Düşünen Adam The Journal of Psychiatry and Neurological Sciences 2012;25:312-320
DOI: 10.5350/DAJPN2012250403



# Quality of Life and Anxiety Levels in Children after Day Surgery

Ayşe Burcu Ayaz[1], Onursal Varlıklı[2]

[1]Child and Adolescent Psychiatrist, Sakarya University Training and Research Hospital, Sakarya - Turkey
[2]Pediatric Surgeon, Sakarya University Training and Research Hospital, Sakarya - Turkey

**ABSTRACT**

Quality of life and anxiety levels in children after day surgery

**Objective:** Day surgery distinguishes from major surgery with the low risk of complications and short healing time after the intervention. Children's and their mothers' anxiety levels increase and children's quality of life diminishes after major surgeries. In this study, we aimed to evaluate the anxiety levels of the children and their mothers', and the children's quality of life before and one month after the day surgery.

**Method:** In our study, 32 children (6 girls, 26 boys) aged 7–12 years who were hospitalized for day surgery in Children Surgery Clinic of Sakarya University Training and Research Hospital constituted the sample group. Before the day surgery, Childhood Behavior Checklist; before and one month after the day surgery, State and Trait Anxiety Inventory (STAI), State and Trait Anxiety Inventory for Children (STAI-C), and Pediatric Quality of Life Inventory (PedsQL)-parent report were completed.

**Results:** There was not any significant difference between the scores of STAI, STAI-C, PedsQL total scale and PedsQL physical health summary before the day surgery and one month after the day surgery. The psychosocial health summary score (PSS) before the day surgery was found to be higher than the PSS one month after the day surgery. STAI total score predicted PSS score.

**Conclusion:** It was revealed that after day surgery, children's psychosocial quality of life deteriorates and it was affected by maternal anxiety level. Therefore, mothers should be informed about the consequences of surgical operation and precautions should be taken to protect the academic skills, peer relationships, and family functioning of children.

**Key words:** Day surgery, quality of life, anxiety level, child

**ÖZET**

Günübirlik cerrahi sonrası yaşam kalitesi algısı ve kaygı düzeyi

**Amaç:** Günübirlik cerrahi (GC), komplikasyon riskinin düşük olması ve ameliyat sonrası iyileşme süresinin kısa olması nedeniyle büyük cerrahi girişimlerden ayrılmaktadır. Büyük cerrahi girişimler sonrasında çocukların ve annelerinin kaygı düzeyi artmakta ve çocukların yaşam kalitesi bozulmaktadır. Bu çalışmada, GC öncesinde ve bir ay sonrasında çocukların ve annelerinin kaygı düzeylerinin ve çocukların yaşam kalitelerinin değerlendirmesi amaçlanmıştır.

**Yöntem:** Çalışmanın örneklem grubunu, Sakarya Üniversitesi Eğitim ve Araştırma Hastanesi Çocuk Cerrahisi Servisi'ne GC amacıyla yatışı yapılan 7-12 yaş grubu 32 çocuk (6 kız, 26 erkek) oluşturdu. GC öncesi Çocukluk Çağı Davranış Değerlendirme Ölçeği, GC öncesi ve bir ay sonrasında Durumluk-Sürekli Kaygı Ölçeği (DSKÖ), Çocuklar İçin Durumluk-Sürekli Kaygı Ölçeği (Ç-DSKÖ) ve Çocuklar İçin Yaşam Kalitesi Ölçeği (ÇİYKÖ) Ebeveyn Formu dolduruldu.

**Bulgular:** GC öncesinde ve 1 ay sonrasında DSKÖ, Ç-DSKÖ, ÇİYKÖ ölçek toplam puanı ve ÇİYKÖ fiziksel sağlık toplam puanı arasında anlamlı bir fark saptanmadı. GC öncesindeki ÇİYKÖ psikososyal sağlık toplam puanı (PSTP), bir ay sonrasındaki PSTP değerlerine kıyasla daha yüksek bulundu. DSKÖ toplam puanının PSTP puanı ile ilişkili olduğu belirlendi.

**Sonuç:** GC sonrasında çocukların psikososyal yaşam kalitelerinin azaldığı ve annenin kaygı düzeyinden etkilendiği gösterilmiştir. Bu nedenle, anneler cerrahi uygulamanın sonuçları ile ilgili bilgilendirilmeli ve cerrahi sonrası çocukların akademik becerilerini, arkadaş ilişkileri ve aile işlevselliklerini korumaya yönelik önlemler alınmalıdır.

**Anahtar kelimeler:** Günübirlik cerrahi, yaşam kalitesi, kaygı düzeyi, çocuk

Address reprint requests to:
Child and Adolescent Psychiatrist, Ayşe Burcu Ayaz, Sakarya University Training and Research Hospital, Child Mental Health and Diseases Outpatient Clinic, Korucuk Campus, Sakarya - Turkey

Phone: +90-264-255-2106/2323-2322

E-mail address: drburcu2000@yahoo.com

Date of receipt: March 17, 2012

Date of acceptance: April 27, 2012

## INTRODUCTION

Day surgical (DS) procedures are procedures which provide appropriate patients to undergo pre-planned surgery and have them discharged within same day. DS is increasingly being utilized due to short duration of recovery, safety and low amount of health expenses (1). Children are suitable patients for DS because of their better health status relative to adults and DS is preferred at some pediatric surgical

procedures of genital and inguinal region such as circumcision, undescended testes and hernia reparation due to its simplicity and short duration (2,3).

Surgical procedures are operations frightening children and their parents and cause avoidance behaviors in children. Children who have difficulty to perceive abstract concepts such as illness and death may find hospitalization and surgical procedures particularly traumatic and may experience feeling of being lost. Age, developmental level, previous hospital admissions and frequency of encountering medical personel affect anxiety level of the child when being admitted to hospital (4). It was reported that traumatic symptoms are observed and anxiety level rises in mothers of children undergoing surgical procedures (5,6). Mothers are more anxious than fathers in general and anxiety level of mother is higher if the child undergoing surgical procedure is under one year old and the procedure is the first in life. Increase in anxiety level of parents during surgical procedure is also found to be correlated with anxiety level of child (7). DS is different from major surgical procedures due to short duration of children being apart from their families after surgery, lower exposure to unpleasant factors such as injection and returning back to daily activities in a shorter time (8,9).

It was reported that social, emotional, motor and cognitive functions and quality of life of children are impaired after major surgical procedures (10,11). Karahan et al. (12) reported that patients do not experience difficulty in performing daily activities of life after DS. No study was found in the literature regarding quality of life after DS in children. DS is suggested to affect quality of life compared to major surgeries due to shorter duartion of recovery, less number of complications and returning back faster to daily activities. However, risk factors of children regarding surgery, post-operative anxiety levels of both children and their mothers may negatively affect quality of life of children after DS. We aimed to evaluate anxiety levels of both children and their mothers and quality of life of children before and one month after.

## MATERIAL AND METHODS

### Sample

Our study group consisted of children between 7 and 12 years old who were admitted to Sakarya University Training and Research Hospital Pediatric Surgery Clinic for DS between January 2011 and January 2012. Children admitted to clinic and their mothers were informed about the study. Thirty-five children (6 girls, 29 boys) agreed to participate in the study and their mothers were interviewed before DS. Socio-demographic form and information from about surgery were completed by pediatric surgeons during the interview. Childen and their mothers were also informed about chid's status, risks of surgery, possible post-operative complications and units which will be applied during interview. Children were required to complete State and Trait Anxiety Inventory for Children (STAI-C) and mothers were required to complete Childhood Behavioral Assessment Scale, State and Trait Anxiety Inventory (STAI) and Pediatric Quality of Life Inventory (PedsQL)-parent report after interview. Children and their mothers were invited to pediatric surgery outpatient clinic one month after DS for follow-up. Thirty-two children (6 girls, 26 boys) who were followed-up were required to complete STAI-C, STAI and PedsQL follow-up forms after evaluating the previous month. Clinician reviewed forms after forms were completed. Approval was taken from Sakarya University Ethical Commitee (no-050.01.04/16).

### Scales

**StateTrait Anxiety Inventory (STAI):** This scale was developed by Spielberger et al. (13) to determine current and continuing anxiety levels and adapted to Turkish by Öner and LeCompte (14). Higher scores achieved from the scale indicate a higher level of anxiety. StateTrait Anxiety Inventory was used to determine anxiety levels of mothers.

**StateTrait Anxiety Inventory for Children (STAIC-S):** This inventory was developed by

Spielberger in 1973 (15). Its validity and reliability study was done by Özusta in 1995 (16). Validity and reliability studies of scale was done by 724 children in total who were going to 3, 4, 5 and 6th grades of primary school. These studies can be adapted to individuals or groups as well.

**1. Trait Anxiety Scale:** It aims to assess predisposition to anixety as wel as individual differences. Scale consists of 20 items in total. It generally assesses the child's feeling according to its frequency of occurrence. Expressions such as "I get nervous at home" or "My hands shake" are responded by "nearly never", "sometimes" and "often" options. Scores can be achived from scale are between 20 and 60; increasing scores indicate an increase in continuous anxiety.

**2. State Anxiety Scale:** Children are required to evaluate how they currently feel themselves and select the most apriopriate option of "I feel very angry", "I feel angry", "I do not feel". Total number of items is 20. The least possible score is 20 and the highest possible score is 60.

**Pediatric Quality of Life Inventory Scale (PedsQL) – Parents Form:** This scale was administered to mothers of children participated in the study to assess quality of life of children. This is a quality of life scale developed in 1999 by Varni et al. (17) to assess health-related quality of life of children and adolescents between 2 and 18 years old. Inner consistency of PedsQL was reported to be high, valid and sensitive. Turkish validity and reliability study of PedsQL was done in two separate studies by Üneri (18) and Memik (19). Different parent forms for 2-4, 5-7 and 8-12 age groups are available and this form evaluates perception of parents about quality of life of the child. Five-item Likert scale is used in scale. Each item is scored in reverse and takes a score between 0 and 100 (0=100, 1=75, 2=50, 3=25, 4=0). Higher scores from scale indicate better health-related quality of life (HRQoL). Physical Health Total Score (PHTS) is obtained by dividing total score of functionality section to number of items; Psychosocial Health Total Score (PSHTS) is obtained by adding emotional functionality, social functionality and school functonality and dividing this sum to total number of items and Total Scale Score (TSS) is obtained by adding scores of all items in the scale and dividing the sum to total number of items. PHTS assesses physical functionality of children. PSHTS assesses emotional changes, relationship with friends, academic performance and attendance to school of children. If the number of items responded is lower than 50% of total items then scale is not scored.

**Child Behavior Check List (CBCL):** This scale was developed by Achenbach and Edelbrock (20) to evaluate competency areas and problematic behaviours of children and adolescents between 4 and 18 years old according to information obtained from parents. Adaptation and standardization for Turkish children was done by Erol et al. (21). Two separate behavioural symptom scores are obtained from scale which are internalizing and externalizing problems. Sum of Social Introvercy, Somatic Complaints and Anxiety/Depression sub-tests make up Internalizing Problems group and sum of Criminal Behaviors and Aggressive Behaviors sub-tests make up Externalizing Problems group. Moreover, there are also sub-scales such as Social Problems, Ideational Problems, Attention Problems and Sexual Problems which are not included in both groups. Total Problem Score is obtained from sum of all sub-scales. Sixty points or more in Internalizing, Externalizing and Total Problem areas and 65 points or more in sub-scales indicate clinical problems.

**ASA Score**

American Anesthesiology Association (ASA) scoring is a scoring system being used since 1963 to evalaute risk factors of patient in surgical procedures. Risk factors of patient is scored between 1 and 5 in ASA scoring: 1, normal healthy patient; 2, mild systemic disease; 3, severe systemic disease; 4, continously life-threatening systemic disease not responding to treatment and 5, patient not expected to live more than 24 hours either undergoing surgery or not (22). ASA scoring was used to evaluate medical risk factors of patient group in our study.

### Statistical Analysis

Data were analyzed by Statistical Program for Social Sciences-SPSS for Windows v13.0 software. Mean values of study group and statistical significance between follow-up data were analyzed by Wilcoxon test and Multiple Simple Regression Analysis. Statistical significance level was taken as $p<0.05$ in our study.

## RESULTS

A total 32 children were participated in the study. Mean age of children participated in the study was 9.34±1.35. Mean number of family members of children participated in the study was 4.34±1.18. Children participated in the study were not undergone any previous surgical procedure. Socio-demographic characteristics and reasons of day surgery of cases and their families are summarized in Table 1.

When emotional and behavioral problems of children are considered, 43.8% of study group (mean±SD, 57.13±11.14) were found to have clinical problems. There were internalizing problems in 28.1% (54.63±10.02), externalizing problems in 31.3% (54.41±11.07), social introvercy in 12.5% (54.19±8.11), anxiety/depression in 18.8% (59.63±8.61), criminal behaviours in 3.1% (54.31±8.60), aggressive behaviours in 18.8% (57.63±8.69), social problems in 12.5% (mean 57.03±8.79), ideational problems in 18.8% (58.19±10.27), attention problems in 12.5% (57.16±7.19). Clinical somatic complaint was not detected in children (52.31±3.88).

When PedsQL mean scores were evalauted, no significant difference was found between mean TSS

**Table 1: Socio-demographic characteristics, ASA scores and causes of day surgery of children and their families undergoing day surgery**

| Socio-demographic characteristics | | n | % |
|---|---|---|---|
| Gender | Boys | 26 | 81.2 |
| | Girls | 6 | 18.8 |
| Educational level of mother | Primary School | 11 | 34.4 |
| | Secondary School | 5 | 15.6 |
| | High School | 12 | 37.5 |
| | University | 4 | 12.5 |
| Working status of mother | Employed | 12 | 37.5 |
| | Unemployed | 20 | 62.5 |
| Educational level of father | Primary School | 8 | 25.0 |
| | Secondary School | 5 | 15.6 |
| | High School | 7 | 21.9 |
| | University | 12 | 37.5 |
| Monthly income (Turkish liras) | 0-500 | 3 | 9.4 |
| | 500-1000 | 11 | 34.4 |
| | 1000-1500 | 7 | 21.9 |
| | 1500-2000 | 5 | 15.6 |
| | >2000 | 6 | 18.8 |
| Psychiatric admission at family members | | 5 | 15.6 |
| ASA score | 1 | 29 | 90.6 |
| | 2 | 3 | 9.4 |
| Reason for admission | Circumcision | 18 | 56.3 |
| | Undescended testes | 3 | 9.4 |
| | Circumcision + Undescended testes | 7 | 21.9 |
| | Inguinal hernia | 2 | 6.3 |
| | Mass excision | 2 | 6.3 |

**Table 2: Anxiety levels of children and their mothers before and after DS and mean quality of life scores of children**

| | Before DS | After DS | Test statistics, p value |
|---|---|---|---|
| PedsQL STS | 77.89±14.14 | 74.29±17.41 | Z=-1.787, p= 0.074 |
| PedsQL PHTS | 74.61±20.77 | 71.09±22.96 | Z=-0.933, p= 0.351 |
| PedsQL PSHTS | 79.64±14.38 | 75.99±17.00 | Z=-1.966, p= 0.049 |
| STAI-C | 30.24±5.56 | 27.63±5.90 | Z=-1.915, p= 0.055 |
| STAI | 39.10±10.43 | 34.47±9.36 | Z= -1.851, p= 0.064 |

PedsQL STS: Quality of life scale for children total score, PedsQL PHTS: Quality of life scale for children physical health total score,
PedsQL PSHTS: Quality of life scale for children psychosocial health total score, STAI-C: State trait anxiety inventory for children, STAI: State trait anxiety inventory.

**Table 3: Factors affecting psychosocial quality of life after day surgery**

| Independent varaibles | Non-Standardized Coefficient | | Standardized Coefficient | p | Confidence Interval 95% | t | VIF |
|---|---|---|---|---|---|---|---|
| | Beta | | Beta | | | | |
| (Constant) | 120.055 | 23.114 | | <0.001 | (72.351)-(167.760) | 5.194 | |
| Age | -0.144 | 2.016 | -0.011 | 0.944 | (-4.305)-(4.018) | -0.071 | 1.064 |
| Gender | -1.532 | 8.009 | 0.033 | 0.850 | (-18.062)-(14.998) | -0.191 | 1.399 |
| ASA score | -6.654 | 9.547 | -0.117 | 0.493 | (-26.358)-(13.050) | -0.697 | 1.288 |
| STAI | -1.276 | 0.309 | -0.684 | <0.001 | (-1.914)-(-0.638) | -4.127 | 1.259 |
| STAI-C | 0.384 | 0.474 | 0.130 | 0.426 | (-0.594)-(1.362) | 0.810 | 1.186 |

**R= 0.690, $R^2$= 0.476, F=4.358, P=0.006, Durbin-Watson=2.040**

STAI-C: State trait anxiety inventory for children (after day surgery),
STAI: State trait anxiety inventory (after day surgery)

and PHTS scores before and one month after DS (p=0.074 and p=0.351, consecutively). PHTS scores of childfren before DS were found significantly higher than PHTS scores after one month (p=0.049). Anxiety levels before and one month after DS were found similar for both children and their mothers (p=0.055 and p=0.064, consecutively) (Table 2).

Variables which may affect PSHTS in the study group such as age, gender, ASA score, total STAI score and total STAIC-S score were analyzed by multiple regression analysis. Variable affecting PSHTS was found to be total STAI score (Table 3).

## DISCUSSION

Surgical procedures administered to children are reported to affect anxiety levels of children and mothers and quality of life of children (11,23,24). Studies mainly focused on anxiety level and quality of life after major surgical interventions such as congenital anomaly reparation, orthopedic surgery and trauma surgery (6,25,26,27). Increasing frequency of DS in recent years attract attention to changes in daily functions of children after DS. Conflicting results were reported in studies evaluating quality of life after major surgical procedures in children. There are studies reporting impairment in quality of life of children after major surgical procedures (10,28). In a study by Çavuşoğlu et al. (29), patients were evaluated at least 2 years after congenital anomaly reparation and although no impairment was found in general and physical functionality of children, their quality of life in psychosocial area was found to be diminished. Landolt et al. (30) examined quality of life of children mean 7 years after congenital heart disease surgery and reported no impairment. It was reported that quality of life of children is impaired after major surgical procedures but child adapts to new situation unless limitation is too severe and quality of life become eventually similar to peers (31,32). Post-operative medical variables and family relations were also shown to affect quality of life (30). When quality of life after DS is evaluated, no impairment in general and physical functionality was found in our study. DS is a type of surgery which physical recovery is rapid due to shorter

duration of procedure, simplicity of interventions and low risk of complication during or after surgery (33). For this reason, evident impairment of physical functionality is not expected in children after DS. However, psychosocial area which consists of emotional functionality, social functionality and school functionality was reported to be impaired. Fear, distress, anger or sorrow after surgery indicate impairment of emotional functionality, impairment of relationship with peers and not being able to play with them indicate impairment of social functionality, inattention at class, not feeling well and not attending school due to medical visits and indicate impairment of school functionality in children. Being far from school and friends even for a short time after DS and emotional effects of surgical procedure on child may explain impairment in psychosocial area. Children are suggested to adapt physical and psychosocial limitations after DS easier than major surgeries. Due to limitation of follow-up duration by one month, recovery process of psychosocial impairment in quality of life is being neglected. It is suggested that children will adapt to new situation over time and their quality of life will become similar to their peers in DS similar to major surgeries. For this reason, there is need for longitudinal follow-up studies investigating quality of life in children after DS.

Hospital admission was reported to create anxiety and fear at children (9). Similarly, every type of surgical intervention has both psychological and physiological consequences on children (34,35). Somatic anxiety symptoms such as rapid breathing, diarrhea and palpitation may be observed during hospital admission. These children were reported to get anxious due to physical harm, undergoing surgical intervention, being separated from family, friends and own environment and exposure to unknown and disturbing operations (36). This anxiety is influenced by developmental level of child and duration of hospital stay (37). Anixety levels of children during and after DS were found similar in our study. In the literature, it was reported that anxiety level of the child increases pre-operatively but informing the child about the procedure decreases anxiety level of him/her (25,38,39). Moreover, it was found that reasoning is more developed in children between 8 and 11 years old compared to 5 and 7 years old and for this reason, anxiety levels are lower at the time of hospital admission (40). Similarly, children of school age were found to have less anxiety and more cooperative compared to smaller children during surgical procedure (41). In a study investigating the correlation between anxiety and coping skills of children with seriousness of surgery, awareness of children about the procedure is higher at minor surgical procedures and they could better cope with them (42). Similar levels of anxiety of children at hospital admission and one month after in our study is suggested to be related with older age group of children, day surgery administration and informing the child about the procedure before administration. Sample group consisting of school-age children in our study might have a positive effect regarding both comprehending his/her current condition cognitively and asking about his/her condition and express him/herself better. In our study, anxiety/depression problems were observed in 18.8% of children according to CBCL. For this reason, it was suggested that clinically evident anxiety symptoms are not observed in majority of children and anxiety levels do not increase before DS. A lower level of anxiety in children is an expected finding due to DS being brief and simple procedures and informing patient pre-operatively. However, utilization of normal control groups when examining anxiety levels will certainly give clearer results.

Surgical procedures are reported to increase anxiety levels of parents of children undergoing surgical procedures (38,39). Mothers are being constrained to adapt new situation, worried about their children's condition and eager to participate at treatment process of their children when being admitted to hospital (24). It was found that anxiety level is decreased when mothers are informed about children's conditions and get participated to treatment (6). We found in our study that state anxiety levels of mothers before and after DS are similar. Being circumcised of nearly all boys in our country, circumcision being a tradition with a symbolic importance and knowledge and experience of mothers abut circumcision surgery may explain why state anxiety of mothers was not affected which circumcision

makes up the majority of our DS experience. Factors reducing anxiety of mothers are short duration of separation of children from their mothers in DS, taking care of children exclusively by their mothers, short duration of post-operative recovery and in our study, informing about condition of children and their mothers, possible complications and institutions which can be applied due to complications. Moreover, psychosocial quality of life of children was found to have affected negatively by increasing anxiety level of the mother after DS in our study. Mothers with high level of anxiety are suggested to be reluctant to send their children to school and allow them to parcticipate at game groups. Continuing anxiety of mothers about their children despite rapid recovery of physical problems affects psychosocial functionality of children. For this reason, informing the mother about child care, possible problems, institutitons which can be applied when needed and mean duration of recovery may be effective.

## CONCLUSION

In our study, state anxiety levels of child and mother after DS were found similar to state anxiety level evaluated at day of surgery. Psychosocial quality of life of children one month after DS was also found to be impaired and state anxiety level of mother after DS was found to be correlated with psychosocial quality of life of child. It has been suggested that DS procedures do not impair physical quality of life of children and do not affect state anxiety levels at time of hospital admission due to being relatively minor surgical procedures and having low complication risk, discharging patients in the same day and having shorter duration of recovery. Informing children and mothers about the intervention and having their questions answered, before surgical procedures, telling follow-up after discharge and possible complications and getting children to school and social environment as soon as possible after the surgical procedure are suggested to decrease psychosocial limitations of surgical procedures.

## LIMITATIONS

Low number of patients recruited, limiting follow-up period by one month and majority of children recruited were being boys are among limitations of our study. Moreover, not evaluating social, academic and intrafamilial functionality predicting PSTS in detail limits findings of our study. When quality of life being affected from several social, familial and personal variables is considered, it can be seen that data used in this study may illuminate some points in this field. For this reason, we suggest to evaluate children at different dimensions and add variables such as academic period which DS was performed, presence of a mental disorder in child, continous anxiety levels of children and their parents, intrafamilial functionality and intrafamilial dynamics to future studies. Perfomimg mental state examinaiton of children, determining their intelligence level and evaluating their academic skills and social functionality may contribute to the study. There are limitations of scale we have used in our study. Perceptions of children about their quality of life could not be assessed due to not utilizing PedsQoL-self-rating form. Our findings were limited to mothers' point of view to their children's quality of life. Assessing self-perception of children towards their quality of life will strenghten findings of the study in the future. Continous anxiety level of the mother was not assessed in our study due to possible effect of mother's state anxiety level after surgery on quality of life of child after surgery. Examining anxiety/depression problems by evaluating emotional and behavioral problems of children by CBCL was suggested to reduce limitation about not assessing continous anxiety levels of children.

### Acknowledgement

We would like to thank Dr. Cahit Örengül, Dr. Alperen Bıkmazer, Dr. Ayşe Arman and all children and their mothers for their contribution to this study.

## REFERENCES


1. Warner MA, Shields SE, Chute CG. Major morbidity and mortality within 1 month of ambulatory surgery and anesthesia. JAMA 1993; 270:1437-1441.

2. Yavuz M, Dramalı A. Pediatric day surgery patient and family preparation and criteria for discharge. Nursing Forum 1998; 1:266-269.

3. Gül R, Göksu S, Mızrak A, Koruk S, Öner Ü. Günübirlik cerrahi ünitemizde ilk sekiz aylık uygulamalarımız. Gaziantep Tıp Dergisi 2008; 14:23-27 (Article in Turkish).

4. Ziegler DB, Prior MM. Preparation for surgery and adjustment to hospitalization. Nurs Clin North Am 1994; 29:655-669.

5. Bevan JC, Johnston C, Haig MJ, Tousignant G, Lucy S, Kirnon V, Assimes IK, Carranza R. Preoperative parental anxiety predicts behavioral and emotional responses to induction of anesthesia in children. Can J Anaesth 1990; 37:177-182.

6. Nagataa S, Funakosib S, Amaec S, Yoshidac S, Ambod H, Kudoe A, Yokotaf A, Uenod T, Matsuokaa H, Hayashic Y. Posttraumatic stress disorder in mothers of children who have undergone surgery for congenital disease at a pediatric surgery department. J Pediatr Surg 2008; 43:1480-1486.

7. Cassady JF Jr, Wysocki TT, Miller KM, Cancel DD, Izenberg N. Use of a preanesthetic video for facilitation of parental education and anxiolysis before pediatric ambulatory surgery. Anesth Analg 1999; 88:246-250.

8. Malster M, Perry A. Day Surgery: In Nursing Approach. St Louis: Mosby, 1999, 286-288.

9. Boyacı M. Çocuk Cerrahisinde Günübirlik Olgulara Yönelik Geliştirilen Hemşirelik Bakım Standartlarının Aile Anksiyetisinin Azaltmaya Etkisi. Yüksek Lisans Tezi, Marmara Üniversitesi Sağlık Bilimleri Enstitüsü, İstanbul, 2003 (Thesis in Turkish).

10. Brosig CL, Mussatto KA, Kuhn EM, Tweddell JS. Psychosocial outcomes for preschool children and families after surgery for complex congenital heart disease. Pediatr Cardiol 2007; 28:255-262.

11. Lam MWC, Klassen AF, Montgomery CJ, LeBlanc JG, Skarsgard ED. Quality-of-life outcomes after surgical correction of pectus excavatum: a comparison of the Ravitch and Nuss procedures. J Pediatr Surg 2008; 43:819-825.

12. Karahan A, Kav S, Abbasoğlu A, Doğan N, Tepe A. Günübirlik cerrahiyi takiben hastaların ev ortamındaki deneyim ve güçlükleri. Hemşirelikte Araştırma Geliştirme Dergisi 2010; 3:38-48 (Article in Turkish).

13. Spielberger CS, Gorsuch RL, Lushene RE. Manual For The State Trait Anxiety Inventory. Palo Alto: Consulting Psychologists Press, 1970.

14. Öner N, LeCompte A. Süreksiz Durumluk/Sürekli Kaygı Envanteri El Kitabı, Boğaziçi Üniversitesi Yayınları, İstanbul, 1985 (Book chapter in Turkish).

15. Spielberger C. STAIC Preliminary Manual. Palo Alto: Consulting Psychologists Press, 1973.

16. Özusta HŞ. Çocuklar için durumluk-sürekli anksiyete envanteri uyarlama, geçerlilik ve güvenilirlik çalışması. Türk Psikoloji Dergisi 1995; 10:32-44 (Article in Turkish).

17. Varni JV, Seid M, Rode CA. The PedsQL: Measurement model for the pediatric quality of life inventory. Med Care 1999; 37:126-139.

18. Üneri OS, Ağaoğlu B, Coşkun A, Memik NC. Validity and reliability of pediatric quality of life inventory for 2- to 4-year-old and 5- to 7-year-old Turkish Children. Qual Life Res 2008; 17:307-315.

19. Memik NC, Ağaoğlu B, Coşkun A, Üneri OS, Karakaya I. Çocuklar için yaşam kalitesi ölçeğinin 13-18 yaş ergen formunun geçerlilik ve güvenilirliği. Türk Psikiyatri Dergisi 2007; 18:353-363 (Article in Turkish).

20. Achenbach TM, Edelbrock C. Manual for the child behavior checklist 4-18 and revised child behavior profile. Burlington VT: University of Vermont, Department of Psychiatry, 1983.

21. Erol N, Arslan BL, Akçakın M. The Adaptation And Standardization Of The Child Behavior Checklist Among 6-18 Year Old Turkish Children: In Sergeant J (editor). Eunethdis: European Approaches to Hyperkinetic Disorder. Zürih: Fotoratar, 1995, 97-113.

22. Türk Anesteziyoloji ve Reanimasyon Derneği (TARD). Anestezi Uygulama Kılavuzları, Preanestezik Hazırlık, 2005 (Article in Turkish).

23. Vatansever N. Çocuk cerrahisinde cmeliyat olan 8-12 yaş grubu çocukların hastane ortamı ve operasyondan etkilenme durumlarının belirlenmesi. Yüksek Lisans Tezi, Marmara Üniversitesi Sağlık Bilimleri Enstitüsü, İstanbul, 2008 (Thesis in Turkish).

24. Shivananda M, Bhaduri A, Jain AG, Kumar V, Sethi S. Experiences of mothers of pediatric surgery children—A qualitative analysis. J Pediatr Nurs 2008; 23: 479-489.

25. Kain ZN, Mayes LC, O'Connor TZ, Cicchetti DV. Preoperative anxiety in children. Predictors and outcomes. Arch Pediatr Adolesc Med 1996; 150:1238-1245.

26. Vitale MG, Levy DE, Johnson MG, Gelijns AC, Moskowitz AJ, Roye BP, Verdisco L, Roye DP Jr. Assessment of quality of life in adolescent patients with orthopaedic problems: are adult measures appropriate? J Pediatr Orthop 2001; 21:622-628.

27. Winthrop AL. Health-related quality of life after pediatric trauma. Curr Opin Pediatr 2010; 22:346-351.

28. Ding R, McCarthy ML, Houseknecht E, Ziegfeld S, Knight VM, Korehbandi P, Parnell D, Klotz P, CHAT Study Group. The health-related quality of life of children with an extremity fracture: a one-year follow-up study. J Pediatr Orthop 2006; 26:157-163.

29. Çavuşoğlu YH, Üneri ÖŞ, Yağız B, Karaman A, Erdoğan D, Karaman İ, Özgüner İF. Doğumsal gastrointestinal ve abdominal anomalisi cerrahi olarak düzeltilmiş Türk çocuklarında yaşam kalitesi algısı. Türkiye Klinikleri Tıp Bilimleri Dergisi 2012;32(4):1004-10 (Article in Turkish).

30. Landolt MA, Valsangiacomo Buechel ER, Latal B. Health-related quality of life in children and adolescents after open-heart surgery. J Pediatr 2008; 152:349-355.

31. Poley MJ, Stolk EA, Tibboel D, Molenaar JC, Busschbach JJ. Short term and long term health related quality of life after congenital anorectal malformations and congenital diagraphmatic hernia. Arch Dis Child 2004; 89:836-841.

32. Hartman EE, Oort FJ, Aronson DC, Hanneman MJ, van Heurn E, de Langen ZJ, Madern GC, Rieu PN, van der Zee DC, Looyaard N, van Silfhout-Bezemer M, Sprangers MA. Explaining change in quality of life of children and adolescents with anorectal malformations of Hischsprung disease. Pediatrics 2007; 119:374-383.

33. Johnson JH. Ambulatory Surgery: In Rothrock JC (editor). Perioperative Nursing Planning. St. Louis: Mosby, 1996, 467-484.

34. Erdil F, Elbaş NÖ. Cerrahi Hastalıkları Hemşireliği. 3. Baskı, Ankara, 1999, 97-104 (Book chapter in Turkish).

35. Kanan N. Çocuk cerrahisinde ameliyathane hemşireliğinin öncelikleri. Hemşirelik Forumu 1999; 2:14-17 (Article in Turkish).

36. Çelik A, Özbey H. Çocuklarda Ameliyatların Psikososyal Etkileri. Ekşi A (editor) Ben Hasta Değilim, Nobel Tıp Kitabevleri, İstanbul, 1999, 379-381 (Book chapter in Turkish).

37. Rudolph KD, Denning MD, Weisz JR. Determinants and consequences of children's coping in the medical setting. Conceptualization, review and critique. Psychol Bull 1995; 118:328-357.

38. Pektekin Ç. Hastaneye kabulde hastaların anksiyetelerinin ölçülüp değerlendirilmesi. Yayınlanmamış Doktora Tezi, İstanbul Üniversitesi Tıp Fakültesi Psikiyatri Kürsüsü, İstanbul, 1981 (Thesis in Turkish).

39. Tourigny J. Preparation for surgery. Can Nurse 1990; 86:35-37.

40. Tiedeman ME, Clatworthy S. Anxiety responses of 5 to 11 year old children during and after hospitalization. J Pediatr Nurs 1990; 5:334-343.

41. Visintainer VA, Wolfer JA. Psychological preparation for surgical pediatric patients: the effect of children's and parents' stress responses and adjustment. Pediatrics 1975; 56;187-202.

42. La Montagne LL, Hepworth JT, Cohen F. Effects of surgery type and attention focus on children's coping. Nurs Res 2000; 49:245-252.