

Occupational Stress and Burnout Syndrome among ICU Nurses. A Prospective Observational Study

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Submitted: 25 November 2019, accepted: 26 November 2019, published: 3 December 2019

Abstract: Nurses in Intensive Care Units (ICU) may be exposed to considerable stress of work. High levels of stress in ICU nurses affect the quality of nursing and the quality of life at work. Determination of occupational stress levels, burnout syndrome and overall job satisfaction among ICU nurses. The research was conducted in Intensive Care Unit of Emergency Clinical County Hospital of Oradea, Romania. Data were collected from the questionnaires, 29 nurses (of the 35) were selected for this study. Professional stress factors have been assessed through Expanded Nurses Stress Scale (ENSS), burnout syndrome through Maslach Burnout Inventory-Human Services Survey (MBI-HSS), while overall job satisfaction was measured by a 7-step Likert scale. The highest levels of stress were associated with workload and conflicts with other health professionals, professional relationship between nurses have been described as the least stressful. About burnout levels: a high score for emotional exhaustion and depersonalization, and a low score for professional achievements. Professional satisfaction has reached an average level. The fidelity of the scales was verified by the Cronbach's alfa coefficient: Expanded Nurses Stress Scale (ENSS) (0.98) and Maslach Burnout Inventory-Human Services Survey (MBI-HSS) (0.73).

Keywords: occupational stress; burnout; ICU nurses; professional satisfaction

How to cite: Cotrau, P.; Hodosan, V.; Vladu, A.; Daina, L.; Pantis, C.; Negrau, M.; Daina, C.; Vernic, C. Occupational Stress and Burnout Syndrome among ICU Nurses. A Prospective Observational Study. *Cent. Eur. Ann. Clin. Res.* **2019**, *1*(1), 3; doi:[10.35995/ceacr1010003](https://doi.org/10.35995/ceacr1010003).

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Introduction

Stress is a state of tension, a set of physiological reactions with a protective role that an individual uses to react to unfavorable factor [1]. Professional stress occurs when there is a discrepancy between the requirements of the professional activity and the individual

resources [2]. In the case of medical staff, professional stress is high because staff are facing a growing number of patients, and compliance with medical quality assurance standards, related to various organizational factors, exacerbates work-related stress [3]. It is generally accepted that professional stress among the ICU nurses: decreases the quality of medical nursing activity, negatively influences professional satisfaction, and can cause anxiety and depression, as well as the occurrence of physical disorders [4]. When the individual is subjected to a stress factor, a characteristic syndrome, in response to physical reactions, will occur. The concept of stress can be observed at an individual level from an overall holistic perspective. The response to stress can be physical, psychological, emotional and is usually a combination of these dimensions. Stress can similarly arise from one or more dimensions and can be internalized or outsourced [5]. Different factors have been described as stressors among ICU nurse, including responsibility and involvement in situations of uncertainty and death [6]. Nurses, along with staff in hospital units, are at greater risk of developing depressive disorders than the general population [7].

Nursing activity is recognized as a professional occupation stressful and often the degree of stress is higher compared to other professions. The duties and responsibilities of nurses involve exposure to known stressors such as: conflict of interest, role ambiguity and significant work requirements [8]. Changing work responsibilities, occupational stressors and stressors outside of the workplace contribute to increasing the stressful feelings faced by ICU nurse [9]. The complexity of nursing activity, especially when the number of nurses and their role changes along with technological and medical innovations, can cause a variation among nurse from the perspective of perception and interpretation of different events and emotions [10]; the connection between professional stress and anxiety, depression and absenteeism in nursing activity being recognized more than a decade ago [11].

Intensive Care Unit (ICU) nurse work in a particularly stressful and burdensome environment [12]. Patient care in ICU is characterized by extremely demanding tasks and requiring urgent therapeutic intervention. High workloads can have negative consequences for nurses and other ICU professionals, as well as for their patients. The direct effects of high workload on patient care may be linked to lack of time to carry out important care tasks and include: complications, poor patient outcomes and increased mortality [13]. Advanced technology in ICU can also be a major stressor [14]. When the devices do not work properly or are insufficient to meet patients' needs, the situation becomes extremely stressful for nurse. Since nurses from ICU departments need to have advanced knowledge and skills to work with sophisticated technology, novice nurses often feel overwhelmed and stressed when they start working in ICU departments. Traditionally, the work of ICU nurse involves a great deal of work and extensive responsibilities, but they have limited authority [15].

Burnout syndrome was first observed among medical staff working in ICU, surgeons and psychiatrists, and later in others medical professions [16]. The presence of burnout syndrome has been recognized as a problem present in the framework of the ICU departments for a long time [17]. Previous studies that have analyzed the ICU departments as a unit of analysis have identified several factors involved in the development of the burnout: socio-demographic variables of individuals, working conditions, long-term overload, psycho-social characteristics of the department, status conflicts and role, reduced support and diminishing the sense of professional utility [18]. Burnout syndrome is specific to the context of work, is a psychological condition resulting from prolonged exposure to stress factors [19]. Maslach and Jackson (1981) identified three components associated with burnout syndrome: emotional exhaustion, depersonalization and diminishing professional achievements [20]. Burnout syndrome is characterized by loss of professional interest, chronic fatigue and frustration, negative consequences that are reflected in the individual level and lead to lower productivity at work. Personality issues (e.g., neuroticism, coping styles, low self-esteem) have been correlated

with burnout. In addition to the negative effects on the subjective well-being of ICU staff, literature suggests that burnout can also have significant implications for patient safety [21].

The negative experiences (including professional stress and burnout) along with the positive experiences and how these experiences align with the values or expectations of nurses influence the perception of professional satisfaction [22]. Professional expectations play an important role in the traditional pattern of professional satisfaction and, in turn, satisfaction is correlated with performance [23].

Method and Materials

Procedure

The method used was a questionnaire survey (sample of convenience), 29 nurses were selected for this study. The research was conducted at the ICU department, Emergency Clinical County Hospital of Oradea, Romania (March–May 2018).

The Survey

The questionnaire contains 157 items, the questions being formulated in the Likert scale, the items corresponding to the following dimensions: coping ability, professional satisfaction, professional stress and burnout. In the present study the following scales were used: Expanded Nurses Stress Scale (ENSS), Maslach Burnout Inventory-Human Services Survey (MBI-HSS), and Single-Item Measure of Job Satisfaction.

Expanded Nurses Stress Scale [24]: scale of 57 items with role in stress measurement among nurses. Items are grouped into 9 subscales: attitude to death; conflicts with doctors; inadequate emotional training; conflicts with colleagues; conflict with hierarchical superiors; overload; uncertainty about medical treatment; relationships with patients and their families; discrimination. The questions are formulated in 4-step Likert (0-never stressful, 3-very stressful) [1].

Maslach Burnout Inventory Human Services Survey [25]: a scale of 22 items to measure the incidence of burnout syndrome. The items are grouped into 3 subscales: emotional exhaustion; depersonalization and diminution of professional achievements. The questions are formulated in 7-step Likert (6-everyday, 0-never). For every dimension, the answers are summed up and the final score represents the dimensioning of one of the following levels: low, medium or high [26].

Single-Item Measure of Job Satisfaction: role in measuring overall workplace satisfaction, measured by a 7-step Likert scale (1-completely unsatisfactory, 7-completely satisfactory).

Results

In order to determine the proposed objectives: determining the level of stress, the incidence of burnout syndrome and professional satisfaction of ICU nurses, it has turned to descriptive inferential statistical analyzes, carried out through the IBM SPSS statistical software (version 24).

Of the subjects of the sample (Table 1), 28 of the subjects are female and one male. Depending on age we have the following categories: 25–36 years old (4 subjects), 36–45 years old (17 subjects), 46–55 years old (7 subjects), and over 56 years old a single subject. Educational level: post-secondary studies (16 subjects), university studies (9 subjects) and postgraduate studies (4 subjects). Seniority in ICU: 5–10 years (4 subjects), 11–20 years (16 subjects) and over 21 years (9 subjects). Marital status: unmarried (2 subjects), married (21 subjects) and divorced (6 subjects).

Table 1. Socio-demographic characteristics of the participants.

		N (%)
Gender	Male	1 (3%)
	Female	28 (97%)
Age	26–35 years old	2 (8%)
	36–45 years old	16 (62%)
	46–55 years old	7 (27%)
	over 56 years old	1 (4%)
Marital status	Unmarried	2 (7%)
	Married	21(72%)
	Divorced	6 (21%)
Educational level	High school	1 (3%)
	Post-secondary school	15 (52%)
	University studies	9 (31%)
	Postgraduate studies	4 (14%)
Years of work in ICU	5–10 years	4 (14%)
	10–20 years	16 (55%)
	Over 20 years	9 (31%)

The level of stress registered by ICU nurses through the ENSS scale is above the moderate level (average 1.51, amplitude 0.58–2.51, standard deviation 0.42). Depending on the dimensions of the ENSS scale, the following environments were recorded: overload (2.07), conflicts with hierarchical superiors (1.9), relationships with patients and their families (1.77), conflicts with physicians (1.68), attitude towards death (1.68), uncertainty over medical treatment (1.56), inadequate emotional training (1.31), conflicts with colleagues nurses (1.17) and discrimination (0.48).

Depending on the stressors with the highest average weight, respectively the smallest, for each dimension of ENSS scale (Table 2), the following results were recorded: for the dimension “attitude towards death” the stress factor with the highest weight is represented by the feeling of helplessness in the case of an unfavorable prognosis for a patient, and the smallest factor is represented by the dialogue with a patient about the imminence of death. For the dimension “Conflicts with physicians” the stress factor with the highest weight is represented by criticism from a doctor, and the smallest factor is represented by possible disagreement over treatment of patients. For the dimension “inadequate emotional training” the stress factor with the highest weight is represented by the lack of training to improve the emotional state of the family, and the smallest factor is represented by the lack of training to improve the emotional state of a patient. For the dimension “conflicts with colleagues nurses” the stress factor with the highest weight is represented by the difficulty of working with a certain colleague, and the smallest factor is represented by the difficulty of working with a colleague of the opposite gender. For the dimension “conflicts with hierarchical superiors” the stress factor with the highest weight is represented by criticism from a superior, and the smallest factor is represented by the lack of managerial team involvement. For the dimension “overload” stress factor with the highest weight is represented by insufficient staff, and the smallest factor is represented by patient division at department level. For the dimension “relationship with patients and their families” stress factor with the highest weight is represented by abusive patients, and the smallest stress factor is represented by being the only one to handle the needs of patients. For the dimension “uncertainty over medical treatment” stress factor with the highest weight is represented by exposure to dangers for their own health, and the smallest stress factor is represented by the poor professional training. For the dimension “discrimination” stress factor with the highest

weight is represented by situations of sexual harassment, and the smallest stress factor is represented by discrimination based on gender (Table 3).

Table 2. The averages obtained for the component dimensions of Expanded Nursing Stress Scale.

N (29) Cronbach's Alfa: ENSS (0.98)	Items	Min.	Max.	Mean	S.D.	
	Attitude towards death	7	1	3	1.68	0.615
	Conflicts with doctors	5	1	3	1.68	0.564
	Inadequate emotional training	3	0	2	1.31	0.701
	Conflicts with colleague nurses	6	0	2	1.17	0.588
	Conflicts with hierarchical superiors	6	1	3	1.90	0.635
	Overload	9	1	5	1.95	0.393
	Relationships with patients and their families	8	1	3	1.77	0.560
	Uncertainty over medical treatment	9	1	3	1.56	0.603
	Discriminations	3	0	2	0.48	0.754

Table 3. The stress factors with the highest impact, respectively the smallest value, for the dimensions of the Expanded Nurses Stress Scale (ENSS), depending on the average value.

Items	Min.	Max.	Mean	S.D.
¹ The feeling of helplessness with a patient whose prognosis is unfavourable.	0	3	2.14	0.875
¹ Listen/talk to a patient about the moment of death.	0	3	1.34	1.23
² Criticized by a doctor.	0	3	2.14	1.26
² Disagreement over the treatment of a patient.	0	3	1	0.926
³ Unprepared to improve the emotional state of a patient's family.	0	3	1.55	1.02
³ Unprepared to improve the emotional state of a patient.	0	3	1.10	1.08
⁴ Difficulty working with a colleague within the same department.	0	3	1.66	1.17
⁴ Difficulty working with a colleague of opposite gender.	0	3	0.5	0.785
⁵ Criticized by a hierarchical superior.	0	3	2.14	1.06
⁵ Lack of involvement from the management team.	0	3	1.52	1.12
⁶ Insufficient staff.	0	3	2.69	0.712
⁶ The distribution of patients according to the organization of the department.	0	3	0.97	0.731
⁷ Having to deal with abusive patients.	0	3	2.38	0.942
⁷ The only one to deal with the patients' families.	0	3	0.86	1.09
⁸ Exposure to dangers to their own health and safety.	0	3	2.48	0.871
⁸ The feeling of poor professional training.	0	3	0.59	0.946
⁹ Sexual harassment.	0	3	0.52	1.09
⁹ Feeling of discrimination based on gender.	0	3	0.45	0.872

The incidence of Burnout syndrome, recorded by study participants, through MBI-HSS (Table 4), falls to a high level (average value 3.51, amplitude 1.73–4.61, standard deviation 0.68). Depending on the specific dimensions, the following average values were registered: emotional exhaustion (3.76), depersonalization (3.66), professional achievements (3.23) (Table 5).

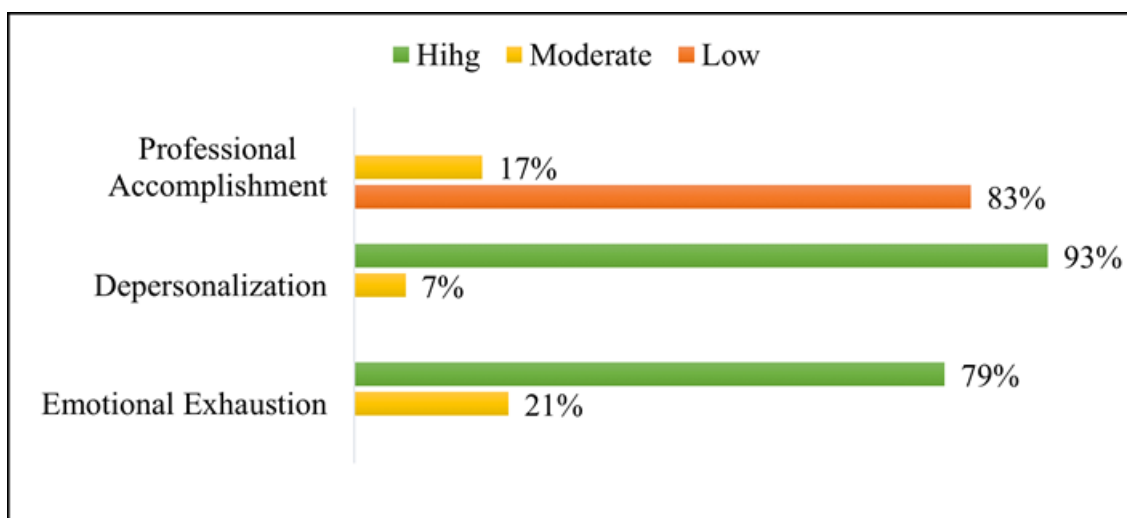
Table 4. Average value registered for the component dimensions of MBI-HSS.

N (29) Cronbach's Alfa: MBI-HSS (0.72)	Items	Min.	Max.	Mean	S.D.	
	Emotional exhaustion	9	1	5	3.76	0.91
	Depersonalization	5	2	6	3.66	0.73
	Professional achievements	8	1	4	3.23	0.75

Score calculation was performed according to [26]. For the dimension "Emotional exhaustion" respondents were grouped into the following levels: medium level (21%, 6 respondents) and high level (79%, 23 respondents). For the dimension "Depersonalization" respondents were grouped into the following levels: medium level (7%, 2 respondents) and high level (93%, 27 respondents). For the dimension "Professional achievements" respondents were grouped in the following levels: low level (83%, 24 respondents) and medium level (17%, 5 respondents) (Figure 1).

Table 5. Average value registered for MBI-HSS items.

Nr.	Items	Min.	Max.	Mean	S.D.
<i>Emotional Exhaustion</i>					
02.	I feel exhausted at the end of a working day.	1	6	5.21	1.14
16.	I have done things that I am proud of at work.	1	6	5.03	1.26
14.	I can easily create a benevolent atmosphere and cooperation with my patients.	1	6	4.79	1.29
13.	I feel full of energy and enthusiasm.	1	6	3.90	1.58
01.	I feel emotionally exhausted because of my work.	0	6	3.83	1.83
03.	I feel tired when I wake up in the morning and have to deal a new day of work.	0	6	3.83	1.92
20.	I worry that the current job affects me emotionally.	0	6	3.69	2.20
06.	I feel frustrated because of my work.	0	6	1.90	2.22
08.	Daily work with patients is a real pressure for me.	0	6	1.79	1.98
<i>Depersonalization</i>					
11.	I feel that I effectively manage my patients' problems.	1	6	5.00	1.19
15.	I feel better after working closely with my patients.	0	6	4.72	1.46
10.	I can easily understand how my patients reflect on things.	0	6	4.17	1.92
05.	I feel exhausted professionally because of my work.	0	6	3.52	2.18
22.	I feel that some patients blame me for some of their problems.	0	6	1.38	1.56
<i>Professional achievements</i>					
12.	I feel like positive influences on other people's lives through my work.	1	6	5.41	1.11
17.	At work I calmly deal with emotional issues.	0	6	4.72	1.73
07.	I feel like I'm working too hard at job.	0	6	4.28	1.66
19.	I have acquired a stronger personality since I worked here.	0	6	3.66	2.55
09.	I feel at the limits of my powers.	1	5	2.93	1.36
04.	Working the whole day is a real discomfort to me.	0	6	2.38	1.84
18.	I feel like treating some patients like impersonal objects.	0	6	1.38	1.69
21.	I do not care what happens to some patients.	0	6	1.10	1.67

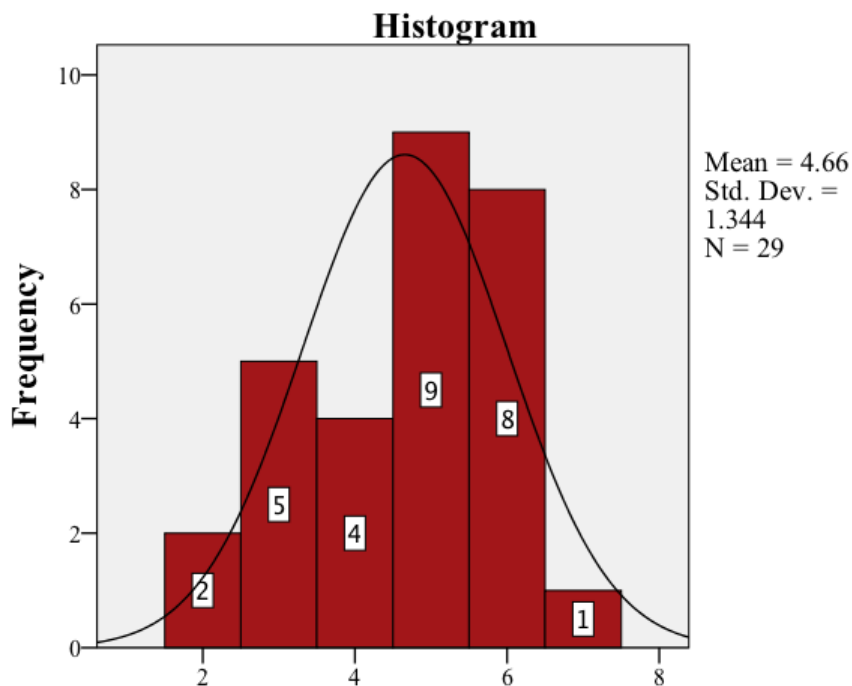
**Figure 1.** Framing subjects according to MBI-HSS levels.

Pearson's Correlation has been used to determine the association between work-related stress and Burnout syndrome (Table 6). According to the obtained results ($\alpha = 0.05$) there are positive correlations between: inappropriate emotional training and emotional exhaustion ($r = 0.465$, $p = 0.011$); between conflicts with nurses and emotional exhaustion ($r = 0.448$, $p = 0.015$); between uncertainty of treatment and the emotional exhaustion ($r = 0.440$, $p = 0.017$); between conflicts with physicians and depersonalization ($r = 0.560$, $p = 0.002$); between conflicts with nurses and depersonalization ($r = 0.407$, $p = 0.029$); between discrimination and depersonalization ($r = 0.275$, $p = 0.045$); between conflicts with physicians and professional achievements ($r = 0.376$, $p = 0.045$).

Table 6. Association between professional stress and Burnout.

ENSS Subscale	Emotional Exhaustion		Depersonalization		Professional Accomplishment	
	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>
Attitude towards death	0.241	0.208	0.102	0.600	-0.128	0.508
Conflicts with doctors	0.365	0.052	0.560	0.002	0.376	0.045
Inadequate emotional training	0.465	0.011	0.321	0.090	0.245	0.201
Conflicts with colleague nurses	0.448	0.015	0.407	0.029	0.310	0.102
Conflicts with hierarchical superiors	0.202	0.294	0.297	0.118	0.108	0.575
Overload	0.050	0.798	0.061	0.755	0.193	0.315
Relationships with patients and their families	0.362	0.054	0.332	0.088	0.091	0.639
Uncertainty over medical treatment	0.440	0.017	0.406	0.029	0.113	0.563
Discriminations	0.297	0.118	0.375	0.045	-0.101	0.955

Professional satisfaction was measured by a 7-step Likert scale (1—completely unsatisfactory; 7—completely satisfactory) has achieved a median score of 4.66, amplitude 2–7, standard deviation 1.34 (Figure 2). Pearson's Correlation has been used to determine the association between dimensions of Burnout syndrome and professional satisfaction (Table 7). According to the obtained results ($\alpha = 0.05$) there are negative correlations between: emotional exhaustion and professional satisfaction ($r = -0.418$, $p = 0.024$) and between professional achievements and professional satisfaction ($r = -0.395$, $p = 0.034$).

**Figure 2.** Professional satisfaction.**Table 7.** Association between dimensions of Burnout syndrome and professional satisfaction.

MBI-HSS Subscale	Professional Satisfaction	
	<i>r</i>	<i>p</i>
Emotional Exhaustion	-0.418	0.024
Depersonalization	-0.311	0.100
Professional Accomplishment	-0.395	0.034

Discussions

The psycho-social characteristics of the ICU working environment cause a very stressful working environment. This environment, along with the complexity of nursing activity, is a potential risk that can lead to the occurrence of professional stress and its consequences over time. These variables can't be removed, but an effective management can diminish these effects, management focused on implementing and streamlining strategies for coping with stress. This must be correlated with the educational system, so that prospective nurses are aware and emotionally prepared to cope with the negative psychosocial effects of ICU nursing. A regulation in the context of occupational medicine that includes occupational stress and psychosocial risks among occupational illnesses would be a first step in awareness of the gravity of this phenomenon.

Study Limitations

The present study presents a limitation from a methodological point of view by using a single item to measure professional satisfaction, Single Item Measure of Job Satisfaction, 7-step Likert scale. Such an approach has allowed measurement of professional satisfaction from a global perspective at the expense of a complex multiscale analysis.

Conclusions

The level of professional stress registered by nurses was above average. They believe that the most stressful situations are associated with work overload, conflicts with hierarchical superiors, and relationships with patients and their families. On the opposite side, the least stressful situations are represented by the peer-to-peer professional relationships between nurses and the discriminatory situations that have also recorded the lowest percentage.

Following MBI-HSS administration, the presence of burnout syndrome was observed. A high score for emotional exhaustion and depersonalization and a low score for professional achievements were recorded. Most of ICU nurses were satisfied with the current job. Professional satisfaction has reached an average level. As stated in various research, stress and Burnout have a negative impact on the subjective perception of professional satisfaction, a valid causal relationship for the present study.

Author Contributions: Conceptualization, P.C. and A.V.; Methodology, L.D.; Software, C.T.; Validation, C.P., M.N. and C.V.; Formal analysis, P.C.; Original Draft Preparation, C.D.; Writing—Review & Editing, P.C.; Supervision, C.V.

Conflicts of Interest: The authors declare no conflict of interest.

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