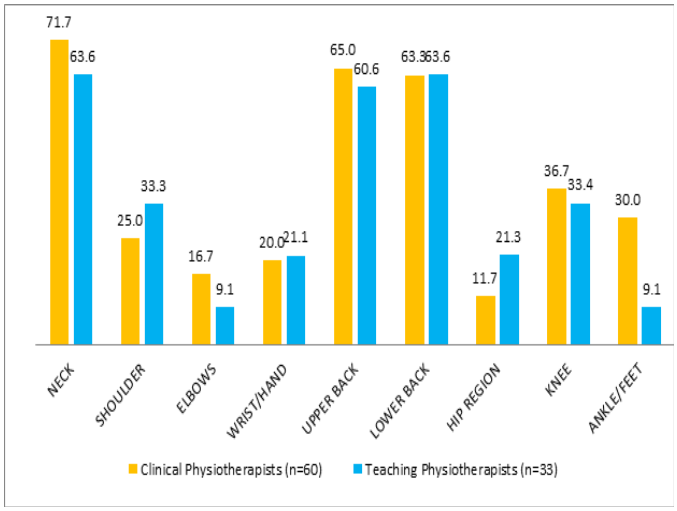


Table 3: Prevalence of Musculoskeletal Disorders Among Physiotherapists

Region	Response	Prevalence (n=210)		Prevalence Among Males (n=117)		Prevalence Among Females (n=93)	
		%	n	%	N	%	n
NECK	YES	62.9	132	58.1	68	68.8	64
SHOULDER	YES, both shoulders	10.5	22	10.3	12	10.7	10
	YES, right shoulder	15.2	32	15.4	18	15.0	14
	YES,left shoulder	5.7	12	8.5	10	2.2	2
ELBOW	YES,both elbows	.5	1	.9	1	0.0	0
	YES,left elbow	2.9	6	.0	0	6.5	6
	YES,right elbow	8.1	17	8.5	10	7.5	7
WRIST/HAND	YES, both wrists/hands	5.8	12	3.5	4	8.6	8
	YES, right wrist/hand	12.9	27	16.3	19	8.6	8
	YES,left wrist/hand	3.8	8	4.3	5	3.2	3
UPPER BACK	YES	51.9	109	42.7	50	63.4	59
LOWER BACK	YES	60.0	126	57.3	67	63.4	59
HIP	YES, left hip region	4.8	10	5.1	6	4.3	4
	YES, on both region	3.8	8	4.3	5	3.2	3
	YES, right hip region	4.8	10	4.3	5	5.4	5
KNEE	YES, both knees	8.1	17	6.9	8	9.7	9
	YES, left knee	9.0	19	6.0	7	12.9	12
	YES, right knee	13.3	28	13.7	16	12.9	12
ANKLE	YES,both ankles/feets	9.0	19	10.3	12	7.5	7
	YES,left ankle/feet	2.9	6	2.6	3	3.2	3
	YES,right ankle/feet	7.6	16	4.3	5	11.8	11

DISCUSSION

The main objective of the study was to find the prevalence of work-related musculoskeletal disorders among clinical and teaching physiotherapists. Results showed that both clinical and teaching physiotherapists were affected by work-related musculoskeletal disorders badly. Both males and females also equally affected by their work.

CLINICAL PHYSIOTHERAPISTS:

In this study, Neck region was affected more than low back area. Followed by knee (29.1%), shoulder (28.4%), both wrist and ankle at the same rate at 20.6%, elbows(13.5%) and hip at its low rate of all (12.8%). The main cause for work-related musculoskeletal disorders among clinical

physiotherapists were treating large number of patients in one day ,lifting heavy equipment and patients for routine treatment sessions, transferring patient in ICU, maintaining the same posture for a long period of treatment , manual therapy sessions, responding to patients' sudden movements, and repeated movements [3,7].

Among clinical physiotherapists, female physiotherapists were affected more by work-related musculoskeletal disorders than male physiotherapists this goes in hand with Bork et al.(1996) implicated the female gender as a potential risk factor for the occurrence of work-related musculoskeletal disorders [2,11].

Glover et al.(2005) reported a higher prevalence of work-related low back pain, neck pain, shoulder pain and wrist/hand pain among female physiotherapists [9].

It has been suggested that the usually higher prevalence of work-related musculoskeletal disorders in female physiotherapists may be related to their less height and more body weight which put them at a disadvantage during patients' treatment and transfer. Women do have a higher prevalence than men for many upper extremity musculoskeletal disorders.

These results were in contradictory with Cromie et al.(2000) reported a higher prevalence of work-related musculoskeletal disorders among male physiotherapists [4].

TEACHING PHYSIOTHERAPISTS:

In teaching physiotherapists also neck region was the most affected area more than another region at a prevalence rate of 63.8%. This may be due to maintaining neck position for a long time while reading. Followed by back region which also got affected more (upper back- 52.2%, lower back-58%). This was documented as the most affected region in all physiotherapists around the world. For teaching, it may be due to abnormal posture and prolonged standing. And also this may be due to teaching treatment techniques to students practically.

In teaching physiotherapists work-related musculoskeletal disorders were due to maintaining same postures for a long time, standing and sitting for a long time, reading books for a long time and writing on board while taking classes.

COMPARISON OF PREVALENCE WORK-RELATED MUSCULOSKELETAL DISORDERS BETWEEN TEACHING AND CLINICAL PHYSIOTHERAPISTS:

Teaching physiotherapists were affected in many regions than clinical physiotherapists. Byron E Bork et al.(1996) said that Physical therapists who worked in hospital-based settings had a greater prevalence of work-related musculoskeletal symptoms in the low back than did non-hospital-based therapists which was contradictory to this study[2]. It may be due to small samples size and work settings.

Sandul Yasobant and Paramasivan Rajkumar(2015) proved that Ergonomic hazards in workstations, such as forward bending of trunk(82.2%), neck flexion of >20°(71.4%) and prolonged standing/sitting (66%) have significantly contributed to the development of pain in back and neck among health professionals[13].

GENERAL PREVALENCE:

Neck region was affected more among physiotherapists at a rate of 62.9%. But many studies told that low back was affected more than the neck. It may be due to small sample size and work settings among different areas.

The present study found that the major ergonomic hazards for physiotherapists are a forward bending of the trunk (100%), neck flexion (95%) and prolonged standing (85%), which is consistent with findings of previous studies [8,12].

The study of Australian therapists by Cromie et al.(2000) suggested that workload is a significant factor in musculoskeletal injury [4].

Previous studies have similarly identified treating a large number of patients in a day and working in the same position for long periods of time, lifting or transferring dependent patients in ICU and performing manual therapy techniques for long durations as the work factors most commonly found to cause work-related musculoskeletal disorders among physiotherapists [3,4].

CONCLUSION

The study concluded that the Prevalence of work-related musculoskeletal disorders among clinical and teaching physiotherapists was high. Thus care should be taken, and all the physiotherapists should be made aware of these problems, and they should be advised to take necessary steps to prevent these injuries for better serving society.

We suggest the study can be done with a large number of samples and also preventive measures can be analyzed. Types of musculoskeletal disorders in a specific region can also identify in future studies.

REFERENCES

[1] Scholey M, Hair M. Back pain in physiotherapists involved in back care education. Ergonomics 1989,32(2)179-90.

[2] Bork BE, Cook TM, Rosecrane JC, Engelhardt KA, Thomason MEJ, Wauford IJ, WorlyRK. Work related musculoskeletal disorders among physical therapists. Phys Ther. 1996; 76(8):827-35.

[3] Holder NI, Clark HA, DiBlasio JM, Hughes CL, Schrpf JW, Harding L, Shepard KF. Cause, prevalence, and response to occupational musculoskeletal injuries reported by physical therapists and physical therapist assistants. Phys Ther. 1999 Jul;79(7):642-52.

[4] Cromie JE, Robertson VJ, Best MO. Work related musculoskeletal disorders in physical therapists: prevalence, severity, risks and responses. Phys Ther.2000; 80(4): 336-51.

[5] Ashfag m. kanwal S. Prevalence of work related musculoskeletal disorders among physical therapists working in Rawalpindi/Islamabad JRCDS.2013;1(2): 6-11

[6] Cromie, J.E., V.J. Robertson and M.O. Best. Work-Related Musculoskeletal Disorders and the Culture of Physical Therapy. Physical Therapy 2002;82(5):459-72.

[7] Rugelj D. Low back pain and other work-related musculoskeletal problems among physiotherapists. Applied Ergonomics. 2003 ;34(6):635-9.
[8] Salik Y, Ozcan A. Work-related musculoskeletal disorders: A survey of physical therapists in Izmir-Turkey. Musculo skeletal Disorders. 2004;5:27.
[9] Glover W, McGregor A, Sullivan C, Hague J. Work- related musculoskeletal disorders affecting members of the Chartered Society of Physiotherapy. 2005;91(3):138-147.
[10] Alexis Descatha et al. Validity of Nordic-style questionnaires in the surveillance of upper-limb work-related musculoskeletal disorders. Scand J Work Environ Health. 2007;33(1):58-65.
[11] Campo, M., S. Weiser, L.K. Koenig and M. Nordin. Work-Related Musculoskeletal Disorders in Physical Therapist: A Prospective Cohort Study with 1-Year Follow-Up. Physical therapy. 2008;88(5):608-19.
[12] Einas Al-Eisa, Syamala Buragadda et al. Work-Related Musculoskeletal Disorders: Causes, Prevalence and Response Among Egyptian and Saudi Physical Therapists. Middle East Journal of Scientific Research.2012;12(4):523-29.
[13] Sandul Yasobant, Paramasivan Rajkumar. Health of the healthcare professionals: A risk assessment study on work-related musculoskeletal disorders in a tertiary hospital, Chennai, India. International Journal of Medicine and Public Health. 2015; 5(2): 189-195.

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