



ORIGINAL ARTICLE

Work Stress, Burnout Levels, and Affecting Factors in Nurses in Neonatal Intensive Care Units

Yenidoğan Yoğun Bakım Ünitesinde Çalışan Hemşirelerin İş Stresi, Tükenmişlik Düzeyleri ve Etkileyen Faktörler

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Abstract

Objective: The aim of this study was to investigate the work stress and burnout levels of neonatal intensive care nurses and the factors affecting them.

Method: This descriptive study was conducted with 270 (73%) of 372 neonatal intensive care nurses who were working in neonatal intensive care units in Şanlıurfa province. Data were collected electronically with Google Form using the descriptive characteristics form, Maslach burnout inventory, and general work stress scale. The linear regression (enter) method was used to evaluate the data.

Results: It was found that nurses working in the neonatal intensive care unit experienced work stress slightly above medium level and emotional burnout at a level close to medium. It was also found that the sense of personal accomplishment was low along with depersonalization. A strong positive correlation was found between the scores of nurses on the general work stress scale and their scores on the Maslach burnout inventory subscales. It was also found that emotional burnout, depersonalisation and sense of personal accomplishment experienced by nurses explained 70.3% of their general work stress.

Conclusion: Burnout and work stress levels of neonatal intensive care nurses were affected by many factors such as gender, marital status, previous education, shift system, and length of service. It is recommended that regular meetings should be held with nurses, prioritised problems should be considered and psychological support should be provided to nurses working in specialized units such as neonatal intensive care.

Keywords: Nurse, work stress, burnout, neonatal, intensive care

Öz

Amaç: Bu çalışmanın amacı yenidoğan yoğun bakım hemşirelerinin iş stresi, tükenmişlik düzeyleri ve etkileyen faktörlerin incelenmesidir.

Yöntem: Tanımlayıcı tipte yürütülen çalışma, Şanlıurfa ilinde yenidoğan yoğun bakım ünitesinde çalışan 372 yenidoğan yoğun bakım hemşiresinden 270'i (%73) ile yürütülmüştür. Veriler tanıtıcı özellikler formu, Maslach tükenmişlik ölçeği ve iş stresi ölçeği kullanılarak elektronik ortamda Google form ile toplanılmıştır. Verilerin değerlendirilmesinde lineer regresyon (enter) yöntemi kullanılmıştır.

Bulgular: Yenidoğan yoğun bakım ünitesinde çalışan hemşirelerin orta seviyenin biraz üzerinde iş stresi ve orta seviyeye yakın düzeyde duygusal tükenmişlik yaşadıkları belirlenmiştir. Aynı zamanda duyarsızlaşma ile beraber kişisel başarı duygusunun da düşük olduğu bulunmuştur. Hemşirelerin genel iş stresi ölçeğinden aldıkları puanları ile Maslach tükenmişlik ölçeği alt boyutlarından aldıkları puanlar arasında pozitif yönde güçlü bir ilişki olduğu saptanmıştır. Aynı zamanda hemşirelerin yaşadıkları duygusal tükenmişlik, duyarsızlaşma ve kişisel başarı duygusu, genel iş streslerinin %70,3'ünü açıkladığı saptanmıştır.

Sonuç: Yenidoğan yoğun bakım hemşirelerinin tükenmişlik ve iş streslerinin cinsiyet, medeni durum, daha önce eğitim alma, vardiya sistemi ve çalışma süresi vb. birçok etmeden etkilendiği saptanmıştır. Hemşireler ile düzenli toplantılar yapılması, öncelikli sorunların dikkate alınması ve yenidoğan yoğun bakım gibi özellikli olan birimlerde çalışan hemşirelere psikolojik destek sağlanması önerilmektedir.

Anahtar Kelimeler: Hemşire, iş stresi, tükenmişlik, yenidoğan, yoğun bakım

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Introduction

Neonatal intensive care units (NICU) are units where patients and premature infants who need special care and who require the highest level of attention, patient safety, and environmental safety receive care (1). It is a known fact that neonatal nurses who care for critically ill patients are exposed to higher levels of work stress than other health professionals (1-3). Studies have reported that factors such as monitoring suffering infants in NICUs and providing adequate care, working with dying infants, not being able to reach the physician in emergencies, difficult working conditions, insufficient number of staff, lack of regular staff meetings, not having enough time to discuss critical cases, not being able to provide adequate psychological support for staff and families, and lack of communication within the team cause nurses to experience work stress (1,4-6).

It has been found that unmanaged work stress in nurses leads to decreased performance, productivity and quality of care, decreased sleep quality and compassion, absenteeism, turnover, and serious psychological problems such as depression and burnout (2,3,7-11). Burnout is defined as a psychological response to work stress presenting with emotional exhaustion, fatigue, low sense of personal accomplishment, and depersonalization resulting from prolonged high levels of stress (12,13).

Studies have shown that neonatal nurses experiencing high levels of burnout and work intensity in the NICU, changing technology and guidelines, difficulties in dealing with critical patients and their families, fatigue, and having worked for five years or more have been found to be associated with high burnout rates in nurses (14-18). Similar to work stress, burnout causes undesirable consequences on health care quality, patient satisfaction, and patient safety, leading nurses to leave their jobs (19,20).

Considering the undesirable consequences of burnout and work stress experienced by neonatal nurses, who have key roles in patient care, it is very important to determine the work stress and burnout levels of nurses and the factors affecting them to improve the health of nurses and patients. This study was conducted to determine the work stress and burnout levels of neonatal nurses and the factors affecting them.

Research Questions:

- What is the work stress and burnout levels of neonatal nurses?

Main Points

- It was determined that neonatal nurses experienced moderate levels of work stress and emotional burnout.
- Nurses' depersonalization and sense of personal success were found to be low.
- There is a strong positive relationship between work stress levels and burnout levels of neonatal nurses.
- Emotional exhaustion, depersonalization, and a sense of personal success experienced by nurses explain 70.3% of their overall work stress.

- Is there a difference between the mean work stress and burnout scores of neonatal nurses according to socio-demographic variables?
- What type of relationship exists between work stress scores and burnout scores of neonatal nurses?
- To what extent do the burnout scores of neonatal nurses affect their work stress scores?

Material and Method

Research type: This study was conducted with a descriptive design.

Population and sample: The study population consisted of 372 neonatal nurses working in the NICUs of all state hospitals (six hospital) in Şanlıurfa province. Purposive sampling design was used in the study, aiming to reach all nurses working in NICUs, and 270 (73%) neonatal nurses who agreed to participate in the study constituted the sample of the study.

Inclusion criteria: Nurses who worked in NICUs in Şanlıurfa province and who volunteered to participate in the study were included. Nurses who did not meet the inclusion criteria were excluded from the study.

Data collection instruments: Data of the study were obtained using the descriptive characteristics form, Maslach burnout inventory, and general work stress scale.

Descriptive characteristics form: It consists of 12 open-ended and multiple-choice questions including questions such as nurses' age, gender, marital status, number of children, educational status, position, institution, unit, mode of working, and length of service.

Maslach burnout inventory: This scale was developed by Maslach and Jackson (21) to determine the burnout levels of individuals toward their job. The scale was adapted into Turkish by Ergin (22). The 5-Likert scale includes 22 items. The scale has three subscales: Depersonalization, personal accomplishment, and emotional exhaustion. Possible scores vary between 0 and 4. Scoring is linear for depersonalization and emotional exhaustion subscales and reversed for the personal accomplishment subscale. High scores on the emotional exhaustion and depersonalization subscales and low scores on the personal accomplishment subscale indicate high levels of burnout. In the reliability analysis of the scale, Cronbach's alpha values were found to be 0.83 for the emotional exhaustion subscale, 0.65 for the depersonalization subscale, and 0.72 for the personal accomplishment subscale [Ergin (22)]. In this study, Cronbach's alpha values were found to be 0.90 for the emotional exhaustion subscale, 0.77 for the personal accomplishment subscale, and 0.79 for the depersonalization subscale.

General work stress scale: The scale was developed by De Bruin (23). A Turkish validity and reliability study was conducted by Teles (24). The scale is a five-point Likert-type scale consisting of one factor and nine items. The scale items are scored between 1 and 5. An increase in the score obtained from the scale indicates a high level of work stress. The score obtained from this scale shows the level of work stress experienced or felt by the individual according to his/her own evaluations. Cronbach's alpha value of the whole scale is 0.91 and Spearman-Brown reliability coefficient is 0.89 [Teles (24)]. In this study, Cronbach's alpha value was found to be 0.911.

Data collection: Data of the study were collected from nurses working in NICUs in Şanlıurfa province via a Google form in an electronic environment.

Statistical Analysis

The data were analyzed using SPSS 22 (SPSS) statistical package program. Kurtosis and skewness values were used to evaluate the suitability of the data for normal distribution. The relationships between the variables were analyzed using the Pearson correlation coefficient when the data fit a normal distribution. Comparison of the means in the three groups was conducted using the One-Way ANOVA test when the data fit a normal distribution. Sample t-test was used for the comparison of paired groups. The enter method, a linear regression method, was used to determine the percentage of general work stress of nurses and $p < 0.05$ was considered statistically significant.

Results

Table 1 shows the distribution of the demographic characteristics of nurses. The mean age of the nurses in the study was found to be 25.53 ± 3.26 years. The majority of nurses were female, single, with no children, and had a bachelor's degree. Similarly, it was found that most nurses worked in a state hospital, were working under contract, had been working with a shift system (day/night) for 3-6 years, had been working in the NICU for 1-3 years, and had received training for the NICU (Table 1).

Table 2 shows the mean scores of the nurses from the scales. The mean scores of nurses were found to be 23.62 ± 8.28 in the general work stress scale, 17.24 ± 8.49 in the emotional burnout subscale, 4.18 ± 4.25 in the depersonalisation subscale, and 7.73 ± 5.7 in the personal accomplishment subscale (Table 2). It can be seen that the nurses who worked in the NICU experienced work stress slightly above the medium level and emotional burnout at a level close to the medium level. While low mean scores in the depersonalization subscale indicate that nurses have low levels of burnout in this area, low mean scores in the personal accomplishment subscale indicate that nurses have high levels of burnout in this area.

Table 3 shows the comparison of mean scale scores according to the demographic characteristics of the nurses. The mean emotional burnout scores of female nurses were

significantly higher ($p=0.019$). It was also found that nurses who were married had significantly higher mean scores on the general work stress and personal accomplishment subscale ($p=0.003$, $p=0.012$, respectively). It was found that the mean scores of married nurses in the general work stress scale and personal accomplishment subscale of burnout were significantly higher ($p=0.003$, $p=0.012$, respectively). When the general work stress and burnout of the nurses were analyzed according to the position of the

Table 1.
Demographic Characteristics of Nurses (n=270)

	Mean \pm SD	Median (min-max)
Age	25.53 \pm 3.26	25 (20-38)
Demographics features	n	%
Gender		
Female	170	63
Male	100	37
Marital status		
Married	91	34
Single	179	66
Having a child		
No	224	82
1	26	10
2	15	6
3 and above	5	2
Educational status		
High school	107	39.6
Associate degree	40	14.8
License	118	43.7
Postgraduate	5	1.9
Position		
Permanent staff	72	27
Contractual staff	198	73
Institution		
Public hospital	245	91
University hospital	25	9
Have neonatal training		
Yes	173	64
No	97	36
Working year		
Less than 1 year	36	13
1-3 year	89	33
3-6 year	91	34
6 years and above	54	20
Working time in the NICU		
Less than 1 year	48	18
1-3 year	111	41
3-6 year	83	31
6 years and above	28	10
Working system		
Shift (day/night)	238	88
Daytime	32	12
Total	270	100

SD=standard deviation, NICU=neonatal intensive care units

Table 2.
Nurses' General Work Stresses and Burnout Subscale Score Averages (n=270)

Scales	Mean ± SD	Median (min-max)
General work stress scale	23.62±8.28	23 (9-45)
Maslach burnout scale		
Emotional exhaustion sub-dimension	17.24±8.49	17 (0-36)
Depersonalization sub-dimension	4.18±4.25	3 (0-20)
Personal success sub-dimension	7.73±5.7	7 (0-32)

SD=standard deviation

Table 3.
Comparison of Scale Score Averages According to Some Demographic Characteristics of Nurses (n=270)

Demographics features	General work stress scale total	Personal success sub-dimension	Emotional exhaustion sub-dimension	Depersonalization sub-dimension
Gender				
Female	24.11±8.31	7.50±5.20	18.17±8.23	4.35±4.41
Male	22.79±8.22	8.11±6.48	15.66±8.74	3.89±3.98
Test value	1.267	-0.848	2.365	0.863
p*	0.206	0.397	0.019	0.389
Marital status				
Married	25.60±7.19	8.95±5.67	17.75±7.93	4.22±3.92
Single	22.61±8.64	7.11±5.64	16.98±8.78	4.16±4.42
Test value	3.014	2.525	0.721	0.110
p*	0.003	0.012	0.471	0.913
Position				
Permanent staff	27.04±6.50	8.99±5.21	20.31±7.82	5.32±4.63
Contractual staff	22.38±8.53	7.27±5.82	16.13±8.47	3.77±4.04
Test value	4.215	2.205	3.656	2.681
p*	0.000	0.028	0.000	0.008
Institution				
Public hospital	23.72±8.35	7.75±5.68	17.49±8.47	4.17±4.28
University hospital	22.64±7.68	7.48±6.03	14.80±8.49	4.32±4.03
Test value	0.622	0.226	1.512	-0.171
p*	0.535	0.821	0.132	0.865
Have neonatal training				
Yes	24.24±8.02	7.76±5.80	18.01±8.59	4.56±4.31
No	22.52±8.66	7.66±5.56	15.88±8.19	3.51±4.09
Test value	1.614	0.144	2.014	1.997
p*	0.108	0.886	0.045	0.047
Working system				
Shift (day/night)	23.27±8.49	7.37±5.70	16.99±8.55	4.16±4.28
Daytime	26.15±6.14	10.27±5.10	19.06±7.98	4.30±4.10
Test value	-2.394	-3.016	-1.386	-0.181
p*	0.020	0.004	0.173	0.857
Having a child				
No	23.0±8.65	7.4±5.76	16.8±8.75	4.1±4.35
1	28.5±4.24	10.2±5.71	19.7±7.31	4.6±3.85
2	25.1±6.15	8.5±4.47	19.0±6.87	3.7±3.83
3 and above	23.6±3.51	7.2±3.63	17.8±5.02	6.2±3.56
F	3.803	2.065	1.123	0.536
p**	p<0.050	0.105	0.340	0.658

Table 3.
Continued

Demographics features	General work stress scale total	Personal success sub-dimension	Emotional exhaustion sub-dimension	Depersonalization sub-dimension
Educational status				
High school	19.60±7.51	6.99±5.90	13.62±7.85	3.37±3.60
Associate degree	22.58±6.38	7.35±6.67	15.23±6.39	2.73±3.50
license	27.52±7.80	8.63±5.05	21.08±8.01	5.30±4.55
Postgraduate	26.20±6.50	5.20±6.26	20.20±10.26	6.80±7.95
F	21.473	1.981	18.528	6.569
p**	p<0.001	0.117	p<0.001	p<0.001
Working year				
Less than 1 year	22.33±8.25	7.11±4.82	16.5±8.05	3.36±3.69
1-3 year	20.97±8.71	6.91±5.68	15.45±8.50	3.74±4.24
3-6 year	24.59±8.53	7.97±5.97	18.59±9.15	4.48±4.58
6 years and above	27.22±5.11	9.07±5.69	18.41±7.15	4.94±3.98
F	7.689	1.823	2.563	1.504
p**	p<0.001	0.143	0.055	0.214
Working time in the NICU				
Less than 1 year	22.33±8.25	7.11±4.82	16.5±8.05	3.36±3.69
1-3 year	20.97±8.71	6.91±5.68	15.45±8.5	3.74±4.24
3-6 year	24.59±8.53	7.97±5.97	18.59±9.15	4.48±4.58
6 years and above	27.22±5.11	9.07±5.69	18.41±7.15	4.94±3.98
F	7.689	1.823	2.563	1.504
p**	p<0.001	0.143	0.055	0.214

*=sample t-test, **=One-Way ANOVA

nurses, it was found that the mean scores of nurses working on permanent staff in general work stress and all subscales of burnout (personal achievement, emotional exhaustion and depersonalisation) were significantly higher ($p=0.000$, $p=0.028$, $p=0.000$, $p=0.000$, $p=0.008$, respectively). The mean emotional burnout and depersonalization subscale scores of nurses who had received training previously were found to be significantly higher ($p=0.045$, $p=0.047$, respectively). The mean scores of general work stress and personal accomplishment subscale of burnout were found to be significantly higher in nurses who worked night shifts ($p=0.020$, $p=0.004$, respectively). The mean scores of the nurses who had only one child were significantly higher ($p<0.050$). While the mean general work stress and emotional exhaustion subscale scores of nurses with undergraduate degrees were significantly higher, mean depersonalisation subscale scores of nurses with postgraduate degrees were significantly higher ($p<0.001$). Considering the total length of service and the length of service in the NICU, the mean scores of nurses who worked for 6 years or more were significantly higher ($p<0.001$, $p<0.050$, respectively) (Table 3).

The regression model created to determine the general work stress of nurses is shown in Table 4 and was found to be statistically significant ($F: 213,513$; $p<0.001$). It was found that the emotional burnout, depersonalisation and personal accomplishment subscales of nurses explained 70.3% of their general work stress. Emotional exhaustion

was the most effective factor affecting the general work stress experienced by the nurses in the hospital ($B: 0.803$; $p<0.001$). A strong positive correlation was found between nurses' scores on the general work stress scale and their scores on the subscales of the Maslach burnout inventory ($r=0.827$, $r=0.580$, $r=0.301$, respectively) (Table 4).

Discussion

This study was conducted to determine the work stress and burnout levels of neonatal nurses and the factors affecting them. While there is a serious shortage of nurses that affects every field of nursing all over the world, this shortage has increased even more with the Coronavirus disease-2019 pandemic. Many nurses have quit or plan to quit their jobs due to work stress and burnout caused by the pandemic (25,26). At the time of the study, the epidemic had just started in our country, but it is thought that the stress and burnout levels of nurses who were on the front lines in natural disasters such as earthquakes, floods, and fires after the pandemic may have increased even more. In a meta-analysis study examining the effect of burnout on patient safety, it was found that high burnout levels of nurses affected patient safety negatively (20). Work stress and burnout levels experienced by nurses should be minimized and patient safety should be improved, especially in NICUs, which require more knowledge, experience and attention (27).

Table 4.
Regression Model Created for Nurses' General Work Stress (Enter) (n=270)

	B (95%)	Beta	t	p	Zero-order	Partial
(Constant)	8.466 (7.066-9.865)		11.911	0.000		
Emotional exhaustion sub-dimension	0.783 (0.697-0.87)	0.803	17.805	0.000	0.827	0.737
Depersonalization sub-dimension	-0.013 (-0.19-0.164)	-0.007	-0.145	0.885	0.580	-0.009
Personal success sub-dimension	0.22 (0.121-0.319)	0.152	4.384	0.000	0.301	0.260

B (95%)=unstandardized coefficients, Beta=standardized coefficients, adj R²:0.703, F=213.513, p<0.001, S.E=2.703

It was found that emotional burnout, depersonalization, and a sense of personal accomplishment experienced by nurses explained 70.3% of their overall work stress, and there was a strong positive relationship between work stress and burnout (Table 4). This is a strong indication that work stress can be significantly reduced only by reducing burnout. In previous studies, the relationship between burnout levels of neonatal nurses and resilience, turnover, and nosocomial infections were examined (25,28,29). Examination of the relationship between burnout and work stress in our study brought a new finding to the literature. Being married and having only one child were among the factors that increased work stress (Table 3). It is thought that work stress may have increased because of the increased responsibility of being a parent for the first time and marriage. At the same time, it was found that nurses who worked at night, those who worked in intensive care, or those who worked for more than 6 years in total experienced higher work stress (Table 3). Similarly, in a different study conducted in Turkey, it was reported that neonatal nurses working over 40 h per week experienced more stress (1). In another study conducted in the USA, it was found that neonatal nurses working in the night shift had higher work stress than those working in the day shift, which supported our findings (30).

Studies have reported that burnout levels of neonatal nurses are affected by workload, interpersonal relationships, rest taken, nutrition, technical skills, and one's own personality traits (anger control, anxiety, shame, insecurity) (25,31-33). Studies conducted in intensive care units in Turkey reported that the increase in length of service and the shift system being always night or night/day decreased nurses' sense of personal accomplishment, increased emotional exhaustion, decreased job satisfaction, and caused them to consider changing their profession (34,35). In another study conducted in the USA, burnout was found to be higher in nurses who had been working in the NICU for more than five years (18). As a result, senior nurses experience more work stress and burnout. It is thought that their awareness due to experience may be high, which may have affected this situation, and their high professional fatigue may have affected it as expected. In a study conducted in Argentina, it was found that gender did not affect the feeling of burnout in nurses, whereas in our study, emotional exhaustion was found to be higher in female nurses and personal accomplishment was found to be higher in married nurses (Table 3) (36). This may have been caused by the fact that female nurses caring for infants with maternal instinct may

have caused emotional exhaustion, whereas the better caregiving experience of married nurses may have caused a higher sense of personal accomplishment. In addition, emotional exhaustion and depersonalization were found to be high in nurses who received training for new-borns (Table 3). Since it is thought that the training may have increased the awareness of nurses, it may have triggered them to evaluate themselves as inadequate in infant care and follow-up.

Study Limitations

The fact that the research was conducted only in the Şanlıurfa province is among the limitations of the study.

Conclusion

In this study, it was found that nurses working in the NICU experienced work stress slightly above the medium level and emotional burnout close to the medium-level. A strong positive relationship was found between work stress and burnout in neonatal nurses. In addition, when the factors affecting burnout and work stress are taken into consideration, the work plans of nurses working in the NICU should be organized by considering their working time in the NICU, total working time, shift systems, gender, marital status, number of children and previous education. It is recommended that regular meetings should be held with nurses, prioritized problems should be considered and psychological support should be provided to nurses working in special units such as neonatal intensive care.

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Ethics Committee Approval: Ethical approval was obtained from the Clinical Research Ethics Committee of a Harran University on 29.03.2021 with the decision number HRU/21.07.19, and institutional permission was obtained from the provincial health directorate. This study was conducted in accordance with the principles of the Declaration of Helsinki.

Informed Consent: Consents were obtained electronically from the nurses who agreed to participate in the study. An informed consent page was presented on the home page of the Google form, and the nurses who agreed to complete the online questionnaire completed the form after selecting

the option that they voluntarily agreed to participate in the study.

Author Contributions: Concept – F.B., D.K., H.K.; Design – F.B., D.K., H.K.; Data Collection and/or Processing – F.B., D.K.; Analysis and/or Interpretation – M.E.D., F.B.; Literature Review – F.B., D.K.; Writing – F.B., D.K., M.E.D.

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