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***Main Concerns of Patients Regarding  
the Most Common Complications in the  
Post-Anesthetic Care Unit***

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**INTRODUCTION**

Preoperative anxiety is frequently associated with anticipation of anesthesia- or surgery-related damages. Severe complications that can be attributed to anesthesia such as death are rare. On the other hand, "minor" events such as pain, nausea, or vomiting have assumed a fundamental role in the determination of the quality provided by the Anesthesiology service<sup>1</sup>.

When postoperative fears are analyzed regarding low morbidity events that should be avoided the most, anesthesiologists have not always been capable to determine the priorities of the patients<sup>2</sup>. Thus, successful treatment of postoperative pain, for example, is not necessarily related with higher satisfaction with anesthesia, since the consequences of pain treatment, such as nausea and vomiting, should be considered.

In a study undertaken in the United States, Macario et al.<sup>3</sup> evaluated the opinion of patients on the subject. Possible undesirable effects in the immediate postoperative period based on data from the literature (MEDLINE between 1986 and 1997) were listed. Since the list generated by this search was extensive, the authors decided to select the nine most frequent events, besides a tenth item described as “normal” (without any undesirable effects) to evaluate the reliability of the answers, since understanding of the questionnaire by the patients interviewed presupposed that the “normal” item would always be classified as “the least undesirable” or the “most desirable” (Chart I). However, the study population was composed mainly by individuals with high socio-economical and cultural level, which might not represent the reality of health services in regions where social indicators usually show a higher inequality rate. The objectives of the present study included: 1) to evaluate the main concerns of patients regarding the post-anesthetic period and to compare them with those observed by Macario et al.<sup>3</sup>; and 2) to test the hypothesis that the most undesirable effects, according to the opinion of the patients interviewed, could be influenced by demographic characteristics like educational level and family income.

## METHODS

After approval by the Ethics on Research Committee of the Conjunto Hospitalar de Sorocaba and signing of the informed consent by patients or their legal guardians, patients older than 16 years of both genders scheduled for elective surgeries under general anesthesia or regional block answered the questionnaire immediately before the pre-anesthetic evaluation undertaken either at the office or the hospital (Chart I). Individuals incapable of reading or understanding the contents of the questionnaire, those who did not agree to answer it, and incomplete forms or those

Chart I – List of Undesirable Pos-Anesthetic Events

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- Nausea
  - Vomiting
  - Waking up with a tube in the throat
  - Shivering and/or feeling very cold
  - Muscular weakness (being awake but unable to move)
  - Somnolence (feeling that one cannot wake up)
  - Severe pain in the throat (caused by the presence of a tube in the throat)
  - Strong pain at the site of the surgery
  - Waking up during the surgery (to remember being awake during the surgery)
  - Normal (without undesirable effects)
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whose “normal” item had not been classified as “least undesirable” (considered incorrect) were excluded from the study. Patients undergoing local anesthesia did not participate in the study.

Since patients received the questionnaire before seeing the anesthesiologist, it was considered that they were unaware of which anesthetic technique would be used. Therefore, the complications listed included some events specific for general anesthesia, but were applied to individuals who would undergo regional blocks.

After receiving the questionnaire, patients were instructed to answer the following question:

- Considering post-anesthetic effects or symptoms you fear the most that are listed below grade then from one (most undesirable) to ten (least undesirable).

Patients were instructed to consider that each hypothetical symptom observed in the post-anesthetic care unit would have the same duration. Some items (such as muscular weakness, somnolence, severe sore throat, waking up during the surgery, and “normal”) were clearly described to facilitate understanding (Chart I). Nausea, vomiting, pain at the site of the surgery, tremors and/or feeling cold were described as severe and difficult to control. The item “waking up with a tube in the throat” was characterized as “waking up after a surgical procedure with a tube that would cause severe discomfort and the patient would be unable to speak as long as it remained in the throat”.

To characterize the study patients, the following parameters were evaluated: age (years), gender, educational level (incomplete junior high, complete junior high, high school, and college), and family income. To facilitate analysis of the data, the number of groups, which was based on the “study of family incomes” of the IBGE (from the Portuguese for Brazilian Geographical and Statistical Institute)<sup>4</sup> was reduced from ten to three: up to US\$560.00, from US\$560.00 to US\$1,690.00, and more than US\$1,690.00.

The size of the study population was based on other studies on the same subject<sup>5</sup> and on the mean number of patients undergoing pre-anesthetic evaluation per month. The Chi-square test was used for the statistical analysis of the relationship between the results and the demographic data (age, gender, educational level, and family income). A  $p < 0.05$  was considered statistically significant. The statistical tests used are part of the Stata 9.0 software.

## RESULTS

The questionnaire was distributed to 500 patients, but 20 of them refused to participate in the study. Forty of the remaining questionnaires were excluded since they were incomplete (17) or incorrect (23). Table I shows the demographic data (age, gender, educational level and family income) of 440 patients included in the study.

Among the patients evaluated, 66.8% were between the ages of 31 and 59 years, 24.3% between 16 and 30 years,

Table I – Demographic and Socio-Economic Characteristic of the Study Patient

Characteristics	n	%
Age (years)		
16-30	107	24.32
31-59	294	66.81
≥60	39	8.86
Gender		
Male	277	62.95
Female	163	37.05
Educational level		
Incomplete Junior High	70	15.91
Junior High	27	6.14
High School	146	33.18
College	197	44.77
Income		
Up to US\$560.00	120	27.27
US\$560.00 to US\$1,690.00	198	45
Above US\$1,690.00	122	27.73

and 8.86% more than 60 years. Most patients were females, 63% while 37% were males. As for the educational level, 44.8% of the patients interviewed had complete or incomplete college, 33.2% attended high school, 6.1% complete junior high, and 15.9% did not finish junior high. Regarding family income, 27.3% had a family income of up to US\$560.00, 45% between US\$560.00 and US\$1,690.00, and 27.7% more than US\$1,690.00.

Among the study patients, 32.5% considered “waking up with a tube in the throat” immediately after anesthesia as the most undesirable event, followed by “severe pain at the site of the surgery” (23.4%), and “waking up during the surgery” (15.7%). Nausea and vomiting were analyzed together, and they were mentioned by 13.4% of the patients. Table II shows, in decreasing order, the post-anesthetic events mentioned more often by the patients.

When the mean position of each event mentioned by patients was considered (Table III), the first three were unchanged, although “severe pain at the site of the surgery” and “waking up during the surgery” changed positions. “Severe sore throat” was the fourth most mentioned, according to this criterion, although it remained in the same position when the percentage of patients who mentioned it as the most undesirable event was analyzed.

For the three events mentioned more often, the results were evaluated regarding demographic and socio-economic data. Analysis of the data showed that the only significant difference

Table II – Percentage of Main Undesirable Effects Mentioned

Undesirable event	(%)
Waking up with a tube in the throat	32.5
Severe pain at the site of the surgery	23.4
Waking up during the surgery	15.7
Nausea	8.4
Muscular weakness	5.7
Vomiting	5.0
Somnolence	3.4
Shivering and/or feeling very cold	3.2
Severe pain in the throat	2.7
Normal	0

Table III – Mean Position of Main Undesirable Events

Undesirable event	
Waking up with a tube in the throat	3.04
Waking up during the surgery	3.85
Severe pain at the site of the surgery	4.55
Severe throat pain	4.92
Vomiting	5.18
Nausea	5.42
Shivering and/or feeling very cold	5.70
Muscular weakness	5.73
Somnolence	6.58
Normal	10

observed was the higher percentage of male patients who did not mention pain as the main postoperative event to be avoided ( $p = 0.01$ ).

## DISCUSSION

The incidence of “minor” post-anesthetic events has been mentioned as an important determinant of patient satisfaction (or lack of) with anesthesia<sup>6</sup>. Using spontaneous responses, Shevde et al.<sup>7</sup> evaluated the main anesthesia-related fears of patients, and they observed that “fear of never waking up”, “feeling pain during or after anesthesia”, and the development of any functional impairment were mentioned more often. In Brazil, Macuco et al.<sup>8</sup> undertook a similar study, but patients received the questionnaire after pre-anesthetic evaluation at the office of the anesthesiologist. According to these authors, the most frequent answers included: “fear of

the unknown”, “sequelae, incapacity, deficiencies, invalidity”, and “medical error, lack of professional qualification”.

One of the objectives of the present study was to evaluate the perspective of patients regarding the most common undesirable effects, and not the most severe complications such as death or cerebral damage as indeed they are importantly worrisome for surgical patients but rare, they were therefore not included in the study. The questionnaire proposed by Macario et al.<sup>3</sup>, who selected the nine most common events based on data available in the literature (MEDLINE between 1986 and 1997), besides a tenth item described as “normal” (not associated with any undesirable effects) to evaluate the reliability of the answers. In the original study, to create a comparison scale among possible undesirable effects, the authors distributed the hypothetical amount of 100 dollars for each patient and asked them how much they would pay to prevent the development of each one. In the present study, this mechanism was not used, since some patients might interpret this method as a means to allocating a face value to the results of anesthesia.

According to the patients evaluated, the most undesirable effects were: waking up with a tube in the throat, severe pain at the site of surgery, waking up during the surgery, nausea and vomiting, muscular weakness, somnolence, tremors and/or feeling very cold, and severe sore throat.

Macario et al.<sup>3</sup> also evaluated the concerns of patients regarding the post-anesthetic period, but the study population was composed of individuals with higher socio-economic and cultural status, which might not represent the reality of countries or regions whose social indicators indicate higher inequality, such as Brazil. In the American study<sup>3</sup>, 69% of the individuals analyzed had a family income greater than 50,000 dollars, which represents approximately 8,000 reais (Brazilian currency) per month, while only 27% of the individuals in the present study reported a family income above 3,000 reais (US\$1,290.00), demonstrating the degree of socio-economic inequality between both populations.

Table IV compares the educational level of the study population in Brazil and United States. Data regarding the

patients evaluated by Macario et al.<sup>3</sup> were not included because they were grouped according to the number of school years.

The educational profile of the present study indicates that the percentage of patients with complete high school or college does not reflect the Brazilian reality. However, when the number of patients who did not complete junior high is analyzed, the study population does not show significant differences when compared with the Brazilian population. On the other hand, among Americans, a small number of individuals has a low educational level. Among the individuals evaluated by Macario et al.<sup>3</sup>, more than 90% attended school for more than 14 years.

Despite those differences, the main concerns of patients regarding undesirable postoperative effects in the present study were similar to the results of Macario et al.<sup>3</sup> Although the first four items are the same, nausea and vomiting were the most feared complication of American patients. Even though the events listed in the questionnaire were the most common in the literature, it is possible that they do not represent the main concerns of the Brazilian population. Since one of the objectives of this study was to compare the profile of the answers to that observed by Macario et al.<sup>3</sup>, the complications listed in the questionnaire were the same. Besides, since patients answered the questionnaire before pre-anesthetic evaluation, we took into consideration that they were not aware of the anesthetic technique and, therefore, general anesthesia would always be on their minds, regardless of the type of the procedure. On the other hand, although the inclusion of items specific to different anesthetic techniques like for example “fear of a pinprick on the back” or “headache”, associated with subarachnoid block, increased the options, they would be without meaning for patients undergoing ophthalmologic and ENT procedures. It would be interesting to divide patients according to the type of anesthesia, but for that patients would have to answer the questionnaire after the decision of the type of anesthesia was made. Macario et al.<sup>3</sup> did not describe the proportion of patients who underwent general anesthesia or regional blocks in their study. Similarly, in the present study since data were gathered before the pre-anesthetic technique the type of anesthesia each one underwent is unknown.

The information gathered from the analysis of the questionnaires was related with anthropometric, socio-economic, and educational levels to evaluate their influence on the answers. Approximately 15% of the patients did not finish junior high, and 25% had a family income below US\$560.00. The opinion of illiterate patients was not evaluated because they were excluded due to the lack of capacity to read the questionnaire, which can be considered a limitation of this study. It would be interesting to include those patients, since it would be a more faithful representation of the socio-economic and cultural profile of the Brazilian population.

The only statistically significant difference observed was the greater percentage of male patients who did not mention

Table IV – Distribution of the Study Population According to Family Income

	Present study*	Brazil **	USA **
Junior High			
Incomplete <sup>§</sup>	15.9	13.6	-
Complete	6.1	41.8	12.1
High School	33.2	21.8	48.9
College	44.8	7.8	39

Adapted from: DIEESE – Portuguese for: International Educational Indicators, Directory of Social and Professional Qualification<sup>9</sup>.

\*16 years and older; \*\*24 to 65 years of age; § – illiterate individuals not included.

pain as the main post-anesthetic event to be avoided. This does not necessarily mean that males are not concerned with pain. We should consider the possibility that they did not include pain due to the influence of cultural factors. Shevde et al.<sup>7</sup> evaluated the opinion of 800 patients about the main concerns related with general anesthesia and observed that pain was the one mentioned more often by male patients. Some parameters that could influence the answers like, for example, prior anesthesia were not investigated. It is expected that the fear of “not awakening” would be higher in patients undergoing general anesthesia. On the other hand, when regional blocks are considered, their concerns are related with pain, during or after the surgical intervention<sup>7</sup>. The point of view of patients does not always coincide with that of anesthesiologists<sup>10</sup>. According to a study that evaluated the opinion of anesthesiologists on the frequency and importance of “minor” adverse events related with outpatient anesthesia, the five events mentioned more often included pain at the incision, nausea, vomiting, preoperative anxiety, and discomfort during insertion of the intravenous catheter. To conclude, the main post-anesthetic worries of patients included waking up with a tube in the throat, severe pain at the site of the surgery, and remembering being awake during the surgery. Although the profile of the study population does not reflect the socio-economic and educational characteristics of the Brazilian population, especially that of poorer areas, age, educational level, and family income did not determine differences in the concerns of patients.

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## RESUMEN

Moro ET, Godoy RCS, Goulart AP, Muniz L, Modolo NSP - Principales Preocupaciones de los Pacientes sobre las Complicaciones Más Frecuentes en la Sala de Recuperación Postanestésica.

**JUSTIFICATIVA Y OBJETIVOS:** Los eventos considerados “menores”, han asumido un rol fundamental en la determinación de la calidad del servicio prestado en el área de la Anestesiología. El objetivo del presente estudio, fue evaluar las principales preocupaciones de los pacientes con relación al período postanestésico y comprobar la hipótesis de que los efectos menos deseados pueden sufrir el influjo de las características demográficas.

**MÉTODO:** Un cuestionario fue respondido por 440 pacientes inmediatamente antes de la evaluación preanestésica. Se relacionaron los posibles efectos no deseados en el período postoperatorio inmediato, basados en una investigación hecha a partir de datos disponibles en la literatura y considerando el criterio de frecuencia, pero no el de gravedad. Fueron evaluados los datos demográficos e investigadas las nueve preocupaciones citadas más a menudo. Las informaciones recolectadas a partir del análisis de los cuestionarios rellenos por los entrevistados, fueron comparadas con sus datos antropométricos, socioeconómicos y educativos, con el objetivo de evaluar la influencia de esas variables en el perfil de las respuestas.

**RESULTADOS:** Entre los efectos no deseados, el temor de despertarse intubado fue el más citado como siendo el más importante, seguido de “dolor fuerte en la región de la cirugía” y “despertarse durante la cirugía”. El análisis de los tres efectos menos deseados con relación a los datos demográficos, no reveló ninguna diferencia estadística significativa, con excepción del ítem “dolor en la región de la cirugía” (menos citado entre pacientes del sexo masculino).

**CONCLUSIONES:** Las principales preocupaciones de los pacientes con relación al período postanestésico son: despertarse con un tubo en la garganta, sentir un fuerte dolor en la región de la cirugía y el recuerdo de estar despierto durante la cirugía. La edad, el nivel cultural y los ingresos familiares, no definieron diferencias en las preocupaciones de los pacientes.