Arch Health Sci Res. 2023;10(1):50-59
DOI: 10.5152/ArcHealthSciRes.2023.22016

Original Article

Examining the Job Stress Experienced by Surgical Nurses and Their Psychological Resilience Status

Selda MERT[1], Özlem KERSU[2], Aylin AYDIN SAYILAN[3]

[1]Kocaeli University, Kocaeli Vocational School of Health Services, Kocaeli, Turkey
[2]Eskişehir Osmangazi University, Faculty of Health Science, Eskişehir, Turkey
[3]Kırklareli University, Faculty of Health Science, Kırklareli, Turkey

Cite this article as: Mert S, Kersu Ö, Aydın Sayılan A. Examining the job stress experienced by surgical nurses and their psychological resilience status. *Arch Health Sci Res.* 2023;10(1):50-59.

ABSTRACT

Objective: Psychological resilience is an important resource that protects surgical nurses against the adverse effects of job stress. This study sought to determine the correlation between work-related stress and psychological resilience in surgical nurses and the factors affecting these.

Methods: This descriptive, cross-sectional study was conducted with 157 nurses working in surgical units between September 13, 2021, and January 21, 2022. A Nurse Information Form, the Nurse Stress Scale, and the Psychological Resilience Scale for Adults were used for data collection.

Results: Very weak negative correlation was observed between work-related stress and the psychological resilience of surgical nurses ($r = -0.159$, $P = .046$), weak negative correlation between nurses' age and work stress ($r = -0.332$, $P < .001$), weak negative correlation between working time and work stress ($r = -0.336$, $P < .001$), and very weak positive correlation between age and resilience ($r = 0.165$, $P = .039$). Very weak positive correlation was determined between length of time in the profession and psychological resilience ($r = 0.222$, $P = .005$). Work-related stress was higher and psychological resilience was lower among nurses who were unmarried, who had a bachelor's degree or higher level of education, who were not satisfied with the working environment, who had a poor quality of work life, and who did not take part in any hobby/activity outside work ($P < .05$).

Conclusion: There are individual, occupational, and environmental risk factors that affect work stress and psychological resilience levels in surgical nurses. Identifying variables that reduce job stress and contribute to resilience in surgical units can help implement strategies that encourage these behaviors and thus retain nurses in this specialty.

Keywords: Surgical nursing, job stress, resilience, psychological

Introduction

Nursing is a physically and emotionally demanding profession. High role expectations and difficult working conditions lead nurses to experience stress. This results in a decrease in psychological resilience in parallel with the stress experienced. Despite problems in the health care system in particular, nurses continue to strive to provide high-quality patient care, to maintain their resilience, and to continue to improve themselves in professional terms.[1]

The concept of psychological resilience, one that has recently emerged in all fields, has also become an important and essential one for nurses. Psychological resilience is defined as one's power of recovery in the face of difficult life experiences and one's ability to overcome changes or negativities.[2] Improved professional skills, increased life and work satisfaction, and decreased rates of leaving or intentions to leave one's job and in mental problems such as burnout and depression are reported in nurses with high psychological resilience.[2,3] Nursing has been identified as one of the professions with the highest stress levels in the work environment, but if they possess powerful psychological resilience, nurses can combat difficult working conditions without being isolated.[1] However, under conditions in which nurses are unable to cope with stress, their psychological resilience declines, and they experience mental problems such as burnout, depression, and anxiety, and physical problems such as back and

Corresponding author: Selda MERT, e-mail: sselda.mertt@gmail.com, selda.mertboga@kocaeli.edu.tr

Received: February 26, 2022
Accepted: October 6, 2022
Publication Date: January 30, 2023

lumbar pain. These health problems are also adversely reflected in the quality of patient care.[4]

Surgical units entail numerous risks, such as the use of advanced technology, exposure to hazardous substances, risks of injury and infection, falls, and intense working conditions. Since the care provided is intensive and complex, there is also a high risk of medical error, ethical problems, and undesirable events. Critical thinking and rapid decision-making are therefore essential.[5,6] All these factors mean that surgical units are more stressful than other units and have various adverse physical, mental, and social effects on nurses. Psychological resilience has been reported to be an important concept for nurses, who encounter numerous stressful conditions in their work environment, who provide professional care services for patients in difficult positions with demanding requirements under all circumstances, and whose task is to make life comfortable for the patient.[2] It is therefore important to be aware of, evaluate, and focus on the stress experienced by surgical nurses and their current resilience, since this will in turn be reflected in the quality of nursing care. However, we encountered no previous studies examining work stress and psychological resilience in such unique environments as surgical units and the factors affecting these. The purpose of this study was therefore to determine the relationship between stress experienced by surgical nurses and their psychological resilience levels and the factors affecting these.

Research Questions

1. What are surgical nurses' work stress and psychological resilience?
2. Is there a significant association between surgical nurses' work stress and psychological resilience?
3. Do surgical nurses' descriptive characteristics affect their work stress and psychological resilience?

Methods

Type of Research

The research was conducted as a descriptive and correlational online survey study.

Research Population/Sample

The research population consisted of nurses consenting to take part in the study by means of social websites and apps between September 13, 2021, and January 21, 2022, who answered the survey questions, and were working in surgical units at the Eskişehir Health, Application, and Research Hospital (n = 213) and Kırklareli Training and Research Hospital (n = 40), Turkey. Based on the total number of surgical nurses of 253, the sample size was calculated at 153 with a 95% CI and effect size of 5 via the https://www.surveymonkey.com/mp/sample-size-calculator/ website. Considering potential losses occurring during the study dates, the study was conducted with 157 nurses.

Data Collection

Data were collected using a Nurse Information Form, the Nurse Stress Scale (NSS), and the Psychological Resilience Scale for Adults (PRS). Due to the risk of COVID-19 infection transmission, the questionnaire was produced using Google Forms and distributed to nurses by means of social websites and applications (Instagram, Facebook, and WhatsApp). The questionnaire was constructed to ensure that it was not possible to move to another question without answering the previous one. Participants were informed in the questionnaire about the purpose of the research and told that the data would be employed for scientific aims and that completing the questionnaire constituted to consent to take part.

Inclusion criteria were (1) working as a nurse in a surgical unit, (2) being able to use a social network, (3) voluntary participation in the study, and (4) completing the question only one time using the same IP. Exclusion criteria consisted of any situation outside the inclusion criteria.

Data Collection Tools

Nurse Information Form

This form consisted of 16 questions investigating nurses' personal (age, sex, education, marital status, presence of chronic disease, etc.) and work (surgical unit, total number of years worked in the current clinic, type of work, etc.) characteristics.

Nurse Stress Scale

This scale was developed in 1981 by Gray-Toft and Anderson for the purpose of measuring the frequency of stress experienced by nurses in the hospital setting.[7] The validity and reliability of the Turkish language version of the scale were studied by Mert, Aydın-Sayılan, and Baydemir in 2020.[8] It consists of 7 factors—uncertainty about treatment (UAT), workload (WL), death of patients (DP), conflict with physicians (CP), conflict with other nurses (CON), inadequate support (IS), and patient suffering (PS) and 34 questions. The NSS is scored using a 4-point Likert-type scale—(1) never, (2) sometimes, (3) frequently, and (4) very frequently. Cronbach alpha reliability coefficients in Mert et al's study[8] were 0.928 for the total scale, 0.807 for UAT, 0.813 for WL, 0.809 for DP, 0.793 for CP, 0.788 for CON, 0.798 for IS, and 0.630 for PS. In the present research, the Cronbach alpha reliability coefficient values were 0.935 for the entire scale, 0.841 for UAT, 0.799 for WL, 0.864 for DP, 0.871 for CP, 0.821 for CON, 0.814 for IS, and 0.771 for PS. The total score obtained from the scale measures the frequency of general stress experienced by the nurse and is calculated by adding together the individual's responses to all the items. Higher scores indicate a greater frequency of stress associated with individual stress problems in the physical, psychological, and social domains. Lower scores indicate that a nurse experiences less frequent stress in the same contexts.[8]

Psychological Resilience Scale for Adults

This scale was developed by Friborg et al[9] in 2003. It consists of 5 factors—personal strength, structured style, social resources, family cohesion, and social competence. In a different study, Friborg et al[10] revealed that a 6-dimensional scale structure better explained the psychological resilience model. In that study, the personal strength factor was divided into 2 parts—perception of the self and planned future, resulting in a 6-dimensional structure. The version of the scale adapted into Turkish by Basım and Çetin in 2011 consists of 33 items and 6 dimensions—perception of the self (POS), planned future (PF), structured style (SS), social competence (SC), family cohesion (FC), and social resources (SR). The scale was scored following the guideline produced by the researchers who originally developed it. Accordingly, if higher scores are intended to indicate greater psychological resilience, then the answer boxes should be evaluated from left to right—"1-2-3-4-5." Questions 1-3-4-8-11-12-13-14-15-16-23-24-25-27-31 and 33 require reverse scoring. This rule was followed in the present study. The minimum possible score on the scale is 33, and the maximum is 165. The scale has no determined lowest and highest score range or cut-off point. Higher scores are regarded as indicating greater psychological resilience and lower scores as indicating lower psychological resilience. The Cronbach alpha reliability coefficient for the entire scale score has been calculated at 0.86 and subdimension values ranging between 0.68 and 0.79.[11] In the present study, the Cronbach alpha reliability coefficient for the entire scale was 0.936, with subdimension values of SS 0.614, PF 0.781, FC 0.853, POS 0.830, SC 0.771, and SR 0.813.

StatisticalAnalysis and Interpretation

Statistical analyses were performed on International Business Machine Statistical Package for Social Sciences version 20.0 software (IBM Corp., Armonk, NY, USA). Normality of distribution was evaluated using the Kolmogorov–Smirnov test. Numerical variables were expressed as median (25th--75th percentile) and frequency (percentage) values. Differences between groups for non-normally distributed numerical variables were evaluated using the Mann–Whitney *U* test, Kruskal–Wallis one-way analysis of variance, and Dunn's multiple comparison test. Relationships between numerical variables were assessed using Spearman's correlation analysis. *P* values <.05 were regarded as statistically significant at 2-way tests.

Ethics

Institutional approval for the study was obtained from the hospitals. The research was also approved by the Eskişehir Osmangazi University Non-Interventional Research Ethical Committee (no. 01, dated September 07, 2021). Informed consent was received from the nurses taking part. The research was conducted in compliance with the principles of the Declaration of Helsinki.

Results

Analysis showed that 36.3% of the surgical nurses were aged 25-34, 86% were women, 63.1% were married, 75.8% were high school graduates, 74.5% worked at the Eskişehir Health, Practice, and Research Hospital, 25.5% had been working for 6-10 years, and 65.6% worked day and night shifts (Table 1).

The median NSS and PRS scores were close to the mean values, and weak negative correlation was observed between the scales' total median scores ($r = -0.159$, $P = .046$) (Table 2).

Weak negative correlation was observed between age and the NSS subdimensions of uncertainty about treatment ($r = -0.327$, $P < .001$), conflict with physicians ($r = -0.290$, $P < .001$), conflict with other nurses ($r = -0.410$, $P < .001$), and the median total NSS score ($r = -0.332$, $P < .001$), while very weak negative correlation was determined between age and workload ($r = -0.254$, $P = .001$) and inadequate support ($r = -0.217$, $P = .006$). Length of time in the profession exhibited weak negative correlation with uncertainty about treatment ($r = -0.276$, $P < .001$), workload ($r = -0.302$, $P < .001$), conflict with physicians ($r = -0.268$, $P = .001$), conflict with other nurses ($r = -0.433$, $P < .001$), and median total NSS score ($r = -0.336$, $P < .001$), while very weak correlation was found between length of time in the profession and inadequate Support ($r = -0.244$, $P = .002$) (Table 3).

Female nurses registered significantly higher median uncertainty about treatment ($P = .017$), death of patients ($P = .002$), conflict with physicians ($P = .011$), and patient suffering ($P = .017$) scores than male nurses. Unmarried nurses registered significantly higher median conflict with physicians ($P = .004$) and median total NSS ($P = .042$) scores than married nurses. University graduate nurses exhibited significantly higher median death of patients ($P = .009$) and patient suffering ($P = .002$) scores than high school graduate nurses. Nurses who worked both day and night shifts registered significantly higher median conflicts with other nurses ($P = .001$) scores than those who only worked day shifts. Nurses who were discontent with their working environments registered significantly higher median uncertainty about treatment ($P = .004$), workload ($P < .001$), conflict with physicians ($P = .045$), conflict with other nurses ($P < .001$), inadequate support ($P = .001$), and total NSS ($P = .002$) scores than those who were content with their working environments. Median uncertainty about treatment ($P = .002$), conflict with other nurses ($P = .005$), and total NSS scores were significantly higher among nurses who described their quality of work life as very poor compared to those describing it as good or very good. Total NSS scores were significantly higher ($P < .05$) in the presence of low levels of outside hobbies/activities, deaths of patients, and suffering of patients (Table 3).

Age was weakly positively correlated with median perception of the self ($r = 0.267$, $P = .001$) PRS subdimension scores and very weakly

Table 1. Surgical Nurses' Descriptive Characteristics (n = 157) (Median (25th-75th Percentile)/n (%))

Descriptive characteristics		n	%
Age	18-24	17	10.8
	25-34	57	36.3
	35-44	53	33.8
	45-54	24	15.3
	55 or more	6	3.8
Sex	Male	22	14.0
	Female	135	86.0
Marital status	Married	99	63.1
	Single	58	36.9
Education	High school	16	10.2
	Bachelor's	119	75.8
	Postgraduate	22	14.0
Institution where worked	Eskişehir Health, Practice, and Research Hospital	117	74.5
	Kırklareli Training and Research Hospital	40	25.5
Time worked in the profession (years)	0-1	14	8.9
	2-5	21	13.4
	6-10	40	25.5
	11-15	35	22.3
	16-20	13	8.3
	21 years or more	34	21.6
Length of time worked in the present clinic (years)	0-1 years	33	21.0
	2-5	54	34.4
	6-10	40	25.5
	11-15	23	14.6
	16-20	2	1.3
	21 years or more	5	3.2
Weekly working hours	40	87	55.4
	45	41	26.1
	46 or more	29	18.5
Working pattern	Days only	54	34.4
	Days and nights	103	65.6
Satisfaction with working environment	Yes	124	79.0
	No	33	21.0
Out-of-work hobbies/ activities	Yes	80	51.0
	No	77	49.0
Presence of any disease either diagnosed or requiring you to use medication	Yes	46	29.3
	No	111	70.7
How would you describe your quality of work life?	Good	106	67.5
	Very good	20	12.7
	Poor	26	16.6
	Very poor	5	3.2
How would you describe your sleep quality?	Good	72	45.9
	Very good	12	7.6
	Poor	56	35.7
	Very poor	17	10.8
Total		**157**	**100.0**

Table 2. Surgical Nurses' Median NSS and PRS and Subdimension Scores and Their Correlations (n = 157) (Median (25th-75th Percentile)

Scales and Sub-Dimensions		Median (25th- 75th Percentile)	*r* (*P*)*													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
NSS	1. UAT	19.00 (17.00-22.50)	.														
	2. WL	17.00 (13.00-18.00)	**0.542** ***P* < .001**	.													
	3. DP	13.00 (11.00-16.00)	**0.573** ***P* < .001**	**0.373** ***P* < .001**	.												
	4. CP	12.00 (10.00-14.00)	**0.587** ***P* < .001**	**0.425** ***P* < .001**	**0.529** ***P* < .001**	.											
	5. CON	12.00 (10.00-14.00)	**0.616** ***P* < .001**	**0.486** ***P* < .001**	**0.343** ***P* < .001**	**0.647** ***P* < .001**	.										
	6. IS	6.00 (6.00-8.00)	**0.479** ***P* < .001**	**0.575** ***P* < .001**	**0.331** ***P* < .001**	**0.454** ***P* < .001**	**0.657** ***P* < .001**	.									
	7. PS	5.00 (4.00-6.00)	**0.445** ***P* < .001**	**0.273** **0.001**	**0.673** ***P* < .001**	**0.457** ***P* < .001**	**0.309** ***P* < .001**	**0.324** ***P* < .001**	.								
	8. NSS Total	85.00 (76.00-97.00)	**0.844** ***P* < .001**	**0.729** ***P* < .001**	**0.730** ***P* < .001**	**0.766** ***P* < .001**	**0.770** ***P* < .001**	**0.699** ***P* < .001**	**0.599** ***P* < .001**	.							
PRS	9.POS	24.00 (21.00-27.00)	**−0.157** **0.049**	−0.142 0.075	**−0.235** **0.003**	**−0.315** ***P* < .001**	**−0.240** **0.002**	−0.085 0.291	**−0.218** **0.006**	**−0.241** **0.002**	.						
	10.PF	15.00 (12.00-18.00)	−0.135 0.091	**−0.203** **0.011**	−0.151 0.059	**−0.169** **0.034**	**−0.226** **0.005**	−0.107 0.181	−0.112 0.162	**−0.204** **0.010**	**0.681** ***P* < .001**	.					
	11.SS	14.00 (12.00-17.00)	−0.150 0.060	**−0.203** **0.011**	**−0.162** **0.043**	**−0.199** **0.013**	**−0.172** **0.031**	−0.068 0.400	−0.077 0.341	**−0.206** **0.010**	**0.552** ***P* < .001**	**0.654** ***P* < .001**	.				
	12.SC	23.00 (18.50-26.00)	−0.067 0.405	−0.050 0.536	−0.036 0.653	−0.054 0.498	−0.122 0.128	−0.129 0.106	−0.003 0.970	−0.083 0.301	**0.542** ***P* < .001**	**0.506** ***P* < .001**	**0.393** ***P* < .001**	.			
	13.FC	25.00 (20.00−27.00)	−0.041 0.607	−0.150 0.061	−0.120 0.135	−0.145 0.070	−0.089 0.266	0.022 0.783	−0.042 0.600	−0.104 0.193	**0.505** ***P* < .001**	**0.506** ***P* < .001**	**0.545** ***P* < .001**	**0.399** ***P* < .001**	.		
	14.SR	28.00 (24.00-32.00)	−0.013 0.871	−0.008 0.919	0.001 0.993	−0.096 0.231	−0.120 0.134	−0.049 0.544	−0.035 0.661	−0.057 0.481	**0.562** ***P* < .001**	**0.536** ***P* < .001**	**0.396** ***P* < .001**	**0.626** ***P* < .001**	**0.639** ***P* < .001**	.	
	15. PRS Total	130 (112.00-140.00)	−0.089 0.268	−0.121 0.131	−0.119 0.139	**−0.194** **0.015**	**−0.190** **0.017**	−0.072 0.369	−0.087 0.280	**−0.159** **0.046**	**0.789** ***P* < .001**	**0.795** ***P* < .001**	**0.720** ***P* < .001**	**0.754** ***P* < .001**	**0.756** ***P* < .001**	**0.819** ***P* < .001**	.

*Spearman Correlation Analysis; Bold faced values are shown as $P < .05$.

CON, conflict with other nurses; CP, conflict with physicians; DP, death of patients; FC, family cohesion; IS, inadequate support; NSS, nurse stress scale; PF, planned future; POS, perception of the self; PRS, Psychological Resilience Scale for Adults PS, patient suffering; SC, social competence; SR, social resources; SS, structured style; UAT, uncertainty about treatment; WL, workload.

Table 3. A comparison of Surgical Nurses' NSS Scores According to Their Descriptive Characteristics (n = 157) (Median (25th-75th Percentile)

Characteristics		UAT	WL	DP	PS	CON	IS	PS	Total NSS
Age	*r*	**−0.327**	**−0.254**	−0.097	**−0.290**	**−0.410**	**−0.217**	−0.077	**−0.332**
	*P**	***P* < .001**	**0.001**	0.226	***P* < .001**	***P* < .001**	**0.006**	0.337	***P* < .001**
Gender	Male	17.00 (14.75-20.00)	16.00 (13.75-20.00)	10.00 (8.00-13.50)	11.00 (9.75-13.00)	12.00 (10.00-15.25)	6.00 (4.00-8.00)	4.00 (4.00-5.25)	78.00 (69.00-92.00)
	Female	20.00 (17.00-23.00)	17.00 (13.00-18.00)	14.00 (11.00-16.00)	13.00 (10.00-15.00)	12.00 (10.00-14.00)	6.00 (6.00-8.00)	5.00 (4.00-6.00)	85.00 (76.00-97.00)
	P (MW)	**.017**	.800	**.002**	**.011**	.605	.334	**.017**	.097
Marital status	Single	19.50 (16.00-23.25)	17.00 (14.75-19.00)	14.00 (11.00-17.00)	13.00 (11.00-15.00)	12.50 (10.75-15.00)	6.00 (6.00-8.00)	5.00 (4.00-6.00)	87.50 (77.00-100.00)
	Married	19.00 (17.00-22.00)	16.00 (13.00-18.00)	13.00 (11.00-16.00)	11.00 (10.00-14.00)	12.00 (10.00-13.00)	6.00 (6.00-8.00)	5.00 (4.00-6.00)	81.00 (73.00-95.00)
	P (MW)	.535	.077	.379	**.004**	.050	.536	.182	**.042**
Education	High school	19.50 (15.25-24.75)	17.00 (13.25-18.75)	11.50 (9.50-13.75)	13.00 (10.00-15.50)	11.50 (10.00-15.50)	6.00 (6.00-7.00)	4.00 (2.50-5.00)	81.50 (73.50-94.75)
	Bachelor's degree	18.00 (16.00-22.00)	16.00 (13.00-18.00)	13.00 (11.00-16.00)	12.00 (10.00-14.00)	12.00 (10.00-14.00)	6.00 (6.00-8.00)	5.00 (4.00-6.00)	81.00 (75.00-97.00)
	Postgraduate	21.50 (19.00-23.00)	18.00 (13.75-19.00)	15.00 (12.75-17.00)	13.50 (10.00-15.00)	13.00 (11.75-14.25)	7.00 (6.00-8.25)	6.00 (4.75-6.00)	95.00 (80.50-97.50)
	P (KW)	.138	.633	**.011**	.758	.334	.375	**.004**	.091
	P※			***P* = .009[b]**				***P* = .030[a]; *P* = .002[b]**	
Length of time in the profession	*r*	**−0.276**	**−0.302**	−0.075	**−0.268**	**−0.433**	**−0.244**	−0.104	**−0.336**
	*P**	***P* < .001**	***P* < .001**	0.352	**0.001**	***P* < .001**	**0.002**	0.197	***P* < .001**
Work pattern	Night and daytime	19.00 (17.00-24.00)	17.00 (13.00-18.00)	13.00 (11.00-16.00)	13.00 (10.00-14.00)	13.00 (11.00-15.00)	6.00 (6.00-8.00)	5.00 (4.00-6.00)	87.00 (76.00-98.00)
	Daytime only	18.50 (16.00-22.00)	16.00 (13.00-18.00)	13.50 (11.00-16.00)	12.00 (10.00-14.00)	11.00 (9.00-13.00)	6.00 (6.00-7.00)	5.00 (4.00-6.00)	81.00 (74.00-93.50)
	P (MW)	.151	.351	.366	.348	**.001**	.194	.801	.148
Satisfied with working conditions	Yes	18.00 (16.00-22.00)	16.00 (13.00-18.00)	13.00 (11.00-16.00)	12.00 (10.00-14.00)	11.00 (10.00-13.00)	6.00 (6.00-7.00)	5.00 (4.00-6.00)	81.00 (75.00-92.00)
	No	22.00 (18.00-25.00)	19.00 (15.50-21.00)	14.00 (10.50-16.50)	14.00 (10.50-15.00)	13.00 (12.00-15.00)	8.00 (6.00-9.00)	5.00 (4.00-6.00)	97.00 (77.00-105.00)
	P (MW)	**.004**	***P* < .001**	.673	**.045**	***P* < .001**	**.001**	.387	**.002**
Quality of work life	Very good	18.00 (14.25-21.00)	16.00 (10.75-17.00)	12.50 (9.00-17.00)	11.00 (10.00-14.00)	11.50 (9.00-13.00)	6.00 (5.00-8.00)	5.00 (4.00-6.00)	78.50 (70.00-95.00)
	Good	18.50 (16.75-22.00)	16.50 (13.00-18.00)	13.00 (11.0015.000)	13.00 (10.00-14.00)	11.00 (10.00-14.00)	6.00 (6.00-7.25)	5.00 (4.00-6.00)	81.00 (75.75-94.00)
	Poor	24.00 (19.75-25.00)	17.00 (14.00-20.25)	15.50 (12.75-18.00)	14.00 (11.00-15.00)	13.50 (11.00-15.00)	6.00 (6.00-8.25)	5.50 (4.75-6.00)	97.00 (82.50-106.00)
	P (KW)	**.002**	**.027**	.213	.222	**.005**	.379	.364	**.010**
	P※	***P* = .007[d]; *P* = .007[e]**	*P* = .054[d]			***P* = .006[d]; *P* = .033[e]**			***P* = .006[d]; *P* = .033[e]**
Out-of-work hobbies/ activities	Yes	19.00 (16.00-22.00)	16.00 (13.00-18.00)	12.00 (10.00-15.00)	11.00 (10.00-14.00)	11.00 (10.00-14.00)	6.00 (6.00-7.00)	4.00 (4.00-5.00)	80.00 (72.25-92.00)
	No	20.00 (17.00-23.50)	17.00 (13.00-19.00)	15.00 (12.00-17.00)	13.00 (11.00-15.00)	13.00 (10.00-14.50)	6.00 (6.00-8.50)	5.00 (4.00-6.00)	90.00 (77.00-100.50)
	P (MW)	.123	.200	***P* < .001**	***P* < .001**	.131	.090	***P* < .001**	**.004**
Sleep quality	Very good	18.50 (14.00-21.00)	15.50 (10.75-17.75)	13.00 (11.25-16.75)	12.00 (9.25-14.00)	13.00 (6.75-13.00)	6.50 (3.75-8.00)	4.50 (4.00-6.00)	80.00 (63.75-95.00)
	Very poor	20.00 (15.00-24.00)	17.00 (16.50-20.00)	11.00 (9.00-17.00)	11.00 (10.00-14.00)	14.00 (10.50-15.50)	7.00 (6.00-7.00)	4.00 (3.50-5.00)	80.00 (63.75-95.00)
	Good	18.00 (16.25-22.00)	16.00 (13.00-18.00)	13.00 (11.00-16.00)	12.00 (10.00-14.00)	11.00 (10.00-13.00)	6.00 (6.00-7.00)	5.00 (4.00-6.00)	81.00 (75.25-92.00)
	Poor	20.00 (17.00-23.75)	16.50 (14.00-19.00)	14.00 (11.00-16.00)	13.00 (10.00-15.00)	13.00 (11.00-15.00)	6.00 (6.00-8.00)	5.00 (4.00-6.00)	87.00 (76.25-100.50)
	P (KW)	.093	.057	.616	.565	.029	.494	.196	.243
	P※					*P* = .072[e]			

※Multiple comparison test; [a]High school-bachelor's; [b]High school—Postgraduate. [c]Bachelor's-Postgraduate; [d]Very good—Poor; [e]Good—Poor;*Spearman Correlation Analysis; Bold faced values are shown as $P < .05$.
CON, conflict with other nurses; CP, conflict with physicians; DP, death of patients; IS, inadequate support; KW, Kruskal–Wallis Test; MW, Mann–Whitney *U* Test; NSS, nurse stress scale; PS, patient suffering; UAT, uncertainty about treatment; WL, workload.

Table 4. A comparison of Surgical Nurses PRS Scores According to Their Descriptive (n = 157) (Median (25th-75th Percentile)

Characteristics		POS	PF	SS	SC	FC	SR	Total PRS
Age	*r*	**0.267**	**0.164**	**0.169**	0.095	0.025	0.089	**0.165**
	*P**	**.001**	**.040**	**.034**	.237	.755	.267	**.039**
Gender	Male	27.00 (21.75-28.00)	14.50 (10.75-18.50)	13.00 (9.00-16.00)	23.00 (19.00-27.00)	24.00 (18.00-26.25.00)	18.00 (20.50-32.00)	132.00 (99.00-142.50)
	Female	24.00 (20.00-27.00)	15.00 (12.00-18.00)	15.00 (12.00-17.00)	22.00 (18.00-26.00)	25.00 (21.00-28.00)	28.00 (25.00-32.00)	129.00 (112.00-140.00)
	P (MW)	.075	.598	.082	.484	.367	.259	.826
Marital status	Single	23.00 (20.00-25.25)	15.00 (10.00-18.00)	14.00 (10.00-16.00)	22.00 (18.00-26.00)	22.50 (18.00-26.00)	27.00 (24.00-31.00)	123.00 (103.00-1336.00)
	Married	25.00 (22.00-27.00)	16.00 (13.00-18.00)	15.00 (12.00-17.00)	23.00 (19.00-26.00)	25.00 (21.00-28.00)	29.00 (25.00-32.00)	134.00 (114.00-144.00)
	P (MW)	**.004**	.136	.117	.888	**.013**	.079	**.027**
Education	High school	24.00 (22.00-26.50)	15.00 (13.00-17.75)	12.00 (9.50-16.75)	22.00 (18.00-25.50)	23.50 (18.00-26.75)	26.00 (23.25-31.00)	124.50 (107.75-133.50)
	Bachelor's	24.00 (20.00-27.00)	15.00 (12.00-18.00)	14.00 (12.00-17.00)	22.00 (18.00-26.00)	24.00 (19.00-27.00)	28.00 (24.00-32.00)	128.00 (109.00-139.00)
	Postgraduate	26.00 (21.75-27.50)	18.00 (15.75-19.25)	15.50 (12.00-16.25)	25.50 (21.75-29.00)	26.00 (25.00-29.00)	31.50 (28.00-33.25)	139.00 (132.00-148.50)
	P (KW)	.519	**.002**	.272	**.049**	**.013**	**.005**	**.003**
	P※		***P*=.001**[c]		*P*=.062[c]	***P*=.043**[b]**; *P*=.017**[c]	***P*=.016**[b]**;P*=.007**[c]	***P*=.012**[b]**; P*=.005**[c]
Length of time in the profession	*r*	**0.277**	**0.173**	0.155	0.125	0.137	**0.196**	**0.222**
	*P**	***P* < .001**	**.030**	.053	.118	.087	**.014**	**.005**
Work pattern	Day and night	23.00 (20.00-27.00)	15.00 (12.00-18.00)	14.00 (11.00-16.00)	22.00 (17.00-26.00)	24.00 (18.00-27.00)	28.00 (24.00-32.00)	127.00 (103.00-139.00)
	Daytime only	25.00 (23.00-27.00)	16.00 (13.75-18.00)	15.00 (12.00-17.00)	23.00 (19.00-26.00)	25.00 (21.75-28.25)	29.50 (25.75-32.25)	132.50 (120.75-146.00)
	P (MW)	.141	.260	.254	.557	.234	.079	.149
Satisfied with working conditions	Yes	24.50 (22.00-27.00)	16.00 (14.00-18.00)	15.00 (12.00-17.00)	23.00 (19.00-26.00)	25.00 (21.00-28.00)	29.00 (25.00-32.00)	134.00 (116.00-144.00)
	No	23.00 (20.00-25.50)	12.00 (10.00-15.00)	12.00 (9.50-15.00)	22.00 (18.00-25.50)	22.00 (18.00-25.50)	26.00 (21.00-31.00)	119.00 (98.00-132.00)
	P (MW)	**.022**	***P* < .001**	**.002**	.113	**.003**	**.035**	**.002**
Quality of work life	Very good	25.00 (19.75-29.75)	17.50 (15.25-20.00)	16.00 (12.00-19.00)	25.50 (20.50-28.75)	26.00 (22.50-29.00)	29.50 (26.50-33.50)	137.00 (123.25-151.00)
	Good	24.00 (22.00-27.00)	16.00 (14.00-18.00)	15.00 (12.00-17.00)	23.00 (19.00-26.00)	25.00 (21.00-27.00)	28.50 (25.00-32.00)	133.50 (115.75-142.00)
	Poor	21.00 (17.00-26.00)	11.00 (8.00-13.00)	12.00 (11.00-14.00)	21.00 (16.00-25.00)	23.00 (18.00-26.00)	24.00 (21.00-30.00)	109.00 (97.00-132.00)
	P (KW)	**.010**	***P* < .001**	**.001**	**.017**	**.021**	**.008**	***P* < .001**
	P※	***P*=.012**[e]	***P* < .001**[d]**; *P* < .001**[e]	***P*=.001**[d]**; *P*=.005**[e]	***P*=.014**[d]	***P*=.023**[d]	***P*=.013**[d]**; *P*=.026**[e]	***P* < .001**[d]**; *P*=.001**[e]
Out-of-work hobbies/ activities	Yes	25.00 (22.00-28.00)	16.00 (14.00-19.00)	16.00 (12.00-17.00)	23.00 (19.00-27.00)	25.00 (20.25-27.00)	30.00 (25.00-32.00)	135.00 (119.00-143.50)
	No	23.00 (19.00-26.00)	14.00 (11.50-17.00)	14.00 (11.00-16.00)	22.00 (18.00-25.00)	25.00 (19.50-27.00)	27.00 (24.00-31.00)	124.00 (103.00-137.00)
	P (MW)	**.001**	**.001**	**.011**	.091	.525	.051	**.008**
Sleep quality	Very good	23.00 (19.00-28.00)	16.50 (14.00-20.00)	14.50 (12.00-16.00)	21.00 (14.75-24.75)	25.50 (21.25-28.75)	28.00 (25.25-29.75)	126.00 (121.00-134.00)
	Very poor	24.00 (22.00-26.50)	15.00 (10.50-18.00)	12.00 (11.50-16.50)	24.00 (20.50-26.50)	24.00 (18.00-27.50)	31.00 (22.00-32.00)	132.00 (107.00-138.00)
	Good	25.00 (22.25-28.00)	15.50 (14.00-18.00)	16.00 (12.25-17.00)	23.00 (18.00-27.00)	25.00 (22.00-27.00)	29.00 (25.00-32.00)	134.00 (116.25-144.00)
	Poor	23.00 (19.25-27.00)	14.00 (10.25-17.75)	13.50 (10.00-16.00)	22.00 (19.00-25.00)	25.00 (18.00-27.00)	28.00 (24.00-32.00)	126.50 (103.00-138.75)
	P (KW)	.132	.062	**.018**	.420	.844	.787	.338
	P			***P*=.017**[e]				

※Multiple comparison test; [a]High school—Bachelor's; [b]High school—Postgraduate, [c]Bachelor's—Postgraduate; [d]Very good—Poor; [e] Good—Poor;*Spearman Correlation Analysis; Bold faced values are shown as $P < .05$. CON, conflict with other nurses; CP, conflict with physicians; DP, death of patients; IS, inadequate support; KW, Kruskal–Wallis Test; MW, Mann–Whitney *U* Test; NSS, nurse stress scale; PS, patient suffering; UAT, uncertainty about treatment; WL, workload.

positively correlated with planned future ($r = 0.164$, $P = .040$), structured style ($r = 0.169$, $P = .034$), and total PRS ($r = 0.165$, $P = .039$) scores. Length of time working in the profession was weakly correlated with median perception of self ($r = 0.27$, $P < .001$) scores and very weakly positively correlated with median planned future ($r = 0.173$, $P = .030$), social resources ($r = 0.196$, $P = .014$), and total PRS ($r = 0.222$, $P = .005$) scores. Married nurses registered significantly higher median perception of self ($P = .004$), family cohesion ($P = .013$), and total PRS ($P = .027$) scores than unmarried nurses. University graduate nurses registered significantly higher planned future ($P = .001$), family cohesion ($P = .017$), social resources ($P = .007$), and total PRS scores ($P = .005$) than high school graduates. Nurses who were content with their working condition registered significantly higher median perception of self ($P = .022$), planned future ($P < .001$), structures style ($P = .002$), family cohesion ($P = .003$), social resources ($P = .035$), and total PRS ($P = .002$) scores than those who were dissatisfied with their working conditions. Nurses who described their quality of working life as very good registered significantly higher median planned future ($P < .001$), structured style ($P = .001$), social competence ($P = .014$), family cohesion ($P = .023$), social resources ($P = .013$), and total PRS ($P < .001$) scores than who described their work life quality as poor. Nurses with outside hobbies/activities registered significantly higher mean perception of the self ($P = .001$), planned future ($P = .001$), structured style ($P = .011$), and total PRS ($P = .008$) than those with no such outside interests. Finally, nurses describing their sleep quality as good registered significantly higher median structured style ($P = .017$) scores than those describing it as poor (Table 4).

Discussion

Surgical units are stressful environments.[5,6] Numerous personal, social, and professional factors affect nurses' resilience.[12,13] Surgical nurses need to possess a high level of psychological resilience in coping effectively with situations resulting in work stress.[13] This study examined the relationship between the work stress experienced by surgical nurses and their psychological resilience levels and factors affecting these.

Resilience is defined as the capacity to recover quickly and bounce back from adverse conditions and to exhibit good adaptation to difficulties[14] and assists nurses in coping effectively and shouldering burdens caused by stress factors.[12] The International Council of Nurses (ICN) 2014 "Nurses: A Force for Change—A Vital Resource for Health" and 2016 "Nurses: A Force for Change—Building Health Systems' Resilience" themes reveal the importance of increasing nurses' psychological resilience in terms of improving health services and overcoming problems in the health system.[15,16] In their clinical study, Chesak et al[17] examined the effects of a stress management and psychological resilience training program applied to nurses who had newly begun working in a clinical setting on their awareness, stress, anxiety, and psychological resilience. Those authors reported a decrease in nurses' stress and anxiety scores and an increase in their awareness and psychological resilience scores. Several studies have shown a negative correlation between work stress among nurses and resilience.[18–22] The incidence of work stress and psychological resilience scores among the nurses in the present study were close to the average values, and very weak negative correlation was determined between the frequency of work stress and resilience scores. Several studies examining the relationship between work stress and psychological resilience[18–22] have also reported a decrease in psychological resilience as work stress increases. Our results are consistent with the previous literature, and we think that, based on our findings, high work stress among nurses can impact adversely on psychological resilience.

In terms of descriptive characteristics, examination of the relationship between age and work stress has revealed a negative correlation between the 2, stress among nurses decreasing as age increases.[5,19,20,23–25] Similarly in the present study, a weak negative correlation was observed between nurses' ages and the incidence of work stress. This finding supports the idea that work stress among nurses decreases as age increases. This may be attributable to the fact that as they grow older, nurses acquire the life and professional experience with which to cope with stressful situations, with stress thus decreasing in line with age.

In terms of the gender variable, Barzilay et al[26] reported higher COVID-19-associated anxiety and depression among women, and Çam et al[27] determined higher scores derived from social stress data (stressors deriving from human relationships) among female nurses working in operating rooms. Manzanares et al[13] and Ataç and Kaplan[28] reported higher stress among female health workers and Gloria and Steinhardt[19] among female and unmarried health workers. Similarly in the present study, female and unmarried nurses exhibited a higher frequency of work stress, a finding compatible with the previous literature. The higher stress among women may be associated with the fact that the great majority of nurses in this study were female (n = 135), married (n = 99), and worked day and night shifts (n = 103) and to greater stress imposed by the societal role of motherhood. It may also be assumed that unmarried nurses experience stress and conflict due to their being younger and inexperienced and to their enjoying less social support than married individuals, resulting in their stress-coping skills not being fully developed.

Nurses have been described as the most at-risk group among healthcare workers in terms of stressors deriving from the work environment.[13,18,28] In addition to nurses' demographic characteristics, several studies have examined the relationship between work stress and length of time worked in the profession, working day and night shifts, dissatisfaction with the work environment, and quality of work life. For instance, Hong et al[24] linked lower anxiety and work-related stress levels to the length of time worked, while Çınar et al[29] reported that stress and perception of distress decreased in line with the length of time worked in their current institution among surgical nurses caring for COVID-19 patients. In a study largely involving nurses working in surgical units, Özgür et al[30] reported high depression scores in 50.3% of their participants and high anxiety scores in 50%, with higher levels of psychological symptoms among nurses working in surgical and internal medicine units that nurses' psychological symptom levels increased as the numbers of years worked in the profession decreased and higher levels of mental problems among nurses reporting experiencing problems due to the physical environment and equipment use. Li et al[31] reported that COVID-19-related stress impaired the quality of life of health workers on the front line. In the present study, the incidence of work stress was higher among nurses with shorter working times in the profession, those working day and night shifts, those who were dissatisfied with their working environment and who described their quality of life as poor, and among those with no outside hobbies or activities. Our findings are compatible with those in the previous literature [24,29,31]. The decreased frequency of work-related stress as the length of time in the profession increased may be attributable to greater professional experience and feelings of personal success increasing nurses' abilities to cope with and adapt to stressful situations and thus to their experiencing less work-related stress. Additionally, we think that adverse working conditions (working days and nights, dissatisfaction with the working environment, and poor working life quality) result in high stress levels in nurses.

Zureigat and Fattah[32] investigated the effect of spare time activities on psychological stress levels among elderly individuals during the coronavirus pandemic (experimental group = 27, control group = 27). Those authors reported that spare time activities (such as painting,

music, and poetry) made a positive contribution to reducing psychological stress levels in their experimental group. We encountered no research in the literature examining work-related stress in nurses and engagement in hobbies/activities outside work. However, similarly to Zureigat and Fattah,[32] we determined a lower incidence of work-related stress in nurses with outside hobbies/activities. We think that participation by nurses in out-of-work social groups and sharing information on various subjects with those groups and enjoying themselves contributed to a reduction in work-related stress. In addition, it may be concluded that taking an interest in out-of-work hobbies/activities can exhibit a protective effect against work-related stress and mental and physical health problems in nurses.

In terms of the relationship between the descriptive characteristic of age and psychological resilience, previous studies have reported that psychological resilience increases with age[18,20,26,33]. In agreement with the existing literature, age was weakly positively correlated with the psychological resilience subdimension of perception of self, and very weakly positively correlated with planned future, structured style, and total PRS scores. Perception of self refers to an individual's self-confidence, self-efficacy, and self-love. Planned future refers to the individual's hopes for the future and ability to develop perspectives concerning adverse events encountered in life by drawing strength from those expectations. Finally, structured style refers to psychological resilience in the context of the ability to plan and cope with daily activities. The relationship between older individuals' self-efficacy, hopes for the future, and ability to cope with adverse events by drawing strength from those expectations, and ability to plan daily activities and their psychological resilience is a significant one. This finding supports the idea that psychological resilience improves with age.

In terms of the relationship between marital status and psychological resilience, Manzanares et al[13] reported lower resilience among unmarried healthcare professionals. In agreement with that study, married nurses in the present study registered higher PRS perception of self and family cohesion subdimension and total PRS scores. Perception of self refers to an individual's self-confidence, self-efficacy, and self-love, while family cohesion refers to the individual's collaboration with the family and the support he receives from it. We think that values shared within marriage and having a good time and collaborating with family members improve psychological resilience among married nurses by contributing to the development of a positive perspective, self-confidence, and self-efficacy and to an awareness of difficult situations that can nevertheless be overcome. In addition, it may be concluded that married individuals' spouses also have a positive impact on their psychological resilience.

Examination of the existing literature shows that academic success, spending time with family, the possession of life aims, and the ability to realize these are protective or strengthening factors in the context of psychological resilience.[2] Havnen et al[20] reported a weak positive correlation between education and psychological resilience ($r = 0.28$, $P < .05$), and very weak negative correlation between education and stress ($r = -0.25$), anxiety ($r = -0.24$), and depression ($r = -0.32$) ($P < .01$). The results of the present research are consistent with Havnen et al.'s[20] study, in which nurses with postgraduate degrees exhibited higher PRS planned future, family cohesion, and social resources subdimension scores and total scale scores than those educated to bachelor's and high school levels. Nurses educated to graduate level or above registered lower NSS death of patients and patient suffering subdimension scores. These findings show that a higher academic level increases patient-related sensitivity and psychological resilience. The increase in patient-related stress levels in line observed as academic levels increased may be interpreted as a negative outcome. However, the increase in resilience associated with an increase in academic level is a positive outcome. When these results are interpreted, it seems that individuals are more resilient even if their susceptibility to stress increases. In other words, the susceptibility to patient-related stress among individuals with high academic success does not adversely impact on their resilience. Alternatively, it may be that nurses who are more resilient as a result of their education are more sensitive to patients.

In terms of the relationship between the study features of length of time in the profession, dissatisfaction with the working environment, and quality of work life and psychological resilience, Hong et al[24] associated a longer working time in the profession with higher resilience. Stott and Johnstone[34] reported a greater probability of work satisfaction in the operating room among nurses with characteristics such as resilience, problem-solving abilities, and organization. Shatté et al[35] reported that individuals with high levels of resilience exhibited better adaptation to a difficult working environment, increased work attendance, and better productivity and that resilience resulted in positive effects on stressful behaviors. Li et al[31] reported a positive association between resilience and quality of life among frontline health care workers during the COVID-19 pandemic. Yıldırım et al[36] also described resilience as a powerful predictor of psychological well-being and quality of life. In this study, higher psychological resilience was determined in nurses with longer working times in the profession, who were satisfied with their working conditions and who described that quality of work life as good or very good. Nurses who were content with their working environment and who reported good/very good quality of work life exhibited greater perception of self, planned future, structures style, social competence, family cohesion, social resources, and general psychological resilience. An individual's satisfaction with the work he does is very important in terms of psychological resilience. That satisfaction is associated with a longer period in that job and with a high quality of life. The higher nurses' satisfaction with their working environment and quality of work life, the higher their expectations for the future, ability to cope with difficulties in achieving the goals they set for themselves, ability to plan daily activities, collaboration with their families, and support from friends and family, and all these positive effects in turn increase nurses' psychological resilience.

Possessing several hobbies or doing housework have been identified as predictors of resilience.[37] Sameer et al[37] reported that the most employed coping strategies during COVID-19 lockdown were watching television, listening to music, and ordinary housework such as cleaning or doing the laundry. Similarly in the present study, nurses taking part in out-of-work hobbies or activities exhibited higher PRS perception of self, planned future, and structured style subdimension and total scale scores. We think that nurses engaged in out-of-work hobbies or activities are more successful in such spheres as the ability to express themselves, job satisfaction and being able to perform daily activities, and coping with difficulties they encounter in achieving future expectations they set for themselves. In addition, taking an interest in out-of-work hobbies/activities is an important determinant of psychological resilience since it contributes to reducing work-related stress in nurses.

Good quality sleep is reported to be a protective factor against psychological problems that health care workers may experience.[33,38] Bozdağ and Ergün[33] reported that healthcare workers' psychological resilience increased in line with the quality of their sleep and recommended that the sleep quality, positive emotions, and life satisfaction of healthcare workers serving during the COVID-19 pandemic all needed to be increased. Labrague[38] showed that psychological resilience reduced adverse effects on mental health, sleep quality, and job satisfaction

among clinical nurses. In agreement with these studies, nurses who reported good sleep quality registered higher psychological resilience in the structured style domain than those reporting poor sleep quality. Structured style refers to the individual's psychological resilience in terms of being able to plan and perform daily activities.[11] From that perspective, there is an important association between good sleep quality and structured style. The better the individual's sleep quality, the better his motivation and ability to plan and perform tasks.

Study Limitations

This research is limited to nurses working in a university and research hospital surgical units, who used social networks and who consented to take part during the specified time frame. In addition, the level of participation was limited due to stress factors such as the intensity of survey studies because of the COVID-19 pandemic, the risk of infection, and working extended and numerous shifts. Another limitation is that the research findings consist of responses to the questionnaire and the scales employed.

This study examined work stress and psychological resilience among surgical nurses. The frequency of work-related stress and psychological resilience levels among surgical nurses was at levels approaching the average, psychological resilience as work stress increased, work-related stress decreased with age, and the incidence of work-related stress was higher, while psychological resilience was lower among female and unmarried nurses, those educated to graduate level or above, nurses with shorter professional experience, those working day and night shifts, those dissatisfied with their working environment, those who described their work life quality as poor, and those with no out-of-work hobbies or activities.

In light of the study results, we recommend that female and unmarried nurses be supported in their work environment, that rotations should be provided at specific intervals for nurses who are not satisfied with the units in which they work, that nurses be supported in terms of undertaking graduate and postgraduate education, that the working conditions of nurses continuing with their education should be improved at the same time, that nurses exhibiting academic success should be rewarded, and that healthy work conditions encouraging satisfaction with the working environment and increasing the quality of work life should be introduced. We also recommend that courses, seminars, conferences, panels, workshops, and structured educational programs (such as stress management and psychological resilience) should be introduced by institution administrators in order to develop nurses' personal skills and that the continuity of such programs should be ensured. Finally, we recommend that condition should be established that will encourage nurses to take part in spare time activities such as exercise, yoga, and meditation, listening to music, reading, and photography in order to improve their coping with stress skills and that these programs should be organized within the institution, with nurse participation being supported. Programs should also be established through which nurses can freely express their problems, emotions, and ideas inside the institution, share their experiences with others experiencing similar problems, and develop joint proposed solutions to problems. Nurses should also be afforded an opportunity to share their past experiences with colleagues with high psychological resilience and to draw conclusions from these. Finally, we recommend that experimental research be carried out aimed at reducing work stress among nurses and improving their psychological resilience.

Ethics Committee Approval: Ethics committee approval was received for this study from the ethics committee of Eskişehir Osmangazi University (date: September 7, 2021, number: 01).

Informed Consent: Informed consent was obtained from the nurses participating in the study.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept – SM; Design – SM; Supervision – SM; Resources – ÖK, AAS; Materials – SM, ÖK; Data Collection and/or Processing – ÖK, AAS; Analysis and/or Interpretation –SM; Literature Search –SM; Writing Manuscript –SM; Critical Review – ÖK, AAS; Other – SM

Declaration of Interests: The authors declare no conflict of interest.

Funding: The authors declared that this study has received no financial support.

References

1. Brennan EJ. Towards resilience and wellbeing in nurses. *Br J Nurs*. 2017;26(1):43-47. [CrossRef]
2. Çam O, Büyükbayram A. Nurses' resilience and effective factors. *J Psychiatr Nurs*. 2017;8(2):118-126. [CrossRef]
3. Jin JS, Oh D. Relationships between nurses' resilience, emotional labor, turnover intention, job involvement, organizational commitment and burnout. *Indian J Sci Technol*. 2016;9(1):1-5. [CrossRef]
4. Pappa S, Ntella V, Giannakas T, Giannakoulis VG, Papoutsi E, Katsaounou P. Prevalence of depression, anxiety, and insomnia among healthcare workers during the COVID-19 pandemic: a systematic review and meta-analysis. *Brain Behav Immun*. 2020;88(May):901-907. [CrossRef]
5. Ocal D, Kurklu S, Tekin K. Determining the stress and motivation levels of the nurses working at the surgery clinics of a traning and research hospital. *Heal Care Acad J*. 2015;2(3):147. [CrossRef]
6. Karabulut N, Çetinkaya F. Cerrahi Kliniklerinde Çalısan hemşirelerin hasta Bakımında Karşılaştıkları Güçlükler ve Motivasyon Düzeyleri. *Anadolu Hemşirelik Sağlık Bilim Derg*. 2011;14(1):14-23.
7. Gray-Toft P, Anderson JG. The Nursing Stress Scale: development of an instrument. *J Behav Assess*. 1981;3(1):11-23. [CrossRef]
8. Mert S, Aydin Sayilan A, Baydemir C. Nurse Stress Scale (NSS): reliability and validity of the Turkish version. *Perspect Psychiatr Care*. 2021;57(2):443-454. [CrossRef]
9. Friborg O, Hjemdal O, Rosenvinge JH, Martinussen M. A new rating scale for adult resilience: what are the central protective resources behind healthy adjustment? *Int J Methods Psychiatr Res*. 2003;12(2):65-76. [CrossRef]
10. Friborg O, Barlaug D, Martinussen M, Rosenvinge JH, Hjemdal O. Resilience in relation to personality and intelligence. *Int J Methods Psychiatr Res*. 2005;14(1):29-42. [CrossRef]
11. Basım HN, Çetin F. The reliability and validity of the resilience scale for adults-Turkish version. *Turk Psikiyatri Derg*. 2011;22(2):104-114.
12. Labrague LJ, De los Santos JAA. COVID-19 anxiety among front-line nurses: predictive role of organisational support, personal resilience and social support. *J Nurs Manag*. 2020;28(7):1653-1661. [CrossRef]
13. Manzanares I, Sevilla Guerra S, Lombraña Mencía M, Acar-Denizli N, Miranda Salmerón J, Martinez Estalella G. Impact of the COVID-19 pandemic on stress, resilience and depression in health professionals: a cross-sectional study. *Int Nurs Rev*. 2021;68(4):461-470. [CrossRef]
14. Lorente L, Vera M, Peiró T. Nurses´ stressors and psychological distress during the COVID-19 pandemic: the mediating role of coping and resilience. *J Adv Nurs*. 2021;77(3):1335-1344. [CrossRef]
15. ICN. International Nurses Day. Nurses DAY 2014. Nurses: A force for change A vital resource for health. Available at: https://www.thder.org.tr/uploads/files/icn-2014.pdf.
16. ICN. International Nurses Day. Nurses DAY 2016. Nurses: A force for change: improving health systems' resilience. Available at: https://www.thder.org.tr/uploads/files/icn-2016.pdf.
17. Chesak SS, Bhagra A, Schroeder DR, Foy DA, Cutshall SM, Sood A. Enhancing resilience among new nurses: feasibility and efficacy of a pilot intervention. *Ochsner J*. 2015;15(1):38-44.
18. Croghan IT, Chesak SS, Adusumalli J, et al. Stress, resilience, and coping of healthcare workers during the COVID-19 pandemic. *J Prim Care Community Health*. 2021;12:21501327211008448. [CrossRef]
19. Gloria CT, Steinhardt MA. Relationships among positive emotions, coping, resilience and mental health. *Stress Health*. 2016;32(2):145-156. [CrossRef]
20. Havnen A, Anyan F, Hjemdal O, Solem S, Gurigard Riksfjord M, Hagen K. Resilience moderates negative outcome from stress during the COVID-19 pandemic: A moderated mediation approach. *Int J Environ Res Public Health*. 2020;17(18):1-13. [CrossRef]

21. Ou X, Chen YY, Liang Z, Wen S, Li S, Chen YY. Resilience of nurses in isolation wards during the COVID-19 pandemic: a cross-sectional study. *Psychol Health Med*. 2021;26(1):98-106. [CrossRef]
22. Yörük S, Güler D. The relationship between psychological resilience, burnout, stress, and sociodemographic factors with depression in nurses and midwives during the COVID-19 pandemic: a cross-sectional study in Turkey. *Perspect Psychiatr Care*. 2021;57(1):390-398. [CrossRef]
23. Di Giuseppe M, Nepa G, Prout TA, et al. Stress, burnout, and resilience among healthcare workers during the Covid-19 emergency: the role of defense mechanisms. *Int J Environ Res Public Health*. 2021;18(10). [CrossRef]
24. Hong Y, Lee J, Lee HJ, et al. Resilience and work-related stress may affect depressive symptoms in nursing professionals during the COVID-19 pandemic era. *Psychiatry Investig*. 2021;18(4):357-363. [CrossRef]
25. Aksu İ, Erdim A. Ameliyathane Hemşireleri İşe bağlı gerginlik ve Stresle nasıl baş ediyorlar?le. *Turk Klin Hemşirelik Bilim Derg*. 2018;10(1):28-37. [CrossRef]
26. Barzilay R, Moore TM, Greenberg DM, et al. Resilience, COVID-19-related stress, anxiety and depression during the pandemic in a large population enriched for healthcare providers. *Transl Psychiatry*. 2020;10(1):291. [CrossRef]
27. Çam R, Gezer N, Boyacioğlu N, Öztürk H. Determination of stress sources of operating room nurses. *Hemşirelik Bilim Derg*. 2020;3(3):14-21. Available at: http://dergipark.gov.tr/hbd. Accessed July 5, 2021.
28. Ataç M, Kaplan A. COVID-19 pandemi sürecinde hemşirelerin psikolojik etkilenmeleri ve ruh sağlıklarının korunması. *J Educ Res Nursres Nurs*. 2021;18(1):54-59. [CrossRef]
29. Çınar F, Es M, Bülbüloğlu S. Examination of stress levels and sources of surgical nurses caring for COVID-19 patients. *Kocaeli Med J*. 2021;10(50):85-93. [CrossRef]
30. Özgür G, Gümüş AB, Gürdağ Ş. Investigation of psychiatric symptoms in nurses working in a hospital [Hastanede çalışan hemşirelerde ruhsal belirtilerin incelenmesi]. *Dusunen Adam J Psychiatry Neurol Sci*. 2011; 24(4):296-305. [CrossRef]
31. Li WQ, Yuan P, Sun J, et al. Resilience, coping style, and COVID-19 stress: effects on the quality of life in frontline health care workers. *Psychol Heal Med*. 2021:1-13. [CrossRef]
32. Zureigat A, Fattah OA. Effect of the leisure activities on the level of psychological stress among the elderly during the coronavirus outbreak. *Phys Act Rev*. 2021;9(1):70-78. [CrossRef]
33. Bozdağ F, Ergün N. Psychological resilience of healthcare professionals during COVID-19 pandemic. *Psychol Rep*. 2020;13. [CrossRef]
34. Stott A, Johnstone PL. After 28 years I'm still absolutely fascinated by what I do: Exploring job satisfaction in experienced perioperative nurses. *ACORN J Perioper Nurs Aust*. 2013;26(1):12-14. Available at: https://search.informit.org/doi/10.3316/informit.255591022763605.
35. Shatté A, Perlman A, Smith B, Lynch WD. The positive effect of resilience on stress and business outcomes in difficult work environments. *J Occup Environ Med*. 2017;59(2):135-140. [CrossRef]
36. Yıldırım M, Arslan G, Özaslan A. Perceived risk and mental health problems among healthcare professionals during COVID-19 pandemic: exploring the mediating effects of resilience and coronavirus fear. *Int J Ment Health Addict*. 2022;20(2):1035-1045. [CrossRef]
37. Sameer AS, Khan MA, Nissar S, Banday MZ. Assessment of mental health and various coping strategies among general population living under imposed COVID-lockdown across world: a cross-sectional study. *Ethics Med Public Health*. 2020;15:100571. [CrossRef]
38. Labrague LJ. Pandemic fatigue and clinical nurses' mental health, sleep quality and job contentment during the Covid-19 pandemic: the mediating role of resilience. *J Nurs Manag*. 2021;29(7):1992-2001. [CrossRef]