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INCIDENCE OFJOB-RELATED MUSCULOSKELETAL SYSTEM AILMENTS OF HOSPITAL EMPLOYEES IN TERMS OF WORKER SAFETY

Abstract:

The aim of this study, in terms of worker safety, is to determine the prevalence of job-related musculoskeletal ailments in in-patient treatment institutions, and to investigate the factors causing these conditions.
Importance: Job-related musculoskeletal conditions, one of the most important causes of job related ailments in employees, occupy an important place among job-related health problems. Also in hospitals, musculoskeletal conditions make up a significant proportion of job-related ailments. The study was carried out by administering, to 53 participants face to face, 10 questions from the "Cornell Musculoskeletal Discomfort Questionnaire" measuring descriptive features; 10 questions evaluating workplace conditions; and 8 questions identifying the musculoskeletal ailments. 45 of the participants were female and 8 male. In data analysis, SPSS 20.0 was used. Pain appearance prevalence in the last 7 days was identified as 77.4% for lower back pain; 73.6% for neck pain, and 60.4% for back pain. It was observed that the capacity for work was negatively affected in 77.4% (n = 41) cases of lower back pain; 73.6% (n = 39) of neck pain; 58.5% of back pain; and 39.6% of right shoulder discomfort. In spite of this, it was identified that there were only7 nurses (13.2%) whose musculoskeletal discomfort was diagnosed by a physician. It was determined that more than 50% of nurses adopted incorrect positions in almost all situations related to body mechanics. It was concluded that the highest pain prevalence in the nurses was lower back pain with 77.4%, followed by neck pain with 58.5% and back pain with 58.5%. It was determined that among the nurses, those having pain throughout the last working week, experienced medium intensity pain, and those feeling pain, aches, or discomfort experienced minimal decrease in their capacity for work.

Keywords:

Employee Safety, Hospital Employees, Musculoskeletal System ailments, Occupational Diseases, Nurses

JEL Classification: I10, I12, I19

1. INTRODUCTION

There has come out a variety of problems relating to the health and safety of the employees within the institution in parallel to the technological advancements in the world and in our country. The problems, which were underrated in the beginning gained importance as they jeopardized the work productivity and the institution, and it is found out that it should be thought over. Job safety is the whole of the systematic studies, which are followed for the protection from the danges resulted in production and the life endagering environments in the work life (Sabancı 2001; akt: Çopur et all,2006:3).

The disease, which causes someone to suffer because of his or her job, is called “occupational disease”. The bad working conditions, injuring the person working at that job within a particular period, causing him to permanently or temporarily suffer both physically and mentally, are the most prominent characteristics of the occupational disease (Önder et al.,2011:33). Occupational diseases are definitely possible to be protected from, once necessary precautions are taken (Bilir,1997; akt: İlhan et al.,2006: 434). In the year 2004, 83.80 occupational accident and 384 occupational disease occured, 1693 people with insurance became constantly disabled due to occupational accident and disease, and 843 people with insurance died in Turkey (SGK (Social Security Institution) activity report, ,2004; akt: İlhan et al.,2006:434). However, in the conducted study, it is seen that the employees did not have enough knowledge on occupational accidents and diseases (Zencir et al.,1994; akt: İlhan et al.,2006:434). Back pain, neck pain, tennis elbow, shoulder tendinitis and carpal tunnel syndrome are the most common musculoskeletal system ailments based on occuptaional diseases (Akbal et al. 2012, Gatchel and Schultz 2012; akt: Bilgiç,2013:12)

Job related musculoskeletal ailments are generally studied under two main titles: 1- Upper extremities diseases (neck, shoulder, elbow, hand and wrist), 2- Back diseases (Yılmaz et all.,2006:16)

Rates of work injuries in health care workers are equal to or higher than those of workers in heavy industry and other occupations that are traditionally considered hazardous. National data compiled by the Bureau of Labor Statistics (BLS) show that the rate of work-related injury or illness requiring medical treatment or lost work was 8.8 per 100 fulltime hospital workers, and 13.5 per 100 among nursing home workers in 2001 (BLS, 2002). These data can be compared to national data on work injuries in 2001 showing an annual rate of work-related injuries and illnesses of 4.0 per 100 full-time workers in mining, 7.9 per 100 workers in construction, and 8.1 per 100 workers in manufacturing (BLS, 2002; akt: Evanoff 2003:451).

Musculoskeletal ailments take place in muscles, nerves, tendons, cartilages, ligaments, joining points and disks (spine). Skeletal and muscular system sendromes consist of common bodily movements such as bending, standing, holding, grasping, twisting and stretching (Akay et al.;2003:74). Musculoskelatal ailments are seem to be the most common job related disease (50% of the job related disease cases). Every one employee out of four in Europe complain about back (24,7%) and muscle (%22,8) pain (Babayiğit and Kurt;2013:154).

In a study conducted in America showed that the direct and indirect expenditure that musculoskeletal system ailments brought to the industry cost $13-$14 billion in the year 1997. As big as 42% of the occupational diseases consisted of

musculoskeletal system ailments (NIOSH;1997, akt: Akay et al.;2003:75). 85% of the employees in England think the musculoskeletal system has the biggest risk of disease and injury. 74% of the workers state job related musculoskeletal system ailments and stress, which is known to be closely related to it, as an important risk. With being seen often and in an accelarating level along with the awareness of the employees draw attention to the job related musculoskeletal ailments (Türkkan; 2009:102).

In a study conducted in Turkish city of Samsun; 62% of the 305 physicisans that participated the study stated a complaint related with a musculoskeletal system at least in one region, and it is found out that those complaints were from waist (50,3%), neck (49,7%), back (38,6%), shoulder (38,6%) respectively (Babayiğit and Kurt; 2013:154)

In the studies conducted within different industries, it is attested that as a result of the application of a comprehensive protection attempts, each dollar spend on it made savings between 80-2220 dollars (Özcan; 2006:41). In order to be protected against job related musculoskeletal ailments, the governments are forced to develop urgent and effective policies against it due to the increasing financial and legal pressures in developed countries. A societal consciousness on protection and ergonomy has developed, and ergonomy training along with the erogonomical attempts has become widespread and started to be used (Özcan; 2006:41).

Various musculoskeletal ailments in employees are also considered as occupational diseases by the laws in our country, however it is not adequately considered by the employers, employees and doctors. The studies on the frequency, the risk factors, work day loss, insurance compensations, expenditur and the effectiveness of the protection training and ergonomical attempts of musculoskeletal ailments are very inadequate (Özcan; 2006:41).

2. METHOD

This study is planned as a cross-sectional study, in which the musculoskeletal ailment prevalances are analyzed by the nurses workin in the inpatient treatment hospitals.

It includes 10 questions concerning the age, marital status, children status and number, the school of graduation, the year of graduation and the duration of nursing for the nurses within the research sample.

There are 10 questions for the nurses in the research sample concerning the number and durations of the nightshifts, how many patients they worked in day-night shifts, working condition with or without help in cases that requires strength like turning the patients or carrying them over the bed, the most used body posture and some bodily mechanics.

There is a chapter with 8 questions including whether the nurses who are part of the research sample with ailments (pain, numbness etc.) from the last year in the neck, shoulder, back, elbow, hand/wrist, waist, hip, knee, foot/ankle visited the doctor and whether they could perform their daily activities (job, housework etc.).

In determining the musculoskeletal ailments, pain, the level of the pain and 7 day long prevelance, a Turkish validity and reliability orientation of “Cornell Musculoskeletal Discomfort Questionnaire” (İlçe, 2007) is used. Cornell Musculoskeletal Discomfort Questionnaire is a scale questioning the pain, ache or

discomforts in the prior week on 18 differnet body zones with 54 questions on the body diagram map. In the lines of the scale are body parts referring to the diagram, and in the columns are the level and the volume of the discomforts and their effect on the work foce. The level of the discomfort changes are valued between never (0) and everyday constantly(5), the volume changes between little (1) and a lot(3); and the effect on the labor changes between never (0) and very much (2) and they consist of right and left lower categories in the extremity parts. In determining the pain level in order to find out the prevalance and the frequency of the musculoskeletal discomfort, the “mid-level discomforting” level is taken as a threshold level.

The research took place at a private hospital within the city boundaries of Konya. The population of the research consists of 74 personnel, working as a universe at the forementioned hospital. 53 nures out of 74 nurses from the aforementioned hospital have been taken to the sample. 21 nurses has stayed out of the sample for various reasons. The data of the research is acquirede with the help of the nurse data collection form, which has been created by the researcher via analyzing the related literature and is filled out by the nurses**.** Adata coding of the reseach has been done in the SPSS (Statistical Programme for Social Sciences) 20.0 program and evaluated statistically.

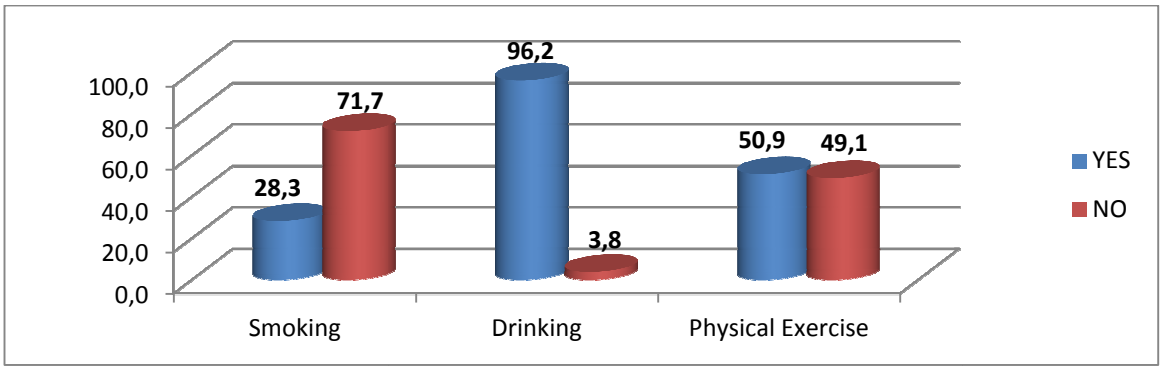
3. FINDINGS

The research has taken place in Konya Ticaret Borsası Kizilay Hospital. The research has been conducted with the 53 nurses of the related hospital.

Table 1: Distribution of the Nurses Based on Their Some Socio-Demographic Qualities

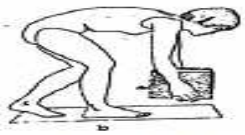
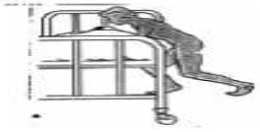
Gender	**Number**	**%**	**Marital Status**	**Number**	**%**
Woman	45	84,9	Married	18	34,0
Man	8	15,1	Single	35	66,0
Age			**School of Graduation**		
18-29	38	75,5	Vocational School of Health	29	54,7
30-40	12	9,0	Associate Degree	13	24,5
≥41	3	5,5	Undergraduate	11	20,8
TOTAL	**53**	**100**		**53**	**100**

Table 2: Distribution of the Nurses Based on Their Healthy Life Style Behavior Characteristics



While anlayzing the distribution of the nurses based on their healthy life style behavior characteristics (table 2); it is indicated that 71,7% of the nurses do not smoke (n:38), but 28,3% of the nurses smoke (n: 15). When it is analyzed whether the nurses drink or not, it is found out that 96,2% of the nurses do not drink (n: 51), but 3,8% smoke (n:2). Beisdes concerning one of the most healthiest life style behavior characteristics, 49,1% of them stated that they do not do any physical exercise (n:26), but 50,9% do physical exercise (n:27).

Table 3: Distribution of the Nurses Based on Some of Their Positions Related with the Body Mechanics

	Wrong Position		Right Position	
Standing Position	 Standing tall		 Hunched back	
	N	%	N	%
	37	69,8	16	30,2
Walking Position	 Straight step		 Hunched step	
	N	%	N	%
	19	35,8	34	64,2
Carrying	 Carrying with a straight back		 Carrying with a bent back	
	N	%	N	%
	7	13,2	46	86,8
Lifting	 Lowering with bent knees		 Lowering with unbent knees	
	N	%	N	%
	6	11,3	47	88,7
Working in a standing position	 Grasping from the front		 Grasping from the sides	
	N	%	N	%
	3	5,7	50	94,3
Sitting	 Sitting tall		 sitting bent	
	N	%	N	%
	15	28,3	38	71,7
Pulling the patient	 Pulling the patient by getting nearer		 Pulling the patient from a distance	
	N	%	N	%
	12	22,6	41	77,4
Total	53	100	53	100

When the positions related with the body mechanics that nurses use mostly

are analyzed (table 3), they stated that 69,8% preferred standing (n:37) while standing tall, 35,8% preferred straight step in walking position (n: 19), 11,3% preferred lowering with bent knees (n: 6), 5,7% preferred grasping from the front while standing (n: 3), 13,2% preferred a straight back while carrying (n: 7), 28,3% preferred sitting straight while sitting (n: 15). In the case of pulling/positioning the patient, 22,6% of the stated that they preffered pulling the patient from a distance (n: 12), while 77,4% preferred leaning their knees to the bed giving the weight on their knees and getting close to the patient.

Table 4: The Distribution of Applications of Care That Might Cause Mechanical Compulsions in Terms of Their Operating Status With/Without Help

Application of Care	By myself		With my nurse friends		With the help from the personnel		Personnel Only		Does not do it		Total	
	N	%			N	%	N		N	%	N	%
Mobilization	14	26,4	12	22,6	6	11,3	2	3,8	19	35,8	53	100
Bath	1	1,9	13	24,5	11	20,8	8	15,1	20	37,7	53	100
Giving Position	9	17,0	13	24,5	16	30,2	2	3,8	13	24,5	53	100
Changing Diapers	3	5,7	3	5,7	14	26,4	11	20,8	22	41,5	53	100
Changing Sheets	6	11,3	1	1,9	9	17,0	18	34,0	19	35,5	53	100
Transportation	0	0,0	11	20,8	23	43,4	5	9,4	14	26,4	53	100
Pressure Sore Care	13	24,5	16	30,2	4	7,5	4	7,5	16	30,2	53	100
Active-Passive Exercise	12	24,5	11	20,8	7	13,2	3	5,7	19	35,8	53	100
Giving a Bedpan	10	18,9	2	3,8	9	17,0	12	22,5	20	37,7	53	100
Urinary Catheter Care	14	26,4	16	30,2	2	3,8	2	3,8	19	35,8	53	100
Other (Carrying Monitor/ Perfusion)	0	0,0	0	0,0	0	0,0	0	0,0	53	100	53	100

Operating Status With/Without Help in Some Applications of Care That Might Cause Mechanical Compulsions is given in table 4. According to this table it is determined that personnel was aided in the rates of 30,2% for one of the most risky activities that is positioning the patient (n: 16), 43,4% for the patient transportation (n:23), 20,8% for giving bath (n:11), 17,0% for giving a bedpan (n: 9), 7,5% for the pressure sore care (n: 4), 17,0% for changing sheets (n: 9), 26,4% for changing diapers (n: 14) and 11,3% for the patient mobilization (n: 6). It is seen that nurses by themselves make active-passive exercises at the rate of 24,5% (n: 12), give pressure sore care at the rate of 24,5 % (n: 12), and give care for the urinary catheter at the rate of 26,4% (n: 14). Giving position occurs 17,0% alone (n: 9) and 24,5% with an aid from a nurse friend.

3.1. Musculoskeletal Diseases and Ailments

Table 5: You are diagnosed with a musculoskeletal ailment by the doctor

	Number	Percentage	Valid Percentage	Cumulative Percentage
No	46	86,8	86,8	86,8
Yes	7	13,2	13,2	100,0
Total	53	100,0	100,0	

If we are to look at the analysis of the musculoskeletal ailment diagnosed by the doctor (Tablo 5); it is seen that while 13,2% is diagnosed with a musculoskeletal ailment by the doctor (n: 7); 86,8% is not diagonsed with any musculoskeletal ailment (n: 46).

Table 6: Musculoskeletal disease table

	Number	Percentage	Valid Percentage	Cumulative Percentage
None	46	86,8	86,8	86,8
Herniated Disk	3	5,7	5,7	92,5
Herniated disk-Muscle Tear in the Shoulder	1	1,9	1,9	94,3
Cervical Discal Hernia	2	3,8	3,8	98,1
Mechanical Back Pain	1	1,9	1,9	100,0
Total	53	100,0	100,0	

It is analyzed which were the diagnosed musculoskeletal ailments by the doctors for the nurses. While the herniated disk seems to have the highest rate with the percentage of 5,7% (n: 3), cervical discal hernia has the second highest prevalance with 3,8% (n: 2), and herniated disk-muscle tear in the shoulder and mechanical back pain have the rate of 1,9% (n: 1).

Table 7: Tanısı konulmuş kas-iskelet rahatsızlıkları rapor durumu

	Number	Percentage	Valid Percentage	Cumulative Percentage
No	50	94,3	94,3	94,3
Yes	3	5,7	5,7	100,0
Total	53	100,0	100,0	

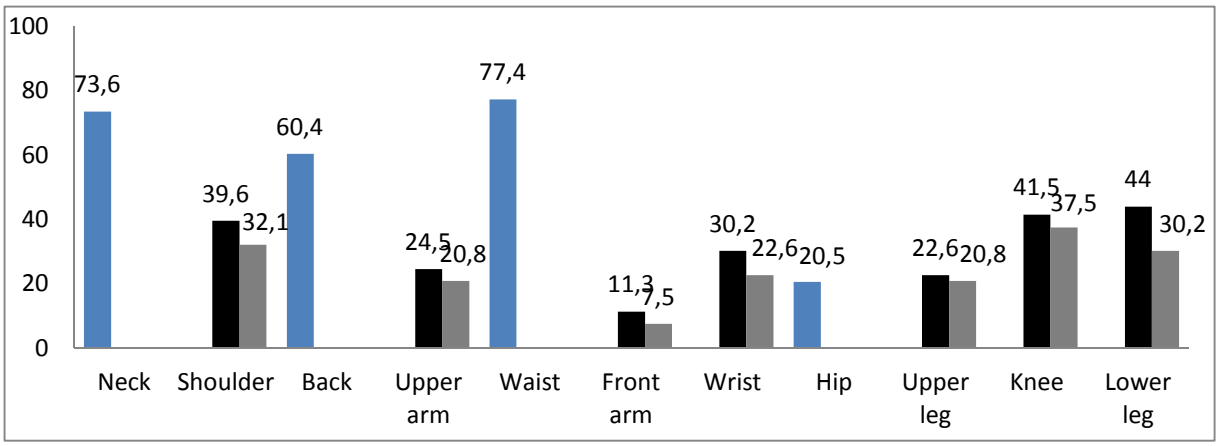
If we are to look at the analysis of the medical report usage situation of the nurses, who are diagnosed with the disease by the doctor; it is seen that 5,7% (n:3) of them took a medical report due to a musculoskeletal ailment and this caused a labor loss.

Table 8: Analyzing The Pain, Ache or Discomfort Situation of the Nurses During Their Last Week of Work by the Help of Cornell Musculoskeletal Discomfort Questionnaire

Body Parts		Never		1-2 Times Last Week		3-4 Times Last Week		Once a Day Last Week		Last Week Every Day Many Times		Total	
		N	%	N	%	N	%	N	%	N	%	N	%
Neck		14	26,4	13	24,5	12	22,	4	7,5	10	18,9	53	100
Shoulder	Right	32	60,4	6	11,3	10	18,	1	1,9	4	7,5	53	100
	Left	36	67,9	5	9,4	7	13,	0	0,0	5	9,4	53	100
Back		21	39,6	12	22,6	7	13,	7	13,2	6	11,3	53	100
Upper	Right	40	75,5	8	15,1	2	3,8	3	5,7	0	0,0	53	100
	Left	42	79,2	4	7,5	4	7,5	3	5,7	0	0,0	53	100
Back		12	22,6	15	28,3	11	20,	7	13,2	8	15,1	53	100
Front	Right	47	88,7	6	11,3	0	0,0	0	0,0	0	0,0	53	100
	Left	49	92,5	4	7,5	0	0,0	0	0,0	0	0,0	53	100
Wrist	Right	37	69,8	13	24,5	0	0,0	2	3,8	11	1,9	53	100
	Left	41	77,4	7	13,2	2	3,8	3	5,7	0	0,0	53	100
Hip		42	79,5	4	7,5	1	1,9	3	5,7	3	5,7	53	100
Upper	Right	41	77,4	5	9,4	1	1,9	4	7,5	2	3,8	53	100
Leg	Left	42	79,2	5	9,4	0	0,0	4	7,5	2	3,8	53	100
Knee	Right	31	58,5	10	18,9	5	9,4	3	5,7	4	7,5	53	100
	Left	33	62,5	7	13,2	5	9,4	4	7,5	4	7,5	53	100
Lower	Right	35	66,0	4	7,5	4	7,5	7	13,2	3	5,7	53	100
	Left	37	69,8	4	7,5	2	3,8	7	13,2	3	5,7	53	100

Musculoskeletal system ailments, which are diagnosed to the nurses by the doctor, are determined (table 8). However, in order to determine the musculoskeletal ailments which are not diagnosed or not in the phase for diagnosis and which occur during the last week of work, Cornell Musculoskeletal Discomfort Questionnaire is used. According to this when the pain, ache or discomfort situation is analyzed it is seen that waist, back and neck pain are the most common ones (table 8).

Graphic 1: 7 Day Long Pain Prevalance of the Nurses with the Cornell Musculoskeletal Discomfort Questionnaire



When the pain prevalance of the nurses is analyzed with the musculoskeletal discomfor in Graphic 1, it is observed that the majority of the complaints come from

the back pain with 74,4%; after that comes the neck pain with 73,6%, back pain with 60,4 %, right lower leg pain with 44 %, right knee pain with 41,5 %. It is stated that the pain complaints in the extremities come mostly from the right side and the reason for this is thought to be that the majority of the people use their right hand/right side dominantly.

Table 9: Analyzing with the Cornell Musculoskeletal Discomfort Questionnaire

The Level of Discomfort and Effectiveness of the Workforce of the Nurses That Feel Pain, Ache or Discomfort During the Last Week of Work

Body Parts		The Level of Discomfort for the Ones Feeling Pain, Ache or Discomfort During the Last Week of Work						The Effectiveness of the Workforce for the Ones Feeling Pain, Ache or Discomfort During the Last Week of Work							
		Extremely Little Discomfort		Medium Discomfort		Very Discomfortin g		Unimportant		Very little effect		Big effect		Total	
Neck		12	22,6	20	37,7	7	13,2	18	34,0	20	37,7	1	1,9	39	73,6
Shoulder	Right	10	18,	9	17,	2	3,8	10	18,9	10	18,	1	1,9	2	39,6
	Left	8	15,	8	15,	1	1,9	7	13,2	10	18,	0	0,0	1	32,1
Back		11	20,	14	26,	6	11,3	18	34,0	11	20,	2	3,8	3	58,5
Upper arm	Right	6	11,	5	9,4	1	1,9	7	13,2	5	9,4	0	0,0	1	22,6
	Left	3	5,7	6	11,	1	1,9	3	5,7	7	13,	0	0,0	1	18,9
Waist		17	32,	16	30,	8	15,1	20	37,7	18	34,	3	5,7	4	77,4
Lower arm	Right	5	9,4	1	1,9	0	0,0	3	5,7	3	5,7	0	0,0	6	11,3
	Left	3	5,7	1	1,9	0	0,0	2	3,8	2	3,8	0	0,0	4	7,5
Wrist	Right	10	18,	5	9,4	1	1,9	11	20,8	3	5,7	2	3,8	1	30,2
	Left	8	15,	4	7,5	0	0,0	8	15,1	2	3,8	2	3,8	1	22,6
Hip		4	7,5	4	7,5	3	5,7	4	7,5	4	7,5	3	5,7	1	20,8
Upper Leg	Right	7	13,	4	7,5	1	1,9	6	11,3	5	9,4	1	1,9	1	22,6
	Left	6	11,	4	7,5	1	1,9	6	11,3	4	7,5	1	1,9	1	20,8
Knee	Right	10	18,	7	13,	5	9,4	9	17,0	11	20,	2	3,8	2	41,5
	Left	8	15,	7	13,	5	9,4	6	11,3	12	22,	2	3,8	2	37,7
Lower Leg	Right	4	7,5	11	20,	3	5,7	8	15,1	9	17,	1	1,9	1	34,0
	Left	3	5,7	10	18,	3	5,7	8	15,1	7	13,	1	1,9	1	30,2

In Table 9, the level of discomfort and effectiveness of the workforce of the nurses that feel pain, ache or discomfort during the last week of work is analyzed. It is seen that the ones that had pain during the last week of work experienced medium discomfort in all of their bodies. It is determined that the ones, who felt pain, ache or discomfort during the week of work had very little affect on their workforce.

4. DISCUSSION AND RESULT

Muculoskelatal diseases can cause health depravity, workforce loss and decreasing efficiency of the nurses, economic loss for the institution, increase of accidents and patients that are cared by the nurses facing risks (Karadağ, 1994; akt: İlçe 2007:140).

It is found out that 5,7 % of the nurses who are diagnosed by the doctor, took a medical report due to their musculoskeletal ailments and this caused a work loss. It is also determined in the study of İlçe that in the past year 6,96% of the nurses (14/201), who are diagnosed with the musculoskeletal ailment by the doctor took leave and medical report. It is found that the ones using leave and medical report have 1280 days and 0.02 work day loss (İlçe,2007:140).

It has become clear that the biggest pain prevalance of the nurses belonged to waist pain with 77,4%, and this is followed by neck pain with 73,6% and back pain with 58.5%. When the pain, ache or discomfort situation of the nurses during the last week of work is analyzed in İlçe's study, it has been found that mostly waist, back, neck and feet pain are encountered.

When the pain prevalance of the nurses are analyzed, it is determined that the mostly complained pain belonged to the back pain (71,1%) band this is followed by right foot pain (55,7%), back pain (54,7%), neck pain (54,2%), shoulder pain (41,8%) (İlçe,2007:129). According to the study by Tunç with 80 nurses, 75% of them complain about musculoskeletal ailments. When the pain prevalance in nurses is analyzed however it is seen that the most complained pain belonges to waist pain with 53,3% and this is followed by neck pain with 20% and knee pain with 18,3% (Tunç,2008:20). The highest prevalence of Work-related musculoskeletal disorder cases was recorded for the lower back (49.7%), followed by shoulders (38%), and neck (35%) (Pınar.2010:1870).

Working conditions must be such that the health of workers is not endangered. The resources of healthy workers should be reinforced. Workers at risk must be supported by protective measures. Workers who have already MSDs must be helped back into work. A participatory approach is particularly promising. Often measures of risk prevention and health promotion need to be linked in order to achieve the goal (Luxembourg, Publications Office of the European Union,s.136: 2011)

The musculoskeletal system ailments can be prevented to a great extent. When the reasons for these ailments are analyzed it is foreseen that many of the diseases can be prevented especially with the betterment of the ergonomy. After a detailed analysis of the problems caused by the individuals and institutions, we advise you to actualize the preplanned steps. We think this study might contribute to the plans in preventing the musculoskeletal ailments.

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