The effect of providing information to patients on their perception of the intensive care unit

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KEY WORDS

ICU, patients' experiences, information, nursing, technological instruments

ABSTRACT

Objective
The objective of this study was to examine the effect the provision of information about the physical and technological environment of the intensive care unit (ICU) had on whether patients felt discomfort during their ICU experience.

Design and Setting
The study used a quasi-experimental design. Patients were selected through convenience sampling at a university hospital in Erzurum, Turkey.

Subjects
There were 80 patients in the study; 40 in the study group (SG) and another 40 in the control group (CG). Five patients in the study group left the study during the study period.

Main outcome measures
The effect of the provision of information on a patient's perception of their level of discomfort during their stay in an ICU was assessed using the Situational Form of Technological Atmosphere in ICU (SFTA-ICU) which is a 24 item instrument designed to measure the level of disturbance felt by patients exposed to different environmental situations in an ICU.

Results
8.6% of the SG and 45% of the CG felt discomfort about their inability to move; 2.9% of the SG and 45% of the CG about their inability to see their relatives; 14.3% of the SG and 40% of the CG about the closed environment of the ICU; 22.5 % of the SG and 40% of the CG about loneliness; 17.1% of the SG and 65% of the CG about nakedness; 11.4% of the SG and 37.5% of the CG about the instruments used on fellow patients; 20% of the SG and 50% of the CG about their inability to express their needs; and 14.3% of the SG and 42.5% of the CG about not being informed before procedures. The difference among the groups was found to be statistically significant.

Conclusions
Well planned information provided to patients preoperatively about the ICU may reduce the rate of discomfort to patients postoperatively caused by the ICU environment, procedures and treatments, and staff responses.

INTRODUCTION

The ICU can be a disturbing environment for patients (Sekmen and Hatipoğlu 1999). In Russell's study (1999 pp.786) many patients described recollections of the ICU using descriptive adjectives and phrases such as 'very noisy', 'all wired up', 'people everywhere', 'patients screaming', 'too scared to sleep', 'unable to move' and 'alarms ringing'.

Such factors as: a closed and unfamiliar environment; restricted movement; dependence on medical equipment; use of complicated instruments; often repeated painful procedures; the sounds made by numerous pieces of technology; the inability to see family members and relatives; and lack of information about treatment and practices can cause psychological distress to patients during and after being discharged from the ICU (Kaçmaz 2002; Novaes et al 1997). It has been established in some studies that restricted movement and posture and social isolation in the ICU, lead to sensorial deprivation, and an absolute reduction in the quality and quantity of sensorial inputs (Hunt 1999; Shih 1997; Jones 1994). Sensorial deprivation may result in a reduced capacity for learning, an inability to solve a problem, temporary perception disorders, and disrupted motor coordination, orientation and sleep patterns (Kutlu et al 2001).

Compton (1990) identified the recovery period after a stay in an intensive care unit as a psychologically stressful time. Patients find factors such as physical discomfort, lack of control, sensory over-stimulation (eg noise and light) and difficulty in maintaining independence in activities of daily living, disturbing (Wong and Arthur 2000; Hunt 1999; Jones 1994; Pennock et al 1994; Shih 1997; Turner et al 1990). Additionally, studies also reveal that some patients are depressed following their discharge from hospital as a result of their ICU stay (Székely et al 2001; Daffurn et al 1994). Some studies have emphasised the need for patient information programs to prepare people for the ICU environment and the physical and psychological problems which may be experienced; and provide strategies for dealing with those problems (Russell 1999; Shih 1997; Watts and Brooks 1997; Soehren 1995; Jones and O'Donnell 1994; Rowe and Weinert 1987). The ICU holds many uncertainties for patients and although there are some descriptive studies examining the effect of the ICU environment on patients (Sarıcaoğlu et al 2005; Rattray et al 2004; So and Chan 2004; Székely et al 2001; Sekmen and Hatipoğlu 1999; Russell 1999; Simini 1999; Hunt 1999; Cornock 1998; Novaes et al 1997; Shih 1997; Watts 1997; Jones et al 1994), no experimental studies were identified.

The research into patients admitted to ICUs in Turkey covers a limited number of specific subjects such as pain (Güneş Ören et al 2005; Vatansever and Eti Aslan 2005), loneliness and depression (Tel et al 2002), anxiety (İncekara and Pınar 2003; Özer 2002;), noise (Akansel 2004), sleep problems (Uğraş and Öztekin 2007; İncekara and Pınar 2003) and communication with mechanic ventilation (Yava and Koyuncu 2006), which lead to physical and psychological problems such as stress, depression and sensorial depression (Székely et al 2001; Kaçmaz 2002; Compton 1990). It is important to know which situational factors in the ICU environment disturb patients in order to prevent or to reduce their effect (Sekmen and Hatipoğlu 1999). There is no descriptive study on how the Turkish patients perceive the ICU apart from that of Sekmen and Hatipoğlu, which was carried out in 1999, which found the factors which most disturbed patients were: inability to move, nakedness, inability to see relatives, loneliness and the closed environment. At the end of the study it was suggested that ICU patients be provided with information about factors which they may find disturbing.

The objective of this study was to examine the effect the provision of information about the physical and technological environment of the ICU had on whether patients felt discomfort during their ICU experience.

METHODOLOGY

Design and Setting

The study used a quasi-experimental design. The study was carried out in the Cardiovascular Surgery Clinic and ICU, Aziziye Research Hospital, Süleyman

Demirel Medical Centre at Atatürk University, Erzurum, eastern Turkey. Criteria for inclusion in the convenience sample were: age 18 years or over; ability to speak and read in Turkish; no previous open heart surgery; no known neurological problems; and no other known complication. Patients with former ICU experience were included in the study. In Özer's (2002) study titled: The impact of planned education on patients' transfer from cardiovascular intensive care unit to clinic, the difference between the anxiety score averages of patients with and without ICU experience before, during and after transfer was not found to be statistically significant. Therefore including patients with ICU experience in the current study during data collecting was not considered to introduce bias. Although patients with ICU experience were included in the study, reaching the sample size who met the study criteria took approximately 19 months (March 2003 to September 2004). An additional criterion, supported by the literature, was that patients had to have spent at least 24 hours in the ICU (Rattray et al 2004; Novaes et al 1997; Jones et al 1994; Rowe and Weinert 1987), Spending at least 24 hours in ICU was considered necessary for patients to be able to evaluate the different parts of the day (morning, noon and evening) and the experiences gained during this time (applications, behaviour, communication).

The sample size for this study was 80 subjects: 40 in the study group (SG) and forty in the control group (CG). At the time this study was conducted, the study site was the only hospital where cardiac surgery was performed. Every patient who met the research criteria and who consented to participation in the study was included in the research, however it took over a period of almost 19 months to recruit 80 patients who were literate and able to speak Turkish. Sümbüloğlu and Sümbüloğlu 1997 considered that at least 30 subjects for each group are sufficient for experimental studies and parametric tests. Additionally, the number of participants in the SG and CG was comparable to previous studies in which the influence of education on the anxiety of open cardiac surgery patients was compared (range 27-50 subjects) (Asilioglu and Senol Celik 2004; Ku et al 2002; Parent and Fortin 2000). Since there are hardly any experimental studies assessing patients' disturbance about ICU atmosphere, this comparison has been made through varying anxiety studies.

Five patients in the SG subsequently withdrew from the study after transfer from the ICU to the clinic. Consequently, the study group included only 35 subjects and the study was conducted with a sample size of 75 patients.

Data Collection Questionnaire

As there was no scale available to evaluate the stressors of the ICU environment, the validity and reliability of which had been tested and adapted into Turkish society, the Situational Form of Technological Atmosphere in ICU (SFTA-ICU) developed by Sekmen and Hatipoğlu (1999) was used.

The SFTA-ICU consists of 24 items covering areas such as: the inability to move, inability to see relatives, closed environment, noise produced by the instruments, no explanation before procedures, not speaking with the patient, or not calling the patient by name. Each item has three potential responses: 'no disturbance', 'disturbed a little', 'disturbed a lot'. The study and control group responses to the SFTA-ICU were analysed using a percentage distribution of the answers.

Procedures

The patients in the CG followed the routine hospital protocol in which no planned preoperative and postoperative information related to the ICU was provided. The researcher provided information to the patients in the SG about the environment of the ICU using face-to-face interviews, explanations and question and answer at a private room in the Cardiovascular Surgery Clinic one day before the patient's scheduled operation.

A standard form was used for informing patients about the items covered in the SFTA-ICU such as: the period of stay in the ICU; ICU staff; the way patients could contact their relatives; possible emergencies; ICU traffic issues;, cardiac monitors; different catheters; chest tubes; ventilators; limited

mobility; ICU equipment; noise, especially from technological equipment; and the physical layout of the ICU. Additionally, respiratory exercises, leg exercises, shoulder exercises, cough exercises were explained and practised with the patient. Patients questions were then answered. At the end of the 45 minute preoperative session, patients were provided with a booklet: What you need to know about the intensive care unit (prepared by the researchers in accordance with current literature).

Each patient in the SG was visited by the researcher for approximately one hour in the ICU on the 1st day of their postoperative period and their questions, if any, broadly covering the items in SFTA- ICU (eg inability to move, closed environment, touch of the instruments, inability to see relatives) were answered.

In descriptive studies carried out to determine patients' recollections of their ICU experience, (Green 2000; Shih 1997; Turner et al 1990) data were collected within 48 hours after transfer from the ICU to the clinic. Accordingly in this study, the SFTA-ICU was applied to CG and SG patients one day after transfer from the ICU to the Cardiovascular Surgery Clinic. Data collection took about 15-20 minutes for each patient.

The Cardiovascular Surgery ICU is a six bed unit, designed in such a way that patients could see one another. Data were collected first from the control group and secondly from the study group. The doctors and nurses in the ICU were informed about the content of the study in the process of collecting data from the SG. After data collection, the SFTA-ICU and booklet were left for the ICU personnel to use.

Ethics

An information form stating the scope and purpose of the study was provided to the Head of the Cardiovascular Surgery Department, from whom written approval for the study was received. The aim of the research was explained to the patients and they were advised that if they did not want to continue they could withdraw from the study at any time. Patients were not told whether they were part of the study group or the control group to avoid bias.

Data analysis

Data were analysed using SPSS software, version 11.5. Descriptive statistics were used to describe the sample. Chi-square test was used to compare the defining qualities of the patients in the CG and SG and the extent to which factors in the ICU environment influenced them. The statistical significance level was 0.05 for the study.

Table 1: Characteristics of the sample

Variable	Control n=40 (53.3%)	Study n=35 (46.6%)	p-value
Gender			
Female	16 (40)	11(31.4)	0.440
Male	24 (60)	24(68.6)	
Marital status			
Married	33 (82.5)	31(88.6)	0.458
Single	7 (7.5)	4(11.4)	
Work status			
Housewife	16 (40)	11(31.4)	
Public official	13 (32.5)	12(34.3)	0.712
Unemployed	11 (27.5)	12(34.3)	
Education			
Literate	5 (12.5)	7(20.0)	
Primary school	20 (50.0)	15(42.9)	0.731
Secondary school	12 (30.0)	9(25.7)	
University	3 (7.5)	4(11.4)	
Former ICU experience			
Yes	16 (40.0)	12(34.3)	0.610
No	24 (60.0)	23(65.7)	
Type of operation			
CABG	30 (75.0)	30(85.7)	0.247
Valve	10 (25.0)	5(14.3)	
Age	X± SS=51.67 ± 13.13	X± SS=53.60 ± 11.98	0.569
Period of stay in ICU	X± SS=2.80 ± 1.24	X± SS=2.51 ± .74	0.240

Study limitations

The findings are from a sample in a university hospital, Erzurum, Turkey, and thus cannot be generalised to all ICU patients in Turkey. There was no Intensive Care Unit Environmental Stressor Scale available in Turkey, the validity and reliability of which had been tested and adapted to Turkish society, hence the researcher was limited to using the Situational Form of Technological Atmosphere in ICU (SFTA-ICU) developed by Sekmen and Hatipoğlu (1999).

The researchers faced some difficulties in that the total population of patients to be admitted to ICU who met the study requirements was not known. Thus, a power analysis was not conducted, nor a

sample of the total population analysed. Statistical interpretation of the results was difficult due to the small sample. Therefore the results of the study cannot be generalised beyond this group.

RESULTS

There were no statistically significant differences between two groups in relation to their demographic characteristics (table 1).

Table2: Comparison of the state of disturbance among the groups caused by ICU related factors

ICU related situational factors	Groups	State of Disturbance: No disturbance		Little Disturbance		Very much disturbance		p-value
		N	%	n	%	n	%	
1: Inability to move	C*	11	27.5	11	27.5	18	45	0.002
	S**	18	51,4	14	40	3	8.6	
2: Inability to see the relatives	C	8	20.0	14	35	18	45	0.000
	S	16	45.7	18	51.4	1	2.9	
3: Existence in a closed environment	C	10	25.0	14	35	16	40	0.005
	S	21	60.0	9	25.7	5	14.3	
4: To witness the procedures applied to the patient lying nearby	C	16	40.0	10	25	14	35	0.000
	S	16	45.7	19	54.3	0	-	
5: Loneliness	C	14	35.0	10	25	16	40	0.018
	S	20	57.1	11	31.4	4	11.4	
6: Touch of the instruments	C	16	40.0	15	37.5	9	22.5	0.655
	S	15	42.9	15	42.9	5	14.3	
7: Nakedness	C	4	10.0	10	25	26	65	0.000
	S	13	37.1	16	45.7	6	17.1	
8: Inability to speak with instruments applied	C	13	32.5	9	22.5	18	45	0.471
	S	15	42.9	9	25.7	11	31.4	
9: Use of medical words	C	18	45.0	14	35	8	20	0.161
	S	23	65.7	9	25.7	3	8.6	
10: To witness the instruments applied to the patient lying nearby	C	13	32.5	12	30	15	37.5	0.034
	S	15	42.9	16	45.7	4	11.4	
11: Sounds produced by the instruments in ICU	C	23	57.5	12	30	5	12.5	0.014
	S	30	85.7	5	14.3	0	-	
12: Smell in the atmosphere	C	21	52.5	6	5	13	32.5	0.149
	S	14	40.0	12	34.3	9	25.7	
13: Inability to express the needs	C	3	7.5	17	42.5	20	50	0.008
	S	10	28.6	18	51.4	7	20	
14: Light	C	25	62.5	7	17.5	8	20	0.263
	S	22	62.9	10	28.6	3	8.6	
15: No explanation before the procedures	C	18	45.0	5	12.5	17	42.5	0.025
	S	25	71.4	5	14.3	5	14.3	
16: Presence of many unknown materials	C	20	50.0	12	30	8	20	0.597
	S	19	54.3	12	34.3	4	11.4	
17: Treatment of patients as if a machine	C	22	55.0	8	20	10	25	0.663
	S	18	51.4	10	28.6	7	20	
18: No speaking with the patient himself	C	15	37.5	14	35	11	27.5	0.232
	S	20	57.1	8	22.9	7	20	
19: Inability to hear well due to the noise from the instruments	C	28	27.2	7	7.5	5	5.3	0.924
	S	23	65.7	7	20	5	14.3	
20: The great number of instruments	C	20	50.0	9	22.5	11	27.5	0.218
	S	22	62.9	9	25.7	4	11.4	
21: Other sounds (music, personnel)	C	26	65.0	4	10	10	25	0.149
	S	21	60.0	9	25.7	5	14.3	
22: Dealing much with the machines	C	22	55.0	13	32.5	5	12.5	0.338
	S	25	71.4	7	20	3	8.6	
23: No calling patients by name	C	24	60.0	9	22.5	7	17.5	0.141
	S	28	80.0	5	14.3	2	5.7	
24: Unawareness of where they are	C	22	55.0	11	27.5	7	17.5	0.121
	S	22	62.9	12	34.3	1	2.9	

*Control group, **Study group

The comparison of the effects of the ICU environment on the study and control groups is given in table 2. Of the items in the SFTA-ICU: lying naked (p=0.018); inability to move (p=0.002); presence in a closed environment (p=0.005); being alone (p=0.018); inability to see relatives (p<0.001); experience of witnessing procedures on patients lying nearby (p<0.001); experience of witnessing the instruments

used on the patient lying nearby ($p=0.034$); the sound produced by the instruments in ICU ($p<0.001$); lack of instruction and explanation before procedures ($p=0.025$); and inability to express one's needs ($p=0.008$); demonstrated a statistically significant difference between the groups.

DISCUSSION

Ten of the 24 items showed statistically significant differences between the study and control groups. The higher rate of disturbance resulting from restricted physical mobility in the control group is an example. Cornock (1998) and Novaes et al (1997) found that 'being restricted by tubes and lines' was one of five items that seriously disturbed patients. The patients in the study group knew they would have restricted mobility in the ICU and were informed they would only be able to do physical exercises like sitting, arm, leg and shoulder movements. This may have resulted in their rate of disturbance caused by restricted mobility being reduced.

The rate of disturbance caused by factors such as the inability to see relatives, staying indoors and feeling lonely was found to be higher in the control group and the difference with the study group was statistically significant. According to Ballard (1981, reported in So and Chan 2004) existence in a closed environment is an significant stressor for patients in surgical ICUs. Other studies support this finding (Rowe and Weinert 1987; Sekmen and Hatipoğlu 1999; Soehren 1995). In Cornock's study (1998) and So and Chan's study (2004) the item of 'missing their spouse' ranked among the first ten items as a cause of disturbance.

Witnessing procedures and instruments applied to the patient lying nearby in the ICU also showed a statistically significant difference between the control and study groups. In the ICU where the present study was carried out, folding screens are normally used to separate patients from one another however in an emergency there may be a delay in using the folding screens.

A statistically significant difference was also found between the two groups in relation to nakedness. In eastern culture where this study was carried out, being naked is not socially or religiously accepted behaviour. In Sekmen and Hatipoğlu's study (1999), nakedness is the leading factor that disturbed patients. The study group were provided with information about what to expect postoperatively and could mentally prepare themselves. On the other hand, the control group were unprepared and found the experience more disturbing.

It has been reported in the literature that noise pollution due to the ICU environment puts patients under stress. In Hweidi's study (2007) noise from buzzers and alarms from various pieces of technology and machines is one of the three most important stressors in ICU. Patients are generally not informed that most of the sounds from the equipment in the ICU are normal and that the required intervention will be made if there are any variations from normal. In this study, there was a statistically significant difference between the disturbance experienced by the control group and the study group to noise.

In a study by Rowe and Weinert (1987), patients reported they were distressed when they were ignorant of the procedures in the ICU and when they failed to get responses to their questions or could not understand the words used in the answers. Following a serious illness, they reported lack of knowledge as an important stressor. Diminished quality in interpersonal communication is often the primary reason for the dissatisfaction of ICU patients and their families. It is thought that interpersonal communication is a significant means of transferring knowledge, providing psychological support and preventing conflict from occurring in the presence of incomprehensible knowledge (Mazzon et al 2001; Shih 1997). Since the patients in the study group were informed about the procedures carried out in the ICU, they demonstrated significantly less disturbance compared to patients in the control group in response to lack of information.

In this study, 50% of the patients in the control group and 20% of those in the study group felt a lot disturbed if they could not express their needs. The difference was statistically significant. Baker and Melby (1996)

reported that patients did not complain about the limited time devoted to them by ICU staff however they also reported that the communication with them in the ICU was concerned with the process of treatment and care rather than with improvements in their health. Llenore and Ogle (1999) suggested that some of the reasons for weak communication in the ICU is nurses with high levels of stress dealing mostly with the physical care of patients and being busy with technological equipment. This finding is supported by Ben-Ami-Lozover and Benbassat (1996). In this study, the study group's patients in the ICU were informed the ICU staff worked hard since, in a six bed unit, there were only two nurses rostered during the day and one nurse rostered at night to care for the ICU patients. The control group's patients were not informed about this situation and consequently may have had difficulty expressing their needs and having their needs met.

CONCLUSION

Well planned information related to the ICU and provided to patients preoperatively reduces the rate of disturbance for patients caused by the ICU environment. The results of this study may assist health professionals to prepare planned education programs for patients being admitted to the ICU postoperatively to reduce their discomfort.

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