Determınatıon of Preoperatıve Fear and Anxıety Levels caused by Multıple Pedıatrıc Burn Surgeries in Patıents and theır Parents

Hakan Akelma (1)
Ebru Tarıkçı Kılıç (2)
Mehmet Özkılıç (3)
Zeki Ayhan Karahan (1)
Sedat Kaya (1)

(1) University of Health Sciences Gazi Yaşargil Training and Research Hospital, Diyarbakır, Turkey
(2) University of Health Sciences Ümraniye Training and Research Hospital, İstanbul, Turkey
(3) Children's Hospital, Diyarbakır, Turkey

Correspondence:
Ebru Tarıkçı Kılıç
University of Health Sciences Ümraniye Training and Research Hospital, Anesthesiology İstanbul, Elmadağ Street, Ümraniye, İstanbul, Turkey
Telephone : +905063306640; Fax no: 90216 3684040
Email: ebru.tarkc@yahoo.com

Received:, 2018; Accepted: 2018; Published: September 1, 2018
Citation: Hakan Akelma, Ebru Tarıkçı Kılıç Mehmet Özkılıç, Zeki Ayhan Karahan Sedat Kaya. Determınatıon of Preoperatıve Fear and Anxıety Levels caused by Multıple Pedıatrıc Burn Surgeries in Patıents and theır Parents. World Family Medicine. 2018; 16(9): 4-12. DOI: 10.5742MEWFM.2018.93489

Abstract

Background: Burn injuries can cause anxiety, and sleep affective and learning disorders among children. Hospitalized children are observed to experience nightmares, behavioural regression and post- traumatic stress disorder.

Objectives and Methods: This situation increases both the stress hormone levels in their blood and the morbidity and mortality rates. Pain becomes more severe while changing the wound dressings and during practices like hydrotherapy, skin grafting, physiotherapy and debridement.

Therefore, good pain and anxiety control should be achieved especially to avoid pain during treatment, to help children heal more easily, and to reduce their stress

Results and Conclusion: We aimed to evaluate the effects of multiple pediatric burn surgeries on the pediatric patients and their parents.

Key words: Burn injuries, pain, anxiety, pediatric, parents.

Introduction

Anxiety is a universal response to any perceived dangers or threats that cause distress in an individual (1). In other words, it is an unpleasant emotional state which is experienced as feelings of uneasiness, worry or foreboding that are often accompanied by certain physiological symptoms. The individual perceives it as a feeling of unrealistic worry and tension as if something bad is going to happen. This feeling can vary in intensity from slight uneasiness and tension to severe panic (2).

Spielberger defined two distinct kinds of anxiety: state and trait anxiety. State anxiety is a subjective fear that the individual feels due to a specific stressful situation. As a result of an activation of the autonomic nervous system, the tension and unease can also be manifested as physiological symptoms such as sweating, looking pale, flushing and shaking. Trait anxiety, on the other hand, is the tendency of the individual to perceive or interpret every situation as stressful because of his/her inclination to worry. People with a high level of chronic anxiety are observed to be vulnerable and pessimistic individuals(3).

There are many causes of burn injuries. It is a type of injury that can occur due to various causes such as hot liquids, electrical devices, chemical substances and gas explosions, and that can be avoided through preventive steps (4,5). Burn injuries are someof the most serious traumas and affect patients both physiologically and psychologically. They cause pain and incur a major stress

response until they heal. Burn injuries are classified as distinct from other types of injuries owing to certain factors including the severe pain during or after the injury, the changes in the body image of patients and the relatively long treatment period. In our country over 5,000 children are hospitalized and treated for burn injuries annually. 40% of the hospitalized burn injury patients are children. Children aged 1 to 5 years have the highest incidence of burn injuries.

Burn injuries can cause anxiety, sleep, affective and learning disorders among children. Hospitalized children are observed to experience nightmares, behavioural regression and post-traumatic stress disorder. This situation increases both the stress hormone levels in their blood and the morbidity and mortality rates. Pain becomes more severe while changing the wound dressings and during practices like hydrotherapy, skin grafting, physiotherapy and debridement. Therefore, a good pain and anxiety control should be achieved especially to avoid pain during treatment, to help children heal more easily, and to reduce their stress (6,7). Burn care requires a multidisciplinary team consisting of doctors, nurses, dieticians, incident managers, social workers and other related health care employees who treat the burned patient.

The surgical process can be stressful for parents. , It has been shown that increased anxiety levels of parents can indirectly affect the anxiety level of children and when the anxiety levels of the parents are lowered, the anxiety levels of the children and therefore their need for postoperative analgesic medication can also be reduced (8).

The factors that can affect parental anxiety are classified in literature as follows: lack of knowledge about the treatment method, unfamiliar surroundings, type of anesthesia, the fear that their child will not wake up after surgery, the fear that they will lose their child, the pain their child feels. There are also additional factors such as being isolated from social life, having to communicate with strangers, medical terminology used by the health care team, and contact with unfamiliar medical devices.
In this study we aimed to identify the effects of multiple pediatric burn surgeries on the pediatric patients and their parents.

Materials and Methods

This study was approved by the Ethical Committee of Gazi Yaşargil Training and Research Hospital School of Health Sciences and was conducted on 200 pediatric ASA1 and ASA2 patients aged between 2-16 who had minimum 2 and maximum 6 surgeries in the Burn Center of the hospital and 200 parents who accompained them. Written consent was obtained from those parents who were able to understand the scales or fill them out with the help of someone they knew.

Surgeons applied Modified Yale Preoperative Anxiety Scale and Smiley Faces Scale to all the patients 30 minutes before the surgery (Chapman and Kirby-Turner, 2002). 30 minutes prior to the surgery the parents were given The State-Trait Anxiety Inventory (STAI) and their points were added up.

Modified Yale Preoperative Anxiety Scale and Smiley Faces Scale, which enable the doctors to observe and evaluate the behaviors of the patients before the surgery, were applied to patients 30 minutes prior to the surgery. To evaluate the anxiety levels of the parents, the literate ones were given STAI-1 (The State-Trait Anxiety Inventory) 30 minutes before the surgery. The illiterate ones were read STAI-1 (The State-Trait Anxiety Inventory) by the doctors in a quiet room 30 minutes prior to the surgery in the presence of someone they knew. All the patients were given 0.01 mg/kg midazolam and 10 mg ketamine in the preoperative room before they were separated from their parents and then taken to the operating room. To monitor the vital parameters of the patients in the operating room, peripheral pulse oximeter, ECG and non-invasive arterial blood pressure monitoring methods were used.

This study excluded patients who were operated on only once or more than six times; patients who had previous surgery in their anamnesis and their parents, parents who could not be contacted, parents who had previously received psychiatric treatment due to anxiety, and parents whowere being treated for a chronic disease.

Statistical analysis
The Statistical Package for the Social Sciences software version 16.0, Chicago, IL, USA was used. The data was analyzed in terms of correspondence to normal distribution. Demographic data has been presented about the duration of anesthesia, the severity and percentage of the burns, average surgery time and standard deviation; gender has been presented in numbers and percentages.

Cronbach's Alpha was used to measure reliability of the scale. The Independent Samples Test was used to compare the means of two independent groups in order to determine whether there was statistical evidence that the associated population means are different, and Mann Whitney U test was used when the assumptions could not be met. Levene's Test was used to evaluate the homogenity of the two study groups. Statistical significance level was chosen as $p \geq 0.05$ in all tests.

Results

From the patients included in the study, 90 were male (45 %) and 110 were female (55 %). The age of the patients varied between 2 and 15, and the mean age was 4,32 ± 3. The causes of burn injuries were hot water (79,8 %), hot food (10.9), flame (4.4 %), hot milk (1.5 %) and others (3.4 %). (Figure 1 - next page)

The mean surgery duration was 28.69 minutes, the mean hospital stay was 6.36 days, the mean number of surgeries was 2.56, the mean burned total surface area was 9.75 %, the mean burn depth was 2.17, and the mean age was 4.32. (Table 1 - next page)

Figure 1: Distribution of the Causes of Burns

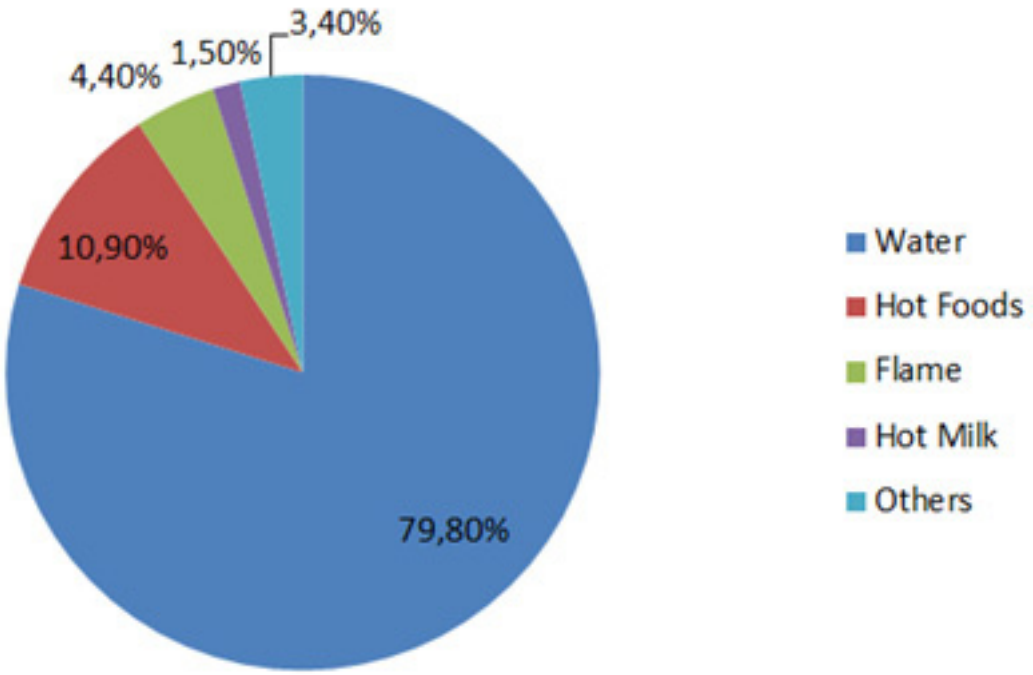


Table 1: Descriptive Statistics

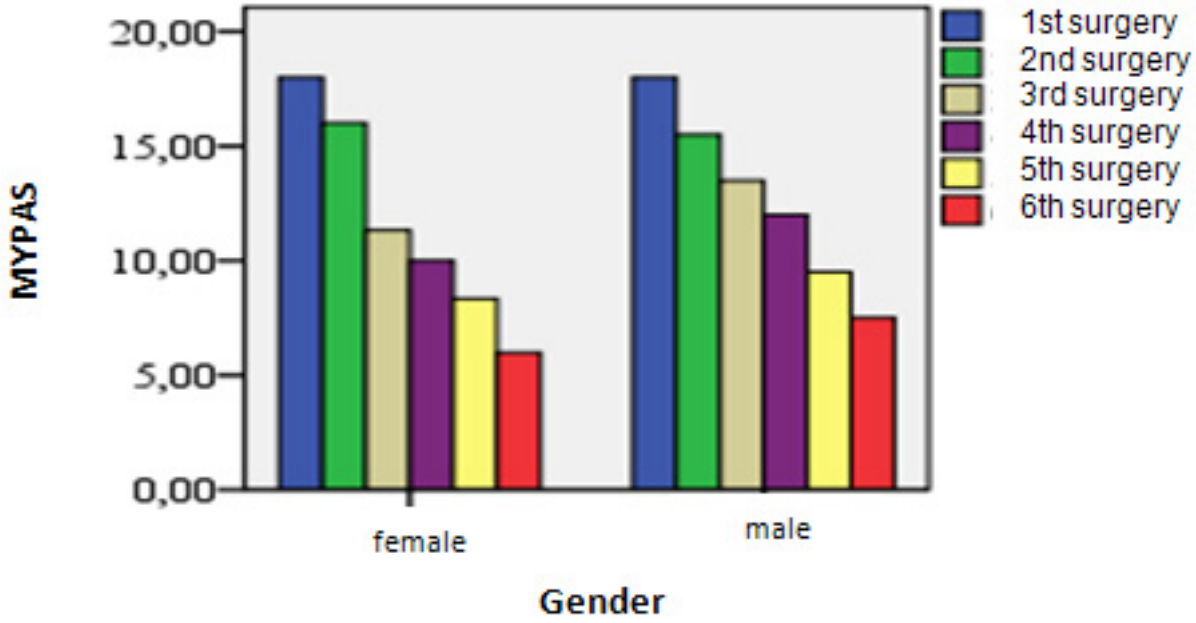
	N	Minimum	Maximum	Mean	Standard Deviation	Variance
NUMBER OF SURGICAL PROCEDURES	200	2.00	6.00	2.5600	1.08544	1.178
DURATION OF SURGERY (MINUTES)	200	15.00	52.00	2.6900	7.29619	61.052
HOSPITAL STAY(DAY)	200	2.00	50.00	6.3600	7.11169	52.234
TOTAL BURNED SURFACE AREA (%)	200	2.00	35.00	9.7500	6.35383	40.371
BURN DEPTH	200	2.00	3.00	2.1700	.37753	.143
AGE (YEAR)	200	2.00	15.00	4.3200	2.99117	8.947
NUMBER OF CHILDREN	200	1.00	10.00	3.5900	1.84279	3.396

The education level of the parents included in the study are as follows: 54% of the mothers were illiterate, 34% were primary school graduate, 10% were high school graduate and 2% were university graduate; 18% of the fathers were illiterate, 57% were primary school graduate, 23% were high school graduate, 2% were university graduate.

70% of the families owned the house they lived in, while 30% of the families were renters. 74% of the families had nuclear households and 36% had extended households. 34% of the families migrated to the city they lived in, while 66% of them were born there.

It can be seen that the mean scores in the Modified Yale Preoperative Anxiety Scale decreased in both female and male patients as they went through multiple surgeries (Figure 2

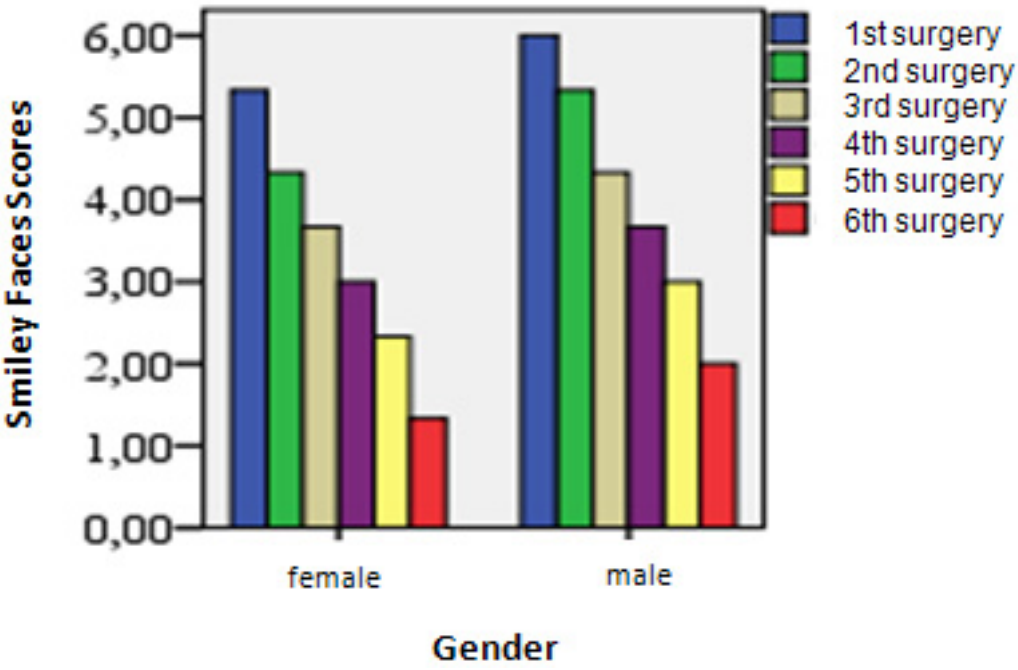
Figure 2: Comparison of the Modified Yale Preoperative anxiety levels in female and male patients



Mann Whitney U Test was used to compare the differences in the anxiety levels of female and male patients. The results of the comparison between the anxiety levels of females and males showed $p>0.05$ in all preoperative scores and no significant statistical difference was found between the two groups.

When the Smiley Faces Scale scores were compared, it can be seen that the anxiety levels of both female and male patients decreased with multiple surgeries (Figure 3).

Figure 3: Comparison of Smiley Faces Scale scores of female and male patients



Mann Whitney U Test was used to compare the differences in the anxiety levels of female and male patients. The results of the comparison between the anxiety levels of females and males showed $p>0.05$ in all preoperative scores and no significant statistical difference was found between the two groups.

There is a statistical correlation between Modified Yale Preoperative Anxiety Scale and Smiley Faces Scale ($p<0.05$) (Chapman and Kirby-Turner, 2002).

Table 2: The Correlation between Smiley Faces Scale and Modified Yale Preoperative Anxiety Scale

Number of Surgical procedures	N	Minimum	Maximum	Mean	Standard Deviation	Variance
m-YPAS 1	200	5,00	22,00	14,0500	3,48264	12,129
m-YPAS 2	200	5,00	20,00	10,1400	3,51338	12,344
m-YPAS 3	58	5,00	20,00	10,4138	3,36492	11,323
m-YPAS 4	26	5,00	14,00	9,0769	2,84199	8,077
m-YPAS 5	12	6,00	10,00	8,5000	1,64317	2,700
m-YPAS 6	10	5,00	8,00	6,6000	1,14018	1,300
SMILEY FACES 1	200	2,00	6,00	4,9900	,95869	,919
SMILEY FACES 2	200	1,00	6,00	3,2700	1,20483	1,452
SMILEY FACES 3	58	2,00	5,00	3,2414	,91242	,833
SMILEY FACES 4	26	2,00	4,00	2,7692	,83205	,692
SMILEY FACES 5	12	2,00	4,00	2,6667	,81650	,667
SMILEY FACES 6	12	1,00	3,00	1,6667	,81650	,667

In this study, Modified Yale Preoperative Anxiety Scale and Smiley Faces Scale were used to determine the preoperative anxiety levels of the patients. It was found that the mean anxiety scores of patients measured prior to each surgery declined as they underwent multiple surgical procedures (Cronbach's Alpha=0.954) (Table 2).

When the results of STAI-1 questionnaires that were filled out 30 minutes prior to the surgery were analyzed with the Student's T Test, they showed homogeneity of variance according to the Levene Test ($p>0.05$). No significant statistical difference was found between parents' level of education and their anxiety levels ($p>0.05$).

It was found that 23% of the groups worked for minimum wage or above the minimum wage, while 77% earned less than the minimum wage. The parents in the study were homogenously grouped in terms of their income level (Levene Test $p>0.05$) and Independent Samples T Test showed no significant statistical difference between the anxiety level of the groups ($p>0.05$). As the number of patients who underwent more than 4 surgeries was not adequate to form an effective sample, those patients were excluded from the study.

34% of the families migrated to the city they lived in, while 66% of them were born there. The families were given Mann-Whitney U Test after the scores of STAI-1 the State-Trait Anxiety Inventory were collected. No significant statistical difference was found between the migrant and native groups ($p>0.05$).

When the Mann-Whitney U Test was applied to the mean scores from STAI-1 The State-Trait Anxiety Inventory of the families who owned a house and those who were tenants, no significant statistical difference was found between the two groups ($p>0.05$).

When the mean scores from STAI-1 inventory of nuclear and extended families were compared with the Mann-Whitney Test, a significant statistical difference was found ($p<0.05$) (Table 3).

Table 3: STAI Anxiety Inventory Scores of Family Types

TYPE OF FAMILY STRUCTURE	N	STAI mean rank	Number of Surgeries
NUCLEAR	148	47,57	1
EXTENDED	52	58,83	1
Total	200		
NUCLEAR	148	46,15	2
EXTENDED	52	62,88	2
Total	200		
NUCLEAR	32	13,12	3
EXTENDED	20	14,10	3
Total	52		
NUCLEAR	16	5,19	4
EXTENDED	10	9,90	4
Total	26		
NUCLEAR	6	2,00	5
EXTENDED	6	5,00	5
Total	12		
NUCLEAR	6	2,00	6
EXTENDED	6	5,00	6
Total	12		

When the anxiety levels of families with 3 and more children and those with fewer than 3 children were compared by Student T test, no significant statistical difference was found between the two groups ($p>0.05$).

When the scores of the parents of children with second and third-degree burns were compared by Student T test, no significant statistical difference was found in patients and their parents ($p>0.05$).

In this study, STAI-1 State-Trait Anxiety Inventory was used to measure the anxiety levels of the parents 30 minutes prior to surgery. Anxiety mean scores which were measured before each surgery were observed to decrease with each surgery (Cronbach's Alpha=0.838).

Discussion

The main purpose of this study was to determine the anxiety levels of children who underwent surgery due to burn injuries, and of their parents, and to find out the changes in the anxiety levels through multiple surgical procedures. The results of this study show that the anxiety levels of the burn injury patients and their parents decrease with each surgery the patient undergoes. Caumo and his colleagues found out that 346 of the 592 patients who underwent elective surgery had previous surgical operations and that the anxiety levels were lower in this group. They explained the lower anxiety levels in patients who had undergone surgery before with conditional learning model (9). Erdem and his colleagues also obtained similar results and reported that previous surgical experience decreases preoperative anxiety. The study conducted by Duman and his colleagues supported the conditional learning model and reported that the patients who had undergone surgery previously had lower anxiety levels (10, 11). According to the definition of conditional learning model, an unconditional fear stimulus must be encountered at short intervals. In this study, we measured the m-YPAS mean scores of the patients who had surgery for the first time as 14±3.5 and their Smiley Faces Scale mean scores as 5±0.9. M-YPAS mean scores were measured 10±3.5 in the second surgery, 10±3.3 in the third surgery, 9 in the fourth surgery, 8.5 in the fifth surgery, and 6.6 in the sixth surgery. Smiley Faces Scale mean scores of the patients were measured 3.27 in the second surgery, 3.24 in the third surgery, 2.76 in the fourth surgery, 2.66 in the fifth surgery, and 1.66 in the sixth surgery. Smiley Faces and m-YPAS scales were correlated and as the number of surgical procedures goes up, the mean scores go down. We also think that this situation is related to the fact that the patients learn through encountering the fear stimulus at short intervals.

Li and Lam measured the mean preoperative state anxiety level as 43.7 in their study on 112 pediatric patients and their parents. It was reported in the study conducted by Karaca Çiftçi and her colleagues that the parents with children who were to undergo a surgical intervention experienced a moderate-level anxiety (the state anxiety mean score was determined as 44.07). The findings of these studies are similar to our anxiety mean score prior to the first surgery (The state anxiety mean score 48.9±7.29) (12,13).

In our literature review we could not find any studies which explained the reasons behind the change in the anxiety levels of parents with children who underwent multiple surgeries. Studies in this area generally focus on the anxiety levels prior to a single surgery. This study is the first to investigate this subject. This study concludes that the anxiety levels of parents decrease as their children undergo multiple procedures.We think that this decrease is related to the decrease in their children's pain, healing of their wounds, their getting used to the hospital environment, the interval between the surgeries, and the conditional learning model.

In the case study Aygıt and his colleagues carried out, the most common cause of burn injuries among 145 patients under the age of 12 that were admitted to the burn center was scalding (86%). They reported the shortest hospital stay among the cases as 1 day, the longest stay as 48 days and the mean length of stay as 14.5±8.07; the mean number of surgery as 3.97±3.03, the mean percentage of burns as 6.68% (14). In this study, the most common cause of burn injuries was scalding (79.8%). The shortest hospital stay of the cases was 2 days, the longest hospital stay was 50 days, the mean length of hospital stay was 6.36±7.1 days, the mean number of surgeries was 2.5±1, the mean percentage of burns was 9.7±6.3, all of which are similar to the findings of Aygıt and his colleagues. In the same study, Aygıt and his colleagues pointto the fact that extended family model may have a negative impact on the pediatric burn injuries and may increase the preoperative anxiety (14). Similar to the findings of Aygıt and his colleagues, we also found that the anxiety level was significantly higher in the extended family structure ($p>0.05$).

When we look into the burn degrees of the patients admitted to the burn center, Demirel and his colleagues assessed 227 patients staying in the burn center and saw that 60.8% of them had second-degree burns and 39.2% had third-degree burns (15). In this study, 83% of the patients had second-degree burns and 17% had third-degree burns. According to the data we obtained in our study, we saw that second-degree burns were more common. We think that is because first-degree burns are ignored in our society or the patients are treated at home after the initial treatment is provided in the emergency room.

Şayık and his colleagues reported that out of the 1,121 pediatric patients aged between 0 and 18 who went to the emergency room, 56.4% were male and 43.6% were female. The size of the burned body surface area was commonly 10-19% (16). In our study, 45% of the patients were male and 55% were female. In our patients the highest percentage of burned body surface area was below 10. Although we had a different statistic from Şayık and his colleagues, we could not find a meaningful correlation between gender and burned body surface area, contrary to their findings. We think that the reason for the lower percentage of burned body surface area in our study is the fact that our intensive care unit does not hospitalize patients with large burn areas because of the physical conditions of the unit.

While Demir and his colleagues who analyzed the connection between level of education and preoperative anxiety on a group of 100 patients pointed out that anxiety level increased with an increasing level of education, in the study conducted by Turhan and his colleagues which included 120 patients it was found that educational level of the patients did not affect preoperative anxiety levels. In our study, we compared the anxiety levels of the parents who received education for at least five years with those who studied over a five year period, we identified that there was no connection between the anxiety levels of parents and their level of education (17, 18).

Unlike Demir and his colleagues, we could not see a statistically significant relation between socioeconomic status and preoperative anxiety. There can be great differences in the socioeconomic status of people in the society. Besides, burn injuries can occur in both low and high income households (18). When our findings were evaluated, we can say that anxiety levels are not related to income.

Karaca Çiftçi and her colleagues compared parents with 3 or more children (67.5%) with those with fewer than 3 children (%32.5) in terms of preoperative anxiety levels and found that those with a higher number of children had a higher level of anxiety. They stated the reason for that as the decrease in the time allocated to other children (12). In our study 65% of parents had fewer than 3 children and there was no significant statistical difference between the two groups.

We think that the anxiety levels of the patients and their parents are not affected by demographic variables and severity of burns because the initial treatment is provided timely, the patients receive the right dosage of analgesic medications, and both the patients and their parents adjust to the burn center. We also think that the lack of difference between the anxiety levels of the patients can be because our burn center staff accompany the patients to their rooms, show them around the room and give them orientation to the center; the patients can reach the nurses whenever they need and they are given information about everything; the primary doctor and the anaesthetist visit the patients in their rooms prior to and after the surgery.

When different scales and studies are considered, it is hard to make meaningful comparisons among the findings of anxiety studies due to the differences in scales, methods and procedures. Scales differ in terms of the measurement of response type, the process conducted, and their implementation. In our study, STAI-1 state-trait anxiety inventory was used to measure the anxiety levels of the parents and Modified Yale Preoperative Anxiety Scale and Smiley Faces Scale were used on pediatric patients. The scores of the anxiety scales used on pediatric patients may vary as they were based on the observations of the doctors. When these possible differences in scores and the fact that there is little research available on the anxiety caused by multiple surgical procedures are taken into consideration, we think that more studies are required to verify our findings.

There were two major limitations of the study. Firstly, as it was carried out only in the burn center of our research hospital, the results of the study cannot be generalised to other burn patients. Secondly, the study was really time-consuming as it involved patients with burn injuries.

Conclusion

In this study which focused on the measurement and evaluation of the anxiety levels of preoperative patients and their parents and on whether there were statistically significant differences based on the distinct qualities of patients and their parents, we found out that there were no statistically significant differences in the anxiety levels of the groups when they were compared in terms of education level, home ownership, migration status and income. When the family structures were compared, the results demonstrated a statistically significant difference in anxiety levels of members of extended families and nuclear families, and it was revealed that the anxiety levels in the extended family structure were higher ($p<0.05$). In the study, the mean score of the STAI-1 anxiety scale was measured as 48.9±7.29 for the parents, and the mean score of the m-YPAS scale was measured as 14±3.5 and that of Smiley Faces Scale measured as 4.9±0 for the pediatric patients prior to the first surgery, and we concluded that the anxiety levels decreased with multiple surgeries.

References

1-) Alvi T, Assad F, Aurang Zeb, Malik MA. Anxiety and depression in burn patients. J. Ayub Med Coll Abbottabad. 2009 Jan-Mar; 21(1):137-41

2-) Vijay Krishnanoorthy, Ramesh Ramaiah, and Sanjay M Bhananker. Pediatric burn injuries. Int J. Crit ILL Inj Sci. 2012 Sep-Dec; 2(3):128-134.

3-) Spitzer RL., Kroenke K., Williams JB., Lowe B. A brief measure for assessing generalized anxiety disorder: the GAD-7. Arch Intern Med. 2006;166:1092–1097.

4-) Carlsson A, Udén G, Håkansson A, Karlsson ED. Burn injuries in small children, a population-based study in Sweden. J Clin Nurs. 2006;15:129–34.

5-) Solotkin, K.C. and Knipe, C.J. (2000). Patient with Burns. S.M. Lewis, M.M. Heitkemper, and S.R. Dirksen (Ed.). Medical Surgical Nursing (Fifth Edition) Assessment and Management of Critical Problems. (s.523-550). St. Louis: Mosby Harcourt Health Science.

6-) Stoddard FJ, Sheridan RL, Saxe GN, et al. Treatment of Pain in Acutely Burned Children. J Burn Care Rehabil 2002; 23:135-156.

7-) Rehberg S, Maybauer MO, Enkhbaatar P, Maybauer DM, Yamamoto Y, Traber DL. Pathophysiology, management and treatment of smoke inhalation injury. Expert Rev Respir Med. 2009;3:283–97.

8-) Robert R, Blakeney P, Villareal C, Meyer W. 3rd. Anxiety: Current practices in assessment and treatment of anxiety of burn patients. Burns.2000 Sep; 26(6):549-52.

9-) Caumo W. Schmidt AP, Schneider CN, et al. Risk factors for preoperative anxiety in adults. Anaesthesia 2001; 56: 720-728.

10-) Erdem D, Ugiş C, Albayrak D, Akan B, Aksoy E, Göğüş N. The effects of anesthesia procedures in preoperative and postoperative anxiety and pain levels in perianal surgery patients. Medical Journal of Bakırköy. 2011, 7:11-16.

11-) Duman A, Öğün Ö. C, Şahin K. T, Şarkılar G, Ökeşli S.Preoperatif korku ve endişeyi etkileyen faktörlerin değerlendirilmesi. SÜ Tıp Fak Derg. 2003;19:21-26.
12-) Esra Karaca Çiftçi, Diler Aydın, Hülya Karataş. Determining the Reasons of Anxiety and Anxiety States of the Parents with Children Undergoing a Surgical Intervention , J Pediat Res 2016; 3(1):23-9.
13-) Li HC, Lam HY, Paediatric day surgery: impact on Hong Kong Chinese children and their parents . J Clin Nurs 2003; 12:882-7.
14-) Çocuklarda Yanık Epidemiyolojisi ve Yanık Oluşumundaki Sosyoekonomik Faktörler A.C. Aygıt, E.Y. Sıkar, H E Sıkar, E.Ş. Mercan, M. Sağır Bağcılar Eğitim ve Araştırma Hastanesi Plastik Rekonstrüktif ve Estetik Cerrahi Kliniği, Afyon Karahisar Devlet Hastanesi Plastik Cerrahi Servisi, Afyon Karahisar Devlet Hastanesi Genel Cerrahi Servisi
15-) Demirel Y, Çöl C, Özen M. Evaluation of the Patients Treated in the Ankara Numune Hospital Burn Centre in One Year. Medical Journal of Cumhuriyet University 2001; 23(1): 15-20.
16-) Şayık D, Açıkgöz A, Musmul A, Ulukuş A, Yanık ile Acile Başvuran 0-18 Yaş GruBu Olgularının Özelliklerin Geriye Dönük Belirlenmesi. Düzce Üniversitesi Sağlık Bilimler Enstitüsü Dergisi. 2016; 6(1): 14-18.
17-) Turhan Y, Avcı R, Özcengiz D.The relationship between preoperative and postoperative anxiety, and patient satisfaction in preparation for elective surgery. Anesthesia Journal. 2012, 20 (1): 27-33.
18-) Demir A, Akyurt D, Ergün B, Haytural C, Yiğit T, Taşoğlu Ş, Elhan, A. H, Erdemli Ö. Anxiety therapy in cardiac surgery patients. Turkish Journal of Thoracic and Cardiovascular Surgery Journal. 2010, 18 (3): 177-182.