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Validity and Reliability of the Modified Yale Preoperative Anxiety Scale in Turkish Children Aged 0-2

Modifiye Yale Preoperatif Anksiyete Skalasının 0-2 Yaş Türk Çocuklarında Geçerlilik ve Güvenirliliği

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ABSTRACT

Objective: Separation from parents, a bad anaesthesia history, the operating room and all invasive procedures may cause psychological trauma in pediatric patients. Given these negative effects, it is seen that psychological evaluation and support in the preoperative period are as important as pharmacological and physiological evaluation. In this study, we aimed to evaluate the validity and reliability short form of the The modified Yale Preoperative Anxiety Scale (mYPAS) in Turkish children aged 0-2.

Methods: After obtaining the ethical approval of Mersin University Clinical Research Ethics Committee, 264 pediatric patients aged 0-2 were included. Median age was 13.5 months (range 0.6-24 months). We used mYPAS for 200 patients and Comfort Behavior Scale for 64 patients. Evaluations were made twice by three different observers, in the playroom and in the operation room. Observers were pediatric anesthetist and 5th year residents of the Department of Anesthesiology and Reanimation.

Results: The ICC (Intraclass Correlation Coefficient) value calculated to evaluate the agreement between the three observers was 0.9857 (95% CI 0.9748-0.9865) for the measurements made in the children's playroom, and for the measurements made in the operation room was 0.9902 (95% CI 0.9894-0.9912). It was determined that those who were not sedated in the age group ≥ 1 years old had higher anxiety symptoms than those in the age group < 1 years old (p<0.05).

Conclusion: It has been determined that the Turkish version of mYPAS can be used with high validity and reliability to evaluate preoperative anxiety levels in Turkish children aged 0-2 years. Preoperative anxiety levels may increase depending on many factors. In our study, we focused on the family factor, and it was shown that the effects of mother education, socioeconomic level, and nuclear family type on the preoperative anxiety of children were important.

Keywords: Pediatric, anesthesia, anxiety

ÖZ

Amaç: Ebeveynden ayrılma, kötü bir anestezi öyküsü, ameliyathane ve tüm invaziv işlemler çocuk hastalarda psikolojik travmalara neden olabilmektedir. Bu olumsuz etkiler göz önüne alındığında farmakolojik ve fizyolojik değerlendirme kadar ameliyat öncesi dönemde psikolojik değerlendirme ve desteğin de önemli olduğu görülmektedir. Bu çalışmada Değiştirilmiş Yale Preoperatif Anksiyete Ölçeğinin (mYPAS) kısa formunun 0-2 yaş arası Türk çocuklarında geçerlilik ve güvenilirliğini değerlendirmeyi amaçladık.

Yöntem: Mersin Üniversitesi Klinik Araştırmalar Etik Kurulu onayı alındıktan sonra 0-2 yaş arası 264 çocuk hasta çalışmaya alındı. Medyan yaş 13,5 aydı (aralık 0,6-24 ay). 200 hastaya mYPAS ve 64 hastaya Konfor davranış ölçeği kullanıldı. Değerlendirmeler oyun odasında ve ameliyathanede olmak üzere üç farklı gözlemci tarafından iki kez yapıldı. Gözlemciler; yetkin pediatrik anestezi uzmanı, Anesteziyoloji ve Reanimasyon Anabilim Dalı 5. yıl asistanlarıydı.

Bulgular: Üç gözlemci arasındaki uyumu değerlendirmek için hesaplanan ICC (Sınıf İçi Korelasyon Katsayısı) değeri çocuk oyun odasında yapılan ölçümler için 0,9857 (%95 CI 0,9748-0,9865), ameliyathanede yapılan ölçümler için 0,9902 (95% CI 0.9894-0.9912) olarak bulundu. Çalışmamızda, ≥ 1 yaş grubunda sedasyon almayanların < 1 yaş grubuna göre daha yüksek anksiyete belirtileri gösterdiği saptandı (p<0,05).

Sonuç: Değiştirilmiş Yale Preoperatif Anksiyete Ölçeğinin Türkçe versiyonunun 0-2 yaş Türk çocuklarında ameliyat öncesi kaygı düzeylerinin değerlendirilmesinde yüksek geçerlilik ve güvenilirlikle kullanılabileceği belirlenmiştir. Ameliyat öncesi kaygı düzeyi birçok faktöre bağlı olarak artış gösterebilir. Çalışmamızda özellikle aile faktörü üzerinde duruldu ve aile tipi, anne eğitimi ve ailenin sosyoekonomik düzeyinin ameliyat öncesi kaygıda önemli olduğu belirlendi.

Anahtar sözcükler: Pediatrik, anestezi, anksiyete

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INTRODUCTION

Preoperative anxiety; includes subjective feelings such as tension, irritability, and unhappiness. Separation from parents, a bad anaesthesia history, the operating room and all invasive procedures can cause psychological trauma in pediatric patients (1).

This trauma can cause behaviors such as sleeping and eating disorders, enuresis, depression, introversion, and excessive addiction in the early postoperative period. In the late postoperative period, separation anxiety, prejudice to hospitals and medical procedures may cause difficulties in the adaptation of the child in school life and daily life. Considering these negative effects, it is seen that psychological evaluation and support in the preoperative period are as important as pharmacological and physiological evaluation (2,3). Preoperative anxiety is seen in 60-80 % of patients scheduled for surgery and adversely affects surgery, anesthesia and postoperative recovery (4).

Accurate measurement of preoperative anxiety is essential for the care of pediatric surgery patients and for interventionist or educe their anxiety. The Yale Preoperative Anxiety Scale (YPAS) was developed in 1995 and modified (mYPAS) in 1997 to help measure the preoperative anxiety of children and was used in many studies including various health fields such as anesthesia, surgery, pediatrics, and dentistry (5-12). In studies conducted in our country, the validity and reliability of the mYPAS-short form has also been demonstrated in Turkish children over the age of 2 (13,14). Although the mYPAS -short form has shown good results and has been approved in children aged ≥ 2 years, its validity in younger children has not been studied. In 2019, Kühlmann et al, proved the validity and reliability of the short form of mYPAS, for this age range in a study on Dutch children aged 0-2 years (15).

In this study, we aimed to evaluate the validity and reliability of the mYPAS- short form in Turkish children aged 0-2; at the same time, we aimed to investigate the family factor, which is one of the factors affecting the anxiety level of children aged 0-2 who will undergo surgery.

MATERIAL and METHODS

After the approval of Mersin University Clinical Research Ethics Committee (04.03.2020 dated and 2020/196 numbered), the study was performed in Mersin University Faculty of Medicine Department of Anesthesiology and Reanimation Operation Room between 15.03.2020-15.03.2021.

Totally 264 pediatric patients aged between 0-2 years, operated under emergency or elective conditions in the stated dates above, allowed to participate in the study by their legal representatives, not mentally retarded, conscious and able to make communication with his relatives, were included in the study. Those who were operated on in the Operating Room of the Department of Anesthesiology and Reanimation at Mersin University Health Research and Application Hospital, between 15.03.2020-15.03.2021, > 2 years old, not allowed to participate in the research by their legal representative, mentally retarded, unconscious pediatric patients whose relatives could not be contacted were excluded from the study.

Modified Yale Preoperative Anxiety Scale dimensions in 200 and Comfort-Behavior Scale (CBS) in 64 of these patients. The sample was determined according to this comparison.

Patients; before the operations to be performed by the Departments of Pediatric Surgery, Otorhinolaryngology, Urology, Ophthalmology, Plastic Surgery, Orthopedics, Thoracic Surgery and Neurosurgery were evaluated in terms of preoperative anxiety using the mYPAS and CBS (Table I, Table II). In the mYPAS, there are 22 items under 5 categories, each representing a different area of child anxiety: activity, speech, emotional state, a significant level of arousal, and relationship with the family. As a result of the evaluation, a score between 23.3 and 100 is obtained.

The CBS consists of six items: alertness, calmness-agitation, muscle tone, physical movement, facial movements, and crying (in children with spontaneous breathing) or respiratory response (in children on a ventilator). Each item has five response categories, and the total score is calculated by counting the scores on individual items ranging from 6 (calm) to 30 (stressful). ≥17 points are considered anxious (stressful), <17 points are considered carefree (non-stressed).

In the study, besides the demographic data of the patients, the number of siblings, maternal age, paternal age, mother's education level, father's education level, family type, and socioeconomic level of the family were recorded in order to investigate the family effect on the anxiety level.

The scale to be used was evaluated independently from each other by 3 different observers in the children's playroom, without sedation and after being taken to the operation room, and scoring was done. Observers, one of whom is a competent about pediatric anesthetist and the other two have received pediatric anesthesia training during their education, consist of the 5th year assistants of the department of anesthesiology and reanimation.

The patients with their parents and a caregiver were taken to the game room in the operating room from the surgical service they were in. Observers and a doctor of surgery welcomed the patients and their parents here. A children's program was opened on the television in the children's playroom for the patients and after the first evaluation of the scale was

Table I: The Modified Yale Preoperative Anxiety Scale

Domain	Score
Activity	
Looking around, curious, playing with toys, reading (or other age – appropriate behavior); moves around holding area/treatment room to get toys or to go to parent; may move to ward operating room equipment	**1**
Not exploring or playing, may look down, fidget with hands, or suck thumb (blanket); may sit close to parent while waiting, or play has a definite manic quality	**2**
Moving from toy to parent in unfocus edmanner, non-activity-derived movements; frenetic/frenzied movement or play; squirming, moving on table; may push mask away or cling to parent	**3**
Actively trying to get away, pushes with feet and arms, may move whole body; in waiting room, running around unfocused, not looking at toys, will not separate from parent, desperate clinging	**4**
Vocalizations	
Reading (non vocalizing appropriate to activity), asking questions, making comments, babbling, laughing, readily answers questions but may be generally quiet; child too young to talk in social situations or too engrossed in play to respond	**1**
Responding to adults but whispers, "baby talk," only head nodding	**2**
Quiet, no sounds or responses to adults	**3**
Whimpering, moaning, groaning, silently crying	**4**
Crying or may be screaming "no"	**5**
Crying, screaming loudly, sustained (audible through mask)	**6**
Emotional expressivity	
Manifestly happy, smiling, or concentrating on play	**1**
Neutral, no visible expression on face	**2**
Worried (sad) to frightened, sad, worried, or tearful eyes	**3**
Distressed, crying, extreme upset, may have wide eyes	**4**
State of apparent arousal	
Alert, looks around occasionally, notices or watches what anesthesiologist does (could be relaxed)	**1**
Withdrawn, sitting still and quiet, may be sucking on thumbor have face turned in to adult	**2**
Vigilant, looking quickly all around, may startle to sounds, eyes wide, body tense	**3**
Panicked whimpering, may be crying or pushing others away, turns away	**4**
Use of parents	
Busy playing, sitting idle, or engaged in age-appropriate behavior and doesn't need parent; may interact with parent if parent initiates the inter action	**1**
Reaches out to parent (approaches parent and speaks to other wise silent parent), seeks and accepts comfort, may lean against parent	**2**
Looks to parent quietly, apparently watches actions, doesn't seek contact or comfort, accepts it if offered or clings to parent	**3**
Keeps parent at distance or may actively withdraw from parent, may push parent away or desperately clinging to parent and not let parent go	**4**

carried out without being sedated while their parents are with them, intravenous vascular access was established by the observers to patients who did not have an intravenous line and 1-2 mg kg^{-1} iv sodium thiopental were implemented the children who needed sedation. After that, the patients were taken to the operating room by the anesthesiologist and surgeon. The parents were allowed to accompany the child to the children's playroom, but they were not taken into the operating room. Suitable music for children was played in the operating room, the room was purified from all other noises, minimum staff was kept in the room due to the pandemic. Before induction, the anxiety levels of the children in the operating room were re-evaluated by the observers.

Table II: Comfort Behaviour Scale

Alertness	1. Deeply asleep (eyes closed, no response to changes in environment) 2. Lightly asleep (eyes mostly closed, occasional responses) 3. Drowsy 4. Awake & alert 5. Awake & hyper-alert
Calm/Agitation	1. Calm 2. Slightly anxious 3. Anxious 4. Very anxious 5. Panicky
Respiratory response (intubated and ventilated)	1. No spontaneous respitation, no cough 2. Spontaneous breathing no resistance to ventilator 3. Occasional cough or resistance to ventilatör 4. Actively breathes againts ventilator or coughs 5. Fight ventilator coughing or choking
Respiratory response (crying and self ventilated)	1. Quiet breathing, no crying sound 2. Occasional sobbing or moaning 3. Whining or monotonous sound 4. Crying 5. Screaming or shrieking
Physical movement	1. No movement 2. Occasional (three or fewer) slight movement 3. Frequent, more than three slight movements 4. Vigorous movement limited to extremites 5. Vigorous movement include torso &head
Muscle tone	1. Muscles totally relaxed; no muscle tone 2. Reduced muscle tone; less than normal 3. Normal muscle tone 4. Increased muscle tone, increased flexion of fingers & toes 5. Extreme muscle rigidity & flexion of fingers & toes
Facial muscles	1. Facial muscles tottally relaxed 2. Normal facial tone 3. Tension evident in some muscles (not sustained) 4. Tension evident throughout muscles (sustained) 5. Facial muscles contorted and grimacing

Categorical measurements were summarized as numbers and percentages, and continuous measurements were summarized as average and standard deviation (median and minimum-maximum where appropriate). Shapiro-Wilk test was used to determine whether the parameters in the study showed normal distribution or not. Mann-Whitney U test was used in paired group analysis for parameters that did not show normal distribution and Kruskall-Wallis tests were used in analyzes of more than two groups. Bonferroni test, one of the Post Hoc tests, was used to determine the source of the difference between the groups.

The Wilcoxon test was used to reveal the difference between observers in game rooms and operation rooms. Spearman correlation tests were used to determine the relationship between the scales. The compliance level between observers was evaluated by the kappa (κ) method. Considering the value ranges in Kappa compatibility analysis; <0.0 'weak', 0.00 – 0.20 'insignificant', 0.21-0.40 'low', 0.41-0.60 'moderate' – 0.61-0.80 'significant', 0.81-1.00 'very-high' shows that there is compatibility. In all these tests, the statistical significance level was taken as $p<0.05$.

Additionally, Intraclass Correlation Coefficient (ICC) calculation was used as the validity index to calculate the relationship between the measures evaluated by more than one rater for continuous variables. The ICC value is a value between 0 and 1, and the closer the obtained value to 1, the higher the

accordance between observers. In order to be able to express that there is an accordance between more than one evaluator, the ICC value should be at least 0.70. Values higher than 0.95 indicate that the accordance between the observers are excellent. Cronbach's alpha calculation was used as the reliability coefficient. In statistical evaluations, p<0.001 level was considered significant.

RESULTS

In this study, 264 patients were included. Modified Yale Preoperative Anxiety Scale was applied to 200 of the patients and CBS was applied to 64 of them. Of the patients who underwent mYPAS, 70.0% (n= 140) were male, 30.0% (n=60) were female, 43.5% (n=87) <12 months, 56.5% (n=113) ≥ 12 months < 24 months old. In the study, 53.1% (n=34) of the 64 patients who underwent CBS were male, 46.9% (n=30) female, and 43.8% (n=28) < 12 months, 56.2% (n=36) were ≥ 12 months < 24 months old.

Form mYPAS, the ICC value calculated to evaluate the agreement between the three observers was 0.9857 (95% CI 0.9748-0.9865) for the measurements made in the children's playroom, and for the measurements made in the operation room was found as 0.9902 (95% CI 0.9894-0.9912); the ICC value for CBS, which was calculated to evaluate the agreement between the three observers, was found to be 0.881 (0.829-0.921) for the measurements made in the game room and 0.917 (0.880-0.945) for the measurements made in the operation room (Table III).

The Cronbach's α coefficients of the evaluations made by all three observers in the children's playroom and the operation room were 0.939 for the 1st observer, respectively; 0.954 for observer 2, 0.942 for observer 2; 0.958 for Observer 3, 0.946; found as 0.957 (Table IV).

The differences in the measurements obtained from the patients who underwent mYPAS were examined. According to the analysis, activity (p=0.278), speech (p=0.117), emotional state (p=0.173), marked arousal (p=0.109), family relationships (p=0.209) and mYPAS total dimension (p=0.287) were measured. It was observed that the differences between the observers were similar (p>0.05) (Table V).

In the evaluation to determine the factors related to anxiety, mYPAS measurement findings obtained from the game room and the age, gender, father's education level, family type, socio-economic level, number of siblings, paternal age, and maternal age variants, and the differences between them were not found significant (p>0.05). While 90 (40%) of the pediatric patients who were brought to the playroom before the operation were implemented premedication in company with their families, 110 of them (60%) were not implemented sedative drugs as premedication. Anxiety levels were significantly lower in patients who received premedication (p<0.001). Modified Yale Preoperative Anxiety Scale scores of the patients who received and did not receive premedication are shown in Table VI.

The anxiety levels of the children who were taken to the operating room without sedation were statistically significantly higher. Considering the maternal education level of these children; a slight increase in anxiety levels was detected in children whose mothers have a bachelor's degree and above, compared to children whose mothers had primary and secondary education.

Table III: Intraclass Correlation Coefficient Values for Modified Yale Preoperative Anxiety Scale and Comfort Behavior Scale Calculated with the Purpose of Evaluating the Accordance Between Three Observers

	mYPAS ICC	mYPAS CI	CBS ICC	CBS CI
Children's playroom	0.9857	0.9848-0.9865	0.881	0.829-0.921
Operating room	0.9902	0.9894-0.9912	0.917	0.880-0.945
p	0.116	0.316	0.448	0.618

mYPAS: Modified yale preoperative anxiety scale, **ICC:** Intraclass correlation coefficient, **CI:** Confidence interval, **CBS:** Comfort behavior scale.

Table IV: The Coefficients of Cronbach's Alfa of Three Observers for Modified Yale Preoperative Anxiety Scale and Comfort Behavior Scale

	mYPAS Children's Playroom	mYPAS Operating Room	CBS Children's Playroom	CBS Operating Room
1st Observer	0.939	0.954	**0.860**	**0.900**
2nd Observer	0.942	0.958	**0.812**	**0.898**
3rd Observer	0.946	0.957	**0.898**	**0.918**
p	0.318	0.216	**0.694**	**0.528**

mYPAS: Modified yale preoperative anxiety scale, **CBS:** Comfort behavior scale.

Table V: Investigation of Activity, Speech, Emotional State, Significant Arousal, and Family Relationships Obtained from Patients Undergoing Modified Yale Preoperative Anxiety Scale and Their Differences Between Observers (n=200)

	Children's Playroom	Operating Room	
	Mean ± SD	Mean ± SD	p
Activity	2.11 ± 0.97	2.04 ± 0.77	0.278
Speech	3.37 ± 1.38	3.11 ± 1.35	0.117
Emotional State	2.32 ± 0.91	2.22 ± 0.79	0.173
Significant Arousal	2.3 ± 0.99	2.18 ± 0.88	0.109
Family Relationships	2.29 ± 0.97	2.08 ± 0.88	0.209
mYPAS	56.9 ± 19.9	52.6 ± 18.7	0.287

mYPAS: Modified yale preoperative anxiety scale, **SD:** Standart deviation.

Table VI: Investigation of Activity, Speech, Emotional State, Significant Arousal, and Family Relationships Obtained from Patients Undergoing Comfort Behavior Scale and Their Differences Between Observers (n=64)

	Playroom	Operating Room	
	Mean ± SD	Mean ± SD	p
Wakefulness	4.09 ± 0.79	3.6 ± 0.74	0.62
Calmness	2.46 ± 1.06	2.42 ± 1.15	0.828
Physical Movement	3.06 ± 1.11	2.93 ± 0.99	0.269
Muscle Tone	3.10 ± 0.59	2.98 ± 0.80	0.254
Facial Movements	2.90 ± 1.23	2.79 ± 0.87	0.421
Crying	2.85 ± 1.40	2.5 ± 1.15	0.334
CBS score	18.71 ± 5.08	17.15 ± 5.01	0.429

CBS: Comfort behavior scale, **SD:** Standard deviation.

Again, the anxiety levels of the children who were sedated in the children's playroom decreased statistically significantly in the operating room. Again, the anxiety levels of these children showed a much higher decrease in children whose mother's education level was undergraduate or higher than in children whose mother's education was in primary and secondary school (Figure 1).

While it was determined that there was a significant difference between the socio-economic levels of the families of the sedated patients and their anxiety levels; It was determined that the anxiety level of the children of families with low socioeconomic level was higher than that of the children of families with a good socioeconomic level ($p<0.05$) (Figure 2).

Inter-observer changes in measurements obtained from CBS-applied data were summarized. According to the review, totality of compilation ($p=0.621$), calmness ($p=0.828$), physical movement ($p=0.269$), muscle tone ($p=0.254$), facial movements ($p=0.421$), crying ($p=0.334$), and CBS score ($p=0.429$) shows the performance of the measurements between the observers ($p>0.05$) (Table VI).

While no significant difference was found between the ages of the sedated patients ($p>0.05$); it was determined that those who did not receive sedation in the age group of '≥1' had higher anxiety symptoms than those in the age group of '0-1' ($p<0.05$) (Table VII).

DISCUSSION

Modified Yale Preoperative Anxiety Scale is mostly used to evaluate the anxiety of children aged 2 and over, especially children aged 5 and above. In this study, the validity and reliability of mYPAS in Turkish children aged 0-2 years are demonstrated. When the literature is evaluated, it is seen that this is the second study conducted on this subject after the study of Kühlmann et al, which proved the validity and reliability of the short form of mYPAS in Dutch children aged 0-2 years (15).

The internal consistency of both mYPAS and CBS was excellent (respectively for mYPAS in the children's playroom Cronbach alpha value 0.88 and in the operating room 0.91, for CBS Cronbach alpha value 0.86 in the children's playroom and operating room). These results show the reliability and validity of our study in Turkish children aged 0-2 years. Our results show beter reliability in both the waiting room and the operating room compared to the results of Kühlmann et

Table VII: Comparison of Average Modified Yale Preoperative Anxiety Scale Scores Before and After Premedication

	Playroom		Operating Room	
	Sedation	No Sedation	Sedation	No Sedation
	Med (Min-Max)	Med (Min-Max)	Med (Min-Max)	Med (Min-Max)
Age				
0-1	62.6 (23.3-100)	45.0 (23.3-55)	52.4 (23.3-95)	55.0 (23.3-100)
≥1	66.6 (23.3-100)	41.6 (23.3-50)	50.8 (23.3-100)	70.8 (23.3-100)
p-value	0.962	0.854	0.593	0.027

Med: Median, **min:** Minimum, **max:** Maximum.

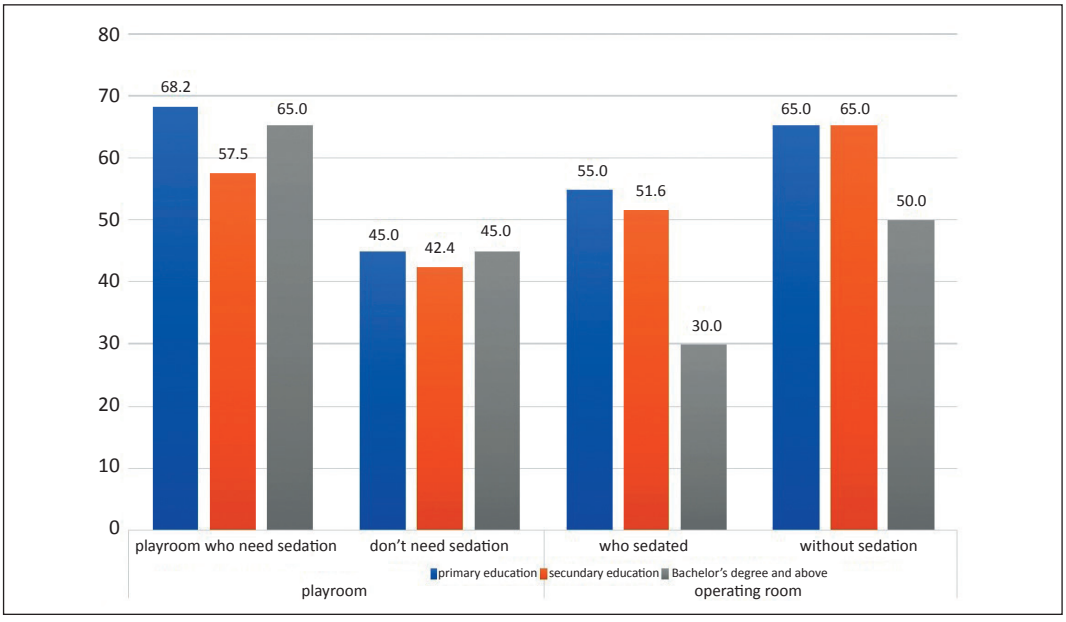

Figure 1: Comparison of the differences between mother's education and children's anxiety level.

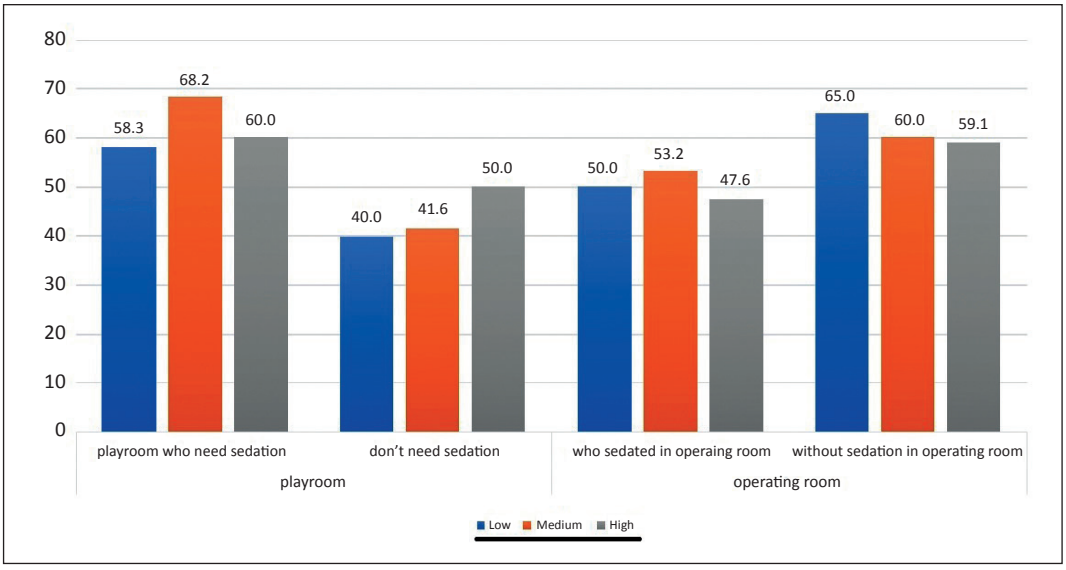

Figure 2: Comparison of the differences between socioeconomic level and anxiety level.

al (15). In particular, our children's playroom (waiting area) results showed beter reliability than other studies. We think that the reason for this is related to the test evaluation method in our study. In similar studies, evaluators evaluated video footage (16). Evaluation of behaviors in the waiting area with this method can be difficult, especially since very young infants are asleep or unable to speak. Infact, in our study, a real-time, dynamic evaluation was made beside family, which allowed the behaviors to be evaluated better.

Cronbach alpha calculation as reliability coefficient and ICC calculation as validity index were made. After the validity and reliability of the scale has been proven, the other thesis of our study is that according to the analysis made at the end of the relationship between anxiety and family factor; the differences between the mYPAS measurement findings obtained from the playingroom and the operation room and the patients' parental education level, family type and socioeconomic level, number of siblings, father's age and mother's age variables were not found significant.

In addition, when the pediatric patients, who received and did not receive premedication, were compared, it was determined that the anxiety levels of the patients who received premedication were statistically significantly lower. Similar to our study, many studies have shown that premedication significantly reduces preoperative anxiety and prevents the development of postoperative behavioral disorders (17-20).

Although we did not come across a study in which the education levels of parents were evaluated separately in our literature review, in many studies evaluating the anxiety levels of children according to the education level of the family, it was shown that as the education level of the parents increased, the anxiety level of the children decreased and the anxiety coping skills of these children were better (21-23). In addition, there are studies in which a relationship could not be determined between parental education levels (24,25). In our study, we found that especially the education level of the mother is important, and as the education level of the mother increases, the anxiety levels of the children (in the children's playroom-operation room) decrease.

Our study showed that the effect of the socioeconomic level of the family on the anxiety level of children is also important. We found that the children of families with a low socioeconomic level had higher anxiety levels compared to the children of families with a high socioeconomic level.

Another result we reached as a result of our study is that there is a significant difference between the family type variant and anxiety levels of the patients who underwent sedation. We concluded that children with extended family type have higher anxiety levels than those with nuclear family type. The reason for this is that since extended families meet the needs of all family members, it prevents individuals from working, developing socially and individually, and being self-sufficient (26).

When the relationship between the ages of the patients included in the study and their preoperative anxiety levels was examined, there was no significant difference between the ages of the children who underwent sedation in accordance with the literature; it was determined that those who were not sedated> 1 year old had higher anxiety symptoms than those aged< 1 year. Infact, when older age groups are evaluated, it has been shown that the level of anxiety increases as the age decreases (8,14,26,27). We think that these results are related to the fact that the children in the studies were over 5 years old. Because separation anxiety in children can start as early as 9 months and peak at 1 year old. Children aged 1-5 years are among the age group at the highest risk of experiencing serious preoperative anxiety.

One of our study's limitations is that parental anxiety, which is effective on preoperative anxiety in pediatric patients, was not evaluated in our research, which will help us to identify the family factor better. Another limitation of our study is that anxiety levels could not be assessed according to surgical departments due to the small number of patients included in some surgical departments.

CONCLUSION

As a result; it has been determined that the Turkish version of mYPAS can be used with high validity and reliability to evaluate preoperative anxiety levels in Turkish children aged 0-2 years. Preoperative anxiety levels may increase depending on many factors. The effects of predicted risk factors on preoperative anxiety levels have been evaluated in many studies and conflicting results have been obtained. In our study, we focused on the family factor, and it was shown that the effects of mother education, socioeconomic level, and nuclear family type on preoperative anxiety of children were important. We believe that the results of the study will contribute to improving the results by evaluating the preoperative anxiety of the patients more accurately. As a next step to make mYPAS-short form more suitable for infants, selected items can be deleted and new items can be added to cover behavioral aspects more specifically for this age group.

As a recommendation, it is appropriate to use pentothal and similar anxiety-reducing drugs for children with high anxiety levels by using scientifically proven anxiety level scales, especially children who will undergo elective surgery and their families can be given preoperative education.

AUTHOR CONTRIBUTIONS

Conception or design of the work: BC, HB, SD
Data collection: BC, HB, SD
Data analysis and interpretation: BC, HB, SD
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