

LEVELS OF BURNOUT SYNDROME IN CROATIAN CRITICAL CARE NURSES: A CROSS-SECTIONAL STUDY

Adriano Friganović^{1,2,3} & Polona Selic³

¹Department of Anaesthesiology and Intensive Care, University Hospital Centre Zagreb, Zagreb, Croatia

²Department of Nursing, University of Applied Health Sciences, Zagreb, Croatia

³Department of Family Medicine, Faculty of Medicine, University of Ljubljana, Ljubljana, Slovenia

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SUMMARY

Background: Burnout syndrome occurs in people who work in jobs which involve frequent and intense contact with people, especially healthcare workers. High dependency departments such as critical care units are very stressful environments, and this can lead to a greater incidence of burnout, especially of emotional exhaustion and poor personal accomplishment. Nurses are the largest group of healthcare workers, and so it is reasonable to expect they would have a high prevalence of burnout.

Subjects and methods: The aim of this study was to assess the prevalence of burnout in critical care nurses in Croatia and explore its association with demographic features. A cross-sectional study of 620 nurses was conducted in several university hospitals, using convenience sampling. The Maslach Burnout Inventory was administered, together with questions about the socio-demographic and work characteristics of the participants (age, gender, length of work in ICU, education, type of ICU).

Results: The majority of the sample were female nursing staff (87.7%), aged 26-35 (38.9%). The results showed that approximately every fifth nurse (22.1%) expressed a high emotional exhaustion (EE), with lesser burden of a high depersonalisation (D) in 7.9%, yet every third nurse (34.5%) scored low on PA. Male nurses reported more depersonalisation ($p=0.045$), yet neither EE nor the PA dimensions differed by gender.

Conclusion: The results of this study concerning burnout are comparable to those of studies of other professions, but the results vary with regard to the sample and the working conditions of the countries.

Key words: burnout syndrome - incidence - nurses - critical care

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INTRODUCTION

Burnout is known to be a psychological, work-related syndrome, and it develops as a result of long-term exposure to emotional and interpersonal stressors in the workplace (Selic et al. 2012). It manifests in negative self-esteem, a negative attitude towards work, and diminished interest in the clients/patients (Selic et al. 2012), and is characterised by emotional exhaustion, depersonalisation, and a lack of social accomplishment (Groene & Jorgensen 2005, Friganovic et al. 2019). In nurses, burnout has been shown to be associated with adverse health outcomes, increased turnover, and decreased patient satisfaction (Florin & Basham 2000).

Florin and Basham said that nurses who work in high-stress areas, such as critical care, report high levels of burnout (Florin & Basham 2000). The leading causes of burnout in nurses are an imbalance between work requirements and preparation and fitness for the workplace, lack of control, insufficient performance recognition, and prolonged stress (Baker et al. 2004, Schaufeli & Buunk 2003). Hospital nurses have higher burnout scores compared to those working in other settings, due to moral distress, emotional and spiritual demands creating the perception of an excessive workload, and stressors associated with physical and psychological environment-related characteristics (Florin & Basham 2000).

Symptoms usually begin because of irregular adaptation to high stress demands (Friganovic et al. 2019). Due to burnout, nurses may develop addictions to alcohol or drugs, absenteeism, or diminished work capability (Stordeur et al. 2001), and have a cynical and negative view of themselves, a diminished sense of contentment (Miliken et al. 2007), and an increased risk of errors (Awa et al. 2010). The secondary consequences of burnout often include financial repercussions, including for the medical institution (Myhren et al. 2013).

The most typical stressors which lead to burnout have been identified: intra-group conflict, variation in workload, and job satisfaction (Elsafer et al. 2018). Inadequate patient safety and medical errors are certainly associated with the incidence of burnout (Alexandrova-Karamanova et al. 2016). Even critical care educators face some level of burnout associated with job satisfaction (Refaat Ahmed et al. 2018). Many authors suggest that improving work conditions may reduce burnout in critical care settings (Malaquin et al. 2017). Low personal accomplishment should be improved by supervisors valuing their team members better (Malaquin et al. 2017). Nurses who work in critical care settings without autonomy, and who are facing job instability and conflict, have a higher incidence of burnout than nurses who work in improved environments (Vahedimian Azimi et al. 2017).

In this region, Macedonian and Croatian authors have conducted a study of burnout, work demands, stress, coping, and team working in hospital nurses, but no studies focused on critical care have been carried out in Croatia (Mijakoski et al. 2015, Šimunović 1998, Mesar et al. 2015). Only one study using nurses as participants (Mesar et al. 2015) investigated the prevalence of stress in surgical ward nurses. This study identified the most intense stressors in two groups of nurses (Mesar et al. 2015). Significant stressors that are related to the organisation of work were work overload; poor organisation; requests to work overtime, up to 24 hours; two-shift work; and limited time for working with patients (Mesar et al. 2015). In Slovenia, Selič et al. conducted a cross-sectional study of Slovenian family medicine trainees, nearly every fifth (18.3%) scored high in all three dimensions (Selič et al. 2012). There is insufficient understanding of job satisfaction as a crucial factor in the development of burnout, and a need for more detailed research (Selič et al. 2012). Prevention of burnout syndrome should be a priority for multiple stakeholders in the healthcare system, and all levels of management must be involved in order to reduce its prevalence and prevent its effects on nurses, healthcare workers and the overall system (Moss & Kleinpell 2019).

The intention of nurses to leave their profession has become a challenge for the modern healthcare system, and should be prevented by systematic activities such as improving the work environment (Moss & Kleinpell 2019). Considering that nurses play a key role in managing futile medical care, being aware of their experiences in this regard could be an initial operational step towards compiling useful caregiving and educational programmes in intensive care units (Friganovic et al. 2017). Nurse managers should adopt supportive approaches and different strategies to reduce the prevalence of burnout syndrome in nurses (Friganovic et al. 2017).

The aims of this study were to explore the levels of burnout in critical care nurses in Croatia and the associations between burnout syndrome, age and gender. A quantitative cross-sectional multi-centre study was conducted in five Croatian hospitals.

SUBJECTS AND METHOD

Participants

The target population was critical care nurses employed in the intensive care units (ICU) of several Croatian University Hospitals. The nurses were asked to participate voluntarily in the study. A convenience sample was used; data collection was carried out from April to September 2017, and a total of 620 participants were recruited (544 female (87.7%) and 76 male (12.3%)). The study was approved by the Ethical Committee of each of the hospitals included.

Table 1. Number and percentage of participants according to demographic features (n=620)

	n	%
Gender		
Male	76	12.3
Female	544	87.7
Age in years		
18-25	141	22.7
26-35	241	38.9
36-45	161	26.0
>45	77	12.4
Education		
Vocational school	318	51.3
Bachelor degree	248	40.0
Master's degree	54	8.7
Marital status		
Single	279	45.0
Married	316	51.0
Divorced or widowed	25	4.0
Work experience in years		
<5	244	39.4
5-10	99	16.0
11-15	90	14.5
16-20	70	11.3
>20	117	18.9
Work department		
Cardiac surgical ICU	80	12.9
Neurosurgical ICU	58	9.4
Paediatric and neonatal ICU	73	11.8
Medical ICU	80	12.9
Surgical ICU	225	36.3
Coronary ICU	72	11.6
Neurological ICU	32	5.2
Organisation		
University Hospital Centre Zagreb	321	51.8
University Hospital Centre Sestre milosrdnice	153	24.7
University Hospital Sveti Duh	50	8.1
University Hospital Merkur	34	5.5
University Hospital Dubrava	62	10.0

Instruments

Several demographic characteristics were collected, i.e. age, gender, education, duration of work in the ICU, marital status, and type of ICU. The Maslach Burnout Inventory (MBI) was designed to assess the three components of burnout syndrome: emotional exhaustion (EE), depersonalisation (DP), and reduced personal accomplishment (PA) (Maslach 1977). There are 22 items which are divided into three subscales. EE and DP are negative scales, so higher scores represent greater emotional exhaustion and depersonalisation. The PA score is a positive scale and a higher score represents higher PA. The Maslach Burnout Inventory (MBI) showed good Cronbach's alpha internal consistency, ranging from 0.74 to 0.90 for each subscale (Serec et al. 2012).

Statistics

Descriptive statistics were used to analyse the main characteristics of the sample. The bivariate association between gender and burnout was examined using the chi-square test. Demographic features were selected as independent variables in the regression modelling, with burnout being the dependant variable.

Following Hsieh, the total of 620 participants was calculated to have more than 95% power to detect a significant association for logistic regression (using an alpha of 0.05, a medium odds ratio of about 2.5 to 1, and a variance inflation factor of 1.28) (Hsieh 1989, Resenthal 1996). The variance inflation factor, which depends on the squared multiple correlation coefficients (R^2) relating a specific predictor of interest to the remaining predictors, was calculated according to the instructions in Hsieh et al. (2003). Our study design did not involve one specific predictor of interest, so we calculated R^2 for each predictor that was applied in the model and used the maximum value obtained. Since all the predictors were categorical variables, we applied logistic regression for Nagelkerke R^2 . Data analysis was carried out using IBM SPSS Statistics for Windows (version 22.0). Significance was set at $p < 0.05$.

RESULTS

Table 1 shows that the majority of the sample were female nursing staff (87.7%) aged 26-35 (38.9%). Most nursing staff had less than 5 years work experience (39.4%); their primary work department was general surgery ICU (36.3%); and most were located in University Hospital Centre Zagreb (51.8%). The mean age was 33.5 ± 9.5 years, ranging from 19 to 62 years; work experience was $SD 10.3 \pm 7.7$ years, ranging from 1 to 38 years. According to the MBI dimension scores in Table 2, the nursing staff expressed a high EE at 22.1%, a high

DP at 7.9% and a low PA at 34.5%. Men reported a higher percentage of medium and high DP in comparison to women ($p=0.045$), which is presented in Table 3. The EE and PA levels did not differ by gender (Table 3). Table 4 shows the logistic regression modelling and the association between demographic features and dimensions of the MBI. The findings do not show any significant differences between EE and demographic features. Male gender (OR=2.03, 95% CI=1.20-3.42, $p=0.008$) was associated with higher depersonalisation. Master's degree education (OR=1.40, 95% CI=1.01-1.96, $p=0.045$) and Bachelor degree education (OR=2.39, 95% CI=1.34-4.26, $p=0.003$) were associated with higher personal accomplishment. The range 5-10 years of work experience (OR=0.56, 95% CI=0.33-0.95, $p=0.032$) was associated with lower personal accomplishment.

DISCUSSION

Critical care nurses in Croatia showed a high level of EE at 22.1%, a high level of DP at 7.9% and a low PA at 34.5%. Personal accomplishment was expressed as the most problematic dimension of the MBI. The results of a study Pejuskovic et al. conducted on physicians in Croatia also showed a high level of EE in 22.5%, DP in 5.01% and PA in 37.3% in the overall sample, which correlates with the results of our study, but the authors did not present differences between gender and other demographic features (Pejuskovic et al. 2011). A Croatian group of authors also conducted a study of physicians and presented the results with a high score of EE in 42.4%, DP in 16.0% and PA in 15.2%; this difference is almost double our results (Ožvačić-Adžić et al. 2013). A comparison of these results is not highly relevant because of the different working groups and environmental settings, but it is certainly important for understanding the prevalence of burnout in healthcare workers (Ožvačić-Adžić et al. 2013).

Table 2. MBI dimensions by scoring level arrangement

Scoring level	EE - Emotional exhaustion - n (%)	DP - Depersonalisation - n (%)	PA - Personal accomplishment n (%)
Low	285 (46.0)	420 (67.7)	214 (34.5)
Medium	198 (31.9)	151 (24.4)	210 (33.9)
High	137 (22.1)	49 (7.9)	196 (31.6)

Table 3. Burnout (MBI) subscales and total score according to gender

	Total - n=620 (%)	Male - n=76 (%)	Female - n=544 (%)	p*
EE - Emotional exhaustion				0.614
Low	285 (46.0)	31 (40.8)	254 (46.7)	
Medium	198 (31.9)	26 (34.2)	172 (31.6)	
High	137 (22.1)	19 (25.0)	118 (21.7)	
DP - Depersonalization				0.045
Low	420 (67.7)	42 (55.3)	378 (69.5)	
Medium	151 (24.4)	26 (34.2)	125 (23.0)	
High	49 (7.9)	8 (10.5)	41 (7.5)	
PA - Personal accomplishment				0.521
Low	214 (34.5)	25 (32.9)	189 (34.7)	
Medium	210 (33.9)	30 (39.5)	180 (33.1)	
High	196 (31.6)	21 (27.6)	175 (32.2)	

* Chi-square test

Table 4. Logistic regression model of demographic features; associations with MBI i.e Emotional Exhaustion, Depersonalisation and Personal Accomplishment

	Emotional Exhaustion (EE) Nagelkerke R ² =0.302		Depersonalization (DP) Nagelkerke R ² =0.176		Personal Accomplishment (PA) Nagelkerke R ² =0.186	
	OR (95% CI)	P	OR (95% CI)	P	OR (95% CI)	P
Gender						
Female	1.00 (reference)		1.00 (reference)		1.00 (reference)	
Male	1.54 (0.94-2.53)	0.087	2.03 (1.20-3.42)	0.008	1.20 (0.74-1.93)	0.456
Age in years						
18-25	1.00 (reference)		1.00 (reference)		1.00 (reference)	
26-35	1.02 (0.59-1.76)	0.944	0.88 (0.48-1.59)	0.663	1.29 (0.78-2.14)	0.316
36-45	1.14 (0.54-2.37)	0.736	0.97 (0.43-2.18)	0.947	1.09 (0.54-2.20)	0.801
>45	1.59 (0.65-3.87)	0.308	1.16 (0.43-3.10)	0.770	1.39 (0.60-3.24)	0.442
Education						
Vocational school	1.00 (reference)		1.00 (reference)		1.00 (reference)	
Bachelor degree	1.24 (0.87-1.75)	0.233	0.97 (0.66-1.43)	0.863	1.40 (1.01-1.96)	0.045
Master degree	0.83 (0.45-1.54)	0.556	0.77 (0.39-1.53)	0.455	2.39 (1.34-4.26)	0.003
Marital status						
Single	1.00 (reference)		1.00 (reference)		1.00 (reference)	
Married	0.93 (0.60-1.43)	0.726	0.97 (0.60-1.56)	0.895	0.97 (0.64-1.45)	0.873
Divorced or widowed	1.34 (0.55-3.32)	0.521	1.05 (0.38-2.96)	0.922	1.99 (0.83-4.77)	0.124
Work experience in years						
<5	1.00 (reference)		1.00 (reference)		1.00 (reference)	
5-10	1.29 (0.74-2.25)	0.374	1.09 (0.59-2.01)	0.785	0.56 (0.33-0.95)	0.032
11-15	1.13 (0.62-2.06)	0.687	1.09 (0.56-2.13)	0.799	1.06 (0.60-1.87)	0.847
16-20	1.33 (0.64-2.76)	0.439	0.89 (0.39-2.00)	0.768	1.23 (0.62-2.47)	0.557
>20	1.00 (0.47-2.11)	0.990	0.93 (0.40-2.17)	0.873	1.26 (0.62-2.56)	0.533

OR: odds ratio; 95% CI: 95% confidence interval

In Brazil a group of anaesthesiologists were tested with the MBI and the results they showed were similar to our results in the EE (25.28%), but there was a difference in the DP (44.19%) and PA (51.16%) results (Barbosa et al. 2014). Sanchez-Moreno et al. compared nurses' results with that of social workers, and found differences in all three dimensions: EE in 12.2%, DP in 26.5% and PA in 21.2% (Sanchez-Moreno et al. 2015). A Macedonian group of researchers conducted a study in order to compare Croatian and Macedonian nurses; they found that Croatian nurses reported a higher level of DP than Macedonian nurses (Mijakovski et al 2011), which not correlate with the findings in our study. However, the authors did not distinguish any differences between clinical settings, and only tried to compare the size of the hospital (Mijakovski et al. 2011). A group of Slovenian authors reported a high level of EE (46%) in a sample of family medicine trainees, which correlated with the findings of Ožvačić-Adžić et al., but they also found a high level of DP (42.4%) and a low level of PA (15.2%), which does not correlate with the reviewed studies (Selič et al. 2012, Ožvačić-Adžić et al. 2013). Selič et al. did not find any relationship between the MBI dimensions and gender, which was also shown in our study (Selič et al. 2012). Another study in Slovenia was conducted with soldiers, where the authors found a high level of EE in 16.3%, a high level of DP in 8.64% and a low level of PA in 30.7%, which relates to findings in our Croatian critical care nurses; the Slovenian authors also found a strong connection between MBI and job satisfaction (Selič et al. 2012).

A Saudi Arabian study conducted on a sample of 150 critical care nurses did not show any difference between the level of burnout and gender, just as we found in the nurses in Croatia (Alharbi et al. 2016). In this study there were also no differences between educational status and MBI dimension scores. Two Brazilian authors presented results on critical care nurses similar to the Croatian nurses, where they found a high level of EE in 22.0%, a high level of DP in 9.1% and a low level of PA in 30.5% (Panunto & Brito Guirardello 2013). Don Santos Alves et al. explored levels of emotional exhaustion in a sample of 267 paediatric nurses, and their results were almost the same as in the Croatian sample (EE in 21.5%); the authors concluded that the nurses' autonomy and work environment correlated with emotional exhaustion (don Santos Alves et al. 2017). Results from a research study on 51 critical care nurses in Turkey (EE 14.68%, DP 5.31%, PA 19.19) also showed similar results to the Croatian sample in the dimensions of EE and DP, and there was a significant difference in PA (Denat et al. 2016). Nantsupawat et al. investigated the effects of burnout on quality of care on sample of 2084 nurses from Thailand (Nantsupawat et al. 2015). Compared to the Croatian results, their low PA score was almost the same (34.5%), but the EE (32.2%) and DP (17.8%) showed significant differences, which may be related to the different clinical environment (Nantsupawat et al. 2015). This was one of the first studies of nurses which confirmed the relationship between the level of burnout and

variables such as patient falls, medication errors, infections and poor quality of care (Nantsupawat et al. 2015). Montgomery et al. found similar results in two dimensions: EE in 20.85% and DP in 5.42% (Montgomery et al. 2015). A literature review did not find any studies with a relationship of gender or educational level and burnout.

CONCLUSION

The results of this study concerning burnout and dimensions of MBI in nurses are comparable to the results of studies of other professions, but the results vary with regard to the sample and the working conditions of the countries. However, for future research it would be interesting to compare different settings in clinical nursing: stressful and less stressful. The findings of the present study showed that male nurses have a significant increase in depersonalisation and prevention programmes should consider this fact. A higher level of nursing education showed higher results in personal accomplishment, which confirms the hypothesis that nurses' autonomy is a significant risk factor. The results also showed a relationship between low PA and work experience in the range 5-10 years. According to these findings it is clear that nurse education is a protective factor and nurses should be encouraged to obtain higher education. Preventive programmes should be directed towards male nurses and nurses with 5-10 years of work experience. Learning programmes related to burnout should be implemented in nurse education curricula.

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Contribution of individual authors:

Adriano Friganović & Polona Selič: study conception and design, data acquisition and selection, manuscript writing and revision.

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Correspondence:

Adriano Friganović, RN, BsN, MsN
Department of Anaesthesiology and Intensive Care, University Hospital Centre Zagreb
Kišpatićeva 12, 10 000 Zagreb, Croatia
E-mail: adriano@hdmsarist.hr