

# The influence of playful activities on children's anxiety during the preoperative period at the outpatient surgical center

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## Abstract

**Objective:** To verify the influence of playful activities during the preoperative period on the anxiety of children participating in the therapeutic recreation project conducted at the outpatient surgical center of Hospital de Clínicas de Porto Alegre (HCPA), Porto Alegre, Brazil.

**Methods:** The modified Yale Preoperative Anxiety Scale (mYPAS) was administered to 50 children between 5 and 12 years of age undergoing medical procedures at the outpatient surgical center. The children were divided in two groups: recreation group (individuals who participated in playful interventions in the recreation room) and control group (individuals who did not participate in playful interventions). Anxiety was measured using the mYPAS at two different moments: soon after the individuals arrived at the outpatient surgical center (minute 0) and 15 minutes after the first measurement.

**Results:** The results showed that soon after arriving at the outpatient surgical center, the patients did not have significant differences regarding anxiety, showing high values. However, after 15 minutes waiting or undergoing intervention, the children in the recreation group had reduced anxiety levels and those in the control group remained anxious.

**Conclusions:** During the preoperative period, children who participate in playful activities in the recreation room have their anxiety reduced in comparison with those that only stay in the preoperative holding area for at least 15 minutes.

*J Pediatr (Rio J). 2010;86(3):209-214: Child, anxiety, playful activities, preoperative.*

## Introduction

Anxiety is defined as a set of manifestations that can be divided between state and trait. State-anxiety is the transient emotional state whose intensity and level vary all the time; on the other hand, trait-anxiety is the personality trait that remains relatively stable.<sup>1</sup> Studies suggest that during the preoperative period anxiety is characterized by feelings of tension, restlessness, anxiety, and psychological stress.<sup>2,3</sup> It seems to be present in most patients undergoing pediatric surgical procedures, and it may be expressed by a behavior showing fear, trembling, panic, cry, or restlessness.<sup>2,4,5</sup>

The anxiety caused by the hospital environment and surgical procedure may be harmful during the preoperative period because it might affect cognitive, social, and affective development, in addition to increasing negative behaviors during the child's postoperative period.<sup>6-8</sup> The child's negative experience during the period prior to the surgery might cause some disorders, such as eating and sleep disorders, and several changes in the child's attitude for some days.<sup>9</sup> Although there are so many negative disorders, responses to surgery may also be positive when they provide self-

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No conflicts of interest declared concerning the publication of this article.

**Suggested citation:** Weber FS. The influence of playful activities on children's anxiety during the preoperative period at the outpatient surgical center. *J Pediatr (Rio J)*. 2010;86(3):209-214.

Manuscript submitted Oct 23 2009, accepted for publication Feb 22 2010.

doi:10.2223/JPED.2000

knowledge and, as a consequence, promote the maturing process of both the child and his/her caregiver regarding this kind of situation.<sup>10</sup>

An operational project was conducted by the Therapeutic Recreation Service at the outpatient surgical center from June 2004 to December 2007 at Hospital de Clínicas de Porto Alegre (HCPA), Porto Alegre, state of Rio Grande do Sul, Brazil. This project is different from the most reputable informative and educative projects because its main objective was to provide the patients and their caregivers with an environment full of joy, comfort, and well-being while they waited for the surgery using a playful approach. Playful activity was chosen for this project because it prepares the child by means of its symbolic characteristic to solve immediate and remote problems, as well as making communication with the child's peers and with his/her environment easier.<sup>6</sup> Therefore, children are able to face their fears using games and they can also collaborate with the medical team, allowing health professionals to perform procedures, providing answers whenever necessary.

Within the hospital environment it is possible to characterize games as therapeutic interventions, since playing games help to promote well-being, which is essential for the physical, intellectual, and emotional health of human beings.<sup>6</sup> Considering such relevant aspect, in 2005, the law no. 11,104 was promulgated in Brazil. Such law made it compulsory for public and private hospitals having pediatric wards to install toy libraries for the inpatients.<sup>11</sup> The recreation room where the playful activities were carried out was characterized as a toy library because it had several toys available for the children to choose from. The presence of so many objects that can be freely handled makes the patients to relate to the environment bringing them closer to their reality. Therefore, such a room is really important because the anxiety caused by the impact of the hospital environment seems to be reduced in toy libraries.

Few studies have focused on the association of anxiety, playful activities, and surgery with the purpose of providing the child with better care and emotional balance. Therefore, the objective of the present study was to investigate the influence of playful activities performed during the preoperative period on the anxiety of children participating in the therapeutic recreation project developed at the outpatient surgical center of HCPA.

## Methods

After the present research project was approved by the Research Ethics Committee of HCPA in May 2007, a randomized clinical trial was conducted. The patients' guardians received information on the study and allowed the children's participation by signing a written consent form. Children from 5 to 12 years old who underwent surgical procedures at the outpatient surgical center of HCPA during

the morning from July to September 2007 were included in the study. The exclusion criteria were: use of anxiolytic drugs and waiting for less than 15 minutes.

During data collection period, the following medical procedures were performed at the outpatient surgical center: adenoidectomy, tonsillectomy, laryngoscopy, bone marrow biopsies, lumbar puncture, intrathecal chemotherapy, catheter removal, catheter placement, colonoscopy, endoscopy, plastic surgery, and strabismus surgery. All the patients needed to receive general anesthesia and, when the anesthesia was administered, one caregiver could stay with the patient in the surgery room. It is important to highlight that during the waiting period, in spite of the fact that the patients were being treated for different conditions, they received the same model of medical care.

In order to characterize the sample, a questionnaire about the patient's personal data was completed by the guardian. Children were divided into two groups based on arrival order at the outpatient surgery center for observation purposes. Children allocated in the control group (CG) were observed in two moments: soon after they arrived in the outpatient surgery center (minute 0) and 15 minutes after the first measurement (minute 15) at the same waiting area. Children allocated in the recreation group (RG) were also observed in two moments: soon after they arrived at the outpatient surgery center (minute 0) and 15 minutes after they entered the recreation room (minute 15). The same professional observed all the children and helped them with the playful activities.

The activities performed in the recreation room were done in groups including at most four children according to their choice and the material available. There were toys, books, comic books, drawing material (sheets of paper, felt tip pens, color pencils, crayons, ruler, pencils and eraser), DVDs, and a TV set in the recreation room. In order to measure the level of anxiety, we administered the modified Yale Preoperative Anxiety Scale (mYPAS) translated into Portuguese and previously used to assess the anxiety of Brazilian children in the study by Guaratini et al.<sup>12</sup> The mYPAS is an observation scale including 22 items divided into five categories: activity, vocalization, emotional expressivity, state of arousal, and use of parents. The score ranges from 23 to 100, and it is calculated based on the choice of the number corresponding to the child's behavior regarding each category. Those children reaching scores higher than 30 were classified as being anxious.

This instrument is validated to measure the anxiety of children during the preoperative period and it has been used in several studies to measure the level of preoperative anxiety and its relation with interventions using toys,<sup>3</sup> videogames,<sup>8</sup> presence of clowns,<sup>10</sup> playing doctor, and movies.<sup>4</sup> However, we could not find any Brazilian studies with the same objective as the present study.

**Statistical analysis**

We carried out a descriptive statistical analysis of the distribution of frequency and median, since these are non-continuous variables. Next, we compared the values of the anxiety scale between the groups and the minutes using the nonparametric test of Mann-Whitney U test. The analyses were performed using the computer program SPSS 14.0 and the level of significance was set at  $p < 0.05$ .

**Results**

Fifty children were observed (mean age  $8.4 \pm 2.15$ ); of these, 25 were in the CG and 25 were allocated in the RG, 22 of them were girls and 28 were boys.

The data collected using the questionnaire are shown in Table 1. When analyzing the difference between sexes and the level of anxiety in the scale scores, we could not find any significant differences between them ( $p > 0.05$ ).

**Table 1 -** Questionnaire data and characteristics of the sample

Characteristics	Frequency, n (%)
Age	
5-12	50 (100)
Sex	
Female	22 (44)
Male	28 (56)
Caregiver	
Mother	36 (72)
Father	6 (12)
Mother and father	3 (6)
Other	5 (10)
Have been to the OSC before?	
Yes	25 (50)
No	25 (50)
Have been to the recreation of the OSC before?	
Yes	19 (38)
No	31 (62)

OSC = outpatient surgical center.

The data collected using the mYPAS is shown in Table 2. At minute 0, RG had a median of 38.32 and at minute 15 such median was significantly reduced ( $p = 0.00$ ) to 23.32. On the other hand, the CG had a median of 41.66 at the first minute, which increased to 46.66 at minute 15. However, this was not a significant change ( $p = 0.44$ ). These results are shown in Figure 1.

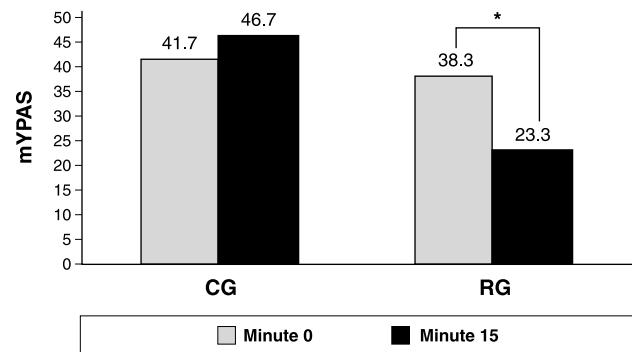
The cutoff point of the scale is 30, that is, children who have a score lower than 30 are not considered to be anxious

**Table 2 -** Median of scores obtained by means of observation using the mYPAS at minutes 0 and 15 for the recreation and control groups

Group/minute	Median
Recreation group	
Minute 0	38.32
Minute 15	23.32*
Control group	
Minute 0	41.66
Minute 15	46.66*

mYPAS = modified Yale Preoperative Anxiety Scale.

\* Significantly different values ( $p = 0.00$ ) between the recreation group and the control group.



CG = control group; RG = recreation group; mYPAS = modified Yale Preoperative Anxiety Scale.  
\*  $p < 0.01$ .

**Figure 1 -** Median of the values collected using the mYPAS at minute 0 and minute 15 for the control and recreation groups

and those who have scores higher than 30 are classified as being anxious. We found that at minute 0 28% of the children allocated in the RG were not anxious and 72% were anxious. After 15 minutes of recreation, 92% of the children did not present with anxiety and only 8% remained anxious. In the CG, we found that at minute 0 12% of the children were not anxious and 88% had anxiety. After spending 15 minutes at the waiting room, only 16% of the children were not anxious and 84% remained anxious.

Using the Mann-Whitney U test, we could observe that at minute 0, both groups had similar levels of anxiety, that is, there was not significant difference between them. After intervention, there was a significant difference between the groups, and the RG had lower anxiety values. These results are shown in Table 3, where it is possible to check the difference between the groups after 15 minutes at the waiting room or playful intervention.

**Table 3** - Number of children who were anxious or not according to the cutoff point of 30 in the mYPAS

Group/minute	Up to 30 (non-anxious) n (%)	Higher than 30 (anxious) n (%)
Recreation group		
Minute 0	7 (28)	18 (72)
Minute 15	23 (92)*	2 (8)*
Control group		
Minute 0	3 (12)	22 (88)
Minute 15	4 (16)*	21 (84)*
Total		
Minute 0	10 (20)	40 (80)
Minute 15	27 (54)	23 (46)

mYPAS = modified Yale Preoperative Anxiety Scale.

\* Significantly different values ( $p < 0.05$ ) between the recreation group and the control group.

## Discussion

During the period previous to the surgery, children may feel fear, sadness, and anxiety. In short, they tend to experience several different emotions within a few minutes.<sup>4</sup> Using the data collected at the outpatient surgery center related to anxiety, we found that anxiety was present in more than half the individuals. In the preoperative period, anxiety was characterized by subjective feelings of tension, restlessness, anxiety, and fear resulting from the prediction of danger, something unknown or strange.<sup>2,13</sup>

According to Bar-Mor, a child's responses to the surgical process depends on his/her (emotional and cognitive) developmental stage, previous experiences, coping mechanisms, meaning of the disease or health status and perception and interpretation of himself/herself and feelings and sensations triggered by the hospital environment.<sup>9</sup> Therefore, the environment and the sensations triggered by it in the individual are believed to have an influence on patients' anxiety. This can be observed at minute 0, at which the CG and RG had high anxiety means.

In addition to the external change, there is also the internal preparation of the child so that he/she can understand the whole surgical process. Fifty percent of the children had been to the outpatient surgical center before; therefore, half of them were going through a new experience. These children could be anxious because they were facing something unknown, something that could be good or bad, something that could cause pain or not. On the other hand, the other half of the sample could be anxious for knowing the discomforts and the risks factors resulting from the procedures.

Anxiety can be triggered by any factor that interferes with the basic human needs for food, air, comfort, and safety, and it can be expressed by means of symptoms

belonging to each category: physiologic, emotional, and cognitive.<sup>14,15</sup> By taking this into account, it is possible to conclude that during the preoperative period, anxiety of individuals also may have been caused by the 8 to 12-hour fasting period that the patients must undergo; by the distress that may be felt resulting from being in a strange environment and wearing unusual clothes (aprons without underwear); and by the lack of confidence caused by the risk of undergoing procedures that require anesthesia. Several causes mentioned above, not necessarily one of them but their association, may explain the high levels of anxiety found in 80% of the children included in our sample at minute 0.

After spending 15 minutes at the same room where they arrived at the outpatient surgical center, among the 25 children allocated in the CG, 21 still had high levels of anxiety, also showing a significant increase in the anxiety levels. Of the 25 individuals who went to the recreation room during 15 minutes, 22 had lower values on the anxiety scale. It is assumed that when the environment is arranged so that it becomes more familiar for the individual, at least with some known objects, patients feel more at ease and, as consequence, their anxiety levels are reduced. On the other hand, remaining in an environment deprived of any attractive feature, which is shared with other adult patients, seems to hinder the reduction of anxiety in the child.

Besides the environment, which seems to be able to calm down patients, the recreation room offered playful activities, providing the children with toys, story books, coloring books, comic books, games, TV sets, and DVDs. According to Carvalho & Begnis, playful resources within the hospital context have shown to stimulate the adaptation process of children.<sup>16</sup> In a study by Lindquist, toys are used as a resource that provide children with stimulating and fun activities at the same time as they make them calm down and feel safer.<sup>17</sup> It is exactly with these purposes that toys are used in playful activities, both to quickly adapt children to the environment and to calm them down.

We believe that the interaction between the children and the materials and professionals available in the recreation room contributed to reduce anxiety, since studies involving playful interaction conducted in the waiting room, without an appropriate environment, showed similar decrease in anxiety.<sup>3,8,10,14,18</sup>

The first models of specific programs for children that would undergo surgery in the hospital were developed in the 1970s.<sup>4</sup> In these models, children were offered an overview of the anesthesia and surgery by means of videos or puppet theater. Later, in the 1980s, the literature showed that it was not enough for the child to watch, she/he also had to interact during the preoperative period so that the reduction of these anxious feelings was more effective, which is in agreement with the results presented.<sup>18</sup>

Kain et al. conducted a study comparing three preoperative preparation programs: during the first one, children would visit the surgery room and were offered information; in the second program, children visited the surgery room and watched a video; and in the third program, children visited the surgery room, watched a video, and interacted with puppets by playing doctors. The researchers found out that children had lower anxiety while they remained in the waiting room when the third program was used.<sup>18</sup> Once again, interaction seems to be a factor responsible for reducing anxiety in children during the waiting period. The results of our study were similar to those of Golden et al., which demonstrated that children who played with toys during the waiting period had significantly decreased levels of anxiety, whereas those children who did not play with toys had increased levels of anxiety.<sup>3</sup>

According to Isayama et al., the playful characteristic manifests more intensively during childhood and experiencing it is essential, since it represents an opportunity for children to acknowledge themselves as individuals who make decisions, have autonomy, analyze actions, assess and look for critical and creative alternatives for problems in their daily lives. The playful aspect can also be characterized by exaggeration of senses and emotions, mixing joy and anxiety, relaxation and tension, pleasure and conflict, and freedom and yielding.<sup>19</sup> During the preoperative period, there is this conflict between playful and pleasant activity and fear of reality, since at the same time as the child plays, he/she is in a hospital waiting for a procedure associated with risk of death.

When the health professional gives the child the opportunity to decide about what she/he wants to do, this recreation professional allows that the patients create their own world, where the activities are relevant to deal with the situation they are going through and to ensure that these experiences provide them with satisfaction and pleasure. Therefore, it is possible to provide the hospital environment with a different meaning, changing from a cold and lonely place to a warm and fun environment, contributing to improve human relationships and change the paradigms usually present in the actions of hospital care, such as body-mind dichotomy and the concept of health restricted to the biological aspect.<sup>19,20</sup> Even if they know they are in the hospital, when they enter the toy library, it seems that the patients get to a enchanted place, they smile and run to get the toys without worrying about what is going on around them.

Justus et al. mentioned that the challenge of the preoperative preparation is to develop strategies based on the cognitive and emotional development of each child.<sup>4</sup> Considering that each one of us is a different person, it is not possible to offer always the same activity to entertain every child. Thus, the strategy used at the outpatient surgery center was to provide options of activities with the material

available in the recreation room according to the maturation and emotional development and the preferences of each patient. Based on the statistical analyses carried out in our study showing that the RG significantly reduced anxiety, it is possible to conclude that this approach, including a professional that motivates and encourages children to perform activities chosen by them and to participate in these activities, has been producing positive results during the preoperative period.

In addition to the environment and the playful intervention, there is also the interaction between the professional and the child, which may have an influence on the results. According to Bersch, when there is personal involvement of adults in the playful activities of children, these experiences may be very significant for children, being a solid basis upon which they will build several other relationships.<sup>6</sup> This leads to reciprocity, balance of power, and affective feeling, as well as a sensation of safety and reliability, which are very important during this period.

In conclusion, we believe that the performance of playful activities during 15 minutes in a room equipped with recreational resources can be a way to reduce children's anxiety during the preoperative period; however, it is not possible to establish the duration of this effect, since, according to Bougère, playing seems to offer an immediate but short-term effect.<sup>21</sup>

## Conclusion

The present study showed that, during the preoperative period, children who participated in playful activities in the recreation room had their anxiety reduced in comparison with those who only stayed in the preoperative holding area for at least 15 minutes. Considering the relationship established between anxiety and negative behaviors during the postoperative period, this playful resource must be considered a method to improve hospital care offered to pediatric patients who need to undergo surgical medical procedures.

We need to value the relationships established between the patient and the environment where the patient is, even if the patient stays there for just a few hours. Everything that takes place during this period of time may have a positive or negative influence on the child, affecting even his/her development. Further studies can be conducted having similar objectives in order to verify the effectiveness of this approach in other hospitals.

## References

1. Caumo W, Broenstrup JC, Fialho L, Petry SM, Brathwait O, Bandeira D, et al. *Risk factors for postoperative anxiety in children*. Acta Anaesthesiol Scand. 2000;44:782-9.

2. Kain ZN, Mayes LC, Cicchetti DV, Bagnall AL, Finley JD, Hofstadter MB. *The Yale Preoperative Anxiety Scale: how does it compare with a "gold standard"?* *Anesth Analg.* 1997;85:783-8.
3. Golden L, Pagala M, Sukhvasi S, Nagpal D, Ahmad A, Mahanta A. *Giving toys to children reduces their anxiety about receiving premedication for surgery.* *Anesth Analg.* 2006;102:1070-2.
4. Justus R, Wyles D, Wilson J, Rode D, Walther V, Lim-Sulit N. *Preparing children and families for surgery: Mount Sinai's multidisciplinary perspective.* *Pediatric Nurs.* 2006;32:35-43.
5. Bersch AA, Yunes MA, Novaes LH, Silva MR, Ribeiro PR, Falkenbach AP. *O brincar como fator potencializador da saúde ambiental no microsistema pediatria: uma análise bioecológica.* Rio Grande: Universidade Federal do Rio Grande; 2005.
6. McCann ME, Kain ZN. *The management of preoperative anxiety in children: an update.* *Anesth Analg.* 2001;93:98-105.
7. Patel A, Schieble T, Davidson M, Tran MC, Schoenberg C, Delphin E, et al. *Distraction with a hand-held video game reduces pediatric preoperative anxiety.* *Pediatr Anesth.* 2006;16:1019-27.
8. Bar-Mor G. *Preparation of children for surgery and invasive procedures: milestones on the way to success.* *J Pediatr Nurs.* 1997;12:252-5.
9. Vagnoli L, Caprilli S, Robiglio A, Messeri A. *Clown doctors as a treatment for preoperative anxiety in children: a randomized, prospective study.* *Pediatrics.* 2005;116:e563-7.
10. Brougère G. *Brinquedo e cultura.* São Paulo: Cortez; 2001.
11. *Seminário Nacional Brinquedoteca: a importância do brinquedo na saúde e na educação.* Anais, Brasília: 2006. p. 132.
12. Guaratini AA, Marcolino JA, Teixeira AB, Bernardis RC, Passarelli ML, Mathias LA. *Estudo transversal de ansiedade pré-operatória em crianças: utilização da escala de Yale modificada.* *Rev Bras Anesthesiol.* 2006;56:591-601.
13. Castillo AR, Recondo R, Asbahr FR, Manfro GG. *Transtornos de ansiedade.* *Rev Bras Psiquiatr.* 2000;22 Suppl 2:20-3.
14. Schmitz SM, Piccoli M, Viera CL. *A utilização do brinquedo terapêutico na visita préoperatória de enfermagem à criança.* *Rev Eletronica Enferm.* 2003;5:14-23.
15. Carpenito LJ. *Diagnósticos de enfermagem: aplicação à prática clínica.* 6ª ed. Porto Alegre: Artes Médicas; 1997.
16. Carvalho AM, Begnis JG. *Brincar em unidades de atendimento pediátrico: aplicações e perspectivas.* *Psicol Estud.* 2006;11:109-17.
17. Lindquist I. *A criança no hospital: terapia pelo brinquedo.* São Paulo: Editora Página Aberta Ltda; 1993. p. 141.
18. Kain ZN, Caramico LA, Mayes LC, Genevro JL, Bornstein MH, Hofstadter MB. *Preoperative preparation programs in children: a comparative examination.* *Anesth Analg.* 1998;87:1249-55.
19. Isayama HF, Campos T, Simão CA, Garcias LM, Moreira M, Boschi PM. *Vivências lúdicas no hospital: intervenção socioeducativas da educação física com crianças da clínica de hematologia.* Anais do 8º Encontro de Extensão da UFMG. Belo Horizonte; Universidade Federal de Minas Gerais: 2005.
20. Mitre RM, Gomes R. *A promoção do brincar no contexto da hospitalização infantil como ação de saúde.* *Cien Saude Colet.* 2007;12:1277-84.
21. Watson AT, Visram A. *Children's preoperative anxiety and postoperative behaviour.* *Pediatr Anaesth.* 2003;13:188-204.

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