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Environmental Stressors Perceived by Patients in the Surgical Intensive Care Unit

Yoğun Bakım Ünitesinde Yatan Cerrahi Hastalarının Algıladıkları Çevresel Stresörler

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ABSTRACT *Objective:* This study aimed to determine the environmental stressors perceived by patients admitted to the surgical intensive care unit (SICU).
Materials and Methods: This is a descriptive and cross-sectional study. The sample of the study comprised 83 patients hospitalized in the SICU. Data were obtained from the Patient Information Form and the Intensive Care Unit Environmental Stressor Scale.
Results: Patients hospitalized in the SICU identified the most important stressors as experiencing pain, inability to sleep, lack of privacy, getting bored, and short family and friends visit time, whereas the least 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: Patients are provided with higher quality care, and new stress-related health problems are prevented by determining the stressors affecting the patients and applying solutions.
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 (CYBÜ) tedavi gören 83 hasta oluşturmuştur. Veriler Hasta Bilgi Formu (HBF) ve Yoğun Bakım Ünitesinde Çevresel Stresörler Ölçeği (YBÜÇSÖ) 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 etmenleri ise sırasıyla telefon sesini duymak, hemşirelerin hastalardan çok hasta başında bulunan cihazlarla ilgili olmaları ve sürekli tavana bakmak olarak tanımlamışlardır.
Sonuç: Hastaları etkileyen stresörleri belirlemek 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

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, special treatment methods are applied, and complex medical devices are available (1,2).

The purpose of the ICU is to restore vital functions of the patients and to discharge them with positive experiences (3). Diagnosis and treatment practices have been improved with medical advancements in the ICU; however, the patients are exposed to some negative physical and psychosocial stressors during their stay in the intensive care unit (4,5). Many factors such as medical interventions, pain, lack of privacy, limited visits, not being able to sleep, lights that are always on and uncomfortable beds can constitute examples of these stressors (6-8). The negative experiences of the patients 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

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changes in the patients and experiencing the clinical condition called intensive care syndrome (9-11). This syndrome develops acutely 48 hours after admission of the patient to the intensive care unit. It is characterized by impaired cognitive functions and change in consciousness (12). The syndrome is stated to be a challenging experience for the patients (13). The patient's abilities such as place, person and time orientation, speaking and perception deteriorate, and 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).

Healthcare professionals working in the intensive care unit should aim to optimize the physiological, psychological and social health of the patients who are provided with advanced life support, and should be able to make the most accurate decisions for the patient as quickly as possible by firstly noticing changes in the patient's condition (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 that will be observed in the patients, their stay in the ICU and the health care expenses will increase, and the patient satisfaction will decrease (18). When the effects of intensive care units on patients are examined, it has been found that there are mostly 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 who are hospitalized in the intensive care unit, 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 environmental stressors of operated intensive care patients with oncological problems and evaluating them together with patients with other surgical problems is regarded as the original value of the study.

Material and Methods

Study design

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

Study Sample

The universe of the study was consisted of all patients who were hospitalized in Sivas Cumhuriyet University Hospital General Surgery Intensive Care Unit. In the study, it was aimed to reach the whole population instead of choosing a sample. However, the study was completed with 83 patients who were hospitalized in the ICU for at least 24 hours and at most 72 hours, who did not develop intensive care syndrome, were older than 18 years of age, who were monitored, who did not have severe pain, and who volunteered to participate in the study.

Procedure

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), the written permission from the hospital and the verbal consents from the participants with the respect to voluntarily participation. The study was designed and conducted in compliance with the Helsinki Declaration criteria.

Data Collection Tools

The data were obtained by the Patient Information Form (PIF) and the Intensive Care Unit Environmental Stressor Scale (ICUESS).

Patient Information Form: This nine-item form was prepared by the researchers to investigate the sociodemographic characteristics (age, gender, educational status, marital 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 (16,20,22,23).

Intensive Care Unit Environmental Stressor Scale: This scale was developed by Ballard in 1981 to identify the stressors perceived by the patients treated in the intensive care units and was revised by Cochran and Ganong in 1989. It was adapted to Turkish by Aslan in 2010, and the Cronbach's alpha value of the scale was found to be 0.94 (18,19). 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 intensive care unit are evaluated as "It does not affect at all (1 point) ", "It affects very little (2 points)", "It frequently affects (3 points)" and "It affects too much (4 points)". The lowest total score that can be obtained from the scale is 42 and the highest total score is 168. The high score obtained from the scale indicates that there are many environmental stressors in the intensive care environment, and they negatively affect the patients.

Study analysis

The data were evaluated using SPSS 22.0 (Statistical Package for Social Science for Windows) package 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 intensive care (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).

While the patients identified the five most perceived stressor factors as experiencing pain, not being able to sleep, the lack of privacy, getting bored, having a short visit time of family and friends, and, they identified the least stressful factors as hearing phone sounds, nurses being more concerned with the devices that are at the bedside than the patients and constantly looking at the ceiling, respectively (Table 2).

Discussion

In this study, the mean total score of the ICUESS used in determining the environmental stressors perceived by

Table 1. Average of the Scores of Environmental Stressors Scale in the Intensive Care Unit 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
>50 years	20(24.1)	125.70±12.21	P:0.001
Gender			
Women	43 (51.8)	113.88±21.52	t:0.486
Men	40 (48.2)	103.59±20.06	p:0.028
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
Other surgical problems	11(13.3)	112.44±15.05	p:0.006
Intensive care experience			
Yes	6 (7.2)	108.00±21.44	U:0.003
No	77 (92.8)	108.12±21.40	p:0.960
ICUESS	83(100)	108.12±21.27	

KW: Kruskal Wallis Test, U: Mann Whitney-U Test, ICUESS: Intensive Care Unit Environmental Stressor Scale

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 smell 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 word you cannot understand	31.	2.15	1,06
Not having nurse introduce them selves	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

the patients in the ICU was found to be 108.12 ± 21.27. In other studies using the same scale, the mean score ranges from 69.26 ± 21.84 to 120.88 ± 20.7 (18,20,24,25). It is thought that this difference may be due to the socio-demographic characteristics of the patients, different configurations of the intensive care units and cultural differences. Thus, it was determined that the patients who were hospitalized in the ICU had high levels of exposure to stressors.

In this study, the most important stress perceived by intensive care patients was found to be pain. This stressor is an expected stressor, since patients experience both oncological problems and surgery. Zengin et al. (2020), in their study, patients expressed 35% pain among stressful experiences in the intensive care unit (26). Likewise, van Gulik et al. (2017) found that 62% of patients in intensive care experience pain (27). Sometimes pain is noted as the second stressor. Besides, in other previous studies it has been determined that catheters, drains, non-invasive and invasive ventilation methods used, treatment and care interventions, aspiration, dressing changes, position changes, rehabilitation practices are the factors that cause pain in patients (28,29). Adequate pain management is important because pain is an important physiological stressor for intensive care patients. Physiological, metabolic, and behavioral responses occur if an effective pain management cannot be provided (30,31). It is important to use clinical practice standards and multidisciplinary approach in pain management. It is key for healthcare professionals working in intensive care to know about the causes, consequences and pain management of pain (4,32).

"Not being able to sleep" was the second factor causing the most stress in our study. Yaman Aktaş et al. (2015) found it as the second stressor, while Gültekin et al. (2018) found it as the fourth stressor that created the most stress (18,33). Demir and Öztunç (2017) found that 75% of intensive care patients suffered from sleeplessness, and Pagnucci et al. (2019) found that 63.5% of them suffered from sleeplessness in their studies (34,35). Factors such as lack of privacy, pain, lights that are always on, uncomfortable beds, noise, bad odors, diagnosis and treatment practices are reported to may cause sleep problems (9,36,37). Since sleeplessness can lead to weakening of the immune system, negatively affect wound healing and cause problems such as delirium, it should be carefully evaluated by healthcare professionals and necessary medical and emotional support should be provided to the patients who have sleep problems (38).

In this study, the third most perceived stressor of the patients was found to be the "lack of privacy". The lack of privacy was found as the second most stressful factor in the study of Zaybak and Çevik (2015), as the third most stressful factor in the study of Yaman Aktaş et al. (2015) and as the fourth most stressful factor in the study of Tezcan Karadeniz et al. (2019) (7, 18, 25). When we look at our study and similar study results, the question "Are not the necessary measures taken to protect privacy in the intensive care units?" comes to mind. In this study, the perception of privacy as the first stressor by the patients suggests that the necessary measures for the protection of 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 on this result. Özata and Özer (2017) found in their study that 88.9% of healthcare professionals needed training on privacy (39). Kim et al. (2016) found that highly educated nurses have a high perception of protecting patient privacy in their study (40). Yu and Kim (2012), determined that the behavior of protecting patient privacy will be gained through training in their study (41). Protecting privacy is the moral and legal responsibility of healthcare professionals working in the intensive care unit, and training of healthcare personnel is crucial for promoting the importance given to privacy (42,43).

The fourth most stressful factor was determined to be "getting bored" in our study. Dias et al. (2015) 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 Lam et al. (2008) stated that getting bored was among the five major stress factors perceived by the patients in their study (2,44). Factors such as not being able to fulfill 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 important in the patients hospitalized for a long time.

''Having a short visit time of family and friends'' was found to be fifth the stressor causing stress in intensive care patients. Şahin and Köçkar (2018) and Tezcan Karadeniz et al. (2019) found it as the second stressor that created the most stress for the patients in their studies (24,25). Visits

in the ICU are restricted for reasons such as preventing the treatment and care practices to the patients and creating a risk of infection for the patients (45). Family is the most important support system of the individual. The fact that the patients cannot spend enough time with their families during their most vulnerable period makes them feel even more vulnerable (46). Patient visits can be increased in order to accelerate compliance of the patients with the ICU and to increase care satisfaction of the patients and their families (47).

The personality characteristics, psychological status, mood and physical endurance of the individuals are stated to affect their attitudes towards stress (25). Therefore, some characteristics of the patients and environmental stressors perceived by them were also examined in the study. It was found that the mean ICUESS score of the patients over 65 years of age were significantly higher than the patients aged 65 years and below in the study. Şahin and Köçkar (2018) found in their study that the patients in the 31-50 age group perceived more environmental stressors than the patients in other age groups (24). Hweidi et al. (2007) stated that the levels of being exposed to stressors increase with the increasing age in their study (20). The presence of multiple chronic diseases and the thought that death is approaching in advanced ages may be perceived as a stressor in the patients. On the other hand, the mean scale score of male patients was found to be significantly higher than female patients. AL Attar et al. showed in their study that male patients were more exposed to stressors (48). Tezcan Karadeniz et al. reported in their study that female patients were more exposed to stressors than male patients (25). In our study, the high stressor levels of male patients may be due to the inability to fulfill the roles and responsibilities which 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 level of stress of the 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 intensive care units, where oncological patients who have undergone surgical operations are treated, should be high.

It has been determined that patients who do not have experience of lying in intensive care are more affected by environmental stressors as expected. In previous similar studies, it was observed that patients who were not hospitalized in the intensive care unit before were more affected by environmental stressors and their stress levels were higher than those who were previously in the intensive care unit (49). 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 who were previously hospitalized in the intensive care unit, being aware of the stressors existing in the intensive care environment, and shaping their expectations according to their past experiences.

Conclusion

In this study, the majority of patients hospitalized in the intensive care unit were identified as patients with oncological surgery problems. These patients; They stated that they perceive emotional problems such as pain, insomnia and lack of privacy, which are the most important symptoms that occur due to both oncology and surgery, as stressors.

This result reveals that oncologic surgery patients hospitalized in intensive care units should be handled with the awareness and sensitivity that they underwent both intensive care, oncology and surgical operations, and therefore, cooperation with the consultant liaison psychiatry to meet these perceived emotional needs. On the other hand, the literature has been found important in terms of reflecting the different responses of individuals exposed to three important stressors such as intensive care, oncology and surgery.

Identifying, reducing and eliminating stressful factors for the patients in the ICU are among the important responsibilities of healthcare professionals working in the intensive care unit. 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.

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

Limitations of the Study

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

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., M.M., K.K., Design: M.C.M., O.K., Y.B., M.M., K.K., Data Collection and Process: M.C.M., O.K., Analysis or Interpretation: M.C.M., O.K., Y.B., M.M., K.K., 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.

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