

The impacts of occupational risks and their effects on work stress levels of health professional (The sample from the Southeast region of Turkey)

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Abstract

Objectives This study was performed to determine the occupational risks and their effects on the work stress of the health professionals working in state hospitals in the Southeast of Turkey.

Methods This cross-sectional and descriptive study was composed of 360 health professionals of the Pazarcık, Ergani, and Şehitkamil State Hospitals between December 2014 and January 2015. The data of the study were obtained by performing the survey which was composed of questions related to the socio-demographic characteristics, factors that were thought to affect the occupational risks and job stress, as well as, the questions of the Work Stress Scale. The analyses of the data have been performed using Student's *t* test and one-way analysis of variance.

Results The working hours, the number of being on-duty, insomnia, and burnout in health professionals were determined to be with the highest mean scores among other stressful risks and hazards. The mean work stress level, which increases the success by creating the group-stimulus effect, was indicated as 2.4 and 2.5 for the health professionals in Pazarcık and Ergani State Hospital, respectively. However, the stress level which poses a threat for the

group-health and efficiency was found to be 4.0 for the health professionals of the Şehitkamil State Hospital.

Conclusions As the exposure of the occupational risks increases in the health professionals, the work stress scores also increase ($p < 0.05$). The occupational risks and work stress of the health professionals in the Şehitkamil State Hospital should be evaluated in terms of occupational health and safety.

Keywords Health professionals · Occupational risk · Occupational health and safety · Work stress · Southeast region

Introduction

In Turkey and throughout the world, the health professionals are faced with various hazards and risks during the health care services. There are various hazards and risks regarding the health care service particularly in the workplace of hospitals in the context of the occupational health and safety (OHS) [1]. The possibility of health professionals to encounter the risks of the profession depends on the profession, the type of the work, and the unit of the hospital. The probability of nurses to experience the health risks are higher compared to other health professionals since nurses spend more time with patients and directly deal with their health status [2–4]. Nowadays, health professionals encounter different work risks depending on the nature of the work compared to the risks of laborers working in other sectors. The wide range of risks of health professionals can be needle injury, backache problems, latex allergy, violence, and stress [5]. The hazards and risks which affect the health status of the health professionals can be grouped as biological, physical, ergonomic,

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chemical, and psycho-social. National Institute for Occupational Safety and Health-NIOSH has reported that there are 29 kinds of physical, 25 kinds of chemical, 24 kinds of biological, 6 kinds of ergonomic, and 10 kinds of psycho-social hazards and risks in hospitals [6].

It should be known that which conditions set the stage for hazards to become risks. When we ignore these situations, it is not possible to work in a healthy and safe environment. In order to protect the health, the factors which deteriorate the health should be known. When the hazards are not prevented, they lead to risks, and furthermore, in case we do not obviate the risks, they cause occupational health problems, injuries and related disability, and unfitness. Both the workplace as well as the work load can lead to occupational mistakes [7, 8]. Studies and scientific reports indicate that risks and hazards increase the occupational diseases, work accidents, work-related health problems, disability and unfitness, as well as they create new problems [9–16].

Work stress is defined as the situation which can create tension in the individual due to the lack of capabilities as well as physical and physiological problems. Working stress emerges in the workplace and it is a potential strain for the workers. Work stress is inevitable in the working life but there are problems in case its frequency or duration is more than an individual can withstand [17]. The stress-related risk factors such as long-term studies, excessive workload, time pressure, difficult or complex tasks, inadequate rest breaks, uniformity, and physically poor business conditions (location, temperature, and lighting are observed more in health professionals). Besides, there are other stress factors such as long-term standing depending on the service intensity, insomnia due to being on-duty, and eating disorders [18, 19]. Various studies emphasize that being a nurse is a hard profession, and the work-related stresses are more common among nurses compared to other professionals. The most important stress factors of nurses in the workplace of the hospital are determined as follows by ICN:

- Providing health care to a person who is prone to die and facing death
- The conflicts of nurses with the directors as well as colleagues including other health care professionals
- Inadequate preparation to cope with the emotional needs of patients and their families
- Lack of personnel support
- Work load
- The uncertainty about the treatment plan [20].

Additional to these reasons, uncertainty regarding the duties, role conflict, the style of management, responsibility, career obstacles, and disadvantages of physical space and environment can also be factors which lead to

stress in nurses [19]. According to the literature, health professionals experience intense stress and it leads to the decrease in the self-esteem, depression, somatic complaints, sleep disorders, and burnout. This negative response of health professionals causes both personal and organizational problems. Furthermore, patients can be negatively affected due to the decrease in the quality of health care services. Primarily, health professionals should be healthy in order to provide a proper health care. The health care is mostly provided by nurses, and therefore, how patients perceive the health care is as important as the quality of the service [21].

Nurses have various ineffective methods to cope with stress such as alcohol and tobacco use, escaping from the problems, excessive eating and drinking, having conflict with others, being away from work, and trying to forget the problems. On the other hand, there are also various effective methods to deal with stress such as using the way to solve problems, dealing with social activities, resting, relaxing, and cognitive coping techniques [22–31]. The workplace and working conditions as well as the awareness of the occupational risks are very important for the health professionals to protect themselves from the work stress [2].

There are differences between the east and the west regions of Turkey with regard to the factors such as level of development, socio-economic status, geographical situation, population. These differences are even more prominent from west to the east. In the East and the Southeast regions of Turkey, health professionals have various problems such as professional development and training opportunities, security, living and working conditions, transport facilities, communication with patients [32]. This descriptive study has been performed to determine the occupational risks and effects of working as a health professional in the three districts in the Southeast region of Turkey. Furthermore, we aim to develop recommendations to health professionals in order to minimize their susceptibility to risks and decrease their work stress.

Materials and methods

The universe of this cross-sectional and descriptive study was composed of 360 health professionals of the Pazarcık, Ergani, and Şehitkamil State Hospitals between December 2014 and January 2015. On the basis of Pazarcık district with a minimum number of professionals (120 individuals), all of the 360 health professionals from these three districts were included in the study. Permission and the ethical approvals were obtained from the institution. Besides, the informed consent form was also given to health professionals to read and understand the aim and content of the study. Each participant signed the form which declares that

they voluntarily participate in the study. The data of the study were obtained by performing the questionnaire as well as the workplace stress scale (WSS) survey under direct observation. The questions were related to the socio-demographic characteristics (age, sex, marital status, economic status, education level), hospital workplace risks and hazards (injury due to the infected penetrating and sharp tools, hand washing, use of gloves, syringe use, violence, etc.), health conditions (nutrition, exercise, rest, chronic diseases, sleep, smoking, alcohol, health checks etc.), and working conditions (service time, working time, work efficiency, etc.).

WSS was developed by Cohen and Williamson in 1998. The validity and reliability of this scale was performed by Baltaş (1998) in Turkey and the Cronbach's Alpha values was found to be 0.84. The aim of the scale is to examine the main points of stress perception and coping with stress. There are 5-point Likert-type scale questions in the scale (1 = Never, 2 = Very rarely, 3 = sometimes, 4 = Often; 5 = Always). The total score is divided into 14 and the scale score of an individual can be obtained (A = 3.5–4.0; B = 1.0–1.3; C = 1.4–1.9; D = 2.0–2.5; E = 2.6–3.1; F = 3.2–3.4). A, B, E, and F groups correspond to stress levels that can negatively affect the efficiency and health, whereas C and D groups correspond to stress levels that can increase the success. The explanations of the groups can be seen as follows: A (1. Group): severe risk level which seriously threatens the health and productivity. B (2. Group): risk level which leads to the feeling of insignificance, does not let the individual to use her/his capacity, and therefore, causes the feeling of uselessness. This stress level is not stimulating. C (3. Group): This stress level is stimulating but for light work. The stress level is boring for an individual who has a high achievement motivation but it is a convenient work stress for an individual who has a combative personality. D (4. Group): The stress level which is the most convenient for the health and the efficiency. E (5. Group): The work stress level which has the high level of stimulation and responsibility but this stress level is also attractive. This work stress level can increase the effectiveness by inducing the individual whereas it can also threaten the health. F (6. Group): The work stress level which has the high level of responsibility, pushes an individual in terms of time, does not give opportunity to rest and deal with family members, and therefore, can threaten the health and effectiveness [19, 33].

The statistical analyses in this study were performed using SPSS 22.0 software package. Categorical measures were shown in numbers and percentages whereas numerical measurements were shown using mean and standard deviation (and maximum and minimum where necessary). For the normally distributed data, one-way ANOVA method was used in order to test the differences in the

means across more than two groups. To be able to compare the means of two groups, advanced techniques were employed such as correlation, simple comparison tests, and regression analysis. In all types of analyses, 5.0 % significance level was used.

Results

The 62.5 % (225 individuals) of the health professionals were female and 37.5 % (135 individuals) of the health professionals were male. The mean age of them was 23.03 ± 14.36 (min = 17, max = 54). The 95.6 % of them had a permanent position, 48.1 % of them were working for the last 2–5 years, and 1.7 % of them working for the last 21 years or more. The 49.2 % of them stated that they were working in clinics, 37.8 % of them were working in special units (such as emergency, intensive care, etc.), 11.7 % of them were working in the diagnosis and examination units, and 1.4 % of them were working in the administrative units. The WSS score distributions of health professionals according to their demographic features can be seen in Table 1.

When we examine the effects of demographic features of health professionals on their work stress, as the age and the number of children increase, the mean WSS scores also increase significantly ($p < 0.05$). According to our results, there was no significant difference between the WSS scores and the gender, marital, and educational status ($p > 0.05$) (Table 1).

The WSS scores of the health professionals according to their occupational status can be seen in Table 2. In three districts, the WSS scores of nurses, midwives, and health officers were significantly higher compared to the WSS scores of laboratory assistants, operators, and technicians. Additionally, the WSS scores of professionals who were in their first 15 years of working life were found to be significantly higher compared to the ones who were working between 16 and 25 years in the institution, who were working 50–59 h per week and who were on-duty 6–10 times ($p < 0.05$) (Table 2).

The WSS scores of the health professionals according to their health status can be seen in Table 3. The WSS scores of health professionals who did not have regular health controls, regular diet, hobby, who had a chronic disease, who were smoking and drinking alcohol, and who had a sleeping problem were significantly higher compared to others ($p < 0.05$) (Table 3).

The hospital working place derived risk and hazard scale scores of health professionals can be seen in Table 4. When we examined the data regarding the risk factors due to the workplace, 66.4 % of the health professionals stated that they were exposed to verbal violence by the families of the

Table 1 The WSS Score distribution of health professionals according to their socio-demographic features

Demographic variables	Mean ± SD (min–max)		<i>p</i> value
Age	23.03 ± 14.36 (Min = 17, Max = 65)		<i>p</i> = 0.000
Number of children	1.89 ± 1.93 (Min = 0, Max = 9)		<i>p</i> = 0.001
	<i>N</i> (%)	WSS Score (Mean ± SD)	
Gender			
Male	135 (37.5)	41.90 ± 10.50	<i>t</i> = −0.559
Female	224 (62.5)	41.25 ± 10.87	<i>p</i> = 0.965
Marital status			
Single	99 (27.5)	42.97 ± 2.29	<i>F</i> = 1.360
Widow/divorced/separated	19 (5.3)	41.26 ± 2.55	<i>p</i> = 0.529
Married	242 (67.2)	40.87 ± 2.68	
Educational status			
Vocational school of health	70 (41.9)	45.18 ± 1.52	<i>F</i> = 6.093
Pre-bachelor	149 (33.7)	38.95 ± 3.44	<i>p</i> = 0.092
Undergraduate	131 (10.6)	42.35 ± 1.55	
Graduate	10 (4.1)	41.50 ± 2.97	

SD standard deviation, *WSS* workplace stress scale

patients, 45.0 % of them stated that they experienced physical violence, 76.7 % of them stated that they had backache, 73.9 % of them stated that they had neck pain, 72.2 % of them stated that they had shoulder and arm pain, 72.8 % of them stated that they experienced insomnia, 93.1 % of them stated that they threw away the needles into the disposal boxes, and 50.6 % of them stated that they had injury due to the infected and penetrating and sharp tools (Table 4).

The mean scores of Work Stress Scale in the state hospitals in districts can be seen in Table 5. When we evaluated the mean scores of work stress, the stress level (C 3.), which creates the group-stimulation and increases the success, was 2.5 and 2.4 for Pazarcık and Ergani State Hospitals, respectively. Besides, the stress level (F 6.), which threatens the health and the efficiency, was 4.0 for Şehitkamil State Hospital (*p* < 0.05) (Table 5).

The correlation between the general exposures of health professionals and the WSS scores can be seen in Table 6. There was a positive and moderate level relationship between the stress scores of the health professionals and the state of being exposed to violence (*p* < 0.05, *r* = 0.323), finding the OHS system sufficient (*p* < 0.05, *r* = 0.162), and finding the workplace of the hospital hazardous and risky (Table 6).

Discussion

When we examined the mean work stress scores of the health professionals according to their socio-demographic characteristics, older individuals had more work stress

compared to younger ones. Our findings are compatible with the literature [34–40]. As the health professionals are getting older, they can not resist the work load and they can get tired more quickly compared to their younger colleagues. There was no statistically significant difference between the work stress scores of health professionals and their gender, marital, and educational status. Similar to our findings, Tel et al. performed a study on health professionals in a hospital in Erzurum and they found that gender did not affect the work stress [17]. However, there are studies in the literature which state that women experience the more intense work stress compared to men [23, 34, 37]. Similar to our study, there was no significant difference between the work stress and the educational and marital status of the health professionals according to the study of Tuna and Baykal entitled ‘The Work Stress in Oncology Nurses and the Factors Affect the Work Stress’ and the study performed by Al-Aameri entitled ‘Source of Job Stress for Nurses in Public Hospitals’ [37, 41]. It is possible to state that the educational and marital status may not affect the work stress.

When we examined the mean work stress scores of the health professionals according to their occupational status, it was determined that the maximum work stress was experienced by nurses among health professionals. Various studies have supported that nursing profession is hard and the work stress due to the workplace is common among nurses [19, 21, 36, 42–49]. Nurses can experience an intense pressure and stress due to the conditions in the workplace and since they provide health care service to ill or stressed people who are prone to be ill. Therefore, nursing can be accepted to be a stressful profession.

Table 2 The WSS score distribution of health professionals according to their occupational status

Occupational status	<i>N</i> (%)	WSS score (Mean ± SD)	<i>p</i> value
Position			<i>F</i> = 4.446
Nurse	255 (70.8)	47.92 ± 11.43	<i>p</i> = 0.001
Midwife	12 (3.3)	44.78 ± 10.62	
Health officer	53 (14.7)	44.56 ± 10.44	
Laboratory assistant	11 (3.1)	39.64 ± 9.44	
Operator	33 (9.2)	38.53 ± 7.12	
Technician	8 (2.2)	36.92 ± 8.05	
The unit of the hospital			<i>F</i> = 8.751
Administrative units	5 (1.4)	37.40 ± 5.50	<i>p</i> = 0.649
Clinics	177 (49.2)	42.99 ± 10.77	
Diagnostic and laboratory units	42 (11.7)	41.14 ± 10.63	
Specialty units (emergency, intensive care)	136 (37.8)	39.75 ± 10.58	
Working duration in the institution			<i>F</i> = 6.006
Less than 1 year	35 (9.7)	45.37 ± 11.87	<i>p</i> = 0.000
2–5 years	149 (41.4)	42.58 ± 9.23	
6–10 years	93 (25.8)	41.98 ± 11.59	
11–15 years	32 (8.9)	41.12 ± 8.98	
16–20 years	28 (7.8)	36.32 ± 11.16	
21–25 years	15 (4.2)	25.50 ± 8.24	
26 years and more	8 (2.2)	41.47 ± 10.71	
Weekly working duration			<i>F</i> = 14.053
40–44 h	161 (44.7)	37.03 ± 9.95	<i>p</i> = 0.000
45–49 h	72 (20.0)	44.54 ± 10.13	
50–54 h	39 (10.8)	47.51 ± 10.23	
55–59 h	36 (10.0)	47.63 ± 10.54	
60–64 h	11 (3.1)	45.54 ± 5.04	
65 h and more	41 (11.4)	41.29 ± 8.85	
Frequency of being on-duty			<i>F</i> = 8.163
Number of persons who are never on-duty	75 (20.8)	36.93 ± 10.07	<i>p</i> = 0.000
Number of persons who are on-duty once	33 (9.2)	40.06 ± 8.01	
Number of persons who are on-duty 2–5 times	150 (41.7)	41.68 ± 11.41	
Number of persons who are on-duty 6–10 times	89 (24.7)	45.89 ± 9.63	
Number of persons who are on-duty 11 times or more	13 (3.6)	38.53 ± 7.12	

SD standard deviation, *WSS* workplace stress scale

In our study, we indicated that as the years pass in the profession, health professionals feel more work stress. Our results are compatible with the study performed by Tuna and Baykal [37]. In contrast to our findings, Tel et al. have indicated that there was no statistically significant association between the work stress of health professionals in a hospital in Erzurum province and the working hours [17]. In general, it can be stated that working hours can influence the work stress. One of the stress factors in the health professionals is the work load. There are various studies which support this hypothesis in the literature [23, 48–56]. In European hospitals, the shift time of the nurses passes

12 h [57]. When we compare the countries throughout the world, the total working time of the health professionals in Turkey is longer compared to various countries [58]. This can negatively affect the quality of the service, happiness, and the work satisfaction of the health professionals, the safety of the workplace as well as the their health and safety. In this study, we showed that as the number of being on-duty increased, the works stress also increased. According to studies conducted by Sariçam, Tuna and Baykal, McVicar as well as Arcaç and Kasımoğlu, they also indicated that the shift work and the number of patients affected the work stress [19, 37, 59, 60]. It has

Table 3 The WSS score distribution of health professionals according to the health status

Health status	N (%)	WSS score (Mean ± SD)	<i>p</i> value
Their health status			
Good	182 (50.6)	42.26 ± 10.85	<i>F</i> = 2.050
Medium	158 (43.9)	40.25 ± 10.86	<i>p</i> = 0.130
Bad	20 (5.6)	43.90 ± 6.92	
Performing regular health checks			
Yes	136 (37.8)	36.61 ± 9.36	<i>t</i> = 7.166
No	224 (62.2)	44.42 ± 10.42	<i>p</i> = 0.000
Easy access to health care status			
Yes	320 (88.9)	41.74 ± 10.90	<i>t</i> = 1.331
No	40 (11.1)	39.35 ± 8.86	<i>p</i> = 0.184
Thinking of performing regular diet			
Yes	129 (35.8)	39.51 ± 10.23	<i>F</i> = 3.702
No	113 (31.4)	42.00 ± 9.83	<i>p</i> = 0.026
Not always	118 (32.8)	43.10 ± 11.75	
The status of performing regular exercise			
Yes	100 (27.8)	41.60 ± 10.42	<i>t</i> = 0.137
No	260 (72.2)	41.42 ± 11.03	<i>p</i> = 0.891
The status of having social hobby			
Yes	186 (51.7)	40.02 ± 9.68	<i>t</i> = 6.222
No	174 (48.3)	42.82 ± 11.45	<i>p</i> = 0.013
The status of having a disease			
Yes	31 (8.6)	41.89 ± 10.69	<i>t</i> = 2.431
No	329 (91.4)	37.03 ± 10.07	<i>p</i> = 0.016
Cigarette			
Yes, everyday, at least once	78 (21.7)	45.52 ± 13.94	<i>F</i> = 5.017
Yes, sometimes	59 (16.4)	44.60 ± 12.22	<i>p</i> = 0.0001
I gave up smoking	53 (14.7)	40.55 ± 10.84	
Never smoked	168 (46.7)	39.50 ± 9.08	
Alcohol			
At least one or two times in a week	39 (21.7)	40.48 ± 11.31	<i>F</i> = 33.553
At least one or two times in a month	9 (16.4)	37.45 ± 10.83	<i>p</i> = 0.000
At least one or two times in a year	201 (14.7)	34.33 ± 8.26	
I gave up drinking alcohol	25 (46.7)	28.08 ± 6.04	
I never drink alcohol	86 (21.7)	25.15 ± 5.94	
Sleeping problems			
Yes	262 (72.8)	41.47 ± 10.71	<i>t</i> = 7.063
No	98 (27.2)	34.26 ± 8.72	<i>p</i> = 0.000

SD standard deviation, *WSS* workplace stress scale

been stated that being alone during the shifts, undertaking the full responsibility of the patient can lead to loneliness and a sense of helplessness as well as intense stress [39]. Therefore, the work stress can increase since the shift workers in the health sector provide health care service to high number of patients and since the process is more complex during the shift period.

In our study, we detected that health professionals frequently smoke and drink alcohol in order to cope with the work stress. Similar to our study, Arıkan and Karabulut

showed that the work tension was high in health professionals who smoke and drink alcohol [40]. In contrast to our findings, Tel et al. showed that there was no association between the smoking and the work stress whereas they found that the stress scores of doctors, nurses, dentists, and health officers who were smoking cigarette were higher compared to others who were not smoking [17]. In literature, it has been specified that one of the indications of the stress is the increased tendency to cigarettes and alcohol [61–63]. Besides the decrease of the work efficiency, the

Table 4 The findings of the health professionals related to the hospital work environment source risk and hazard scale

The hospital work environment source risks	N	Mean	SD
Do you wash your hands before the treatment process?	360	4.40	0.79
Do you wipe your hands after washing your hands?	360	4.28	0.98
Do you use hand sanitizer?	360	3.96	1.09
Do you use gloves during the patient care/treatment process?	360	4.07	1.17
Do you wear protective coat during the patient care/treatment process?	360	3.37	1.31
Do you pay attention not to work in the challenging positions for you body?	360	3.58	1.17
Do you break the ampoule during the preparation of the treatment?	360	4.21	0.99
Do you close the injector valve after the treatment?	360	3.41	1.49
Do you throw away the needle into the special needle box?	360	4.37	1.00
Do you change your gloves while switching a patient from another?	360	4.21	0.97
Do you wash your hands after the treatment/care?	360	4.25	1.04
Do you wash the place within 5 min when there is a chemical splash to your skin/eyes/open wound?	360	4.00	1.26
Have you been exposed to verbal violence by relatives of the patients in the hospital?	360	3.14	1.23
Have you been exposed to physical violence by relatives of the patients in the hospital?	360	2.47	1.24
Have you been abused by patients' relatives?	360	2.39	1.40
Have you ever had a neck pain that negatively affected your health?	360	3.26	1.19
Have you ever had a backache that negatively affected your health?	360	3.38	1.20
Have you ever had a shoulder or arm pain that negatively affected your health?	360	3.26	1.24
Have you been exposed to the adverse effects of chemotherapy drugs?	360	2.27	1.38
Have you ever had insomnia problem?	360	3.26	1.26
Have you ever experienced a varix problem?	360	3.05	1.45
Have you had any health problems related to the skin due to latex gloves?	360	3.07	1.37
Have you ever had a nosocomial viral infection?	360	2.67	1.32
Have you ever experienced injuries due to infected and penetrating objects?	360	2.75	1.35

SD standard deviation

Table 5 The average of WSS scores in District State Hospitals

Hospitals	Mean ± SD	Min	Max	Work stress score	p values
Gaziantep Şehitkamil State Hospital	49.63 ± 9.70	24	70	4.0	$F = 73.187$ $p = 0.000$
Diyarbakır Ergani State Hospital	37.18 ± 8.96	19	58	2.4	
Kahramanmaraş Pazarcık State Hospital	37.60 ± 8.44	16	60	2.5	

SD standard deviation, WSS work stress scale

Table 6 The correlations between the general exposure of the health professionals and WSS applications

	General exposure to stress		Generally finding sufficient the OHS system		Generally finding the working environment in hospital hazardous and risky	
	r	p	r	p	r	p
WSS score	0.323	0.000	0.162	0.002	0.278	0.000

WSS workplace stress scale, OHS occupational health and safety

habit of smoking, alcohol, and drug use can also be increased among individuals who work under stress. Therefore, the methods used by health professionals to

cope with stress in the workplace should be known and it is important to develop positive attitudes in terms of both the nursing profession and providing good quality of service.

The night shifts can lead to work stress as well as insomnia. In our study, the 72.8 % of the health professionals stated that they experienced insomnia due to the work stress in the workplace. Ozabacı showed that night shifts caused insomnia in the 78.0 % of the nurses [64]. The mean of 6–8 h of sleep is sufficient for healthy individuals whereas it is not enough for health professionals who work under intense stress conditions and who have long working hours.

According to the analyses related to the mean works stress scores of health professionals, we detected that the stress factor with the highest score was the occupational risk. According to the literature, the occupational risks for health professionals can be injuries with infected penetrating and sharp tools, nosocomial viral infections, back-shoulder-arm pain due to heavy lifting, physical traumas, verbal or physical violence, and stress [2, 5, 65–69]. The excess number of these stress factors which threaten the physical and mental health status of the health professionals can lead to decrease in their working performance. Another important issue that emerges due to work stress is the experience of the physical problems. The 76.7, 73.9, and the 72.2 % of the health professionals had back, neck, and shoulder/arm pain, respectively. It has been determined that the health professionals who had back, shoulder, and arm pain had also higher work stress levels. In the study performed by Aiken et al., it has been shown that the 88.0 % of the nurses had back injury and negative effects of work stress because of the nosocomial hazards and risks that were not prevented properly in the hospital [9]. According to the study which covered all health personnel in Germany, it was stated that musculoskeletal diseases were the most common problems (with the rate of 52.0 %) due to the work risks [70]. In Turkey, the musculoskeletal diseases are observed frequently in health professionals [3, 69–72]. According to studies, the most common physical problem is the backache [49, 67, 72–78]. The life quality of the health professionals can be decreased because of the physical problems, and therefore, occupational performance can also be negatively affected. Being exposed to the penetrating and sharp tools is the important problem [78] and the most important source of infection [79–81]. In our study, the 93.1 % of the health professionals stated that they threw away the needles into the disposal boxes whereas the injuries due to the penetrating and sharp tools were commonly experienced. It has been shown in various studies that the injury rate of penetrating and sharp tools is high also in Turkey [19, 66, 78–83]. This indicates us that the health professionals use an incorrect method of closing the needle valve upon injections. According to the study performed by Centers for Disease Control and Prevention (CDC), the penetrating and sharp tools have been defined and it has been observed that there were 5000 percutaneous injuries in the 5-year follow-up period and the 62.0 % of

these injuries occurred with syringe needle. The 38.0 % of these injuries happened during the use of percutaneous tools and the 42.0 % of these injuries happened before and after the use of disposable tools [84]. According to the estimations of CDC, there are 385,000 injuries with syringes annually and approximately 1000 injuries with penetrating and sharp tools daily among health professionals in hospitals [85]. In this study, the commonly observed sharp and penetrating tool-related injuries can occur due to the incorrect disposal of the syringes into the disposal boxes or since the health professionals do not throw away them.

The violence in the health institutions is defined as the verbal or physical attack of a patient, relatives of the patient, or another individual against the health professionals [68, 85]. Nowadays, violence in the workplace is an important issue [85, 86]. In our study, the health professionals stated that they were exposed primarily to verbal violence (66.4 % of them) and secondly to physical violence (45.0 % of them) of the family members of the patients. In the literature, it has been reported that the violence against health professionals is very high [75], and furthermore, it has been specified that verbal violence is the most common one among others [86, 87]. Exposure to violence can increase the work stress of health professionals. According to Yesildal, the frequency of the violence in England between the years of 2001 and 2002 was 46.0 %. Besides, the rate of non-fatal violence against health professionals in the USA was 0.83 % whereas this rate was 60.0 % in Turkey [88]. The violence against health professionals in Turkey is similar to other countries. However, there are also some differences. The health institutions, with all branches and units, were claimed to be mainly responsible for many occurring problems. Moreover, they are often shown as target, and therefore, face the violence and threats within the society [89]. In Gaziantep province, where our study was performed, Dr. Ersin Arslan, who was a thoracic surgery specialist, was stabbed and killed in April 17, 2012 by the 17-year-old grandson of the 84-year-old men since he died in the surgery in Avukat Cengiz Gökçek State Hospital. After this sad event, the name of the hospital was changed as ‘Gaziantep Dr. Ersin Arslan State Hospital.’ Similarly, Dr. Özhan Uçkan, who was brain surgery specialist, was beaten by one family member of a patient in the same hospital in August 23, 2012. It can be stated that beating the doctor and nurse by relatives of the patient is almost seen as a normal situation in the Southeast region of Turkey.

When we examined the WSS scores and the stress levels of the health professionals, the stress level which threatens the group-health and effectiveness was detected as (49.63 ± 9.70) F 6. stress level, which threatens the health and the efficiency, in the health professionals working in Gaziantep Şehitkamil State Hospital. The stress levels

which increase the success by creating the Group-inducing effect were (37.60 ± 8.44) and (37.18 ± 8.96) C 3. stress level, which creates group-stimulation and increases the success, in the health professionals in Diyarbakır Ergani and Kahramanmaraş Pazarcık State Hospitals, respectively. As the exposure to occupational risks increase, the work stress of health professionals also increases. According to the study performed in İzmir (a province located in the west coast of Turkey) by Sarıçam, nurses have the optimum stress levels in terms of their health and efficiency [19]. It can be specified that health professionals in Diyarbakır Ergani and Kahramanmaraş Pazarcık State Hospitals do not perceive the works stress factors as a risk whereas health professionals working in Gaziantep Şehitkamil State Hospital perceive the work stress as a risk.

In this study, there was a positive correlation between the exposure to the stress, finding the OHS system sufficient, and finding the workplace of the hospital hazardous and risky ($p = 0.000$, $r = 0.278$). Compatible with our findings, Sarıçam also showed a positive and moderate level association between the risk scores of nurses and finding the workplace of the hospital hazardous and risky [19]. As the stress score of the health professional increases, the level of finding the workplace risky and hazardous and finding the OHS system sufficient can also increase.

In contrast to the restructuring and privatization process of health sector in the world, the OHS for health professionals was not adequately achieved. The OHS problems were solved rather individually by health professionals, through their occupational experiences. The monitoring process of occupational injuries and diseases and the reasons behind are important both for individual worker rights, occupational health and are unignorable for work security. In this context, ILO has developed several standards at the national and international levels to explain how the work injuries should be recorded and evaluated [90, 91].

In Turkey, OHS standards were not able to put in force and adequate attention was not paid. In particular, the health and security problems of the professionals in hospitals have been increasing. In spite of this, the health professionals can hardly benefit from health services and sustain a healthy work life, unless he/she applies individually. One of the solutions to this problem could be to initiate a first-step health service for health professionals in hospitals [6].

Occupational health and safety was mentioned for the first time in the Official Gazette (No: 25134 and dated 10.06.2003) with ‘Labor Law (No: 4857)’ [92] partially whereas it was published for the first time as an independent law in the Official Gazette (No: 28339 and dated 30/06/2012) with ‘Occupational Health and Safety Law (No: 6331)’ [93]. All laborers were included in the scope of

the law regardless of the distinction between public and private sectors. Here are the mostly included articles in the second part of the OHS law (No: 6331) in terms of the duties, authorities, and obligations of both the employees and the employers: General obligations of the employer (Article 4), principles of risk prevention (Article 5), occupational health and safety services (Article 6), support for occupational health and security services (Article 7), occupational physicians and occupational safety specialists (Article 8), determining the hazard class (Article 9), control risk assessment, measurement, and research (Article 10), emergency plan, fire fighting, and first aid (Article 11), recording and notification of occupational accidents and diseases (Article 14), health surveillance (Article 15), informing employees (Article 16), training of workers (Article 17), obligations of employees (Article 19) [93].

Conclusively, health professionals working in the Southeast region of Turkey have work stress and their health is deteriorated because of the inconvenience of the workplace and the hazards. Moreover, work stress leads to decrease in quality of health care services of health professionals and the patients are also negatively affected. Health professionals should primarily be healthy in order to give the most convenient health care service to patients. In this study, it has been shown that the health professionals in Gaziantep Şehitkamil State Hospital experience more intense work stress levels which threaten their health and efficiency compared to others working in Diyarbakır Ergani and Kahramanmaraş Pazarcık State Hospitals. Therefore, the occupational risks and the work stress of health professionals in Gaziantep Şehitkamil State Hospital should be evaluated in terms of OHS. Priority should be given in-service training related to the efficient communication methods with the patient and the relatives of the patients and the ways of coping with stress. Furthermore, health institutions should train all of their health professionals by developing convenient OHS policies. It is important to evaluate the occupational risks in terms of both the medical and occupational ethics.

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Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

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