

Anxiety levels and influencing factors among the relatives of patients presenting to the emergency department

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Abstract

Background and objective: In recent years, the majority of incidents of increasing violence against healthcare workers, especially emergency department (ED) staff, have been perpetrated by family members of patients. Anxiety is one of the predictors of this violence in ED. The aims of this study were to measure anxiety levels among the relatives of ED patients at the time of presentation and to identify the factors that affect them.

Materials and methods: In this prospective, cross-sectional study, 687 relatives of patients were included. The State-Trait Anxiety Inventory- State (STAI-S) and State-Trait Anxiety Inventory- Trait (STAI-T) scales were administered to assess state and trait anxiety levels. The data for the study were recorded using the SPSS 16.0 statistics program.

Results: STAI-S averages were found to be statistically significantly higher than their STAI-T averages in parents ($p = 0.036$). A statistically significant difference was found between the state and trait anxieties of the group whose patients had a history of previous hospitalization ($p = 0.013$), previous surgeries ($p = 0.009$), presented with trauma ($p=0.007$), and received intervention in ED ($p = 0.003$). The state anxiety of the patient relatives who brought their patients to the ED by their own means was found to be statistically significantly higher than the trait anxiety ($p=0.028$).

Conclusion: Our study showed that patient relatives whose patients presented to the ED due to trauma or had a history of surgery/hospitalization, or arrived at the hospital under their own means, experienced elevated anxiety levels. More multi-center studies are needed.

Introduction

Anxiety is an abnormal, groundless state of restlessness characterized by over-stimulation of the autonomic nervous system, with physical symptoms such as high blood pressure, tachycardia, tachypnea, and tremor, accompanied

by concern, fear, and obsession [1-3]. Distinction between different experiences of anxiety is possible using Spielberger's two-factor anxiety theory [4]. Types of anxiety have been measured by the State-Trait Anxiety Inventory (STAI) of Spielberger *et al.* [5].

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State anxiety is the subjective fear experienced by an individual due to stressful situations, which intensifies during periods of heightened stress and diminishes upon resolution of the stress. Trait anxiety is the tendency of an individual to experience anxiety independent of the situation or to perceive situations as stressful. These individuals experience state anxiety more intensely than others do [6-8].

The STAI, a scale employed for assessing anxiety levels, consists of two distinct scales namely state anxiety scale (STAI-S) and trait anxiety scale (STAI-T). Items are rated from 1 to 4. The total score from both scales ranges from 20 to 80. A high score indicates high levels of anxiety, whereas a low score indicates low levels of anxiety [9]. The translation of the inventory into Turkish and the validity and reliability studies were performed by Oner et al. in 1983 [7].

Anxiety is identified as one of the predictors of this violence in emergency department [10]. Emergency department staff are more exposed to violence compared to other medical services personnel [11-13]. Acts of violence against healthcare workers in the emergency department are predominantly carried out by the relatives of patients [12-15]. In a study investigating the frequency and types of workplace violence experienced by doctors working in emergency departments in Turkey, it was found that 99% of the participants reported verbal violence, while 54% reported physical violence [14].

The purpose of this study was to determine the state and trait anxiety levels of patient relatives during patient presentation to the emergency department and to investigate the influencing factors.

Materials and methods

The study was approved by the Cerrahpaşa University Ethics Committee; approval number: B-23 on 3th March 2011. Written consent was obtained from all study participants.

Study population and methods: In this prospective, cross-sectional study, relatives of the patients, aged 18 years and older, presented to the emergency department in seven consecutive 24-hour periods were included. Average number of patients

attended the emergency department in seven days was accepted as 3,344. Considering 10% prevalence of anxiety, we planned to include 687 relatives of patients aged 18 years and older to analyze their data within a 95% confidence interval and with a 2% deviation. Based on systematic sampling, one patient relative in every four presentations to the emergency department was included in the study. When a patient relative was not included because of exclusion criteria the order of systematic sampling was resumed without making any changes. The patient relatives who were mentally or intellectually impaired, were under psychiatric diagnosis and treatment, did not speak Turkish, were illiterate, did not give consent, could not communicate, and were accompanying patients requiring an urgent surgery were excluded from the study.

Demographic and personal identification information from patient relatives participating in the study was collected. STAI-S and STAI-T scales were used to assess state and trait anxiety levels [5,7]. Seriousness of patient medical conditions was evaluated using a 5-point Likert test before the surveys. Surveys with unanswered questions were excluded from the analysis.

Data were recorded using the SPSS 16.0 statistics program. The recorded data were analyzed by comparing STAI-S and STAI-T averages of the patient relatives to their demographic properties, the demographic properties of the related patients, and the backgrounds of both patient and relative. A chi-square test was used for analysis of categorical data, and a t-test was used for analysis of numerical data according to the number of samples.

Results

In this prospective, cross-sectional study, 687 patient relatives aged 18 and older who presented to the emergency department in seven consecutive 24-hour periods were included. Out of total 687 patient relatives, 343 were female (49.9%) and 344 were male (50.1%). For the 687 patient relatives participating in the study, the STAI-S average score was 46.1 ± 7.8 , whereas the STAI-T average score was 45.4 ± 8.0 (STAI-S range = 22–70; STAI-T range = 24–64). High STAI-S averages were statistically significant (t-test; $p = 0.020$).

The statistical analysis of anxiety levels and subgroup tests for patient relatives participating in the study, based on factors such as gender, presence of chronic illness in the patient, whether the patient was brought in due to trauma, previous hospitalization history, surgical history in the patient's medical records, and the mode of arrival to the hospital (ambulance or self-arrival), is provided in Table-1.

Table-1: Anxiety levels and influencing factors in patient relatives presenting to emergency department

Variable		Number	STAI-S Mean ±SD	P value	STAI-T Means ±SD	P value	STAI-S vs STAI-T (p value)
Sex of the PR	Female	343	46.1±7.8	0.969	45.3±8.0	0.644	0.343
	Male	344	46.1±7.8		45.6±8.1		0.344
The PR's degree of kinship	First degree	622	46.2±7.8	0.618	45.5±8.0	0.413	0.036
	Second degree	65	45.7±7.9		44.7±8.1		>0.05
PRs perception regarding the severity of patient's condition	Very severe/severe	205	46.0±7.5	0.827	45.0±7.5	0.340	>0.05
	Normal/mild/very mild	482	46.2±7.9		45.6±8.3		>0.05
Patients with a history of chronic disease	No	431	46.0±7.8	0.730	45.3±8.3	0.453	>0.05
	Yes	256	46.2±7.8		45.7±7.6		>0.05
Patients with a history of hospitalization	No	463	46.3±7.5	0.361	45.9±8.1	0.018	>0.05
	Yes	224	45.7±8.4		44.4±7.9		0.013
Patients with a history of previous surgery	No	503	46.2±7.5	0.647	45.9±8.0	0.019	>0.05
	Yes	184	45.9±8.6		44.3±8.0		0.009
History of previous accompaniment of PRs to emergency department	No	440	46.8±7.8	0.003	46.1±8.2	0.003	>0.05
	Yes	247	44.9±7.6		44.2±7.6		>0.05
History of admission of PR to the hospital as a patient before	No	433	46.5±7.4	0.077	46.5±7.5	<0.001	>0.05
	Yes	254	45.4±8.4		43.7±8.6		<0.001
Patient brought to emergency department by ambulance	No	614	46.3±7.8	0.154	45.6±8.1	0.156	0.028
	Yes	73	44.9±7.3		44.2±7.3		>0.05
The PR's past negative experience at the hospital	No	620	46.1±7.7	0.692	45.5±8.1	0.342	>0.05
	Yes	67	45.8±8.5		44.6±7.0		>0.05
PR's first accompaniment to the hospital	No	536	46.2±8.0	0.444	45.5±8.0	0.951	>0.05
	Yes	151	45.7±6.9		45.4±8.4		>0.05
Patient Received intervention in the emergency department	No	397	47.3±6.4	<0.001	47.2±6.4	<0.001	>0.05
	Yes	290	44.5±9.1		43.1±9.4		0.003

Note: PR – Patient relative; vs – versus

Most of the patient relatives accompanying were the parents of the patients (41.6%). Whether the patient was a first- or second-degree relative did not cause a statistically significant difference in the anxiety of the patient relative. In the sub-group analysis of patient relatives, STAI-S averages of those who brought their children to the hospital were found significantly ($p = 0.036$) higher than their STAI-T averages. According to the 5-point Likert scale, 424 (61.7%) patient relatives reported the severity of their relatives' conditions as normal. However, no statistically significant differences were found between the STAI-S and STAI-T averages of the patient relatives who reported the severity of their relatives' health problems as severe and those who reported them as normal or mild according to the 5-point Likert scale (Table-1).

Nearly half (290; 42.2%) of the patients accompanied by the relatives received interventions, whereas 397 (57.8%) did not. For the relatives of the patients who did not receive an intervention, both the STAI-S and STAI-T averages were found significantly (<0.001) higher compared to the relatives of patients who received an intervention (Table-1). In the sub-group analysis, no statistically significant difference was found between the STAI-S and STAI-T of the relatives of patients who did not receive an intervention (t-test on paired samples; $p = 0.719$). However, a statistically significant difference was found between the STAI-S and STAI-T of the relatives of patients who received an intervention (t-test on paired groups, $p = 0.003$).

More than one third (247; 36%) of the patient relatives had accompanied the patient to the emergency department in the past, whereas 440 (64%) were there for the first time. Of the patient relatives included in the study, the STAI-S and STAI-T averages of those in the emergency department with their relative for the first time were found significantly higher than those who had been in that position before (Table-1). In the sub-group analysis, no statistically significant difference was found between the STAI-S and STAI-T of either group (t-test on paired groups; $p = 0.070$ for the group that had previously accompanied and $p = 0.146$ for the group that had not previously accompanied).

More than one third (254; 37%) of patient relatives had a history of previously presenting to the emergency department as a patient themselves, whereas 433 (63%) did not. The trait anxiety for the patient relatives who had not experienced self-presentation to the emergency department was significantly higher than that of patient relatives who had (Table-1). In the sub-group analysis for both groups, the state anxiety of the patient relatives in the latter group was found significantly higher than those in the former group (t-test on paired groups; $p = 0.001$). About one in 10 (67; 9.8%) patient relatives recounted a negative experience in their previous hospital presentations, whereas 620 (90.2%) patient relatives did not. About a quarter (151; 22%) of the patient relatives reported that they were presenting to that emergency department for the first time, whereas 536 (78%) had come to the same hospital before. This variable had no influence on state or trait anxiety levels of the patient relatives.

Discussion

Anxiety is identified as one of the predictor of violence in emergency department [10]. Moreover, in recent years, incidents of violence against healthcare professionals have shown an increase [12]. Given the fast-paced environment of EDs, the sudden health problem of admitted patient and the fear of losing a loved one, higher state anxiety levels are deemed normal for patient relatives. In the STAI analysis with 40 as the boundary value, trait and state scores were over this value in most of our data, which suggests the presence of a general anxiety in the general population [16]. When under stress, individuals with a high level of trait anxiety are expected to demonstrate state anxiety reactions more quickly and frequently than those with a low level of trait anxiety [17]. In our investigation, the statistically significant high averages on STAI-S scale align with our anticipated outcomes. Studies investigating the anxiety levels of patients and patient relatives in the emergency department and the factors that affect these anxiety levels have been conducted in the past [18-20].

H.Y. Pi *et al.* found that female patient relatives had higher levels of anxiety than male patient relatives

expressed in emergency departments [20]. Previous studies have shown that women have higher levels of state and trait anxiety than men do [21,22]. However, contrary to our expectations, the anxiety of patient relatives was not affected by gender in our study. Although not consistent with the literature, we attribute this lack of difference to potential social and cultural factors. A large majority of the patients presented to the emergency department accompanied by their first-degree relatives, who offer them support, trust, and comfort. In our study, being a first- or second-degree relative to the patient did not cause a statistically significant difference in anxiety levels, whereas being a patient's parent raised the state anxiety to a statistically significant degree. Martin *et al.* [19] found in their study that over 40% of parents experienced higher levels of state anxiety in the emergency department. We believe that this happens nearer relatives due to a greater sense of responsibility and emotional attachment to the patients compared to other relatives.

In our study, of the patient relatives, 69.4% defined the health condition of their patients as normal or mild. Studies by Kılıçaslan *et al.* [23], and Ersel *et al.* [24] reported that 32.2% to 47.2% of the patients presenting to the emergency department did not actually have emergency conditions. However, Köse *et al.* observed that majority of the patients presenting to emergency department had no emergency conditions [25]. This situation could potentially result from the improper utilization of emergency services intended for expedited outpatient care. We were not expecting to find that the patient relatives' perceptions of the severity of their patients' health problems had no effect on their state anxiety levels. This lack of an effect may have been influenced by an unwillingness of the relative to acknowledge the severity of the issue or because they intentionally miss stated the condition as severe or very severe to access health services more quickly [26]. Our study also showed that the presence of a chronic disease and regular drug usage of the patient were not factors that affected the anxiety levels of the patient relatives. This lack of effect is likely because of the frequency with which the patient relatives have dealt with the issues and visited the

emergency department or polyclinic facilities accordingly in the past. It can be assumed that these relatives have developed better mechanisms for coping with their anxiety [27-29].

Trait anxiety levels were higher in the patient relatives whose patients had a history of previous hospitalization or surgery. This finding suggests that dealing with previous hospitalizations, surgeries, and other life-or-death situations had negative effects on the trait anxiety of the patient relatives. In sub-group analysis of the patient relatives whose patients had a history of surgery or hospitalization, state anxiety was significantly higher than trait anxiety, which demonstrates that concern about experiencing similar events and previous hospital experience definitely increased state anxiety. On the contrary, the state anxiety of patient relatives with no previous hospital experience was not affected.

State anxiety levels were higher in the patient relatives whose patients presented to the emergency department due to trauma or received intervention. As similar findings have been reported in previous studies, it is essential to anticipate the elevated anxiety levels among patient relatives presenting to the emergency department with trauma. Therefore, attention should be given to addressing the needs of patient relatives of such patients [30].

Although the trait anxiety of the patient relatives who had never previously self-presented to the emergency department was found significantly high, no significant difference was found between their trait anxiety and their state anxiety upon presentation to the emergency department. The fact that no difference was found in the sub-group analysis of the patient relatives who had not self-presented to the emergency department before suggests that these patient relatives may have had high baseline anxiety levels in their daily lives. The state anxiety of the patient relatives who had self-presented to the emergency department before was found significantly high. This finding might be due to their previous negative experiences with their disease, their distrust in the referral and administration of the emergency department, or their ability to more easily empathize with their patients.

We found that 10.6% of patient relatives accompanied their patients to the emergency department by ambulance. The state anxiety of the patient relatives who brought their patients to the emergency department by their own means was found to be statistically significantly higher than the trait anxiety. This might be due to the fact that the relatives of patients who were brought by ambulance encountered a healthcare professional before they reached the hospital and began to receive healthcare services and information. In a conducted study, it was found that approximately one-third of the patient relatives might have believed that the health condition of their patient was more serious than it actually was and families had a need for explanations regarding the medical condition of the patient [30]. On the other hand, patient relatives who brought their patients by their own means had to handle all kinds of problems and stress themselves until they arrived at the hospital. The initial medical contact occurring before hospital admission could be considered an effective factor in reducing the anxiety of patient relatives.

Conclusion

Our study revealed that, being a parent, having a history of hospitalization, surgery, presenting due to trauma, having intervention and bringing the patient by their own means were associated with higher levels of anxiety among the patient relatives. The early detection of anxiety, identified as an indicator of violence, could be a method for preventing incidents of violence in emergency services. Multi-center and more comprehensive studies on the causes, anxiety levels and expectations of patient relatives presenting to the emergency department, would contribute to planning measures to reduce anxiety and violence at the emergency department and as well improve patient management.

Authors' contribution

SBS: Study design, data collection, data analysis, manuscript writing; HT: Study design, statistical analysis; ÖzlemD: Data analysis, manuscript editing, literature review; ÖzgürD: Data analysis,

manuscript writing; ŞennazŞ: Data collection, data analysis, literature review; SılaŞ: Data collection, data analysis

Conflict of Interest

There are no conflicts of interest to declare.

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