

Investigation of the Orthopedic Problems that Affect Productivity at Establishments

Murat Korkmaz¹, Bülent Kiliç², Ali Serdar Yücel^{3*}, Ayça Gürkan⁴, Ahmet Atalay⁵ and Isa Çiftçi⁶

¹*Güven Group Inc. Finance Manager, Istanbul, Turkey*

²*Orthopaedist, Tekirdag, Turkey*

^{3,6}*Firat University Faculty of Sports Sciences, Elazig, Turkey*

⁴*Ege University Faculty of Nursing Psychiatry, Izmir, Turkey*

⁵*Ardahan University School of Physical Education and Sports, Ardahan, Turkey*

^{*}*E-mail: alsetu_23@hotmail.com*

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ABSTRACT This study is an applied research that examines the impact of orthopaedic problems that the employees and personnel working at manufacturing establishments on labour productivity and performance. This applied research was carried out with the personnel working at manufacturing establishments in Istanbul, Bursa, Izmir and Ankara. 5-point Likert scale and a questionnaire were employed in the study with the aim of identifying the demographic features of the participants. This questionnaire was given to the personnel in person or sent via e-mail. Simple Random Scale was used in the study. No identity information of the participants was disclosed. The study lasted for almost 14 months. Within this period, (N=982) individuals participated in the study. At the end of the study, it was stated that work place conditions of the participants were unhealthy, unsafe, and physically uncomfortable and ergonomically insufficient. Besides, the study showed that labour productivity and performance of the personnel who experience physical, orthopaedic and traumatological problems is decreased.

INTRODUCTION

Work-related musculoskeletal system is one the most frequent health problems in the society (Özcan et al. 2007; Morken et al. 2007; Erick and Smith 2011). It is stated that almost 30 percent of the musculoskeletal problems around the world are work-related. Recently, the studies on risk factors, labour force loss and cost have been on the increase due to the rise in the frequency and cost of work-related musculoskeletal system disorders in developed countries (Önal 2007). Working conditions, chemical, physical, biological and psychosocial factors can lead to health problems for the personnel. One of the common problems of personnel is musculoskeletal system diseases. Besides, work-related musculoskeletal system has become a public health concern, because it is common and it leads to important health problems (Türkkan 2009).

The relationship between work and health is bilateral. While working life and conditions affect the health of the individual, health status of the working individual can affect the quality and quantity of the work. A healthy person works more productively and makes higher quality products in comparison to an individual with a disease or disability (Öztürk 2006; Bilir 1997).

In addition to the physical conditions, the age and quality of the machines, tools and equipment used during working process are determinant factors in the performance of the employees (Maitland 1997). Moreover, the way of performing a work at the manufacturing establishments is among the factors that influence labour productivity due to its effects on the human health (orthopaedic disorders).

Some factors such as unhealthy posture and working conditions, weight lifting and carrying, fast working pace can lead to some health problems (<http://www.wellpoint.com.tr>, 02 February 2015). Besides, irregular work flow, improper working conditions and lack of equipment affect health of personnel and work security (Yilmaz et al. 2014).

For example, loading units at mines and quarries, the usage mobile devices such as trucks, scrapers and bucket excavators could cause exposure of the whole body to vibration, and disc problems or increase the existing disc problems. Usage of piercing tools such as air compressor could cause hand-arm vibration syndromes. In the jobs where recurrent movements and manual labour are common, the probability of damage to musculoskeletal system is high. Manual handling, lifting large and heavy ob-

jects, long-recurring work movement, poor posture is prevalent in mining. All these can result in musculoskeletal damage. Working in the same position for a long time causes excessive fatigue. Back damages, sprain and strain, shoulder, elbow, wrist problems are seen in people who work in construction sector (R.T Ministry of Labour and Social Security 2011).

A study conducted with 42,360 households all around Turkey based on sectors indicated that the rate of work-related health problems in 2013 is 2 percent in forestry and fishing, 3.5 percent in construction, 2.1 percent in wholesale and retail trade, eating and hotels, 2.7 percent in manufacturing sectors, where employment is so high. Also, the highest rate of work-related health problems based on the professions is in “artisans and relevant jobs” group with 3.2 percent. It is followed by “facility and machine operators and assemblers” group with 2.8 percent. The lowest rate in work-related health problems is in “bureau and customer services” with 1.7 percent (TUIK Turkish Statistical Institute 2014).

The Occupational Diseases guideline issued by the Ministry of Labour and Social Security, Occupational Health and Safety General Directorate in 2011, the cases that lead to work-related strain in musculoskeletal system are listed as follows:

- Manually handling the loads
- Lifting, holding, carrying
- Pushing, pulling
- Body positions causing strain
- Sitting
- Standing
- Leaning the body forward
- Squatting, knee bending, lying
- Arms above the shoulder level
- Increased effort and/or power requiring jobs
- Hard-to-reach work places (climbing, ascending stairs)
- Use of the hand/arm system as a tool (hitting, hammering, bending, pressing)
- Use of effort/power in operating the equipment
- Recurrent tasks with high level of manual activity
- Whole body vibration
- Hand-arm vibration (Ministry of Labour and Social Security 2011).

Healthy working environment is a prerequisite for the peace at work and rapid develop-

ment. Occupational accidents and diseases threaten life due to their consequences, result in a significant cost increase and directly affect the productivity and profitability in a business establishment (Mert 2002).

While there is a need of work safety professionals in terms of productivity and performance, quality factor should not be ignored. The quality of training carried out in the training programs should be thought again and again (Ceylan 2012). First of all, working conditions and working environment should be adapted and designed for the human beings in a way which makes it suitable for them to perform the duties and display the productivity expected. No matter how the equipment or methods that the individual uses while working are technically perfect, if they are not suitable for the person, that person would not be able to display the high performance expected. It is necessary to benefit from the guidance of ergonomics science, apply ergonomic findings and principles in work places, in brief design the work places ergonomically in order to make working conditions suitable for the human beings and design the working environment in a way which is convenient for human beings (Incir 1999).

For example, using computers in work places has been increasing for the last twenty years. While using computer in work places is increasing productivity, it leads to many health problems particularly upper extremity work-related musculoskeletal diseases (ÜE-IKİH). In order to protecting from ÜE-IKİH that is increasing more and more, principles of right body mechanics should be implemented and ergonomic work places should be provided (Özcan et al. 2011).

It is necessary to provide safe working conditions and create a healthy environment as possible (Maitland 1997). With the aim of decreasing occupational accidents, giving further education and getting personnel adopt right habits should be provided for correcting personnel's deficiencies and increasing their occupational qualities (Ulutasdemir et al. 2015).

The risk factors that arise in line with the anatomical and psychological features, socio-cultural factors, working technique and physical conditions of the work place mainly affect musculoskeletal system, circulatory system and other body systems (Tunç 2008).

Musculoskeletal system plays a significant role in maintaining the daily life and working life of

the individual. There are plenty of business fields that require the use of musculoskeletal system in working life. Musculoskeletal system diseases decrease the quality of life and cause serious labour force loss, resulting in movement limitations (Rogers and Travers 2001; Okkaoglu 1998; Öztürk 2006).

Musculoskeletal system diseases are the leading disease type in causing the loss of labour force. Especially the quality of life and labour productivity of the individuals who work in business fields with intense production level is decreased. Occupational musculoskeletal system diseases are seen in body structures such as muscle, joint, tendon, ligament, nerve and bone and in localized blood circulatory system, and develop under the influence of the work and work environment. These diseases can also be classified as occupational diseases (The Association of Encouragement for Healthy Life and Health Policies 2014).

When the occupational diseases that encompass musculoskeletal system diseases are evaluated with respect to work and society, it is seen they cause many negative effects. They affect the industry and economy adversely in addition to decreasing in job satisfaction, productivity, quality and quantity (Schuchmann 1996; Noradin et al. 1991).

Özcan and Kesiktaş (2007) highlights that musculoskeletal diseases primarily affect waist, neck and upper extremities and expressed work-related risk factors under the title of “Physical and Ergonomic Factors” as follows:

- Recurrent movements,
- Movements that cause strain,
- Using the waist and body in a bad and wrong positions For example, leaning forward without bending knees, lifting weight play a role in herniated disc occurrence while excessively bended position of the wrist while using the computer is a significant reason for the development of carpal tunnel syndrome.
- Same position for a long-time,
- Vibration

Özcan and Kesiktaş (2007) listed the most common occupational musculoskeletal diseases in according to body regions as follows:

- Shoulder-Neck Diseases: Rotator cuff disease, biceps tendinitis, cervical spondylitis, shoulder- acromioclavicular joint osteoarthritis, cervical radiculopathy, thoracic

outlet syndrome, cervicobrachial pain syndrome, etc.

- Upper extremity diseases: Disease secondary to hand-arm vibration, arm, elbow and wrist tendinitis, tables related to nerve entrapment, carpal tunnel syndrome etc.
- Waist and lower extremity diseases: Waist pain, disk hernia etc. (Özcan and Kesiktaş 2007).

Occupational diseases related to physical factors are classified under 7 titles in Social Securities Health Procedures By-Law. Musculoskeletal system diseases that develop secondary to recurrent movement or strain occupy a big place among these diseases. These are:

Diseases That Develop Secondary to the Physical Factors

- Diseases that occur with ionizing radiations,
- Cataract with ultrared beams,
- Noise-related hearing loss,
- Diseases that occur as a result of the changes in the air pressure
- Vibration-related bone-joint defects,
- Articular bursa diseases that occur as a result of continuous local pressure,
- Tendon cuff and periost diseases as a result of excessive forcing,
- Meniscus damages in mines and similar places,
- Vertebra processus tear as a result of excessive strain,
- Nerve paralysis as a result of constant local pressure,
- Muscle cramps,
- Miner nystagmus (Social Insurance Health Procedures Regulation 1985)

Musculoskeletal system diseases are the most common work-related disease type in Europe. In 27 European Union member countries, 1 out of four of the workers working has back pain complaints and almost 1 out of four has muscle pain complaints (European Foundation for the Improvement of living and working Conditions, 4th European Working Conditions Survey 2007). In EU, about 24 percent of the workers have back pain complaints and 22 percent of them have muscle pain complaints. Musculoskeletal system diseases do not only cause personal disturbance to the employees and income loss but also affect business establishments and national economies (Chronic Disease Management Inspection 2014).

Occupational Health Safety measures aims at decreasing the labour force loss that arise from occupational diseases and accidents and increasing efficiency with employees who have higher motivation in a healthier and safer working environment by ensuring the safety of the production (Sargin 2007).

When the impact of the occupational health and safety practices on business efficiency and accordingly competitive power is assessed, it is essential that business establishments keep the working environment healthy and safe in order to benefit from the skills of the employees. Those who work in a healthy and safe working environment work more productively in comparison to the employees who have the same skills but who have to deal with health and safety problems and make substantial contributions to the competitive power of the business establishment (Sargin 2007).

The studies carried out on occupational health and safety indicate that it is possible to create a healthy and safe working environment, enhance work motivation of the employees by reducing the stress on the shoulders of the employees, decrease the number of occupational accidents and diseases, lower absence from work for health reasons, boost productivity and performance thanks to the ergonomic arrangements in work places (Önal 2007).

Current risks of production life have increased with technological developments and the issues about human health and comfortable work conditions have become debatable. Ergonomic has brought a new dimension to the stable course of these debates and it has been an important factor in terms of giving particular importance to human health and increasing productivity (Atalay et al. 2014).

Within this scope, in this study we aimed to investigate the impact of the orthopaedic problems that the employees and personnel at manufacturing establishments experience. Within this context, we believe our study will make contribution to the literature with regard to work productivity decrease because of the problems that arise from physical working conditions and the impact of musculoskeletal system diseases, one of the major diseases of today.

MATERIAL AND METHODS

This applied research investigates the impact of orthopaedic problems that the employees and personnel at manufacturing establish-

ments experience on labour productivity and performance. Labour productivity is decreased due to the problems that arise in relation to joint problems, rheumatismal diseases, major problems of today, and most importantly physical working conditions. A great number of studies and practices indicate that individuals who work under non-ergonomic conditions at manufacturing establishments experience different physical problems. Poor posture creates negative impacts in different parts of the body, and negatively affects labour productivity and performance of the workers. This applied research was carried out with the personnel working at manufacturing establishments in Istanbul, Bursa, Izmir and Ankara. 5-point Likert scale and a questionnaire were employed in the study with the aim of identifying the demographic features of the participants. This questionnaire was given to the personnel in person or sent via e-mail. All of the participants were chosen randomly. Simple Random Scale was used in the study. No identity information of the participants was disclosed. The study lasted for almost 14 months. Within this period, (N=982) individuals participated in the study.

Data Analysis

The data obtained from the study was analysed via SPSS 18 statistical program, and reliability and validity were ensured. 0.873 was obtained as Cronbach's Alpha coefficient. Different statistical analysis techniques were applied and the study was extended.

RESULTS

When demographic information of participants within the research are examined, it is understood that 65 percent of participants are man, 35 percent are woman, 80 percent are married and 10percent are single, 53 percent of participants have elementary education level and 63 percent of them have an income changing between 1000 and 2500 Turkish Liras. Furthermore, it is seen that 82percent of participants are working as an unqualified worker (Table 1).

A total of 4 factors were identified as a result the of factor analysis performed with 29 items. These factors are as follows (Table 2):

1. Severe damage occurred in my body due to the work I performed.

Table 1: Some demographic statistics concerning the participants

		N	%
1. Gender	Female	346	35
	Male	636	65
2. Marital status	Married	786	80
	Single	180	18
	Other	16	2
3. Do you have children? If yes, how many children do you have?	No	39	4
	1	314	32
	2	136	14
	3	200	20
	3+	293	30
4. Have you ever experienced any professional or orthopedic and physical problems in relation to your educational status or work?	Yes	768	78
	No	214	22
5. Have you ever experienced any occupational accidents within your work term?	Yes	524	53
	No	458	47
6. How you ever had surgical problems for any reason?	Yes	258	26
	No	724	74
7. How long have you been working?	1-3	18	2
	4-6	184	19
	7-9	95	10
	10-12	171	17
	13-15	314	32
	16-20	164	17
	21+	36	4
8. What is your educational status?	Literate	160	16
	Primary school	525	53
	High School	203	21
	College Degree-Undergraduate	68	7
	Master's Degree-Doctorate	26	3
9. What is your profession?	Unqualified worker	804	82
	Department chief	129	13
	Master-foramen	27	3
	Manager	22	2
10. What is your income?	501-1000	210	21
	1001-2500	614	63
	2501-3500	109	11
	3501+	49	5
11. Do you have social insurance?	Yes	918	93
	No	64	7
12. Do you have private health insurance?	Yes	48	5
	No	934	95
13. Does your weight change regularly?	Yes	181	18
	No	801	82
14. Do you use any medications regularly?	Yes	216	22
	No	766	78
15. Have you ever had any psychological problems?	Yes	32	3
	No	950	97
16. Do you have an occupational physician?	Yes	44	4
	No	938	96
17. Do you go through regular physical and internal medical controls?	Yes	150	15
	No	832	85
18. Which of the following do you regularly use?	Cigarette	641	65
	Alcohol	209	21
	Antidepressant medications	55	6
	Other	49	5
	None	28	3
19. Do you use gel, plaster or a different product for your pain?	Yes	906	92
	No	76	8
20. Did you receive physical treatment and rehabilitation?	Yes	104	11
	No	878	89
21. Do you do sports activities regularly?	Yes	104	11
	No	878	89

Table 1: Contd...

		<i>N</i>	%
22. Do you drink 2.5-liter water or liquid everday?	Yes	910	93
	No	72	7
23. Do you consume gaseous beverages? If yes, how many cc?	100 cc	37	4
	200 cc	393	40
	300 cc	153	16
	500 cc	137	14
	501+ cc	262	27
24. Did you obtain good results from hot spring and thermal treatment?	Yes	38	4
	No	944	96

Table 2: Factor analysis (Rotated Component Matrixa)

	<i>Component</i>			
	1	2	3	4
Damage occurred in my body due to the work I performed.	.877			
Damage occurred in my body due to the work I performed.	.860			
Damage occurred in my body due to the work I performed.	.859			
Damage occurred in my body due to the work I performed.	.830			
Damage occurred in my body due to the work I performed.	.792			
Damage occurred in my body due to the work I performed.	.785			
Damage occurred in my body due to the work I performed.	.753			
Damage occurred in my body due to the work I performed.	.706			
Damage occurred in my body due to the work I performed.	.535			
Damage occurred in my body due to the work I performed.	.528			
Damage occurred in my body due to the work I performed.	.453			
In my work place, occupational safety conditions are not taken into account.		-.767		
In my work place, occupational safety conditions are not taken into account.		.758		
In my work place, occupational safety conditions are not taken into account.		.757		
In my work place, occupational safety conditions are not taken into account.		-.591		
In my work place, occupational safety conditions are not taken into account.		.583		
In my work place, occupational safety conditions are not taken into account.		.579		
In my work place, occupational safety conditions are not taken into account.		.560		
In my work place, occupational safety conditions are not taken into account.		.525		
I have experienced psychological problems due to the conditions of my work place.			.811	
I have experienced psychological problems due to the conditions of my work place.			.808	
I have experienced psychological problems due to the conditions of my work place.			.753	
I have experienced psychological problems due to the conditions of my work place.			.417	
I have experienced psychological problems due to the conditions of my work place.			.327	
I have experienced psychological problems due to the conditions of my work place.			.255	
Work place conditions should be regulated.				.851
Work place conditions should be regulated.				.823
Work place conditions should be regulated.				-.384
Work place conditions should be regulated.				-.274

2. In my work place, occupational safety conditions are not taken into account.
3. I have experienced psychological problems due to the conditions of my work place.
4. Work place conditions should be regulated.

Regression Analysis

H0: Damage occurred in my body due to the work I performed factor is independent from the other factors.

As the result of the analysis, damage occurred in my body due to the work I performed factor and following questions were found correlated in Table 3. Accordingly (Table 3):

- Gender has 0.130 unit negative effect.
- Orthopaedic and Physical problems have 0.06 unit negative effect.
- Occupational accident has 0.115 unit positive effect.
- Educational status has 0.215 unit negative effect.
- Educational status has 0.161 unit negative effect.

Table 3: Regression analysis regarding “Damage occurred in my body due to the work I performed” factor

Model			Unstandardized coefficients		Standardized coefficients		
			B	Std. error	Beta	T	Sig.
1	1.	Gender	-.076	.065	-.130	-1.173	.241
	4.	Have you experienced orthopedic and physical problems in relation to your profession and educational status	-.005	.074	-.006	-.065	.948
	5.	Have you experienced any occupational accidents in your work term?	.074	.063	.115	1.184	.237
	8.	Educational status	-.089	.035	-.215	-2.512	.012
	9.	Profession	-.116	.051	-.161	-2.267	.024
	15.	Have you ever experinced any psychological problems?	.190	.089	.375	2.127	.034

- Psychological problems have 0.375 unit positive effect.

H0: In my work place, occupational safety conditions are not taken into account factor is independent from other factors.

As the result of the analysis, in my work place, occupational safety conditions are not taken into account factor and following questions were found correlated in Table 4. Accordingly (Table 4),

- Gender has 0.157 unit negative effect.
- Orthopaedic and Physical problems have 0.072 unit positive effect.
- Occupational accident has 0.138 unit positive effect.
- Educational status has 0.204 unit positive effect.
- Profession has 0.143 unit positive effect.
- Psychological problems have 0.368 unit negative effect.

H0: I have experienced psychological problems due to the conditions of my work place factor is independent from the other variables.

As the result of the analysis, I have experienced psychological problems due to the conditions of my work place factor and following questions were found correlated in Table 5. Accordingly (Table 5):

- Gender has 0.262 unit positive effect.
- Orthopaedic and Physical problems have 0.106 unit positive effect.
- Occupational accidents have 0.267 unit positive effect.
- Educational status has 0.002 unit positive effect.
- Profession has 0.341 unit positive effect.
- Psychological problems have 0.933 unit negative effect.

H0: Work place conditions should be regulated factor is independent from other variables.

Table 4: Regression analysis regarding “occupational safety conditions are not taken into account” factor

<i>Model</i>			<i>Unstandardized coefficients</i>		<i>Standardized coefficients</i>		
			<i>B</i>	<i>Std. error</i>	<i>Beta</i>	<i>T</i>	<i>Sig.</i>
1	1.	Gender	-.091	.065	-.157	-1.411	.159
	4.	Have you experienced orthopedic and physical problems in relation to your profession and educational status?	.056	.074	.072	.754	.451
	5.	Have you experienced any occupational accidents in your work term?	.089	.063	.138	1.416	.157
	8.	Educational status	.084	.035	.204	2.375	.018
	9.	Profession	.103	.051	.143	2.015	.044
	15.	Have you ever experinced any psychological problems?	-.186	.089	-.368	-2.089	.037

Table 5: Regression analysis regarding “I have experienced psychological problems due to the conditions of my work place” factor

Model		Unstandardized coefficients		Standardized coefficients	T	Sig.
		B	Std. error	Beta		
1	1. Gender	.152	.064	.262	2.386	.017
	4. Have you experienced orthopedic and physical problems in relation to your profession and educational status?	.083	.073	.106	1.131	.258
	5. Have you experienced any occupational accidents in your work term?	.172	.062	.267	2.784	.005
	8. Educational status	.001	.035	.002	.020	.984
	9. Profession	.245	.050	.341	4.873	.000
	15. Have you ever experienced any psychological problems?	-.472	.088	-.933	-5.365	.000

As the result of the analysis, work place conditions should be regulated factor and following questions were found correlated in Table 6. Accordingly (Table 6):

- Gender has 0.308 unit negative effect.
- Orthopaedic and Physical problems have 0.010 unit positive effect.
- Occupational accidents have 0.025 unit positive effect.
- Educational status has 0.176 unit positive effect.
- Profession has 0.087 unit negative effect.
- Psychological problems have 0.179 unit positive effect.

H0: Orthopaedic and physical problems experienced are not correlated with labour productivity and performance.

As the result of the analysis, orthopaedic and physical problems and labour/performance loss were found correlated in Table 7.

H0: Orthopaedic and physical problems experienced and sociocultural problems are not correlated.

As the result of the analysis, orthopaedic and physical problems and sociocultural problems were found correlated in Table 8.

H0: Orthopaedic and physical problems experienced and the problems related to attitude and behaviours towards profession are not correlated.

As the result of the analysis, orthopaedic and physical problems and the problems in the attitudes and behaviours towards the profession were found correlated in Table 9.

DISCUSSION

The rate of musculoskeletal diseases is quite high in health statistics. Although intense physical work derange the health of many people, modern workplace and manufacturing activity organization enhanced the volume of work performed in sitting position. This has raised different health threats in working fields. In-office monitored activities or usage of heavy vehicles

Table 7: Anova test regarding orthopaedic and physical problems and labour/performance

	Sum of squares	df	Mean square	F	Sig.
Intergroup	1.616	1	1.616	1.525	.027
Intragroup	1038.580	980	1.060		
Total	1040.197	981			

Table 8: Anova test regarding orthopaedic and physical problems and sociocultural problems

	Sum of squares	df	Mean square	F	Sig.
Intergroup	.295	1	.295	9.428	.002
Intragroup	30.662	980	.031		
Total	30.957	981			

Table 9: Anova test regarding orthopaedic and physical problems and attitude and behaviours

	<i>Sum of squares</i>	<i>df</i>	<i>Mean square</i>	<i>F</i>	<i>Sig.</i>
Intergroup	.502	1	.502	.211	.006
Intragroup	2330.175	980	2.378		
Total	2330.676	981			

such as truck might derange the health of people. While sitting with poor posture or insufficient movement can lead to diseases in musculoskeletal structure and ligaments, continuous body vibration for years lead to damage in gastrointestinal tracheas and premature degenerative changes in lumbar vertebra of the workers. It is necessary that both workers and designers should attach more importance to “seating as working tool” in order to prevent the increase of these diseases. Principally, body length measurements should be taken into account while the seating is designed and reaching-accessing and movement limits required during the daily activities should be compatible with the ergonomic recommendations (Uyanik 1999).

Implementing efficient ergonomic programmes at workplaces is of utmost importance in order to prevent the musculoskeletal problems. In order to conduct these programmes, employer and employees should be aware of their responsibilities and do what is necessary. It would be possible to prevent musculoskeletal system diseases by taking the risks, particularly ergonomic risks, found by risk analysis and evaluation to be performed at the work places under control, managing musculoskeletal system diseases and conducting educational studies upon fulfilling these responsibilities (Önal 2007).

Also, it might be possible to avoid such inconveniences by making some ergonomic improvements including rendering work station, equipment and working conditions suitable for the workers, work modification, work planning, work organisation, administrative inspections such as breaks (Özcan and Kesiktas 2007). A study on people with desk jobs revealed that the ergonomic interventions applied to computer users had an effect on decreasing musculoskeletal diseases. Moreover, the findings indicates that the ergonomic interventions applied at work had an impact upon eliminating the posture disorders of computer users, mis-positioning of computer equipment and reducing the psychosocial risk factors (Özcan et al. 2011).

Within the scope of pain and movement limitation that develop secondary to the exposure to physical and psychological risks during work activities and musculoskeletal diseases that can develop with injuries, which are among the most common health problems that workers experience (Özcan and Kesiktas 2007), this study indicated orthopaedic and physical problems were correlated with attitude towards profession and sociocultural problems. Among work-related musculoskeletal disorders, lumbar discopathy was detected most common and those who are exposed to heavy lifting because of their jobs were seen to suffer from it most often. Along with lumbar discopathy, the most common diagnosis among welders and technical staff; disorders like cervical discopathy, shoulder and CTS were other frequent disorders (Akbal et al. 2012). Also, one of the variables that affect the factors regarding the scale used for the participants was identified as psychological problems.

CONCLUSION

The results that could have an impact on the factors that were identified with application are as follows:

The variable that affects damage occurred in my body due to the work I performed factor most is psychological problems; the variable that affects at my work place, occupational safety conditions are not taken into account factor most is psychological conditions; the variable that affects I have experienced psychological problems due to the conditions of my workplace factor most is psychological problems; the variable that affects work place conditions should be regulated factor most is gender.

Orthopaedic and physical problems and labour/performance loss were found correlated; orthopaedic and physical problems and sociocultural problems were found correlated; orthopaedic and physical problems and the problems in the attitudes and behaviours towards the profession were found correlated.

RECOMMENDATIONS

This study revealed the musculoskeletal system-related health problems of the employees working at manufacturing establishments. It can be pointed out that the employees should not be seen only as a production tool, and their psychological and socio-cultural presence should be taken into account so as to protect their body health. The work environment should be enhanced and the ergonomic interventions should be considered in accordance with psychological and sociocultural features of the employees. Finally, it is crucial to handle the issues of work safety and worker's health job security in a multidimensional way, and to carry out training activities.

NOTE

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