

# Investigation of work-related tension levels and related factors in healthcare workers

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**Ethics Committee Approval**

This study was initiated with the approval of Van Yüzüncü Yıl University Non-Invasive Clinical Research Ethics Committee (Decision No: 2019/04-05, Date: 22/02/2019).

The data of this study were taken from the specialist thesis of the responsible author. (Department of family medicine, specialty thesis, Yüzüncü Yıl University, Van, Turkey)

All procedures in this study involving human participants were performed in accordance with the 1964 Helsinki Declaration and its later amendments.

**Conflict of Interest**

No conflict of interest was declared by the authors.

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**Abstract**

**Background/Aim:** Factors such as heavy workload and infectious diseases cause Work-Related Tension (WRT) in healthcare workers. This study aimed to evaluate the Work-Related Tension Scale (WRTS) scores of healthcare workers to assess whether they are concerned about infecting their families and themselves as a result of their work and whether they are thinking about being fired or changing professions if they have this anxiety.

**Methods:** A total of 300 healthcare professionals working in a university hospital were included in this cross-sectional study. Data were obtained with the work-related stress scale (WRTS) and descriptive questionnaire and analyzed using SPSS 20.0 software. A  $P < 0.05$  was considered statistically significant. Descriptive statistics and ANOVA analysis were used during statistical evaluation.

**Results:** The mean WRTS score (yes: 42.71) of the participants who had anxiety about infecting their families because of their jobs was significantly higher than that of the other groups (partially: 41.49, no: 38.16) ( $P < 0.001$ ). The mean WRTS score (yes: 42.27) of the participants who had anxiety about infecting themselves was significantly higher than those who did not (partially: 40.9, no: 38.21) ( $P = 0.012$ ). Healthcare workers who wanted to resign due to this concern had a considerably higher mean WRTS score (yes: 43.70) than those who wanted to keep working (partially: 42.93, no: 39.86) ( $P < 0.001$ ).

**Conclusion:** Healthcare workers are concerned about infecting themselves and their families because of their jobs. As a result of this concern, their WRT levels are increased, and they are alienated from their work. Measures to increase effective protection against infectious diseases and stress management are needed.

**Keywords:** Healthcare workers, Work-related tension, Contagiousness anxiety

## Introduction

The healthcare sector is considered to have elevated job stress, and work-related tension is experienced more often than in the other professions because of both providing service to the patients and their relatives who are experiencing intense stress, and frequent encounters with stress sources [1-3]. Factors such as heavy workload, giving care to patients with poor general conditions, and emotionally supporting the patients and their relatives can cause work-related tension (WRT) among the healthcare workers. WRT and burnout syndrome are mostly seen in professions that provide service to people such as medicine, nursing, and physiotherapy. Problems arise when the frequency and duration of the work exceed the individual's coping ability. It can also reduce productivity, job satisfaction, punctuality, and increase resignations [4, 5].

Infectious diseases occur due to a microorganism or their harmful products. They can occur after direct or indirect transmission of an agent from the infected individual, animal, or reservoir to a susceptible host by an animal host, vector, or lifeless environment [6]. Healthcare professionals are at the risk of encountering many infectious agents in their working environment. For the occurrence of any nosocomial infection, a focus, a susceptible host, and a route of transmission are required. Blocking the transmission route between the focus of infection and the host may help prevent infection in both the patients and the healthcare personnel [7]. As in the current Covid-19 pandemic, the pathogens can remain suspended in the air and airborne viruses, or bacteria-infected droplets can spread when someone sneezes or coughs [8]. It is of great importance that the hospitals are kept clean so that patients, their relatives, and healthcare professionals can receive or provide health services in a cleaner environment. Prevention of hospital-acquired infections can be facilitated by cleaning practices and the use of personal protection products and devices. This process includes addressing the basis of the subject, continuing education, and the healthcare professionals and institutions acquiring various habits to provide better service to patients [9, 10]. While it is known that health workers, especially doctors, experience high levels of work stress even at normal times, the Covid-19 virus pandemic caused additional pressure on the health system all around the world [11]. The theoretical and practical (stress coping techniques) training the physicians will receive about managing the intense stress in our country is necessary for their professional success [12]. Healthcare workers can stop worrying about infecting themselves and their families because they work at a hospital. In addition, the resignation of qualified health workers may also be prevented.

Literature review showed that various studies related to the WRT level of health workers were carried out all around the world in recent years. Our study aimed to determine whether the relationship between the stress experienced by healthcare workers due to their job and their approach to nosocomial infections show significant differences according to socio-demographic and occupational characteristics.

## Materials and methods

This cross-sectional descriptive study was conducted with the participation of 300 volunteering healthcare professionals (doctor, nurse/health officer, emergency medical technician, paramedic, laboratory worker, health technician, nurse, and cleaning staff, etc.) working in a university hospital between March and June 2019.

The sample size was calculated using the equation  $n = z^2 \cdot \delta^2 / d^2$  to represent the population of the study ( $n = 860$ ).

The survey consists of a socio-demographic information form prepared by the researchers, a questionnaire of 44 questions measuring the level of knowledge about infectious diseases and protection. WRTS, which comprises 18 "fill in the blanks" and multiple-choice questions, is the "Work-related tension scale" developed by Revicki et al. [13] in 1991, and the Turkish validity and reliability study was performed by Aslan et al. [4] in 1996. It is a 4-point Likert-type self-report scale containing 18 items developed to determine work-related tension and stress in healthcare workers. The scoring is as follows: 4 = Strongly agree 3 = Mostly agree 2 = Partially agree 1 = Disagree. The 2<sup>nd</sup>, 4<sup>th</sup>, 8<sup>th</sup>, 9<sup>th</sup>, 11<sup>th</sup>, and 15<sup>th</sup> questions are scored in reverse. The lowest and highest scores are 18 and 72, respectively. A high total score indicates increased work-related tension.

This single-center study was initiated with the approval of Van Yüzüncü Yıl University Non-Invasive Clinical Research Ethics Committee (Decision No: 2019/04-05, Date: 22/02/2019) and conducted following the Declaration of Helsinki. The participants were informed about the study, and their verbal and written consents were obtained.

### Statistical analysis

Chi-square test was used for descriptive statistics and the continuous variables were expressed as mean, standard deviation, minimum and maximum. Categorical variables were expressed as numbers and percentages. One-way analysis of variance was used to compare group means of continuous variables. Duncan, LSD, Tukey, Games-Howell multiple comparison tests were used to identify the different groups following the analysis of variance. The statistical significance level was 5% and the SPSS statistical package program was used for all calculations.

## Results

The patients' ages, genders, marital and educational statuses, professional experience (years), working hours per week, current departments, and occupation were presented in Tables 1 and 2. Among all, 56% were male, 60% were married, 35.3% were between the ages of 30-35 years, 64% had a university degree or higher. Seventy-two percent of the participants had less than 10 years of professional experience and 86% of the participants were working for 40 hours or more per week. Most participants were working in the Internal Diseases and surgical clinics.

Among the participants, those who had the anxiety of infecting their families because of working in a hospital had significantly higher WRTS scores than the other groups ( $P < 0.001$ ). The mean WRTS score of the participants who had anxiety about contagion was significantly higher than that of the other groups ( $P = 0.012$ ). Those who stated that they were

dismissed from their jobs due to this anxiety had higher average WRTS scores than the other groups ( $P<0.001$ ) (Table 3).

Table 1: Gender, marital status, age, and educational status characteristics of the participants (n=300)

Features	Categories	n	%
Gender	male	169	56.3
	female	131	43.7
Marital Status	Married	180	60.0
	Single	107	35.7
	Widowed / Divorced	13	4.3
Age Range	18-25	47	15.7
	26-29	75	25.0
	30-35	106	35.3
	36-41	39	13.0
	42 and over	33	11.0
Education Status	Primary Education	6	2.0
	Secondary Education	24	8.0
	High school	78	26.0
	University	91	30.3
	Doctorate	101	33.7
Total		300	100

Table 2: Participants' professional experience (years), weekly working hours (hours), current department and occupational information characteristics (n=300)

Features	Categories	n	%
Professional experience (years)	1-5	126	42
	6-10	90	30
	11-15	42	14
	16-20	27	9
	21 and over	15	5
Weekly working time (hours)	20-30	5	1.7
	30-40	37	12.3
	40-50	151	50.3
	50-60	24	8
	60 and above	83	27.7
The department they are currently working in	Internal clinic	86	28.7
	Surgical clinic	60	20
	Pediatrics clinics	44	14.7
	Polyclinic and intervention rooms	36	12.0
	Emergency	28	9.3
	Intensive care unit	16	5.3
	Blood center	6	2.0
	Operating room	5	1.7
	Hemodialysis unit	3	1
	Laboratory	16	5.3
Profession	Doctor	101	33.7
	Nurse/paramedic	99	33
	Housekeeper/caregiver	100	33.3
Total		300	100

Table 3: Examination of the scores of the participants according to their anxiety to infect their families or themselves and the state of being dismissed from their jobs

Features	n	WRTS*			P-value*
		Average	Std. deviation	Min / Max	
Do you worry about infecting your family with a contagious disease because of your work? (n = 300)					
Yes	139	42.71	6.81	29/60	0.001
Partially	105	41.49	7.18	25/59	
No	56	38.16	8.72	21/64	
Do you worry about being infected with a contagious disease because of your work? (n = 300)					
Yes	182	42.27	7.14	28/60	0.012
Partially	85	40.90	7.76	21/64	
No	33	38.21	7.88	23/56	
Have you been alienated from your job because of this anxiety? (n = 266)					
Yes	65	43.70	6.95	30/60	0.001
Partially	93	42.93	6.60	28/59	
No	108	39.86	7.75	21/64	

\*: One-way variance analysis and Duncan, WRTS: Work-Related Tension Scale

## Discussion

Cai et al. [14] found that concerns about personal health and infecting their families were the main factors triggering work-related stress among the healthcare workers in China. In the study conducted by Dai et al. [15], one of the main concerns of health workers was infecting their family members (63.9%). The mean WRTS score of the health workers included in our study was higher among those who were worried about infecting their family members because of their job. According to the literature review, there is a relationship between such an anxious state and the WRT levels.

Alimoğlu et al. [16] found a significant difference between WRT levels and emotional exhaustion, while there was

no significant relationship between the participants' work-related health problems and WRT levels. In the study of Tokuç et al. [17], the average WRTS score of participants, who use drugs due to an infectious disease that was thought to be transmitted from a patient in the last year, was higher than that of the other groups. In addition to the general stress factors that Chinese health workers are exposed to, they experience anxiety due to the risk of infecting themselves and the others due to COVID-19 [18]. There is a connection between the WRT level of healthcare workers and their anxiety about spreading a work-related infection. In our study, similar to others, a significant difference was found between the mean WRTS score of healthcare workers who were anxious about infecting themselves with work-related infections and those who were not.

Erçevik et al. [19] reported that the average WRTS score of nurses who would not re-choose their profession was higher than those who would or those who did not want to change jobs at all. In a study by Arıkan et al. [20] conducted in 2003, 69.3% of the participating nurses stated that they would choose another profession if they had a second chance. The mean WRTS scores of the nurses who wanted to change their profession were higher than those who would want to continue the same profession. Aslan et al. [21] researched the validity and reliability of the work-related tension scale in the healthcare sector in 1998 and found that the mean WRTS score was higher among the participants who stated that they would choose another profession if they graduated from high school today. In the study conducted by Vatanserver [22] in 2016, a significant relationship was found between the participants' choice of profession/department and the mean WRTS score. The mean WRTS score was higher among those who are thinking of changing professions. Our study yielded similar results with the literature. The average WRTS score was higher among those who were thinking of changing their profession and who stated that they were alienated from their current job. Although it can be concluded that those who are considering a job change are not satisfied with their current jobs, it has recently been found that healthcare workers in our country are considering a job change due to the low professional reputation and financial gain and the increased violence in health.

### Limitations and strengths of the study

One of the strongest aspects of our study is that it was conducted before the Covid-19 pandemic, which proved that healthcare workers already had anxiety about infectious disease transmission. Its cross-sectional and single-center design is our study's main limitation. It is recommended that similar multi-center studies be conducted with more participants.

### Conclusion

Healthcare workers had concerns about infecting themselves and their families because of their jobs. They had elevated WRT levels, and they did not want to continue working in their current profession because of this anxiety.

The Covid-19 pandemic that occurred after the completion of our study proved our rationale. We would recommend using novel technology that will reduce the possibility of disease transmission routinely in all healthcare institutions.

The possibility of infecting family members can be reduced by disinfecting the clothes of employees after work or working with appropriate uniforms provided by the hospital management. Increasing the number of employees, especially in risky departments such as intensive care units, and arranging weekly working hours per the world standards will also reduce work-related tension and positively affect health outcomes.

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