

Research Article

Evaluating Occupational Stress Levels of the Railway Workers

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Abstract

AIM: This study aimed to determine the levels of stress that are experienced by railway workers.**METHOD:** This descriptive, cross-sectional study was conducted at the facilities of Turkish State Railways. The study sample included 322 male workers. The study data were collected between February and April 2015. A personal information form and the Doetinchem Organizational Stress Questionnaire were used to collect data.**RESULTS:** It was determined that the employees are influenced by all sub-dimensions of the groups of stressors, social changes, psychological tensions, and complaints about health, and they have a medium level of stress. The study found that the workers were mostly influenced by their responsibilities and occupational uncertainty in future.**CONCLUSION:** Descriptive characteristics of the workers and work-related and occupational characteristics showed statistically significant difference in mean scores of the subscales of stressors, social variables, psychological variables, and health complaints. In future, defining stress-related factors by determining the stress levels of employees will guide the initiatives intended to reduce work-related stress.**Keywords:** Occupational health, occupational nursing, occupational stress, railway, railway workers

Introduction

Employee health is substantially affected by work, and work is affected by employees' health as well. This relationship should be explored to protect employee health and improve the quality of work (Bilir & Yıldız, 2014).

Most people spend a major part of their adult life working in an environment in which they face many physical and psychological challenges, requiring them to cope with varying degrees of stress. Physical (for example, temperature, lighting, pressure, ventilation, radiation, and noise) as well as chemical conditions (for example, lead, benzene, and mercury exposure) have negative effects on health. A working environment includes both physical/chemical and social/psychological environments. Work-related stress has potential health effects on the workers (Capasso, 2018). According to the International Labor Organization, stress is the harmful physical and emotional response owing to an imbalance between the perceived demands and the perceived resour-

es and the abilities of individuals to cope with those demands. Work-related stress is determined by work organization, work design, and labor relations and occurs when the job demands do not match or exceed the capabilities, resources, or needs of the worker or when the knowledge or abilities of an individual worker or a group to cope are not matched with the expectations of the organizational culture of an enterprise (International Labor Organization, 2016).

People can experience stress in different aspects of their lives; one of them is the working life, which is a stressful environment (De Sio et al., 2017). Each employee and each job have unique source of stressors, which vary by personal characteristics, technology, work environment, and interpersonal communication (Motowidlo et al., 1986).

It is important to determine the stress-generated situation and how it affects the employees. Instead of being controlled by stress, workers should control their own stress (Potter & Perry, 2009). Work-related

stress can be managed by changing personal characteristics, attending social activities, or implementing time management (Aydın, 2016; Potter & Perry, 2009). In addition, work-related stress can be reduced by some changes in the work environment in which common decisions are made by employees, roles in the workplace are defined, conflicts are reduced, work conditions are improved, and social support is provided (Aydın, 2016; Garcia-Herrero et al., 2017).

The share of railway services in transportation networks is over 10% in developed countries. It is 1.5% in Turkey (İnan & Demir, 2017). Railways were rapidly developed by reconstruction after 2003 in Turkey (Sarı et al., 2011). This development resulted in a current issue regarding railway workers' problems with work and the workplace. Railway workers may be exposed to high levels of stress because they are assigned to shift work, seasonal work, and distant long road work and factory and studio workers are assigned to hazardous and very hazardous work. Altundaş et al. (2010) have studied railway workers and found that their job satisfaction was low and their risk of exposure to high-voltage transmission lines, noise, and work accidents was high. They described the negative aspects of their work life as physically demanding work conditions, irregular work hours, low pay, and poor work and rest facilities. They said that they experienced sleep disorders owing to shift work, worked in extreme cold and hot weather, and had musculoskeletal problems. Canpolat (2006) has found that railway workers experience stress concerning their relationships with superiors (58%), low pay (52%), complex structure of the workplace (43.5%), poor-quality food (21.7%), high risk of work accidents (20.3%), excessive work hours (20.3%), relationship with peers (18.8%), lack of break time (8.7%), and work environment (5.8%).

Managing workplace stress is an important area of work-related health and safety. One of the important tasks of an occupational health nurse is to organize the interventions to manage workplace stress. The occupational health nurse performs nursing interventions to manage work stress in employees. They identify the source of stressors in the workplace, determine which employees have the highest levels of stress, and intervene to reduce current sources of stressors. They take preventive measures to protect the employees' health against the negative effects of stress and help the individuals cope with the harmful outcomes of stress. They intervene to help

the employees to adapt to stress (Clemen-Stone et al., 2002; Usca, 2013). They perform evidence-based implementations to improve the quality of life and health of the employees (Rogers, 2012). Assessing employees' stress levels can be a guide to plan stress management interventions.

In workplaces with a high number of employees, it may be difficult for individuals to adapt to work, colleagues, and organization. This may increase the number of factors that create stress in the workplace and increase employee perception of these factors. There are many studies in the literature examining the causes, consequences, and ways of coping with work stress (Usca, 2013; Smith et al., 2019; Yang et al., 2019). However, there is no large-scale study conducted by the nurse, who is the basic member of the occupational health team, in the field of occupational health that defines the stress level of the employees in crowded workplaces that have different occupations in our country. Determining the stress levels and job stressors of the workers working together in different job areas can guide the prevention and elimination of these stressors. These initiatives can contribute positively to employee health and safe work environment.

From this perspective, this study was conducted to evaluate the stress levels of employees working in a public institution.

Research Questions

1. Which personal descriptive characteristics affect the mean scores of the Doetinchem Organizational Stress Questionnaire (VOS-D) stressor, social changes, psychological tensions, and complaints on health?
2. Which work and workplace characteristics affect the mean scores of VOS-D stressor, social changes, psychological tensions, and complaints on health?

Method

Study Design

It is a descriptive cross-sectional study.

Sample

The data were collected from 5 factories and workshops (Factory Directorate of the Rail Welding and Track Machines Repair, Railway Mechanical Workshop Directorate, Loco Maintenance Workshop Di-

rectorate, Wagon Maintenance and Repair Workshop Directorate, and State Railways of the Turkish Republic (TCDD) Regional Directorate of Q Railway Factory) that are located in the second residential area of in the TCDD.

A total of 560 employees work in all the factories and workshops. The workers in all the factories and offices of the TCDD Region II building where this study was performed were all males. Shift work is employed in the Loco Maintenance Workshop Directorate and Wagon Maintenance and Repair Workshop Directorate. Seasonal and temporary workers as well as assigned employees are hired in some factories and workshops. Long-distance employees may be given out-of-province assignments for 1, 3, or 6 months at a time. The factory and office workers were assigned responsibilities, such as motor repair, quality control, engine repair, hydraulics, welding, machinist, steam engine maintenance and repair, compressors, bonnets, and pneumatic brakes as well as working as technical draftsman, operator, and motorist and in track laying crew, glass crew, and craftsman hydrostatics and coil winding in units, such as factory, engine shop, welding shop, heating plant, iron foundry, electrical shop, dyeing plant, and lathe shop.

Before the study, the researcher performed a power analysis to calculate the sample size. Therefore, the researcher used the mean score scales that were obtained from a similar past study (Çınar, 2010). As a result of the analysis with an alpha value of (a) 0.05, a power of (1-b) 0.90, and a deviation of 0.05, it was calculated that at least 300 individuals should participate in this study. In the sample, the researcher included 322 collaborative employees that built an open communication and agreed to participate in this study. The study data were collected during personal interviews that were performed during break time of normal working hours.

Data Collection

The data for this descriptive study were collected between February and April 2015. The data were collected during the break time during working hours of the workers. The researcher gave the data collection tools to the workers in the restroom or canteen in groups and collected them after they were completed.

Data Collection Tools

The researcher used a personal information form and VOS-D to collect the data.

Personal Information Form

This form included 21 questions about personal descriptive information as well as workplace and work information. The questions were prepared in accordance with the literature (Aydın, 2016; Bilir & Yıldız, 2014; Canpolat, 2006; Motowidlo et al., 1986; Potter & Perry, 2009). The form included questions about: gender, age, educational status, marital status, work unit, staff status, work experience, work order, physical workplace conditions (noise, inadequate/extreme illumination, inadequate ventilation, extreme cold and hot weather, dust, smoke, radiation, extreme humidity, vibration, pressure, inadequate equipment, insufficient working area, crummy building, badly designed/inadequate furniture, insufficient toilets, insufficient restroom/canteen), ergonomics in the workplace, relationships with coworkers and superiors, exposure to work-related violence, job health and safety measurements, status of encountering job accidents, perception of work conditions, perception of work stress, job satisfaction, thought of changing jobs, habit of smoking and alcohol consumption, disease, and average income level.

The Doetinchem Organizational Stress Questionnaire

The original questionnaire was created in Dutch. It was adapted to Turkish language by Türk (Türk, 1997). VOS-D is an 81-item Likert-type scale that was used to identify and estimate the levels of organizational stress factors. VOS-D includes the dimensions of stressors, psychological tensions, complaints on health, and social changes. Each group includes its own sub-dimensions. According to the objective of the research, some scales may not be involved in the study or some new scales may be added. These scales may be independently evaluated. Stressors include the following sub-dimensions: excessive workload, uncertainty of roles, responsibility, conflict of roles, not being able to leave the workplace, making no participation in decision-making process regarding work, lack of belief in the necessity of work, and uncertainty about the future of work. Psychological tensions include the following sub-dimensions: lack of job satisfaction, feeling worried about work, and psychological complaints. Complaints about health include occasional and continuous illnesses. Social changes include lack of support by chief and coworkers (Türk, 1997).

All VOS-D dimensions and their sub-dimensions were used in this study. Total Cronbach's alpha (α) coefficient of VOS-D was 0.81 in the original scale,

and it was calculated 0.87 in this study. To evaluate the obtained scores, the study used a conversion table that included percentile values of 5%, 25%, 75% and 95%. Table 1 presents the percentiles with their average scores (Türk, 1997).

Statistical Analysis

Evaluation of categorical variables was performed using descriptive statistics. Suitability of the data for normal distribution was examined by the Kolmogorov-Smirnov or Saphiro-Wilk test, and homogeneity of variance was examined by the Levene test. Student's t test was used to compare the 2 groups, and one-way analysis of variance (ANOVA) was used for comparison of 3 or more groups when parametric test conditions were met. In cases where parametric test conditions were not fulfilled, the Mann-Whitney U test was used for comparing the 2 groups and the Kruskal-Wallis variance analysis was used for comparing 3 or more groups. The Scheffe multiple comparison test and Bonferroni corrected Mann-Whitney U test were used to determine which groups the difference was between. The threshold for significance was $p < 0.05$.

Ethical Considerations

The researcher obtained an official consent from all plants and directorates of TCDD in addition to the ethical approval to evaluate the research ethics. An authorization dated January 12, 2015, was obtained from Turgut Özal University University's human research ethics committee (Decision No: 63) for ethical compliance of this study. The researcher also informed all workers that they can participate in the study on a voluntary basis and obtained their written informed consent.

Results

The mean age of the workers was 47.0 ± 7.4 years with a minimum age of 21 and a maximum age of 60 years. The mean working years of these workers in this job were 20.0 ± 9.6 years. Personal descriptive characteristics of workers and workplace and work-related characteristics are presented in Tables 2 and 3.

Table 4 presents the percentile distributions and descriptive statistics of workers' mean scores on each sub-dimension of stressor, social change, psychological tension, and health complaints groups. The mean scores of employees for all sub-dimensions of

Table 1

Evaluation of VOS-D Scale Points

Stress level	The conversion of score averages into percentiles
Very low stress	Score \leq 5 percentile
Low stress	5 percentile $<$ score \leq 25 percentile
Medium stress	25 percentile $<$ score $<$ 75 percentile
High stress	75 percentile \leq score $<$ 95 percentile
Very high stress	95 percentile \leq score

Note. VOS-D: Doetinchem Organizational Stress Questionnaire

the VOS-D were at the medium level. In the group of stressors, employees were the most influenced by "responsibility" (score: 3.21) and "uncertainty of the future of work" (score: 3.20). In the group of social changes, employees were the most influenced by "lack of support by chief" (score: 2.35). In the group of psychological tensions, they were influenced by "lack of job satisfaction" the most (score: 2.20). In the group of complaints on health, employees were influenced by "complaints about illness occurring occasionally" the most (score: 9.46) (Table 4).

The sub-dimensions with significant differences were summarized after evaluating the participants' sub-dimension mean scores on stressors, social changes, psychological tensions, and complaints on health on the basis of personal descriptive characteristics as well as work and workplace characteristics. Table 5 presents this summary.

Excessive Workload

The mean score for excessive workload of workers was significantly higher than that of the other participants who were younger than 39 years ($\chi^2=11.73$, $p=0.003$), who were single ($z=-2.802$, $p=0.005$), who had a university degree ($\chi^2=7.85$, $p=0.005$), with an income less than expenses ($F=5.25$, $p=0.006$), who worked in the Wagon Maintenance and Repair Workshop Directorate ($F=15.02$, $p<0.001$), who perceived the work environment as non-ergonomic ($F=8.90$, $p<0.000$), who had good relationships with coworkers ($t=2.82$, $p=0.005$), and who had poor relationships with superiors ($F=8.44$, $p<0.001$). The mean score of this sub-dimension was significantly higher than that of the other participants who were exposed to job violence ($t=4.31$, $p<0.001$), found job health and safety precautions insufficient ($F=12.46$, $p<0.001$), thought they worked in poor working conditions ($F=24.93$, $p<0.001$), described their work

Table 2
Distribution of Personal Descriptive Characteristics of Employees (n=322)

Descriptive characteristics	Number (n)	Percentage (%)
Age (years)		
≤39	44	13.7
40–49	141	43.8
≥50	137	42.5
Marital status		
Married	300	93.2
Single	22	6.8
Education status		
Primary school graduate	51	15.9
Secondary school graduate	31	9.6
High school graduate	198	61.5
University graduate	42	13.0
Income status		
Higher than expenses	87	27.0
Equal to expenses	183	56.8
Less than expenses	52	16.2
Smoking		
Smoking	125	38.8
Quitted	120	37.3
Never smoked	77	23.9
Alcohol consumption		
Consume	43	13.4
Quitted	92	28.6
Never consumed	187	58.0
Disease that requires regular medicine		
No	236	73.3
Yes	86	26.7
Distribution of current diseases (n: 86)		
Cardiovascular system diseases	34	39.5
Endocrine system diseases	12	14.0
Gastrointestinal system diseases	5	5.8
Respiratory system diseases	13	15.1
Other*	22	25.6

Note. *Other: Musculoskeletal system diseases, dermatological diseases, allergic diseases, Hepatitis B, and glaucoma

as very stressful ($\chi^2=46.76$, $p<0.001$), had low employee satisfaction ($F=11.34$, $p<0.001$), wanted to change their job ($t=-5.82$, $p<0.001$), and did not feel well at work ($F=7.54$, $p=0.001$). (ANOVA: F value,

Kruskal-Wallis test: χ^2 value, Student's t test: t value, Mann-Whitney U test: z value) (Table 5).

Uncertainty of Roles

The mean score on uncertainty of roles was significantly higher for the participants who had an income equal to expenses ($\chi^2=25.38$, $p<0.001$), did not smoke ($F=3.69$, $p=0.02$), had no idea about the ergonomics of the work environment ($\chi^2=15.99$, $p<0.000$), did not have good relationships with their coworkers ($t=-3.32$, $p=0.001$), and had medium-level relationships with superiors ($\chi^2=11.58$, $p=0.003$). These participants with higher mean scores were also exposed to job violence ($z=-2.44$, $p=0.014$), had a low employee satisfaction ($t=9.17$, $p=0.010$), wanted to change their job ($t=-2.83$, $p=0.005$), and did not feel well at work ($\chi^2=9.17$, $p=0.010$) (ANOVA: F value, Kruskal-Wallis test: χ^2 value, Student's t test: t value, Mann-Whitney U test: z value) (Table 5).

Responsibility

The individuals who worked in the Factory Directorate of the Rail Welding and Track Machines Repair ($\chi^2=17.94$, $p=0.001$) were included in the permanent staff ($t=2.25$, $p=0.025$), perceived the work environment as non-ergonomic ($F=3.42$, $p=0.034$), thought that they have bad working conditions ($F=7.04$, $p=0.001$), and described their work as very stressful ($\chi^2=6.59$, $p=0.002$) obtained significantly higher mean scores on responsibility than the other participants (ANOVA: F value, Kruskal-Wallis test: χ^2 value, Student's t test: t value, Mann-Whitney U test: z value) (Table 5).

Conflict of Roles

The mean score on the conflict of roles was significantly higher for those who were younger than 39 years ($F=14.28$, $p=0.001$), who were single ($z=-2.70$, $p=0.007$), who had a university degree ($\chi^2=7.32$, $p=0.007$), with an income less than expenses ($\chi^2=6.62$, $p=0.036$), who consumed alcohol ($\chi^2=6.81$, $p=0.033$), who worked in the Wagon Maintenance and Repair Workshop Directorate ($\chi^2=16.05$, $p=0.003$), who were included in the permanent staff ($z=-2.01$, $p=0.044$), who perceived the work environment as non-ergonomic ($\chi^2=14.97$, $p=0.001$), and who had poor relationships with superiors ($\chi^2=13.06$, $p=0.001$). These individuals were also exposed to job violence ($z=-3.70$, $p<0.001$), found job health and safety precautions insufficient ($\chi^2=15.27$, $p<0.001$), believed that they were working in poor conditions ($\chi^2=23.75$, $p<0.001$), described their work as very

Table 3*Distribution of Workplace and Work-Related Characteristics (n=322)*

Workplace and work-related characteristics	Number (n)	Percentage (%)		
Working unit				
Locomotive maintenance	83	25.8	Insufficient rest room/canteen	58 18.0
Rail-welding	65	20.2	None of them disturbs	25 7.8
Factory directorate	79	24.5	Working conditions	
Wagon maintenance	43	13.4	Mild	23 7.2
Road mechanic	52	16.1	Medium	183 56.8
			Heavy	116 36.0
Staff status			Work stress	
Permanent	299	92.9	No stress	191 59.3
Contracted	23	7.1	Low stress	87 27.0
			Very stressful	44 13.7
Work experience (year)			Job satisfaction	
≤10	62	19.3	Good	265 82.3
10–19	72	22.4	Medium	20 6.2
20–29	140	43.5	Bad	37 11.5
≥30	48	14.8		
			Desire to change job	
Working order			No	277 86.0
Shifted	250	77.6	Yes	45 14.0
Shiftless	72	22.4		
			How do you feel at work?	
Ergonomics in the workplace			Good	145 45.0
Convenient	83	25.8	Feel so-so.	123 38.2
Inconvenient	188	58.4	Do not feel good	54 16.8
Have no idea	51	15.8		
			Job health and safety precautions in the workplace	
Physical workplace conditions*			Sufficient	118 36.7
Noise	216	67.1	Insufficient	164 50.9
Inadequate illumination	98	30.4	Do not have any idea	40 12.4
Extreme illumination	3	0.9		
Inadequate ventilation	156	48.4	Have had any work accident?	
Extreme hot	33	10.2	No	224 69.6
Extreme cold	147	45.7	Yes (sequelae remained)	40 12.4
Dust or smoke	192	59.6	Yes (no sequelae remained)	58 18.0
Radiation	23	7.1		
Extreme humidity	3	0.9	Relationships with coworkers	
Vibration	20	6.2	Good	246 76.4
Pressure	16	5.0	Medium**	76 23.6
Inadequate equipment	100	31.1	Relationship with the superior	
Insufficient working area	57	17.7	Good	203 63.1
Crummy building	110	34.2	Medium	96 29.8
Insufficient toilets	47	14.6	Bad	23 7.1
Badly designed/inadequate furniture	40	12.4	Exposure to work-related violence	
			Yes	24 7.5
			No	298 92.5

*Multiple choices were selected.

**Two employees who have bad relationships with their coworkers are included in the group of employees who have a medium-level relationship with their coworkers.

Table 4
Percentile Distributions of the Mean Scores of VOS-D Scales and Their Descriptive Statistics (n=322)

VOS-D sub-dimensions	Very low stress (<5% employees)	5% of employees	Low stress (5%–25% employees)	25% of employees	Medium stress (25%–75% employees)	75% of employees	High stress (75%–95% employees)	95% of employees	Very high Stress (>95%)	\bar{x}	Standard deviation	Minimum	Maximum
Stressors													
Excessive workload	2.00	2.00	2.33	3.00	3.00	3.00	3.67	3.67	2.74	0.51	1.78	4.67	
Uncertainty of roles	1.25	2.00	2.00	3.00	3.00	3.00	3.50	3.50	2.41	0.65	1.00	5.00	
Responsibility	1.75	2.50	2.50	3.75	3.00	3.00	4.75	3.67	3.21	0.89	1.00	5.00	
Conflict of roles	1.00	2.00	2.00	3.00	3.00	3.00	3.67	3.67	2.56	0.79	1.00	5.00	
Not being able to leave the workplace	1.33	2.33	2.33	3.33	3.00	3.00	3.50	3.50	2.71	0.64	1.33	4.00	
Lack of participation in work-related decision-making	1.00	1.50	1.50	2.00	2.00	2.00	3.00	3.00	2.24	0.81	1.00	4.00	
Lack of believing the necessity of the work	1.00	1.00	1.00	2.00	2.00	2.00	3.00	3.00	1.58	0.73	1.00	4.00	
Uncertainty of the future of work	1.75	2.75	2.75	3.75	3.75	3.75	4.75	4.75	3.20	0.84	1.00	5.00	
Social Changes													
Lack of support by chief	1.40	2.00	2.00	2.80	2.80	2.80	3.20	3.20	2.35	0.59	1.00	3.80	
Lack of support by coworkers	1.20	1.60	1.60	2.40	2.40	2.40	2.80	2.80	2.05	0.53	1.00	3.40	
Psychological Tensions													
Lack of job satisfaction	1.00	1.33	1.33	2.67	2.67	2.67	3.67	3.67	2.20	0.83	1.00	5.00	
Feeling worried about work	1.50	1.75	1.75	2.50	2.50	2.50	3.00	3.00	2.17	0.51	1.00	4.00	
Psychological complaints	1.36	1.73	1.73	2.18	2.18	2.18	2.64	2.64	1.95	0.38	1.00	3.73	
Complaints on Health													
Complaints about illness occurring occasionally	0.00	4.00	4.00	14.00	14.00	14.00	24.00	24.00	9.46	7.36	0.00	28.00	
Complaints about illness occurring continuously	0.00	0.00	0.00	3.00	3.00	3.00	11.00	11.00	1.98	4.68	0.00	36.00	

Note. VOS-D: Doetinchem Organizational Stress Questionnaire

Table 5 p Values Indicating the Influences of the Mean Scores of VOS-D Sub-Dimensions of Personal/Work and Workplace-Related Characteristics (n=322)

Personal/work and work-related characteristics	Stressors				Social Changes		Psychological Tensions			Complaints About Health					
	Excessive workload	Uncertainty of roles	Responsibility	Conflict of roles	Not being able to leave work-place	Lack of participation in decision-making regarding the work	Lack of believing the necessity of future of the work	Uncertainty of the future of work	Lack of support by chief workers	Lack of support by co-workers	Lack of job satisfaction	Feeling worried about work	Psychological complaints	Complaints about illness occurring occasionally	Complaints about illness occurring continuously
Age	0.003*	0.985	0.954	0.001*	0.421	0.005*	0.079	<0.001*	0.301	0.607	0.137	0.052	0.263	0.624	0.012*
Marital status	0.005*	0.494	0.271	0.007*	0.855	0.136	0.003*	0.005*	0.128	0.860	0.002*	0.163	0.004*	0.502	<0.001*
Education status	0.005*	0.813	0.271	0.007*	0.927	0.136	0.003*	0.005*	0.056	0.191	0.504	0.010*	0.681	0.066	0.288
Income status	0.006*	<0.001*	0.155	0.036*	0.815	0.025*	0.005*	0.057	0.016*	<0.001*	0.023*	0.003*	0.174	0.067	0.404
Smoking habit	0.614	0.026*	0.055	0.325	0.555	0.198	0.547	0.581	0.467	0.320	0.053	0.260	0.301	0.112	0.845
Alcohol use	0.790	0.566	0.504	0.033*	0.477	0.963	0.201	0.960	0.647	0.043*	0.020*	0.081	0.053	0.249	0.827
Disease status	0.202	0.415	0.867	0.505	0.531	0.144	0.790	0.400	0.839	0.508	0.503	0.804	0.623	0.001*	0.023*
Working unit	<0.001*	0.291	0.001*	0.003*	0.011*	0.001*	<0.001*	0.207	0.096	<0.001*	0.006*	0.013*	0.017*	0.902	0.015*
Staffed status	0.292	0.805	0.025*	0.044*	0.417	0.015*	0.425	0.164	0.633	0.982	0.392	0.540	0.956	0.264	0.271
Working years	0.125	0.672	0.144	0.634	0.624	0.001*	0.489	<0.001*	0.348	0.921	0.094	0.067	0.159	0.106	0.030*
Working order	0.091	0.691	0.580	0.327	0.519	0.471	0.007*	0.368	0.280	0.103	0.043*	0.158	0.389	0.739	0.368
Ergonomic convenience	<0.000*	<0.000*	0.034*	0.001*	0.922	0.002*	0.021*	0.020*	<0.001*	0.003*	0.212	0.001*	0.086	0.007*	0.885
Relationships with coworkers	0.005*	0.001*	0.128	0.512	0.530	0.023*	<0.001*	0.098	0.028*	<0.001*	0.001*	0.447	0.007*	0.310	0.198
Relationships with superior	<0.001*	0.003*	.096	0.001*	.614	0.069	<0.001*	0.005*	<0.001*	<0.001*	<0.001*	0.001*	0.001*	0.001*	0.060
Work-related violence	<0.001*	0.014*	0.615	<0.001*	0.446	0.305	0.117	0.150	0.053	0.027*	0.027	<0.001	0.054	0.112	0.615
Job health and safety	<0.001*	0.177	0.128	<0.001*	0.558	0.358	0.005*	0.176	<0.001*	<0.001*	0.261	<0.001*	0.040*	0.003*	0.024*
Have had work accidents	0.057	0.923	0.851	0.073	0.117	0.011*	0.716	0.257	0.939	0.786	0.062	0.002*	0.208	0.010*	0.006*
Working conditions	<0.001*	0.101	0.001*	<0.001*	0.296	0.017	0.685	0.469	0.009*	0.360	0.461	<0.001*	0.010*	0.049*	<0.001*
Work-related stress	<0.001*	0.811	0.002*	<0.001*	0.610	0.606	0.919	0.095	<0.001*	0.567	0.250	<0.001*	0.012*	0.012*	0.003*
Job satisfaction	<0.001*	0.010*	0.498	<0.001*	0.429	0.027*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	0.017*	0.054
Desire to change job	<0.001*	0.005*	0.485	0.001*	0.584	0.311	0.001*	<0.001*	0.002*	0.147	<0.001*	<0.001*	0.002*	0.093	0.004*
How to feel at work	0.001*	<0.001*	0.238	0.447	0.802	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	0.001*	<0.001*	0.061	0.002*

Note. VOS-D: Doetinchem Organizational Stress Questionnaire
*p<0.05

stressful ($\chi^2=22.91$, $p<0.001$), had low employee satisfaction ($F=11.53$, $p<0.001$), and wanted to change their job ($z=-3.39$, $p=0.001$) (ANOVA: F value, Kruskal-Wallis test: χ^2 value, Student's t test: t value, Mann-Whitney U test: z value) (Table 5).

Not Being Able to Leave the Workplace

The mean score of this sub-dimension was significantly higher for employees working in the Loco Maintenance Workshop Directorate ($F=3.32$, $p=0.011$) than that of the ones working in other departments (ANOVA: F value, Kruskal-Wallis test: χ^2 value, Student's t test: t value, Mann-Whitney U test: z value) (Table 5).

Lack of Participation in Work-Related Decision Making

The mean score of this sub-dimension was significantly higher for the participants who were 39 years old or younger ($\chi^2=10.68$, $p=0.005$), with an income equal to expenses ($\chi^2=7.38$, $p=0.005$), who worked in the Factory Directorate of the Rail Welding and Track Machines Repair ($\chi^2=18.40$, $p=0.001$), who were included in the permanent staff ($z=-2.42$, $p=0.015$), with less than 10 years of work experience ($\chi^2=16.49$, $p=0.001$), who had no idea about the ergonomics of the work environment ($\chi^2=12.79$, $p=0.002$), who did not have good relationships with coworkers ($z=-2.27$, $p=0.023$), who had no experience of work accidents ($\chi^2=9.09$, $p=0.011$), who felt a medium-level employee satisfaction ($\chi^2=7.19$, $p=0.027$), and who did not feel well at work ($\chi^2=21.02$, $p<0.001$) (ANOVA: F value, Kruskal-Wallis test: χ^2 value, Student's t test: t value, Mann-Whitney U test: z value) (Table 5).

Lack of Believing the Necessity of Work

The mean score of this sub-dimension was significantly higher for the individuals who were single ($z=-2.95$, $p=0.003$), who had university degrees ($\chi^2=8.70$, $p=0.003$), with an income equal to expenses ($\chi^2=10.71$, $p=0.005$), who worked in the Factory Directorate ($\chi^2=23.74$, $p<0.001$), who did not have any idea about the ergonomics of the work environment ($z=-20.68$, $p=0.007$), who did not have good relationships with their coworkers and superiors ($z=-4.03$, $p<0.001$; $\chi^2=24.94$, $p<0.001$), who had no idea about job health and safety precautions in the workplace ($\chi^2=10.50$, $p=0.005$), who felt a low level of employee satisfaction ($\chi^2=28.63$, $p<0.001$), who wanted to change their job ($\chi^2=-3.43$, $p=0.001$), and who did not feel well at work ($\chi^2=42.09$, $p<0.001$) (ANOVA: F value, Kruskal-Wallis test: χ^2 value, Student's t test: t value, Mann-Whitney U test: z value) (Table 5).

Uncertainty of the Future of Work

The individuals who were 50 years old or younger ($\chi^2=19.67$, $p<0.001$), were married ($z=-2.79$, $p=0.005$), graduated from high school ($\chi^2=8.70$, $p=0.003$), had more than 30 years of work experience ($F=6.11$, $p<0.001$), did not have any idea about the ergonomics of the work environment ($F=3.98$, $p=0.020$), maintained poor relationships with their superiors ($F=5.41$, $p=0.005$), felt a low level of employee satisfaction ($F=13.38$, $p<0.001$), wanted to change their job ($t=-5.59$, $p<0.001$), and did not feel well at work ($F=7.65$, $p=0.001$) obtained a significantly higher mean score on this sub-dimension than that of the other participants (ANOVA: F value, Kruskal-Wallis test: χ^2 value, Student's t test: t value, Mann-Whitney U test: z value) (Table 5).

Lack of Support by Chief

The mean score of this sub-dimension was significantly higher for those who had an income less than expenses ($F=4.21$, $p=0.016$), did not have any idea about the ergonomics of the work environment ($F=9.83$, $p<0.001$), maintained poor relationships with their coworkers ($t=-2.028$, $p=0.028$), did not have good relationships with their superiors ($F=29.69$, $p<0.001$), thought that job health and safety precautions in the workplace were insufficient ($\chi^2=18.48$, $p<0.001$), believed that they were working in bad working conditions ($F=4.81$, $p=0.009$), described their work as very stressful ($F=8.80$, $p<0.001$), had a low level of employee satisfaction ($F=50.50$, $p<0.001$), wanted to change their job ($t=-3.14$, $p=0.002$), and did not feel well at work ($F=14.51$, $p<0.001$) (ANOVA: F value, Kruskal-Wallis test: χ^2 value, Student's t test: t value, Mann-Whitney U test: z value) (Table 5).

Lack of Support by Coworkers

The mean score of this sub-dimension was significantly higher for the individuals who had an income equal to expenses ($\chi^2=18.13$, $p<0.001$), consumed or gave up consuming alcohol ($\chi^2=6.28$, $p=0.043$), worked in the Factory Directorate ($\chi^2=32.76$, $p<0.001$), did not have any idea about the ergonomics of the work environment ($\chi^2=11.49$, $p=0.003$), did not have good relationships with their coworkers ($z=-6.51$, $p<0.001$), maintained medium-level relationships with their superiors ($\chi^2=28.52$, $p<0.001$), were exposed to job-related violence ($t=2.21$, $p=0.027$), did not have any idea about job health and safety precautions in the workplace ($\chi^2=16.28$, $p<0.001$), had a medium-level employee satisfaction ($F=9.58$, $p<0.001$), and had fair feelings about

their job ($\chi^2=21.01$, $p<0.001$) (ANOVA: F value, Kruskal-Wallis test: χ^2 value, Student's t test: t value, Mann-Whitney U test: z value) (Table 5).

Lack of Job Satisfaction

The individuals who were single ($t=-3.09$, $p=0.002$), had an income equal to their expenses ($\chi^2=7.57$, $p=0.023$), and did not consume alcohol anymore ($\chi^2=7.80$, $p=0.02$) obtained a higher mean score on this sub-dimension. In addition, these individuals worked in the Factory Directorate ($\chi^2=14.40$, $p=0.006$), did not work on shifts ($z=-2.02$, $p=0.043$), did not maintain any positive relationships with their coworkers ($z=-3.17$, $p=0.001$), had poor relationships with their superiors ($\chi^2=16.00$, $p<0.001$), had a low level of employee satisfaction ($\chi^2=22.38$, $p<0.001$), wanted to change their job ($t=-3.23$, $p=0.001$), and did not feel well at work ($\chi^2=16.77$, $p<0.001$) (ANOVA: F value, Kruskal-Wallis test: χ^2 value, Student's t test: t value, Mann-Whitney U test: z value) (Table 5).

Feeling Worried About Work

The mean score on feeling worried about work was significantly higher for those who had university degrees ($\chi^2=11.44$, $p=0.010$), with an income less than expenses ($F=5.88$, $p=0.003$), who worked in the Railway Mechanical Workshop Directorate ($F=3.23$, $p=0.013$), who perceived the work environment as non-ergonomic ($F=6.79$, $p=0.001$), who maintained poor relationships with their superiors ($F=7.66$, $p=0.001$), and who were exposed to job-related violence ($t=4.55$, $p<0.001$). These individuals also believed that job health and safety precautions in the workplace were insufficient ($F=10.75$, $p<0.001$), described their work as very stressful ($F=22.22$, $p<0.001$), had a low level of employee satisfaction ($F=13.08$, $p<0.001$), wanted to change their job ($t=-4.55$, $p<0.001$), and did not feel emotionally well at work ($F=7.74$, $p=0.001$) (ANOVA: F value, Kruskal-Wallis test: χ^2 value, Student's t test: t value, Mann-Whitney U test: z value) (Table 5).

Psychological Complaints

The mean score of psychological complaints was significantly higher for the individuals who were single ($z=-2.89$, $p=0.004$), worked in the Factory Directorate ($\chi^2=12.02$, $p=0.017$), and did not have good relationships with their coworkers ($z=-2.70$, $p=0.007$). The individuals with higher mean scores maintained poor relationships with their superiors ($\chi^2=13.55$, $p=0.001$), had no idea about job health and safety precautions in the workplace ($\chi^2=6.45$,

$p=0.04$), thought that they have bad working conditions ($\chi^2=9.21$, $p=0.01$), described their work as very stressful ($\chi^2=8.89$, $p=0.012$), had a low level of employee satisfaction ($F=5.89$, $p<0.001$), wanted to change their job ($z=-3.08$, $p=0.002$), and did not feel well at work ($\chi^2=37.57$, $p<0.001$) (ANOVA: F value, Kruskal-Wallis test: χ^2 value, Student's t test: t value, Mann-Whitney U test: z value) (Table 5).

Complaints about Occasionally Occurring Illness

Individuals who had an illness ($z=-3.36$, $p=0.001$), perceived the work environment as non-ergonomic ($\chi^2=10.03$, $p=0.007$), had poor relationships with their superiors ($\chi^2=14.86$, $p=0.001$), and believed that job health and safety precautions in the workplace were insufficient ($\chi^2=11.63$, $p=0.003$) obtained a significantly higher mean score on this sub-dimension. These individuals also had a work accident ($\chi^2=9.16$, $p=0.01$), believed that they were working in poor conditions ($\chi^2=6.02$, $p=0.049$), described their work as a little stressful ($\chi^2=9.91$, $p=0.012$), and felt a low level of employee satisfaction ($\chi^2=8.20$, $p=0.017$) (ANOVA: F value, Kruskal-Wallis test: χ^2 value, Student's t test: t value, Mann-Whitney U test: z value) (Table 5).

Complaints about Continuously Occurring Illness

The mean score of this sub-dimension was significantly higher for those who were 39 years old or younger ($\chi^2=8.92$, $p=0.012$), single ($z=-3.74$, $p<0.001$), had a disease ($z=-2.26$, $p=0.023$), worked in the Railway Mechanical Workshop ($\chi^2=12.28$, $p=0.015$), and had been working for less than 10 years ($\chi^2=8.92$, $p=0.030$). These participants also did not have any information about job health and safety precautions in the workplace ($\chi^2=7.44$, $p=0.024$), had a work accident ($\chi^2=10.11$, $p=0.006$), thought that they had good working conditions ($\chi^2=19.23$, $p<0.001$), described their work as stressful ($\chi^2=11.43$, $p=0.003$), wanted to change their job ($z=-2.86$, $p=0.004$), and did not feel emotionally well at work ($\chi^2=12.44$, $p=0.002$) (ANOVA: F value, Kruskal-Wallis test: χ^2 value, Student's t test: t value, Mann-Whitney U test: z value) (Table 5).

Discussion

This study was conducted to determine the stress levels of railway workers. The researcher thinks that the study findings will guide future initiatives that aim to reduce work-related stress.

All of the workers in this study were male. This may indicate that the harsh work conditions of units

where the study was performed were not suitable for women, and men work in more harsh work conditions. Of the workers in a study by Canpolat (2006) on factory workers' sources of stress in the workplaces, 95.7% were male (Canpolat, 2006). Şahin (2017) found work stress levels as "physical and mental stress indicators were present" in his study of 285 male workers in an iron and steel plant, which is a heavy industrial enterprise.

The mean age of participating workers was 47.0 ± 7.4 years. The mean age of the workers was high because of TCDD's reduced worker recruitment and the workers' long experience of working in these units.

Of the participants, 77.6% worked in shifts. A study by Okutan & Tengilimoğlu (2002) of 242 managers and 362 workers at the Ankara Regional Directorate of the State Railways of the Republic of Turkey determined 70% of them worked in shifts and felt uncomfortable about it. Work hours affect the stress levels of workers, and shift workers' lack of a consistent sleeping pattern can cause physical fatigue, psychological burnout, and deterioration of social life and diet.

Of the workers, 74.2% said that the ergonomics of the workplace were not convenient and they had no idea about it. Of the workers in an industrial factory studied by Çınar (2010), 37.3% found the workplace ergonomic, 23.8% did not find it ergonomic, and 38.9% had no idea about ergonomics; 96.8% participants were male. The findings of this study resemble those of Çınar (2010).

Workers in this study felt discomfort primarily about noise (67.1%) and secondarily about dust or smoke (59.6%). Workers in the study by Çınar (2010) felt discomfort primarily about dust or smoke (53.6%) and secondarily about noise (43.4%). The results of this study resemble those of Çınar (2010). Negative physical conditions in the workplace affect the workers in many ways. Improvement of negative physical conditions may prevent job accidents and illnesses.

Of the participating workers, 82.3% said that they were satisfied, 6.2% were somewhat satisfied, and 11.5% were not satisfied with the job. The findings of this study resemble the findings of Canpolat (2006). The rate of workers who were satisfied with the job was 79.9%, and the rate of workers who were not

satisfied was 20.3% (Canpolat, 2006). Aazami (2015) determined that job satisfaction is a significant factor that affects the psychosocial status of workers.

This study found that all sub-dimensions caused medium-level stress, which is consistent with the relevant literature (Clemen-Stone et al., 2002). For example, the study conducted by Çınar (2010) in a workplace operating in industry found that stressors, social changes, and psychological tensions caused medium-level stress. Another study found that all sub-dimensions of stressors and social changes cause medium-level stress (Türk & Çakır, 2006). The findings of this study are consistent with the literature, which is also a major indicator that there has been no positive improvement in working conditions, job security, and job safety in Turkey in the last 15 years. In this study, 95% and 75% of employees were mostly affected by responsibility and uncertainty of the future of work, respectively, whereas more than 25% were affected by uncertainty of the future of work and 5% were affected by excessive workload. A related study found that 5%, 25%, 75%, and 95% of employees were mostly affected by excessive workload (Türk & Çakır, 2006). Türk (1997) found that 95% and 75% of employees were mostly affected by responsibility, while 25% and 5% were mostly affected by excessive workload. In another study, it was observed that employees were mostly affected by responsibility and excessive workload (Aydın et al., 2010). This study found that employees were mostly affected by responsibility, and this is consistent with the other study findings. However, the influence of uncertainty of the future of work is not observed in other studies. This can be owing to the fact that employees do not feel safe because there were varying working conditions in the facilities where this study was conducted, and these state-guaranteed factories are considered to be taken into the scope of privatization.

In the literature, other studies similar to this study indicated that personal characteristics and work and work-related characteristics affect the stress levels of employees (Türk & Çakır, 2006; Couser, 2008; Çınar, 2010; Özçay, 2011; Özen, 2012; Yeşil, 2013; Hu et al., 2014; Smith et al., 2019). Consistent with the findings of this study, the mean score for excessive workload was higher for single employees with post-graduate degrees in a study conducted with nurses (Özen, 2011). This study showed that perceptions of excessive workloads decreased as the employees

became older. This may be owing to the fact that employees that worked in the same units for many years feel more experienced. This study also found that workplace and work-related characteristics significantly affected the score of excessive workload. Gillespie et al. (2001) have stated that excessive workload and work-related stress are positively related; work-related stress increases with an increase in workload, and it decreases with a decrease in workload. Karabağ & Özgen (2008) found significant relationships between workload and stress levels.

The findings of this study are in line with the literature because the score of uncertainty of roles sub-dimension was higher for employees who did not have good relationships with their superiors and coworkers (Çınar, 2010). The mean score of uncertainty of roles was found to be significantly higher for those with a low economic status (Özçay, 2011). The author assumed that the employees having poor relationships with their superiors and coworkers may experience uncertainty of roles because of their lack of effective communication in the workplace. Studies in the relevant literature have highlighted that uncertainty of roles may cause lack of self-confidence and loss of motivation, which may also create more stress (Gümüştekin & Gültekin, 2009). Başaran (2008) has concluded that an increase in the uncertainty of roles decreases employees' job satisfaction. Similar to this study, Özen (2011) has found that the mean score of uncertainty of roles was higher in nurses who do not smoke.

In this study, the mean score was high for staffed employees who perceive the work environment as not ergonomic, think that they have bad working conditions, and feel much stressed at work. The higher responsibility score of the staffed employees may be associated with the status of staffed employees being better than contracted/temporary employees owing to their higher work responsibilities. Özçay (2011) have found that perceived responsibility was significantly higher in staffed employees than in contracted employees. Given that majority of the contracted/temporary personnel have to work in this way, perceived responsibility of temporary employees will probably be lower assuming that they do not have a sense of belonging to the work and workplace. A study conducted with forensic science experts and their assistants found that taking responsibility causes more stress as individuals become older, and employees between the ages of 25 and

29 years have the lowest responsibility scores (Aydın et al., 2010). This study found that age did not affect the scores of responsibility, and the participants had the lowest score of responsibility.

In the literature, similar with this study, the mean score of conflict of roles was higher for single employees than that for married employees (Narin, 2010; Özçay, 2011; Yeşilyurt, 2009). This difference can be explained with their skills to prevent conflict of roles by taking multidimensional roles in their marriages. Similar with this study, Özen (2011) has found the mean score of conflict of roles to be higher in alcohol consumers. As the alcohol consumers experience a strong conflict in their roles, it can be concluded that alcohol is referred to be an ineffective way to cope. Similar to the findings of this study, the literature found the mean score of conflict of roles to be higher for the workers who find their income insufficient than the other individuals (Özen, 2012). Özçay (2011) have found that the mean scores on conflict of roles were significantly lower in company employees than in contracted personnel. Conflict of roles mostly influences middle-level employees (Baltaş & Baltaş, 2010). The mean score on conflict of roles is higher in the company employees because they believe that they have a higher work status than contracted/temporary workers. Başaran (2008) has stated that an increase in conflict of roles reduces job satisfaction.

In this study, locomotive maintenance employees had the highest score than other working unit employees in not being able to leave the workplace. This may be owing to the fact that the probability of leaving the workplace is lower for these employees because of the nature of their work. Being unable to leave the workplace because of the aspects of the work is an important source of stress for workers. Stordeur & Wanderberne (2001) have argued that organizational structure of the workplace should allow changes that are addressed to defining, preventing, and removing factors that cause stress.

Similar to the findings of this study, the literature suggests that as the ages of employees and their duration at work increase, employees' participation in the decision-making process increases as they become older and gain more experience at their work (Türk, 1997; Türk, 2006; Çınar, 2010). Being older and more experienced is assumed to lead to a greater participation of employees in the decision-making processes.

Young employees with fewer working years participate less in work-related decision-making processes, which may be a result of their lack of experience and weak loyalty to the work and workplace. In this study, the mean score on lack of participation in work-related decision-making process was significantly higher for employees who did not have any work accidents. Canpolat (2006) has found a significant difference between employees' work accident experiences and stress levels and stated that employees with this experience have higher stress levels than the other employees. Negative experiences of employees with work accident experience and thoughts of being at risk for another work accident may increase their desire to have more control on the work and to participate in decision-making process.

In this study, many personal as well as work and workplace-related characteristics significantly influenced the mean score on the lack of belief in the necessity of work. These findings are compatible with those in the literature (Çınar, 2010; Özen, 2011; Ross & Altmaier, 1994; Türk, 1997; Türk, 2006). Ross & Altmaier (1994) have emphasized that lack of belief in the necessity of the work was one of the reasons for work-related stress. Employees who do not believe in the necessity of their work perceive going to work as an obligatory task and think that they do not have any reasons to do their work.

Çınar (2010) has found a significant difference between the sub-dimension of uncertainty of future work and working years and stated that employees who worked for at least 21 years have higher scores on uncertainty of future work. Türk & Çakır (2006) have found that employees who are aged at least 40 years and primary school graduates and had at least 21 years of work experience have higher scores for uncertainty of future work. Employees who are older than 50 years and have at least 30 years of work experience are getting closer to their age of retirement, and university graduates are preferred over the high school graduates at work; therefore, high school graduate employees are afraid of losing their jobs, which may lead to high scores on uncertainty regarding the future of work. Uncertainty about the future of work is the lowest for university graduates because employees with a high education status work in more qualified management positions.

Employees who experience difficulties owing to work and workplace-related problems are expect-

ed to find job health and safety precautions insufficient, think they have bad working conditions, do not feel well at work, want to change their jobs, and have stress at work when they do not receive support from their chiefs and friends. Employees who maintain positive relationships with their coworkers and superiors may be more motivated and desired to become integrated with their work for valuable contributions. The literature suggests that there is a positive relationship between work-related stress and organizational loyalty. Başaran (2008) has expressed that job satisfaction increased and job-related stress decreased as the level of satisfaction with coworkers increased. Chang (2006) has stated that work-related stress is low when loyalty to organization and employees is strong.

In this study, many personal characteristics and work and workplace-related characteristics significantly affected the mean scores on lack of job satisfaction. Job satisfaction indicates how much employees care about their work and shows their work-related information, beliefs, and pleasures. Employees expect to have proper working conditions and motivational support to get job satisfaction. Therefore, employees, who have poor relationships with their coworkers and superiors, are not happy with their work, and feel bad at work, are expected to have low job satisfaction. Studies in the literature have found that age and relationship with coworkers affect job satisfaction, which is consistent with this study (Çınar, 2010; Türk, 1997). Employees make progress in their careers as they become older; however, becoming older also implies a decrease in physical strength. As a result, employers and organizations expect less from these employees, which may in turn affect their job satisfaction. In contrast, the increase in commitment and performance on the basis of spending many years at work may lead to a high job satisfaction. Work and work-related negative situations may cause psychological complaints. Studies in the literature have emphasized that psychological complaints involving negative feelings, such as concern, fear, helplessness, and hopelessness, may increase employees' work-related stress (Maslach, 2018). In this study, the mean score of psychological complaints was higher for the employees who have poor relationships with their coworkers and find their workplaces stressful. Similar to the findings of this study, studies in the literature have determined that married employees have more psychological complaints than single employees and a significant

difference was found among psychological complaints, work-related stress, and relationships with coworkers (Çınar, 2010; Özen, 2011).

This study found that many personal descriptive characteristics and work and workplace characteristics did not influence the mean score of complaints on health. The literature also suggests similar results with the findings of this study. Aagestad et al. (2014) have stated that psychosocial risk factors influence general health conditions. Owen (2000) has stated that negative workplace conditions have negative influences on physical and psychosocial health of employees. Çınar (2010) has found significant differences between the sub-dimensions of work accident experience, work-stress, job satisfaction, and complaints about health. A history of work accident, insufficient job health and safety precautions, bad working conditions, and not feeling good at work may trigger complaints about health. This may lead to permanent injuries and conflict that affect the workplace as a whole.

Conclusion and Recommendations

This study showed that the employees were influenced by all sub-dimensions of stressors, social changes, psychological tensions, and complaints about health and they feel medium-level stress. Therefore, this study recommends that education programs be organized in workplaces to prevent, reduce, and manage stress. In addition, organizations should develop new strategies to periodically evaluate workplace stressors and to better control stress-related factors at work. Working environments and conditions should be improved; assignments, authorities, and responsibilities of all workers should be clearly defined in the workplace; and counseling units to cope with work stress should be constituted. Events should be organized to make way for the careers and promotions of workers, balanced workloads, increased social interactions in the work environment, ensuring workers' inclusion in decision making, teamwork among workers, determining shift hours according to the individual characteristics of workers, making regulations about working hours and workloads, preventing violence in workplace, and developing team spirit.

The occupational nurse should identify the employees at risk of stress and take appropriate action. They should help to protect individuals from harmful

consequences of stress in individuals experiencing stress and should intervene to adapt to and reduce stress. They should lead the employee to manage time or participate in social and cultural activities. Studies that assess the work stress levels of workers in various fields should be conducted to define field-specific stressors. Intervening in the management and control of work stress is the responsibility of the occupational nurse.

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