



THE QUALITY OF ANESTHESIA CARE IN OUTPATIENT PEDIATRIC SURGERY

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ABSTRACT

Background: User satisfaction is a relevant factor when assessing the quality of healthcare services. This study evaluated satisfaction with anesthesia care in children undergoing outpatient surgery at the Instituto de Medicina Integral Prof. Fernando Figueira (IMIP) in northeastern Brazil between August 2014 and February 2015.

Methods: This cross-sectional study included 307 children aged ≤ 14 years. Children with coexisting diseases or neurological disorders were excluded. Patients and parents/guardians were interviewed seven days after surgery regarding their overall satisfaction, information provided on anesthesia and preoperative fasting, use of preanesthetic medication, information given to parents/guardians regarding their child's transfer to the post-anesthesia care unit (PACU), permission to accompany their child in the PACU, and the occurrence of adverse events. Frequency tables were constructed for categorical variables. Numerical variables were described as means and standard deviations. Significance was established at $p < 0.05$.

Results: Overall, 76.9% of parents/guardians stated that they had been given no information on the anesthesia procedure and 58% had not been informed about preoperative tests. Only 11.7% of children received preanesthetic medication and 73.94% of parents/guardians accompanied the child in the PACU. Adverse events were reported by 29%, with the most common being vomiting (7.2%). Overall 295 parents/guardians (96.09%) declared themselves satisfied. Of the children who could be interviewed, 37.5% feared the anesthesia, 47.5% had met the anesthetist and 102 (62.57%) remembered that someone had explained the procedure to them preoperatively. Ninety-eight children (59.39%) expressed satisfaction with the anesthetic procedure.

Conclusions: Satisfaction was high among parents/guardians but lower among the children interviewed.

KEYWORDS : anesthesia; quality assurance in healthcare; satisfaction; anesthesia recovery period; pediatric anesthesia.

Introduction

The quality of healthcare services has been evaluated in various sectors. Within the public domain, this evaluation is used to direct the management of financial resources and programs. In Brazil, evaluations of the quality of health services began to gain momentum in the 1980s, in conjunction with the proposal and implementation of the new Brazilian national healthcare service, the SUS [1,2].

Healthcare quality is a multidimensional concept that, in most situations, reflects a subjective evaluation and involves rating a wide variety of health-related services, including technical, organizational and managerial procedures [1]. Therefore, in the field of health, the inherent subjectivity of quality assessment is dealt with by taking into account the biopsychosocial characteristics of the client as well as his/her expectations [1,2].

Some factors may serve as criteria with which to evaluate quality. These include professional skills (technical skills, team attitudes and communication skills), user satisfaction (treatment received, concrete results, cost and time), accessibility (cultural, social, geographic and economic factors), efficacy (use of adequate guidelines and appropriate technology, as well as staff compliance with the guidelines implemented), and efficiency (costs, resources and risks) [2]. Of these

factors, user satisfaction is particularly relevant, serving as a method of evaluating the quality of various health services. In Brazil, this is particularly true following the implementation of Law 8.142/90, which guarantees social control of the Brazilian National Health Service in which the user participates in the establishment of the service he/she uses [3].

User satisfaction with respect to anesthesia, which is an essential component of surgical healthcare, appears to be closely associated with the patient's prior knowledge of the subject, with the occurrence of side effects and with postoperative outcome. Prior knowledge may come from previous experiences and/or appropriate explanation of the procedure during the preanesthetic consultation. Sometimes, the patient may find it difficult to differentiate the phenomena resulting from the anesthesia itself from the phenomena associated with the surgical procedure [4].

Parents' satisfaction with pediatric anesthesia has been shown to be closely associated with the explanations regarding the procedure that were provided at the presurgical and preanesthetic consultations, as well as whether parents were able to participate in the decisions made with respect to the anesthesia procedure. Conversely, the child's satisfaction is more closely associated with postsurgical results such as

the occurrence of adverse events in the immediate postoperative period. Nevertheless, parents' participation in the presurgical preparations may reduce children's anxiety, with a positive effect on the occurrence of postoperative pain and disruptions to sleep and appetite [5].

The objective of the present study was to evaluate the occurrence of adverse events in the immediate postoperative period and user satisfaction with respect to anesthesia care in the outpatient pediatric surgery department of the Instituto de Medicina Integral Prof. Fernando Figueira (IMIP) in Recife, Pernambuco, Brazil.

Patients and Methods

A cross-sectional, observational study was conducted with 307 patients submitted to outpatient pediatric surgery at IMIP, Recife, Pernambuco, Brazil between 2014 and 2015. The institute's internal review board approved the study protocol under reference CAAE 17146413.3.0000.5201. Parents/guardians signed an informed consent form, and some of the children signed an assent form.

The children and their parents/guardians were approached at the first follow-up visit after discharge from hospital, which occurred on average seven days after the surgical procedure. The investigator detailed the objectives of the study and the patient was only included if the parent/guardian agreed and signed the informed consent form. All the children who were fully verbal were given information on the study and those able to read and write were asked to sign an informed assent form. If the child did not wish to participate in the study, he/she was not included, even if their parent/guardian had consented.

Patients of 0 to 14 years of age who had been submitted to outpatient surgery at the institute within the stipulated timeframe were eligible for inclusion in the study. Children with coexisting diseases or neurological disorders were excluded, as were those who were not accompanied at the follow-up visit by the same person who was with them during the surgical procedure.

Sample size was calculated using the OpenEpi software program, version 3.01, and was based on data from the literature showing that in 72% of cases the anesthesiologist kept the parent/guardian informed with respect to the child's state of health and that this was considered one of the most important factors at the time of evaluating satisfaction with anesthesia procedures. For a power of 80% and an alpha error of 5%, sample size was calculated at 307 patients.

A questionnaire specifically designed for use in this study was applied. The variables evaluated in the study were: the parents/guardians' satisfaction with the anesthesia procedure, whether information had been provided on the anesthesia procedure and on the required preoperative fasting time, whether preanesthetic medication was given, whether parents/guardians were informed of the child's transfer to the post-anesthesia care unit (PACU) and whether they were able to stay there with the child. Demographic characteristics of the accompanying adult (sex, age, marital status, schooling and income level) and the occurrence of adverse events in the child during the period immediately following surgery (vomiting, pain, prolonged somnolence, sore throat or any other complications) were also evaluated.

User satisfaction (parent/guardian and child) was evaluated using a Likert scale, with five options of response: very satisfied, satisfied, somewhat satisfied, dissatisfied, and very dissatisfied. For the children, an Andrews stylized faces scale was used that consisted of five stylized figures of faces representing expressions that ranged from very dissatisfied to very satisfied [6]. For the purposes of analysis, answers of "very satisfied" or "satisfied" were classified as "satisfied", while responses of "somewhat satisfied", "dissatisfied" or "very dissatisfied" were considered "dissatisfied". In relation to all the other variables, information supplied by the child's parents/guardians was used.

The children's evaluation of quality involved questions regarding whether they had been afraid of the anesthesia, whether they had met their anesthetist prior to surgery and whether he/she had given them information about the anesthesia procedure, whether they remembered anything during the procedure, whether they thought the experience of having been given anesthesia through a mask for medication inhalation was bad, and whether they had experienced pain following surgery.

Statistical analysis

Data analysis was performed using the Stata software program, version 13.3. Descriptive measures such as percentages and proportions were used to describe the categorical variables. The Shapiro-Wilks test was used to test the normality of the distribution of the numerical variables. For those with normal distribution, means and their respective standard deviations were used as measures of central tendency. For those with an abnormal distribution, medians and the 25th and 75th percentiles were used. Significance was defined as $p < 0.05$.

Results

Overall, 344 children and their parents/guardians were invited to participate. Of these, 37 were excluded (age >15 years), leaving 307 children. Most of the parents/guardians were women (304; 99%), with only 3 (1%) being men. Mean age was 31.62 ± 0.5 years (mean \pm standard deviation). Most parents/guardians (192; 62.5%) were married, had an income of ≤ 1 minimum salary (210; 68.4%) and 50% had a median of 9 years of schooling. The great majority of participants (98.4%) were from the state of Pernambuco, with only 5 (1.6%) coming from other states (Table 1).

When asked about the information they were given prior to the procedure, 236/307 parents/guardians (76.9%) stated that they had not been given any information regarding the type of anesthetic to be used and 178 (58%) said that they had received no information about required preoperative tests. Regarding the required preoperative fasting time, 293 of the parents/guardians (95.44%) confirmed that they had been given instructions. Only 36 (11.7%) stated that preanesthetic medication had been given. Regarding whether the accompanying adult had been able to stay with the child up to the moment of surgery, 280 (91.2%) confirmed that they been able to remain with the patient (Table 2).

Regarding the postanesthetic data, 89 parents/guardians (29%) reported that their child had experienced adverse events. Of these, the most common was vomiting, which was experienced by 22 children (7.2%), followed by prolonged somnolence in 16 (5.2%), pain in 10 (3.3%), nausea in 1 (0.3%) and a sore throat in 1 (0.3%). Of the 307 parents/guardians, 226 (73.61%) reported having been informed that their child was in the PACU following surgery and 227 (73.94%) stated that they were able to be with their child there (Table 2).

Of the 307 children included in the study, 31.67% were girls and 68.33% were boys. Of these, 142 were unable to answer, either because they were too young or because of certain limitations such as cognitive dysfunctions. Of the 165 who were interviewed, 63 (37.5%) reported that they had been afraid of being submitted to anesthesia; 76 (47.5%) stated that they had already met their anesthetist prior to surgery, and 102 (62.57%) remembered that staff had provided them with information on the anesthesia procedure before surgery. Only 12 (7.27%) remembered anything from the actual anesthesia procedure. Nevertheless, 130 (79.26%) reported that they remembered having inhaled the anesthetic through the mask and 54 (33.33%) said they did not like having to use it. Fifty-nine of the children (35.75%) reported having experienced pain after surgery (Table 3).

There was a high rate of satisfaction with the anesthesia procedure, with 295 of the parents/guardians interviewed (96.09%) expressing their satisfaction with the procedure compared to only 12 (3.91%) who were dissatisfied. Overall, 98 of the children (59.39%) expressed satisfaction with the anesthesia procedure, while 67 (40.60%) were dissatisfied (Table 4).

Discussion

As the organization or reorganization of health services becomes a subject of debate and in the light of the growing incorporation of new technologies such as those used in anesthesia procedures, it becomes extremely relevant to evaluate the quality of these services [7]. One of the indicators of results that has been subject to most intense evaluation in health is user satisfaction. Irrespective of the label given (patient, user, client, consumer), this role is increasing in importance since the individual contributes directly to the health evaluation process. User satisfaction, as an outcome of healthcare, can be considered one of the most important indicators of the quality of the care provided [8].

The findings of the present study highlight the high degree of satisfaction in the parents/guardians. This is normally believed to be

associated with the accompanying adults being provided in advance with information on the type of procedure to be performed on their child. In fact, patients' relatives very often tend to express satisfaction simply as a result of having received attention from the doctors prior to, during and after surgery, not taking into account aspects directly related to the procedure itself such as, for example, the occurrence of pain following surgery or side effects. Nevertheless, conversely, what was found here was a large proportion of parents/guardians who had received no information at all on the type of procedure to be performed; however, even so, their satisfaction with the procedure was high.

A previous study conducted to evaluate satisfaction with anesthesia found that the parents/guardians of children submitted to outpatient surgery thought that they should have been involved to a greater extent in the decisions made regarding the anesthesia procedure to which their children were submitted. The satisfaction of those parents/guardians with the procedure was lower compared to parents/guardians who believed that they had participated sufficiently in the decisions [9]. Indeed, the majority of the parents stated that they would like to participate, together with the doctor, in the decision-making process [9-11].

On the other hand, in the case of children, satisfaction tends to be more closely associated with the occurrence of undesirable effects immediately following surgery. In agreement with this, the degree of satisfaction in the children in the present study was lower than that of the accompanying adults, probably not only as a result of the occurrence of undesirable effects, but also because relatively few of the children here were given preanesthetic medication to calm their fears [7].

Previous studies have shown that, irrespective of the measurement method used, satisfaction is generally found to be high in studies conducted to evaluate healthcare [12-16]. These findings, however, must be interpreted with caution. Within the context of public health in a developing country, high rates of satisfaction may be the result of a gratitude bias or the fact that the user, who is unaccustomed to receiving attention from healthcare professionals and facilities, feels satisfied just because they were given information by the professionals providing the service, irrespective of the quality offered [17]. This further reinforces the importance of the child's different viewpoint, which is normally more pragmatic and more directly associated with the service provided.

The child's degree of satisfaction with the anesthesia procedure may also be affected by the amount of anxiety generated by the required preoperative fasting time [5], by the moment when the child is separated from his/her parents [15,16,18,19], and by the child's inability to understand the procedure [7,12,13]. Therefore, it appears clear that the anesthetist needs to communicate with the child whenever possible to reassure him/her that they are safe during the procedure and to explain the importance of fasting, both to the child and to the parents/guardian [5,13]. To ensure the parents' understanding, the literature even suggests the distribution of explanatory leaflets [20]. On the other hand, a study on satisfaction with pediatric anesthesia showed that the fact that the child was given information by the anesthetist or by another member of the medical team had no effect on his/her expression of satisfaction or on his/her recovery [21].

Because preanesthetic medication was used here in relatively few cases (11.7%), the moment at which the child is separated from his/her parents/guardian may have had a direct effect on the high rate of dissatisfaction expressed by the children at having to use the facemask during inhalation anesthesia. Furthermore, it is known that the moment when the child is separated from his/her parents/guardian generates stress both for the child and for the accompanying adults. In a recently conducted study, investigators compared the induction of anesthesia in the presence of the parents with the use of preanesthetic medication, with the latter being found to be more effective in reducing the children's anxiety and, consequently, the anxiety of their parents/guardians as well [19].

In agreement with data from the literature, the most commonly reported postoperative adverse effect was vomiting; however, the frequency of 7.2% found in the present study is considerably lower than the usually reported mean of 26.8% [21,22]. In the PACU, 73.61% of the parents/guardians were present, accompanying their child's recovery, which also has a positive effect in reducing anxiety, both in the child and in the adult [21]. Nevertheless, according to some investigators, the child's rapid recovery and his/her discharge from hospital on the same day, is not in line with parents' expectations. They

expect the child to sleep or to be groggy in the 24 hours following surgery and feel more comfortable in the hospital environment during this period [17]. Therefore, it is important to inform the parents/guardians of the advantages of discharging the child from hospital as soon as possible.

Although the results of the present study introduce important reflections regarding the evaluation of satisfaction, some limitations must be taken into account. The principal limitation concerns the unavailability of a specific scale with which to evaluate the quality of anesthesia care, resulting in the need to use a scale developed by the investigator and not yet validated. Nevertheless, we believe that this paves the way for more in-depth evaluations and may provoke reflections on the need to create and validate specific scales for this purpose.

There are also some limitations with respect to satisfaction as a measure of quality. First, the patients' understanding of the science and technology of the care provided is inadequate and could result in inappropriate judgments. Secondly, the patient's expectations in relation to the professional or to the procedure are not always well understood or interpreted. However, despite these limitations, we believe the study to be extremely pertinent, considering the increasing need to evaluate satisfaction with services as an indicator of quality. The present findings highlight the need for further studies designed to obtain data that would be more in line with reality.

Conflicts of interest

None declared.

Funding

None.

Table 1. Sociodemographic characteristics of the operated children and their parents/guardians. Outpatient Surgery Department, Instituto de Medicina Integral Prof. Fernando Figueira (IMIP), Recife, Pernambuco, Brazil, 2014-2015.

	n (%)
Sex of the child	
Male	205 (66.77)
Female	95 (30.94)
Data missing	7 (2.28)
Place of residence	
Pernambuco	302 (98.4)
Other states	5 (1.6)
Sex of the parent/guardian	
Male	3 (1.0)
Female	304 (99.0)
Marital status of parent/guardian	
Single	98 (31.9)
Married	192 (62.5)
Divorced	11 (3.6)
Other	6 (2.0)
Income of the parent/guardian	
≤ 1 minimum salary	210 (68.4)
2 - 5 minimum salaries	95 (30.9)
> 5 minimum salaries	2 (0.7)
Occupation of the parent/guardian	
Retired	4 (1.3)
Other	188 (61.2)
Self-employed	50 (16.3)
Employed	65 (21.2)
Years of schooling of parent/guardian (Median in years; 25th - 75th percentiles)	9 (5-11)

n: number of patients; %: percentage of patients

Table 2. Preanesthetic and postanesthetic data of the operated children. Outpatient Surgery Department, Instituto de Medicina Integral Prof. Fernando Figueira (IMIP), Recife, Pernambuco, Brazil, 2014-2015.

	n (%)
Parent/guardian was given information on the anesthesia technique	71 (23.1)
Parent/guardian was given information on the required preoperative fasting time	293 (95.44)
Child was given preanesthesia medication	36 (11.7)

Parent/guardian was given information on the need for preoperative tests	129 (42.0)
Parent/guardian stayed with the child in the preoperative period	280 (91.2)
Child experienced adverse effects	89 (29.0)
Pain	10 (3.3)
Vomiting	22 (7.2)
Somnolence	16 (5.2)
Sore throat	1 (0.3)
Parent/guardian was informed when the child was transferred to the PACU	42 (13.7)
Parent/guardian was allowed to stay with the child in the PACU	226 (73.62)

n: number of patients; %: percentage of patients; PACU: post-anesthesia care unit.

Table 3. Child's evaluation of anesthesia. Outpatient Surgery Department, Instituto de Medicina Integral Prof. Fernando Figueira (IMIP), Recife, Pernambuco, Brazil, 2014-2015.

	n (%)
Was afraid of the anesthesia procedure	
Yes	63 (20.72)
No	105 (34.54)
Unable to answer	136 (44.74)
Had met the anesthetist prior to surgery	
Yes	76 (25.00)
No	87 (28.62)
Unable to answer or did not remember	141 (46.38)
The anesthetist explained about the anesthesia procedure	
Yes	102 (33.55)
No	61 (20.07)
Unable to answer or did not remember	141 (46.38)
Remembered something from the anesthesia procedure	
Yes	12 (3.95)
No	104 (34.21)
Unable to answer	141 (46.38)
Remembers having inhaled [the anesthesia agent] through a mask	
Yes	130 (42.76)
No	34 (11.18)
Unable to answer	140 (46.05)
Thought the anesthesia was bad	
Yes	54 (17.76)
No	108 (35.53)
Unable to answer	142 (46.71)
Experienced pain after the surgery	
Yes	59 (19.41)
No	104 (34.21)
Unable to answer	141 (46.38)

n: number of patients; %: percentage of patients

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