Turk J Intensive Care 2022;20:193-200
DOI: 10.4274/tybd.galenos.2021.28290

ORIGINAL RESEARCH / *ÖZGÜN ARAŞTIRMA*

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Environmental Stressors Perceived by Patients in the Surgical Intensive Care Unit

Yoğun Bakım Ünitesinde Yatan Cerrahi Hastalarının Algıladıkları Çevresel Stresörler

Received/Geliş Tarihi : 03.03.2021
Accepted/Kabul Tarihi : 20.09.2021

ABSTRACT *Objective:* This study aimed to determine the environmental stressors perceived by patients admitted to the surgical intensive care unit.
Materials and Methods: This is a descriptive and cross-sectional study. The sample of the study comprised 83 patients hospitalized in the surgical intensive care unit. Data were obtained from the Patient Information Form and the Intensive Care Unit Environmental Stressor scale.
Results: Patients hospitalized in the surgical intensive care unit identified the most critical stressors as experiencing pain, inability to sleep, lack of privacy, getting bored, and short family and friends visit time, whereas the minor stressful factors were identified as hearing phone sounds, nurses who are more concerned with bedside devices than the patients, and constantly looking at the ceiling.
Conclusion: Environmental stressors affecting patients in the intensive care unit should be identified and eliminated. This initiative will prevent new stress-related health problems and improve patient quality care.
Keywords: Surgical intensive care, oncological surgery, stressor perception, environmental stressor

ÖZ *Amaç:* Bu çalışmanın amacı, yoğun bakım ünitesinde yatan cerrahi hastaların algıladıkları çevresel stresörleri belirlemektir.
Gereç ve Yöntem: Bu çalışma tanımlayıcı ve kesitsel bir araştırmadır. Araştırmanın örneklemini cerrahi yoğun bakım ünitesinde tedavi gören 83 hasta oluşturmuştur. Veriler Hasta Bilgi Formu ve Yoğun Bakım Ünitesinde Çevresel Stresörler ölçeği ile elde edilmiştir.
Bulgular: Yoğun bakım ünitelerinde yatan hastaların algıladıkları en önemli stresörler sırasıyla ağrı, uyuyamamak, mahremiyetin olmaması, sıkılmak ve aile ve arkadaş ziyaret süresinin az olması olarak, en az stres oluşturan etmenler ise sırasıyla telefon sesini duymak, hemşirelerin hastalardan çok hasta başında bulunan cihazlarla ilgili olmaları ve sürekli tavana bakmak olarak tanımlanmıştır.
Sonuç: Hastaları etkileyen stresörlerin belirlenmesi ve çözüm uygulamaları ile hastaların daha kaliteli bakım almaları sağlanacak ve stres kaynaklı yeni sağlık sorunlarının oluşması engellenecektir.
Anahtar Kelimeler: Cerrahi yoğun bakım, onkolojik cerrahi, stresör algısı, çevresel stresör

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Introduction

The intensive care units (ICUs) are different departments from other clinics, which aim at treating patients with critical health problems and where specially trained healthcare professionals work, unique treatment methods are applied, and complex medical devices are available (1,2).

The purpose of the ICU is to restore the patient's vital functions and to discharge them with positive experiences (3). Although medical developments in intensive care have improved diagnosis and treatment practices, patients are exposed to physical and psychosocial stressors during their stay in the ICU (4,5). Many factors, such as medical interventions, lack of privacy, pain, restriction of visits, uncomfortable beds, inability to sleep, and constant lights, can cause stress in the patient (6-8). The patients' negative experiences due to these stressors may cause them to experience psychological health problems in addition to their current diseases (8).

Physiological and psychological conditions that cause stress in the ICU can lead to the occurrence of sensory changes in the patients and experiencing the clinical condition called intensive care syndrome (9-11). Characterized by impaired cognitive functions and changes in consciousness, this syndrome develops acutely 48 hours after the patient's admission to the ICU and is a challenging experience (12,13). The patient's abilities, such as place, person and time orientation, speaking, and perception, deteriorate. The symptoms can be varied from comparing the devices in the intensive care environment to various living species to having horrible hallucinations (12,14). This syndrome, also known as delirium or intensive care psychosis, prolongs hospitalization in the ICU, increases health care costs and causes mortality (13,15).

Health professionals working in ICU should be able to make the right decisions for the patient as soon as possible by noticing the changes in the condition of the patient who is given advanced life support. The second goal should be to optimize patients' physiological, psychological and social health (16). In addition, healthcare professionals should be able to actively assess and manage the patient's environment so that the patient can achieve the best results in care and treatment (17).

If the stress complaints perceived by the patients cannot be prevented or reduced, the possible health problems observed in the patients, their stay in the ICU and the health care expenses will increase, and patient satisfaction will decrease (18). When the effects of ICUs on patients are examined, it has been found that there are primarily studies on physical effects in the literature. However, it has been determined that the number of studies investigating emotional effects is limited (10,12). In this study, patients hospitalized in the ICU, who have oncological problems, and who have undergone surgery are more than those hospitalized for other surgical problems. Therefore, it is predicted that stressors may differ from environmental stressors perceived by other surgical patients in the literature. Investigating the environmental stressors of operated intensive care patients with oncological problems and evaluating them with patients with other surgical problems is regarded as the original value of the study.

Materials and Methods

Study Design

The study was planned as a descriptive and cross-sectional study.

Study Sample

The study universe consisted of all patients hospitalized in Sivas Cumhuriyet University Hospital General Surgery Intensive Care Unit. The study aimed to reach the whole population instead of choosing a sample. The study was conducted with 83 patients hospitalized in the ICU for a minimum of 24 hours and a maximum of 72 hours, who did not develop intensive care syndrome, were older than 18 years, were followed up, and did not have severe pain.

Procedure

Ethical approval of the study was obtained from the Cumhuriyet University Non-Invasive Clinical Research Ethics Committee (decision no: 2019-09/01, date: 11.09.2019). At the same time, written permission from the institution and verbal permission from the participants were obtained. The study was designed and conducted following the criteria of the Declaration of Helsinki.

Data Collection Tools

The Patient Information Form (PIF) and the ICU Environmental Stressor scale (ICUESS) obtained the data.

PIF: This nine-item form was prepared by the researchers to investigate the socio-demographic characteristics (age, gender, marital status, educational status, social security) and some other descriptive characteristics (clinic where the

patient was hospitalized, presence of chronic diseases) of the patients by reviewing the relevant literature (19-23).

ICUESS: This scale was developed by Ballard (24) in 1981 to identify the stressors perceived by the patients treated in ICUs and was revised by Cochran and Ganong (25) in 1989. It was adapted to Turkish by Çınar et al. (19) in 2011, and Cronbach's alpha value of the scale was found to be 0.94. The internal consistency coefficient of the scale was Cronbach's alpha value of 0.93 in this study. The 4-Likert-type scale consists of 42 items. The items prepared to identify the stressor perceived by the patient in the ICU are evaluated as "It does not affect at all (1 point)", "It affects minimal (2 points)", "It frequently affects (3 points)" and "It affects too much (4 points)". The lowest and highest scores obtained from the scale are 42 and 168, respectively. The high score obtained from the scale indicates that many environmental stressors in the ICU environment negatively affect the patients.

Statistical Analysis

The data were evaluated using the SPSS 22.0 (Statistical Package for Social Science for Windows) program. Descriptive variables were presented as mean, percentage and standard deviation values. The normality of intra-group distributions was tested with the Kolmogorov-Smirnov test. The independent sample t-test was used for two-group comparisons based on socio-demographic characteristics. The One-Way ANOVA test was applied in more than two groups. A value of $p<0.05$ was considered statistically significant.

Results

It was found that 75.9% of the patients were under 50 years of age, 51.8% were female, 37.3% were primary school graduates, 86.7% were operated oncological reasons, and 92.8% were not experienced in ICU (Table 1).

The mean total ICUESS score of the patients hospitalized in the ICU was 108.12±21.27. Patient characteristics such as age, gender, educational status and the reason for the operation were found to significantly affected the mean total ICUESS score ($p<0.05$) (Table 1).

Patients defined the five most perceived stress factors as experiencing pain, inability to sleep, lack of privacy, boredom, and short visits to family and friends. They determined that the factors causing less stress were hearing phone calls, nurses being more interested in bedside devices than patients, and constantly looking at the ceiling (Table 2).

Table 1. Average of the Scores of Environmental Stressors scale in the ICU according to demographic characteristics

Characteristics (n=83)	n (%)	Mean ± SD	Statistical test
Age (years)			
<50 years	63 (75.9)	102.53±20.53	t=10.97 p=0.001
>50 years	20 (24.1)	125.70±12.21	
Gender			
Women	43 (51.8)	113.88±21.52	t=0.486 p=0.028
Men	40 (48.2)	103.59±20.06	
Educational status			
Illiterate	20 (24.1)	116.10±16.58	KW=11.08 p=0.011
Primary school	31 (37.3)	113.29±18.84	
Middle school	18 (21.7)	101.11±20.85	
High school and university	14 (16.9)	94.28±25.10	
The reason for having surgery			
Oncological surgery	72 (86.7)	106.25±23.33	U=8.07 p=0.006
Other surgical problems	11 (13.3)	112.44±15.05	
Intensive care experience			
Yes	6 (7.2)	108.00±21.44	U=0.003 p=0.960
No	77 (92.8)	108.12±21.40	
ICUESS	83 (100)	108.12±21.27	

KW: Kruskal Wallis test, U: Mann-Whitney U test, ICU: intensive care unit, SD: standard deviation, ICUESS: ICU Environmental Stressor scale

Discussion

In this study, the average ICUESS total score used to determine the environmental stressors perceived by intensive care patients was 108.12±21.27. This result shows that the patients hospitalized in the ICU have a high level of exposure to stressors. In other studies using the same scale, the mean score ranged from 69.26±21.84 to 120.88±20.7 (18,20,26,27). It is thought that this difference may be due to the different sociodemographic and cultural characteristics of the patients and the different configurations of the ICUs.

In this study, the most significant stress perceived by intensive care patients was pain. This stressor is expected since patients experience both oncological problems and surgery. Zengin et al. (4), in their study, patients expressed 35% pain during stressful experiences in the ICU. Likewise, van Gulik et al. (28) found that 62% of patients in intensive care experience pain. Sometimes the pain is noted as the second stressor. In previous studies, it was determined that

Table 2. Stressors rating and mean of score of patients in intensive care unit

Stressors	Range	Mean	SD
Being in pain	1.	3.86	1.14
Not being able to sleep	2.	3.66	0.90
Having no privacy	3.	3.59	1.00
Being in bored	4.	3.50	1.12
Only seeing family and friends for few minutes	5.	3.35	0.84
Being thirst	6.	3.34	1.07
Unable to move arms due to IV lines	7.	3.32	0.71
Being tied by tubes	8.	3.24	0.79
Having strange machines around you	9.	3.11	0.92
Having tubes in your nose or mouth	10.	3.08	0.82
Not being in control of your self	11.	3.07	0.83
Having your blood pressure taken often	12.	3.00	0.95
Hearing your heart monitor alarm go off	13.	3.00	1.06
Nurses and doctors talking too loudly	14.	2.96	1.16
Having light on constantly	15.	2.94	0.93
Frequent physical exams by doctors and nurses	16.	2.94	0.82
Hearing other patient cry out	17.	2.88	0.84
Treatments not explained to you	18.	2.85	1.30
Not knowing when to expect things will be done to you	19.	2.78	0.96
Unfamiliar and unusual noises	20.	2.73	1.12
Watching treatment given to other patient	21.	2.69	0.72
Not knowing where you are	22.	2.51	0.71
Not knowing what day it is	23.	2.47	0.76
Hiring the buzzers and alarms from the machinery	24.	2.41	0.75
Being aware of unusual smells around you	25.	2.34	0.92
Being woken up by nurses	26.	2.32	1.11
Having men and women in the same room	27.	2.32	0.94
Bing stuck with needles	28.	2.30	0.52
Not knowing what time/time is	29.	2.19	0.89
Miss your partner	30.	2.17	1.17
Nurses use the word you cannot understand	31.	2.15	1.06
Not having nurses introduce themselves	32.	2.12	0.78
Seeing bags over your head	33.	2.08	0.86
Having the nurses be in too much of a hurry	34.	1.97	0.95
Being cared for by unfamiliar doctors	35.	1.96	0.90
Being in a room which is too not or cold	36.	1.96	0.88
Having nurses constantly doing things around your bed	37.	1.79	0.73
Uncomfortable bed and pillow	38.	1.75	0.98
Having to wear oxygen	39.	1.73	0.52
Look at the pattern of holes in the ceiling	40.	1.69	0.35
Feeling the nurses are watching the machines closer than they are watching you	41.	1.69	1.08
Hearing the telephone ring	42.	1.46	1.02

ICU: Intensive care unit, SD: standard deviation , IV: intravenous

drains, catheters, invasive-non-invasive ventilation, care and treatment interventions, position change, aspiration, dressing application and rehabilitation are among the factors that cause pain in patients (29,30). Since pain is a physiological stressor, pain management is critical in intensive care patients. Failure to provide adequate pain management causes physiological, metabolic and behavioural responses in the patient (31,32). Therefore, healthcare professionals in ICU must know the causes, management and consequences of pain. In order to provide pain management, clinical practice standards should be followed, and a multidisciplinary team approach should be adopted (4,33).

"Not being able to sleep" was the second factor causing the most stress in our study. Yaman Aktaş et al. (18) found it the second stressor, while Gültekin et al. (34) found it the fourth stressor that created the most stress. Demir and Öztunç (35) found that 75% of intensive care patients suffered from sleeplessness, and Pagnucci et al. (36) found that 63.5% of them suffered from sleeplessness in their studies. Factors such as lack of privacy, pain, lights always on, uncomfortable beds, noise, foul odours, and diagnosis and treatment practices are reported to cause sleep problems (9,37,38). Since sleeplessness can weaken the immune system, negatively affect wound healing and cause problems such as delirium, it should be carefully evaluated by healthcare professionals. Necessary medical and emotional support should be provided to patients with sleep problems (39).

In this study, the patients' third most perceived stressor was the "lack of privacy". The lack of privacy was found as the second most stressful factor in the study of Zaybak and Çevik (7), the third most stressful factor in the study of Yaman Aktaş et al. (18) and the fourth most stressful factor in the study of Tezcan Karadeniz and Kanan (27). When we look at our study and similar results, the question, "Are not the necessary measures taken to protect privacy in ICUs?"

comes to mind. In this study, the patient's perception of privacy as the first stressor suggests that the necessary measures for protecting privacy are not sufficiently taken. However, cultural differences, physical conditions of the intensive care environment where the study was conducted, hospitalization of male and female patients in the same environment, inability to dress patients, and covering them only with bed linens may be effective. Özata and Özer (40) found that 88.9% of healthcare professionals need training on privacy. Kim et al. (41) found in their study that nurses with a high level of education pay more attention to protecting patient privacy. In their study, Yu and Kim (42) determined that the behaviour of protecting patient privacy can be gained through education. Protecting privacy is the moral and legal responsibility of healthcare professionals working in the ICU, and training healthcare personnel is crucial for promoting the importance given to privacy (43,44).

The fourth most stressful factor was "getting bored" in our study. Dias Dde et al. (2) stated that this factor was the common stressor for the patients in the two units in their study conducted in two different ICUs, while Soh et al. (45) stated that getting bored was among the five major stress factors perceived by the patients in their study. Factors such as being unable to fulfil family roles, not having enough time with family and friends, and not making their own decisions are thought to cause boredom in the patient. Social rehabilitation and emotional support are essential for patients hospitalized for a long time.

"Having a short visit time of family and friends" was the fifth stressor causing stress in intensive care patients. Şahin and Köçkar (26) and Tezcan Karadeniz and Kanan (27) found it as the second stressor that created the most stress for the patients in their studies. Visits in the ICU are restricted because the patient's treatment and care practices are hindered and pose a risk of infection (46). The family is the most important supporter of the individual. Patients being away from their families and cannot spend time with them when they are most vulnerable causes them to feel vulnerable (47). Patient visits can be increased to increase the care satisfaction of patients and families and to ensure their adaptation to the ICU (48).

The individuals' personality characteristics, psychological status, mood and physical endurance are stated to affect their attitudes towards stress (27). Therefore, in this study, some sociodemographic and disease characteristics and environmental stressors perceived by the patients were also examined. It was found that the mean ICUESS score of the patients over 65 years of age was significantly higher than the patients aged 65 years and below in the study. Şahin and Köçkar (26) found in their study that the patients in the 31-50 age group perceived more environmental stressors than those in other age groups. The presence of multiple chronic diseases and the thought that death is approaching at advanced ages may be perceived as a stressor in the patients.

On the other hand, the mean scale score of male patients was significantly higher than that of female patients. In their study, AL Attar and AL Wondowi (49) showed that male patients were more exposed to stressors. According to a study by Tezcan Karadeniz and Kanan (27), female patients reported being exposed to more stress than male patients. In our study, the high stressor levels of male patients may be due to their inability to fulfil the roles and responsibilities they assumed in their families because of hospitalization in the ICU. Illiterate patients were found to have significantly higher mean scale scores compared to those with high school or higher education. The high-stress level of individuals with low educational status may be due to the lack of information about the disease, diagnosis and treatment methods.

The mean scale scores of the patients with oncological problems were found to be significantly higher than the other surgical patients. This difference may be related to the fact that oncology patients have more life-threatening risks due to their illnesses and the psychosocial problems they experience due to cancer. Therefore, the awareness of healthcare professionals working in ICUs, where oncological patients who have undergone surgical operations are treated, should be high.

It has been determined that patients who do not have experience lying in ICU are more affected by environmental stressors than expected. In previous similar studies, it was observed that patients who were not hospitalized in the ICU before were more affected by environmental stressors and their stress levels were higher than those who were previously in the ICU (50). This finding we obtained as a result of the research is compatible with the literature. This finding can be explained by the experience of patients previously hospitalized in the ICU, being aware of the stressors in the intensive care environment, and shaping their expectations according to their past experiences.

This study was considered a limitation to the presence of patients hospitalized in the surgical ICU of a university

hospital who agreed to participate. Therefore, the results obtained can only be generalized to the patients sampled. At the same time, patients hospitalized in the surgical ICU leave the ICU when surgery complications and anaesthesia disappear, and their condition stabilizes. Therefore, this patient group could not perceive all environmental stressors because they did not stay in the ICU as much as the patients in the general ICU constitute another study limitation.

Conclusion

In this study, most patients hospitalized in the ICU were identified as patients with oncological surgery problems. These patients; stated that they perceive emotional problems such as pain, insomnia and lack of privacy, which are the most critical symptoms due to oncology and surgery, as stressors.

For this reason, oncological surgery patients hospitalized in ICUs should be handled with the awareness and sensitivity that they are both intensive care, oncology and surgical operation patients. This requirement reveals that it is necessary to cooperate with the consultant liaison psychiatry to meet the patient's emotional needs. On the other hand, the literature has been found significant in reflecting the different responses of individuals exposed to three critical stressors: intensive care, oncology and surgery.

Identifying, reducing and eliminating stressful factors for the patients in the ICU are among the essential responsibilities of healthcare professionals working in the ICU. The level of exposure to stressors is different for each patient. Therefore, care to be provided to the patients should be individualized and holistic. With the resolution of stressful factors for the patients, new health problems that may occur in the patients will be prevented, their hospitalization periods in the ICU will be shortened, treatment and care costs will decrease, and patient satisfaction will increase.

Indeed, providing the physical conditions in which the patients will feel more comfortable in the ICU is essential. More importantly, it is thought that training programs to be provided to healthcare professionals about patient stressors, especially protecting privacy, will reduce exposure to stressors in intensive care patients.

Ethics

Ethics Committee Approval: The study was conducted after obtaining the ethics committee approval from the Ethics Committee of Cumhuriyet University Non-Invasive Clinical Research (decision no: 2019-09/01, date: 11.09.2019).

Informed Consent: The study was conducted after obtaining the verbal consents from the participants with the respect to voluntarily participation.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: M.C.M., O.K., Y.B., M.M., K.K., Concept: M.C.M., O.K., Y.B., M.M., K.K., Design: M.C.M., O.K., Y.B., Data Collection and Process: M.C.M., O.K., Analysis or Interpretation: M.C.M., O.K., Y.B., M.M., Literature Search: M.C.M., O.K., Y.B., M.M., K.K., Writing: M.C.M., O.K., Y.B., M.M., K.K.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study received no financial support.

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