

## ORIGINAL PAPER

## PERCEPTION OF INTENSIVE CARE STRESSORS BY PATIENTS, NURSES AND FAMILY

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**Abstract**

**Aim:** The aim of this study was to compare the perception of selected stressors acting on the Czech intensive care unit (ICU) of Czech patients, their families and attending nurses. **Design:** A descriptive comparative study. **Methods:** Stressor perception was measured by a Czech version of the standardised questionnaire, The Environmental Stressor Questionnaire (ESQ). The sample group consisted of 90 people. Data were obtained via pairing (patient – relative – nurse). The family and the attending nurses evaluated stressors by empathising with the patient. **Results:** When evaluating the data obtained, it was ascertained that the relatives and attending nurses perceive stressors acting on the ICU as worse than patients themselves do. The overall level of stressor perception in the relatives was statistically significantly higher than in the patients ( $z = -3.72$ ;  $p < 0.001$ ). A statistically significant difference was also confirmed with regard to perception of stressors between attending nurses and patients ( $z = -2.23$ ;  $p < 0.001$ ). **Conclusion:** Both the relatives and attending nurses perceive stressors in the intensive care unit as worse than the patients themselves do. The negative impacts of stressors can be reduced by implementing new approaches in nursing care.

**Keywords:** family, intensive care unit, nurse, patient, stressor.

**Introduction**

A number of studies (Novaes et al., 1999; Fontaine, Briggs, Pope-Smith, 2001) state that the intensive care unit (ICU) is a very stressful environment. The term “intensive care” itself evokes images of seriously ill patients, surrounded by medical devices, unpleasant odours, loss of privacy, and the presence of strangers. These images trigger anxiety in a patient and his/her family, and increase the level of perceived stress. The body’s response to stress is a complex neurohumoral response and is one of the key factors influencing the course of the critical condition. This phenomenon has its neurophysiological correlates evidenced by various tests (Papathanassoglou et al., 2010). The field of psychoneuroimmunology deals with the effects of environmental factors on the human immune system. This discipline explains in detail the impact

of patients’ environment on their stress response (Lusk, Lash, 2005). Based on the analysis of this research (Soh et al., 2008; Ehlers, Watson, Moleki, 2013), acting stressors in the ICU can be categorised into three basic groups: physical, psychological and environmental. Physical stressors include, for example, pain and sleep disorders (a mutually conditional relationship has been proven). Pilkington (2013) states that these components are precipitated by other factors, which are based on the underlying disease and routine medical interventions (mechanical ventilation, catheterisation and other invasive procedures, etc.) and nursing care (suctioning, positioning, toilets, etc.). Psychological stressors include: immobilisation, boredom, social isolation, and sadness. These factors adversely affect patients’ psyche, leading to disruption of affectivity and motivation, loss of confidence, etc. Environmental stressors include noise, excessive (permanent) exposure to intense light, smell, incorrect room temperature, etc. These factors can be reduced through appropriate organisational measures. According to Nightingale, the environment is

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a central concept that nurses can significantly influence with appropriate nursing procedures. In her concept, she describes three levels of relationships: individual – environment; environment – nurse; and nurse – patient. The new concept of the *Healing Environment* (HE) is based on the Nightingale's model. This approach emphasises the so-called bio-behavioural perspective in all three levels of relationships. The bio-behavioural term describes the fact that the disease affects the behaviour of the individual in the context of the environment by modulating the neuroendocrine response (Fontaine, Briggs, Pope-Smith, 2001; Mellot, Sharp, Anderson, 2008). The aim of this holistically-oriented integrative approach is to eliminate the negative effect of the hospital environment (noise, light, air quality and temperature, patient's comfort) via targeted nursing interventions. The concept of *the healing environment* also includes the liberalisation of the regime of patients' visits. HE corresponds with the initiative of Family-Centred Care (FCC) – care focused on the family. The core of this concept is the relationship between individual family members and health professionals. In this relationship, families are considered fully-fledged partners in the provision, planning, and evaluation of care. FCC promotes family members from passive recipients of care to active participants (Jakšová, Sikorová, Hladík, 2016). These studies (Novaes et al., 1999; Pang, Suen, 2009; Yava et al., 2011) show that the perception of stressors is significantly different and higher in both the attending nurses and family when compared with the evaluated patients. In the holistic approach to care, the identification of acting stressors is a crucial prerequisite to providing more qualified nursing care and thereby mitigating its adverse effects.

## Aim

The aim of this study was to compare the perception of stressors acting in intensive care units by Czech patients, their families, and the attending nurse, and to identify similarities and differences in perception of acting stressors in order to integrate a holistic approach.

## Methods

### Design

Stressor perception was assessed using a comparative descriptive study. Data were collected from April 2016 to August 2016 in the interdisciplinary intensive care unit (IDICU) in Nový Jičín hospital (12 beds, unselected admission of patients).

### Sample

The sample consisted of 90 subjects (30 patients, 30 family members, and 30 attending nurses) grouped into respective triads (patient – relative – nurse). The entrance criteria for each group were as follows. Patient: a) conscious, alert, oriented in place, time, person, b) hospitalised in the IDICU for more than 24 hours, c) over 18 years of age, d) voluntary consent to the research. Family: a) direct relatives, b) at least one visit of the patient during hospitalisation in the IDICU, c) over 18 years of age, d) voluntary consent to the research. Nurse: a) the attending nurse on the day of the interview with the patient, b) voluntary consent to the research.

### Data collection

Two research nurses were trained to collect data. The technique of controlled structured interviews was used. Each interview lasted about 20 minutes. The family and the attending nurse evaluated stressors by empathising with the patient.

### Questionnaire method of stressor evaluation

Stressor perceptions acting on the intensive care unit were measured by a specific standardised questionnaire: *The Environmental Stressor Questionnaire* (ESQ), developed in English as a specific subjective evaluation tool by Cornock (1998). (Note: The translation and use of the questionnaire was carried out with the direct consent of the author. For the purpose of our study, the item “fear of AIDS” was replaced with the item “fear of other hospital-transmitted diseases”). The ESQ contains 50 items categorised into three domains: *Physical stressors* (questions 1, 4, 5, 6, 8, 13, 18, 24, 28, 29, 32, 34, 44) *psychological stressors* (2, 12, 14–16, 19, 20–23, 26, 35–41, 43, 45–50), and *environmental stressors* (3, 7, 9–11, 17, 25, 27, 30–31, 33, 42) (Table 1).

Each item is evaluated within a five-point Likert scale (0–4 scale), resulting in a score ranging from 0 to 200, whereby a higher score indicates a higher level of stress.

### Translation Process

Agreement to the translation of the questionnaire was requested from the author (Cornock, 1998). The linguistic translation and adaptation of the questionnaire were conducted according to the Beaton et al. (2000) manual. The translation of the questionnaire proceeded in the following steps:

#### 1. Forward translation

The English version was translated into Czech language independently by two of the authors of the

article. Upon the completion of the translation, the differences in translation were discussed and agreement was made on a single version which was submitted to a professional translator.

## 2. Reverse translation

The translator carried out a reverse translation into English, which he/she compared with the original questionnaire after completion. Subsequently, he/she commented on the differences between the original and the reverse translation, and suggested changes to items in Czech.

## 3. Expert group

The expert group: following the stage of translation, an expert group comprising two academics, a physician and two nurses met. The purpose of the

meeting was to agree that the proposed final translation was equivalent to the original questionnaire, and that the Czech items matched in terms of the content and semantics.

## 4. Patient testing

Pilot testing was performed on four patients, four nurses, and four family members in the IDICU in Nový Jičín Hospital. During the pilot phase, the respondents were asked to provide additional information regarding the quality of the questionnaire (e.g. clarity of questions and answer options). Every potentially difficult term used were also discussed with the respondents to ensure full comprehension of all items of the questionnaire. Patients included in the pilot test were not included in the final sample.

**Table 1** Domains of Environmental Stressor Questionnaire

Domain	Items	Domain	Items
PH	1. Being restricted by tubes/lines	PS	26. Watching treatments being given to other patients
PS	2. Not having nurses introduce themselves	E	27. Having to look at the pattern of tiles on the ceiling
E	3. Having nurses in too much of a hurry	PH	28. Not being able to sleep
PH	4. Being thirsty	PH	29. Not being able to move your hands or arms because of intravenous lines
PH	5. Having your blood pressure taken often	E	30. Being aware of unusual smells around you
PH	6. Uncomfortable bed or pillow	E	31. Having lights on constantly
E	7. Hearing the telephone ring	PH	32. Being in pain
PH	8. Frequent physical examination by doctors or nurses	E	33. Seeing intravenous bags over your head
E	9. Having strange machines around you	PH	34. Being stuck with needles
E	10. Feeling nurses are watching the machines closer than watching you	PS	35. Not knowing where you are
E	11. Hearing the buzzers and alarms from the machinery	PS	36. Having nurses use words you cannot understand
PS	12. Nurses and doctors talking too loudly	PS	37. Not being in control of yourself
PH	13. Having to wear oxygen	PS	38. Not knowing what day it is
PS	14. Missing your husband or wife	PS	39. Being bored
PS	15. Not having treatments explained to you	PS	40. Having no privacy
PS	16. Hearing your heart monitor alarm go off	PS	41. Being cared for by unfamiliar doctors
E	17. Having nurses constantly doing things around your bed	E	42. Being in a room which is too hot or cold
PH	18. Having tubes in your nose or mouth	PS	43. Hearing people talk about you
PS	19. Not knowing what time it is	PH	44. Not being able to communicate
PS	20. Hearing other patients cry out	PS	45. Fear of death
PS	21. Having other men or women in the same room	PS	46. Not knowing the length of stay in ICU
PS	22. Only seeing family and friends for only a short time each day	PS	47. Being unable to fulfil family roles
PS	23. Not knowing when to expect things to be done on you	PS	48. Financial worries
PH	24. Being awakened by nurses	PS	49. Fear of other hospital-transmitted diseases
E	25. Unfamiliar and unusual noises	PS	50. Being pressurised to consent to treatment

PH – physical stressors; PS – psychological stressors; E – environmental stressors

## Data analysis

The IBM SPSS 19 statistical programme was used for data analysis. Descriptive statistics were used to analyse demographic and clinical data, and classify the top ten stressors. From the available methods of descriptive statistics, we used absolute frequency (n), relative frequency (%), calculation of the arithmetic mean (mean), total score (total), and standard deviation (SD). Subsequently, we used the Wilcoxon paired test to compare the differences between the groups. Testing relationships between variables (gender, type of admission, level of education, and age) related to stress perception was carried out via the Mann-Whitney U-test, independent-samples t-test, and a one-way ANOVA. Statistical significance of the results was estimated empirically ( $p < 0.001$ ), since sample size and unpredictable differences between studied groups prevented more precise calculation.

## Results

### Sociodemographic and Clinical Characteristics

Demographic patient data were analysed: gender, age and education. Clinical patient information included: type of admission, previous ICU admission, current length of stay on ICU, and need of mechanical ventilation. Additional data were obtained from

nurses (level of education), and from family relatives (relationship to the patient). Clinical data of the participants were recorded by nurses participating in the study.

A total of 30 patients, 30 family members and 30 attending nurses met the entrance criteria. The sample of *patients* included 11 (37%) men and 19 (63%) women. 22 respondents (74%) were older than 45 years of age. In the IDICU, 11 patients (37%) were admitted acutely, and 19 (63%) electively. 17 (53%) patients were mechanically ventilated. The length of hospitalisation ranged from two to 31 days (mean 4.06; SD = 4.90). Only three patients (10%) had received elementary education. The sample of *nurses*, consisted of 24 women (80%), and only six men (20%). 16 nurses (56%) were over 45 years of age, and 21 (70%) nurses stated secondary education as the highest education achieved. The sample of *relatives* consisted of 11 (37%) men and 19 (63%) women. In terms of kinship, a total of 13 (43%) were spouses (husband/wife), seven (23%) children, five (17%) parents, three (10%) siblings, and two stated “others” (7%). 18 (60%) relatives were over 45 years of age. Half of the relatives (50%) reported university education as the highest education achieved (Table 2).

**Table 2** Demographic and clinical data (n = 90)

		Nurses (n = 30)	Patients (n = 30)	Family (n = 30)
		n (%)	n (%)	n (%)
Age	18–24	2 (7)	3 (10)	3 (10)
	25–34	7 (23)	2 (6)	4 (13)
	35–44	5 (17)	3 (10)	5 (17)
	45–54	7 (23)	11 (37)	10 (33)
	55+	9 (30)	11 (37)	8 (27)
Gender	Male	6 (20)	11 (37)	11 (37)
	Female	24 (80)	19 (63)	19 (63)
Mode of admission	Emergency		11 (37)	
	Planned		19 (63)	
Previous ICU admission	Yes		16 (53)	
	No		14 (47)	
Education level	Elementary School	21 (70)	3 (10)	2 (7)
	Secondary school	9 (30)	18 (60)	13 (43)
	University		9 (30)	15 (50)
Intubation history	Yes		17 (57)	
	No		13 (43)	
Nature of kinship	Spouse			13 (43)
	Child			7 (23)
	Parents			5 (17)
	Siblings			3 (10)
	Others			2 (7)
Average length of stay in ICU			mean – 4.06 SD – 4.90 range: 2–31 days	

ICU – intensive care unit, SD – standard deviation



### Stress perception Patient – Family

Statistically significant differences were found in stress perceptions between patients and their family members. The total value of the responses of relatives was statistically significantly higher than in patients ( $z = -3.72$ ;  $p < 0.001$ ), mean difference 25.69 (121.03 vs. 146.72) (Table 3).

In compiling the top ten stressors in the compared samples (patient – family), the aggregate number of stressors amounted to 12. There was a majority consensus in the representation of perceived stressors in both groups, but not in their order. The results show that the item “Being in pain” was rated as worst. However, the samples diverge in the order of other stressors (Table 4).

**Table 3** Disparities in the Perception of Stressors by ICU Patients, Nurses and Family

Items	Nurses mean (SD)	Patients mean (SD)	Family mean (SD)
1. Being restricted by tubes lines <sup>b</sup>	2.63 (0.96)	2.37 (0.93)	3.13 (0.73)
2. Not having nurses introduce themselves <sup>a</sup>	2.73 (0.91)	2.10 (1.02)	3.13 (0.73)
3. Having nurses in too much of a hurry <sup>a</sup>	2.60 (0.97)	2.23 (0.82)	3.30 (0.84)
4. Being thirsty <sup>b</sup>	3.23 (0.77)	2.77 (1.04)	3.30 (1.02)
7. Hearing the telephone ring <sup>a,b</sup>	2.77 (1.07)	1.87 (0.78)	2.90 (0.89)
8. Frequent physical examination by doctors or nurses <sup>b</sup>	2.27 (0.98)	1.77 (0.82)	2.63 (0.89)
9. Having strange machines around you <sup>a</sup>	2.17 (1.12)	1.93 (0.83)	2.87 (0.86)
11. Hearing the buzzers and alarms from the machinery <sup>a</sup>	2.67 (0.96)	2.33 (0.99)	3.03 (0.85)
12. Nurses and doctors talking too loudly <sup>a,b</sup>	2.37 (0.96)	1.47 (0.82)	2.90 (0.92)
13. Having to wear oxygen <sup>b</sup>	2.87 (1.04)	2.33 (1.03)	2.60 (0.97)
27. Having to look at the pattern of tiles on the ceiling <sup>b</sup>	2.97 (0.99)	2.33 (0.92)	2.90 (1.09)
29. Not being able to move your hands or arms because of intravenous lines <sup>a</sup>	2.53 (0.93)	2.07 (0.83)	3.23 (0.81)
30. Being aware of unusual smells around you <sup>b</sup>	2.97 (1.03)	2.83 (1.05)	3.10 (1.06)
39. Being bored <sup>a</sup>	2.70 (0.91)	2.43 (1.06)	3.10 (0.92)
40. Having no privacy <sup>b</sup>	2.93 (0.90)	2.53 (1.16)	3.07 (0.70)
Mean ESQ score	2.69 (0.39)	2.42 (0.42)	2.93 (0.43)
	[2.54; 2.83]	[2.26; 2.57]	[2.77; 3.09]
Total ESQ score	134.50 (19.52)	121.03 (21.18)	146.72 (21.37)
	[127.21; 141.79]	[113.12; 128.94]	[138.60; 154.85]

ICU – intensive care unit; SD – standard deviation; ESQ – The Environmental Stressor Questionnaire. Numbers in square bracket are the 95 per cent confidence intervals. Wilcoxon Signed Ranks test statistically significant at  $p < 0.001^a$  (patient – relatives); Wilcoxon Signed Ranks test statistically significant at  $p < 0.001^b$  (patient – nurses).

The relatives had significantly higher values for responses in the following items: “Not having nurses who introduce themselves” (item 2), “Having nurses in too much of a hurry” (item 3), “Hearing the telephone ring” (item 7), “Having strange machines around you” (item 9), “Hearing the buzzers and alarms from the machinery” (item 11), “Nurses and doctors talking too loudly” (item 12), “Not being able to move your hands or arms because of intravenous lines” (item 29), and “Being bored” (item 39).

Based on the analysis, it appears that the items related to orientation (items No. 19, 35, 38, 46) are perceived worse by family members. The items “Being pressurised to consent to treatment” (item 50), “Having nurses constantly doing things around your bed” (item 17), and “Feeling nurses are watching the machines closer than watching you” (item 10) achieved the lowest scores in both groups.

### Stress perceptions Patient – Nurse

Statistically significant differences were found in stress perceptions by patients and attending nurses. The total value of the responses of nurses was statistically significantly higher than in patients ( $z = -2.23$ ;  $p < 0.001$ ), mean difference 13.47 (121.03 vs. 134.50) (Table 3). Nurses perceive “fear of death”, “Having tubes in your nose or mouth”, and “Being in pain” to be the greatest stressors (Table 4). Nurses reported significantly higher values for the items of physical and environmental stressors compared with patients’ responses: “Being restricted by tubes/lines” (item 1), “Being thirsty” (item 4), “Hearing the telephone ring” (item 7), “Frequent physical examination by doctors or nurses” (item 8), “Nurses and doctors talking too loudly” (item 12), “Having to wear oxygen” (item 13), “Having to look at the pattern of tiles on the ceiling” (item 27), “Being aware of unusual smells around you” (item 30) and “Having no privacy” (item 40).

When examining the association between patients and attending nurses, the following items received the lowest scores: “Being pressurised to consent to treatment” (item 50), “Fear of other hospital-transmitted diseases” (item 49) “Seeing intravenous bags over your head” (item 33).

#### *Stress Perception in Patients: Testing Relationships between Variables*

We were interested in comparing the assessment of individual items of the ESQ questionnaire by gender. The Mann-Whitney U-test was used for detection. No statistically significant differences at

$p < 0.001$  were ascertained, even in a single questionnaire item.

To verify the significance between age and stress perception, an independent-samples t-test ( $p < 0.001$ ) was used. The statistical analysis did not confirm a significant correlation between stress perception and age ( $p = 0.350$ ). In addition, no statistically significant differences between the type of admission and stress perception ( $p = 0.374$ ) or gender ( $p = 0.434$ ) were confirmed. Based on a simple analysis of variance, no statistically significant difference between the level of education and stress perception was ascertained ( $p = 0.521$ ) (Table 5).

**Table 5** The Comparison of the Characteristics of Patients with Regard to Stress Perception

Patients characteristics		n (%)	mean (SD)	t*/F, Mann-Whitney U-test	p-value
Age	< 44	6 (20)	113.67 (24.43)	t = 0.951	0.350
	≥ 45	24 (80)	122.88 (20.45)		
Mode of admission	Planned	19 (63)	118.37 (19.53)	t = 0.903	0.374
	Emergency	11 (37)	125.64 (24.03)		
Gender	Male	11 (37)	125.09 (29.94)	t = 0.793	0.434
	Female	19 (63)	118.68 (14.46)		
Gender / items of ESQ				Mann-Whitney U-test**	
Level of education	Elementary school	3 (10)	81.20 (26.54)	F= 0.668	0.521
	Secondary school	18 (60)	93.40 (29.76)		
	University	9 (30)	87.72 (21.13)		

\*Independent t-test; \*\*There was no items of ESQ statistically significant difference between male and female in patients' groups ( $p < 0.001$ , Mann-Whitney U-test); SD – standard deviation; ESQ – The Environmental Stressor Questionnaire

## Discussion

Despite the relatively small sample of respondents (30 in each group), the pilot nature of the study presents initial information regarding stress perceptions in the ICU in Czech socio-cultural conditions. Higher sensitivity to stressors in attending nurses and families than in patients themselves was statistically confirmed. A statistically significant difference in the ratings of acting stressors in the individual samples was also confirmed by a number of previous studies (Pang, Suen, 2008; Yava et al., 2011; Kaur et al., 2013).

Available literature confirms the significantly higher values obtained from the attending nurses. A number of authors (Pang, Suen, 2008; Yava et al., 2011) tend to the view that the relationship between the level of perceived stress and knowledge is bidirectional and mutually influenced. In addition, Salem (2015) adds that congestion, shortage of nursing staff, and death and its unpredictability have a profound effect on the perception and conception of stressors by nurses. A portion of the studies conducted so far (Cochran, Ganong, 1989; Cornock, 1998) indicate the over-valuation of the impacts of environmental stressors by nurses themselves. The influence of a studied association can be explained by the

conditionality of the state (inappropriate room temperature leads to sleep disturbance, and shortened sleep reduces pain thresholds).

The item “Being in pain” (item 32) was perceived by patients and relatives as the greatest stressor associated with being in the intensive care unit (in nurses it was rated only third). Epidemiological studies (Hamilton, Catley, Karlson, 2007; Kline, 2009) conclude that pain affects patients both at the physical (sleep, discomfort) and psychological level (increasing misery, and leading to accentuated feelings, loss of motivation, and resignation to the situation).

Current approaches to the treatment of acute pain include a number of protocols of care with the emphasis on pharmacotherapy. Alternative and complementary methods for the treatment of pain are gaining weight in both lay and professional spheres, where they are beginning to play a role according to the principles of evidence-based medicine (EBM). In the area of clinical nursing procedures in the intensive care unit, acupressure and acupuncture can be applied. Acupressure is considered to be an appropriate method to suppress post-operative nausea and vomiting, but its effectiveness is highly variable and depends on many other factors (White,

2007). The effect of acupuncture is mainly analgesic, psycho-regulative, homeostatic, immune modulating, and motor function regulating. Its precise mechanism of effect is unknown (Hakl, 2013).

The psychosocial aspect “Fear of death” (item 45) was evaluated by the nurses as the major stressor (for family, it ended second, for patients third). A qualitative study conducted by Chan and Twinn (2007) states that the fear of death plays an important role in the dynamics of perception and behaviour. Anxiety, insecurity and vulnerability are an integral part of the feelings that patients and their relatives experience. Swanson and Wojnar (2004) add that patients perceive and require emotional support from nurses, as, due to their disease, they are under constant stress. According to the authors, emotional support includes several components: sharing, listening, empathy and understanding. If this support is provided for patients and families by nursing staff, it raises their hopes and eliminates fear.

The study showed a difference in perception of psychological and physical stressors between patients and nurses. Patients reported higher scores for psychological stressors, whereas nurses evaluated physical stressors as worse. This is confirmed by several previous studies (Novaes et al., 1999; Biancofiore et al., 2005). Interpretation of different results may be related to the state of the patient, since, as indicated by Soh et al. (2008), nurses are primarily focused on life function support, and the fulfilment of physiological needs.

The study results also confirm statistically significantly higher response rates in the relatives of patients. These results are consistent with previous studies (Novaes et al., 1999; Pang, Suen, 2009), which registered a higher susceptibility to stressors in relatives. The results may be related to the impact of disease in the psychosocial field – according to Hughes, Bryan, Robbins (2005), hospitalisation significantly impairs the ability to perform expected tasks and roles. This is also confirmed by the study conducted by Chan and Twinn (2007), which states that for relatives, a stay in the ICU ranks among the most stressful life experiences. Based on its analysis, the most important stressors include uncertainty, change of social roles, and ineffective communication.

The intensive care environment has its own specifics and differences, which determine the character of the cooperation between nurses and families of hospitalised patients. Berwick, Kotagal (2004) state that the liberalisation of the regime of patients’ visits and the presence of a relative in various therapeutic interventions reduces the psychosocial

impacts of the disease, and develops a holistic approach to care. Studies by Pang and Suen (2008, 2009) indicate that the item “Fear of other hospital-transmitted diseases” is perceived by respondents as a significant stressor. In our research, this item was perceived by the respondents as a relatively low stressor. Similar results are also presented by Yava et al. (2011), who hold the opinion that the perception of the described risk is significantly influenced by the level (maturity) of health care provided.

In the Czech Republic, great emphasis is placed on the prevention of nosocomial infections (including the implementation of precautionary measures, known as “care bundles”).

The sociological analysis sought to examine the relationship between stress perception in patients from a gender perspective. In overall evaluation of the responses, men achieved higher values (125.09) than women (118.68), but this relationship was not statistically significant ( $p = 0.434$ ), even when individual items are analysed. Despite the fact that our results did not confirm a statistically significant relationship, most studies agree that emotional and cognitive processes are significantly influenced by gender (Bem, 1974; Formánková, 2009).

The impact of age has been evaluated in a study by Marosti, Dantas (2006). Based on the results, they conclude that younger age negatively affects the assessment of stressors. This correlation was not found to be statistically significant in our work (despite the initial theoretical assumptions).

Nurses in intensive care place significant emphasis on providing information that leads to the reduction of anxiety, as well as activities to overcome barriers (Drahošová, Jarošová, 2016). The need for information is an important aspect of care, which is based on effective communication. This also corresponds with our findings, in which acutely admitted patients in the IDICU achieved a higher overall score (125.64) compared to elective admissions (118.37). Increasing patient awareness of their own health strengthens trust between nurses and patients, which is a fundamental pillar of holistic care.

### **Limitation of study**

The size of the sample is a major limitation of the study. With respect to the low number of respondents, the results cannot be generalised and statistically reliably interpreted. The single-centre nature of the study is another key limitation.

For a valid assessment of the benefits of complementary and alternative nursing procedures

on the perception of stress in intensive care patients (compared to standard nursing procedures), a quality multicentric, randomised study is required.

## Conclusion

The aim of our study was to evaluate the stressors acting on intensive care units from the viewpoint of the care recipient (patient), provider (nurse), and relative. The output clearly shows that relatives and attending nurses tend to perceive stressors in the intensive care unit as worse than patients themselves. The obtained results emphasise not only the importance of the monitored phenomenon, but could also be the basis for a critical evaluation of the clinical practice environment. In recent literature, there is a consensus on the importance of the implementation of organisational measures [healing environment concept, initiative of care focused on family (family centred care), holistic approach, etc.], which can be a complementary tool to mitigate the adverse effects of stressors acting on intensive care units.

## Ethical aspects and conflict of interest

The authors declare that there is no conflict of interest regarding the surveillance study and ethical aspects were respected while processing the results. All bibliographical sources used are properly cited.

## Author contribution

Concept and design (HL), data collection (HL, VP), manuscript draft (HL), critical revision of the manuscript (KA), final approval of the manuscript (HP).

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