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Work-related musculoskeletal disorders among plumbers

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Abstract

Work related musculoskeletal disorders are the conditions that affect the soft tissues of the body segments. In plumbing occupation, where the work is physiologically demanding and many types of tools and powered machinery are in use. The study was conducted to investigate the prevalence of MSD symptoms among the plumber workers. Fifty plumbers were randomly selected from construction sites and interviewed with Nordic Musculoskeletal Questionnaire (MSQ). The findings show that the maximum prevalence of MSD symptoms was reported in back, shoulder and hand/wrist during last 12 months and last 7 days from the time of interview. The result also shows that highest severity of pain occurred in shoulder whereas most of the burning sensations and locking symptoms were observed in hand/wrist and back respectively.

Keywords: Musculoskeletal disorders, prevalence of MSD symptoms, severity of MSD symptoms

Introduction

Musculoskeletal disorders are the most predominant, self-reported, work related illness. According to Levy and Wegman, (2000) [3], occupationally caused or Aggravated MSDs rank first among the health problems in the frequency with which they affect the quality of life. Based on lost earning, Workers compensation payment and medical payment, MSDs are more costly than any other single health disease. Work related musculoskeletal injuries generally inflicts the muscles, ligaments, tendons or nerves and occur when excessive stresses are placed on a human musculoskeletal system. A majority of these injuries are the results of repeated stress (Kroemer, 1989) [1]. In plumbing occupation, where the work is physically demanding and many types of tools and powered machinery are in use. The study was conducted to investigate the prevalence and severity of MSD symptoms among the plumber workers.

Methodology

A multistage random sampling technique was adopted to conduct the study. Total 50 plumbers were selected from 10 randomly selected construction sites in Lucknow city. Nordic Musculoskeletal Questionnaire (MSQ) (Kuorinka, 1987) [2] was used to know the prevalence of MSD symptoms and three point scale (mild=1, moderate=2, severe=3) (Vaernes *et al.*, 1988) [4] with body map was applied to know the severity of MSD symptoms in different body parts.

Results

Prevalence of MSD symptoms among plumbers

The data given in Table 1 portrays that majority of plumbers complained for back pain during last 12 months from the time of interview followed by 76.00 and 74.00 per cent respondents complained pain in knee/leg and hand/wrist respectively. Further regarding other symptoms of MSD the maximum percentage of plumbers expressing burning sensation in hand/wrist (40.00 %), numbness in knee/leg (44.00 %), tingling in hand/wrist (60.00 %), swelling in knee/leg (44.00 %) and locking in back (64.00 %) during last 12 months. In respect of last 7 days prevalence of MSD symptoms from the time of interview, identified that majority (46.00%) of respondents complained for shoulder pain followed by 34.00 per cent and 32.00 per cent respondents complained for pain in hand/wrist and back respectively. It is further revealed that majority of plumbers expressing burning sensation (8.00%) in ankle/feet, numbness (12.00 %) in hand/wrist and ankle/feet both, tingling (16.00 %) in hand/wrist, swelling (8.00 per cent) in ankle/feet and locking (10.00 %) in shoulder during the last 7 days.

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Prevalence of severity of MSD symptoms among plumbers

The data given in Table 2 shows that maximum (94.00 %) plumber workers complained about shoulder pain followed by 92.00 per cent about back pain. On the basis of severity rating, majority (46.00 %) of respondents complained sever pain in shoulder whereas, 42.00 per cent workers complained moderate pain in their hand/wrist. In case of burning symptom, majority (42.00%) of respondents complained in hand/wrist followed by 26.00 per cent observed in ankle/feet. According to severity rating of burning symptom, majority, 22.00 per cent respondents found having mild burning sensation in hand/wrist followed by 16.00 per cent having moderate burning sensation. Only 6.00 per cent respondents complained about sever burning sensation in their ankle/feet. Table 2 also revealed that majority (46.00%) of respondents complained about numbness symptom in knee/leg followed by 42.00 per cent complained in elbow/upper arm. In score of severity rating 28.00 per cent complained about moderate numbness in knee/leg, whereas, 22.00 per cent observed mild numbness in hand/wrist and back both. Only 10.00 per cent respondents complained about sever numbness in their ankle/feet. Further in case of tingling symptom 66.00 per cent respondents complained about tingling problem in hand/wrist and knee/leg whereas, 36.00 per cent respondents were observed moderate tingling in knee/leg. Only 8.00 per cent respondents complained sever tingling problem in their

hand/wrist. Similarly in score of swelling problem, majority (46.00%) of respondents complained swelling in knee/leg followed by 36.00 per cent in hand/wrist. On the basis of severity rating 30.00 per cent respondents complained about mild swelling in knee/leg whereas, 14.00 per cent complained about moderate swelling in hand/wrist and ankle/feet both. Only 4.00 per cent respondents were identified as having severe swelling in their hand/wrist and knee/leg both. It is also apparent from the Table 2 that majority (64.00%) of plumber respondents complained about locking symptom in their back followed by 58.00 per cent in knee/leg. On the basis of severity distribution, 40.00 per cent respondents complained moderate locking problem in shoulder whereas, 34.00 per cent observed having mild swelling in back. Only 10.00 per cent respondents complained about severe locking problem in their elbow/upper arm.

It can be concluded from the study that maximum MSD symptoms were observed in back, shoulder, hand/wrist and ankle/feet during the last 12 months and last 7 days from the time of interview. It was also observed that maximum respondents were suffering from severe pain occurred in shoulder whereas, severe burning and locking symptoms appeared in hand/wrist and back respectively. Remaining other MSD symptoms such, numbness, tingling and swelling were mostly observed in knee/leg among plumber respondents.

Table 1: Prevalence of MSD symptoms among plumbers during past one and 7 days, N = 50

S. N	Body parts	Last 12 months						Last 7 days					
		Pain	Burning	Num- bness	Ting- ling	Swell- ing	Locking	Pain	Burning	Num- bness	Ting- ling	Swell- ing	Locking
1.	Neck	31 (62.00)	-	6 (12.00)	22 (22.00)	2 (4.00)	8 (16.00)	5 (10.00)	-	-	-	-	2 (4.00)
2.	Shoulder	34 (68.00)	4 (8.00)	10 (20.00)	2 (4.00)	7 (14.00)	22 (44.00)	23 (46.00)	1 (2.00)	1 (2.00)	-	1 (2.00)	5 (10.00)
3.	Elbow/upper arm	31 (62.00)	3 (6.00)	21 (42.00)	13 (26.00)	6 (12.00)	18 (36.00)	6 (12.00)	-	4 (8.00)	2 (4.00)	1 (1.00)	3 (6.00)
4.	Hand/Wrist	37 (74.00)	20 (40.00)	20 (40.00)	30 (60.00)	17 (14.00)	22 (44.00)	17 (34.00)	2 (4.00)	6 (12.00)	8 (16.00)	2 (4.00)	3 (6.00)
5.	Back	40 (80.00)	3 (6.00)	17 (34.00)	5 (10.00)	5 (10.00)	32 (64.00)	16 (32.00)	-	2 (4.00)	-	-	4 (8.00)
6.	Hip / Thigh	27 (54.00)	-	13 (26.00)	2 (4.00)	8 (16.00)	20 (42.00)	6 (12.00)	-	2 (4.00)	-	-	2 (4.00)
7.	Knee / Leg	38 (76.00)	8 (16.00)	22 (44.00)	29 (58.00)	22 (44.00)	29 (58.00)	7 (14.00)	3 (6.00)	4 (8.00)	2 (2.00)	3 (6.00)	6 (12.00)
8.	Ankle / Fact	23 (46.00)	12 (24.00)	15 (30.00)	15 (30.00)	16 (32.00)	9 (18.00)	2 (4.00)	4 (8.00)	6 (12.00)	2 (4.00)	4 (8.00)	1 (2.00)

(Figure given in parenthesis denote percentage)

Table 2: Prevalence and severity rating of MSD symptoms among Plumbers, N=50

S. N.	Body Parts	Pain			Burning			Numbness					
		Total No.	Severity			Total No.	Severity			Total No.	Severity		
			M ₁	M ₂	S		M ₁	M ₂	S		M ₁	M ₂	S
1.	Neck	34 (68.00)	12 (24.00)	18 (36.00)	4 (8.00)	-	-	-	6 (12.00)	2 (4.00)	3 (6.00)	1 (2.00)	
2.	Shoulder	47 (94.00)	8 (16.00)	16 (32.00)	23 (46.00)	4 (8.00)	2 (4.00)	2 (4.00)	-	10 (20.00)	4 (8.00)	4 (8.00)	2 (4.00)
3.	Elbow/Upper arm	35 (70.00)	18 (36.00)	11 (22.00)	6 (12.00)	3 (6.00)	2 (4.00)	1 (2.00)	-	21 (42.00)	7 (14.00)	9 (18.00)	4 (8.00)
4.	Hand / Wrist	43 (86.00)	7 (14.00)	21 (42.00)	15 (30.00)	21 (42.00)	11 (22.00)	8 (16.00)	2 (4.00)	20 (40.00)	11 (22.00)	9 (18.00)	-
5.	Back	46 (92.00)	11 (22.00)	19 (38.00)	16 (32.00)	3 (6.00)	2 (4.00)	1 (2.00)	-	18 (36.00)	11 (22.00)	7 (14.00)	-
6.	Hip / Thigh	31 (62.00)	13 (26.00)	12 (24.00)	6 (12.00)	-	-	-	-	14 (28.00)	9 (18.00)	4 (8.00)	1 (2.00)
7.	Knee / Leg	40 (80.00)	18 (36.00)	15 (30.00)	7 (14.00)	10 (20.00)	5 (10.00)	3 (6.00)	2 (4.00)	23 (46.00)	7 (14.00)	14 (28.00)	2 (4.00)
8.	Ankle / Feet	23 (46.00)	12 (24.00)	9 (18.00)	2 (4.00)	13 (26.00)	6 (12.00)	4 (8.00)	3 (6.00)	16 (32.00)	4 (8.00)	7 (14.00)	5 (10.00)

(Figure given in parenthesis denote percentage)

(M₁ = Mild, M₂ = Moderate, S = Sever)

Table 2: Contd.....

S. N.	Body Parts	Tingling			Swelling			Locking					
		Total No.	Severity			Total No.	Severity			Total No.	Severity		
			M ₁	M ₂	S		M ₁	M ₂	S		M ₁	M ₂	S
1.	Neck	11 (22.00)	8 (16.00)	3 (6.00)	-	2 (4.00)	2 (4.00)	-	-	10 (20.00)	5 (10.00)	3 (6.00)	2 (4.00)
2.	Shoulder	2 (4.00)	1 (2.00)	1 (2.00)	-	7 (14.00)	3 (6.00)	4 (8.00)	-	24 (48.00)	2 (4.00)	20 (40.00)	2 (4.00)
3.	Elbow/Upper arm	16 (32.00)	2 (4.00)	12 (24.00)	2 (4.00)	6 (12.00)	4 (8.00)	2 (4.00)	-	20 (40.00)	4 (8.00)	11 (22.00)	5 (10.00)
4.	Hand / Wrist	33 (66.00)	12 (24.00)	17 (34.00)	4 (8.00)	18 (36.00)	9 (18.00)	7 (14.00)	2 (4.00)	22 (44.00)	7 (14.00)	12 (24.00)	3 (6.00)
5.	Back	5 (10.00)	3 (6.00)	2 (4.00)	-	5 (10.00)	3 (6.00)	2 (4.00)	-	32 (64.00)	17 (34.00)	11 (22.00)	4 (8.00)
6.	Hip / Thigh	2 (4.00)	1 (2.00)	1 (2.00)	-	8 (16.00)	5 (10.00)	3 (6.00)	-	21 (42.00)	10 (20.00)	7 (14.00)	4 (8.00)
7.	Knee / Leg	33 (66.00)	12 (24.00)	18 (36.00)	3 (6.00)	23 (46.00)	15 (30.00)	6 (12.00)	2 (4.00)	29 (48.00)	15 (30.00)	11 (22.00)	3 (6.00)
8.	Ankle / Feet	15 (30.00)	4 (8.00)	7 (14.00)	3 (6.00)	17 (34.00)	10 (20.00)	7 (14.00)	-	9 (18.00)	6 (12.00)	3 (6.00)	-

(Figure given in parenthesis denote percentage)

(M₁ = Mild, M₂ = Moderate, S = Sever)

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