

## ORIGINAL RESEARCH

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### SURGERY INFORMATION REDUCES ANXIETY IN THE PRE-OPERATIVE PERIOD

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**PURPOSE:** Patients preparing to undergo surgery should not suffer needless anxiety. This study aimed to evaluate anxiety levels on the day before surgery as related to the information known by the patient regarding the diagnosis, surgical procedure, or anesthesia.

**METHOD:** Patients reported their knowledge of diagnosis, surgery, and anesthesia. The Spielberger State-Trait Anxiety Inventory (STAI) was used to measure patient anxiety levels.

**RESULTS:** One hundred and forty-nine patients were selected, and 82 females and 38 males were interviewed. Twenty-nine patients were excluded due to illiteracy. The state-anxiety levels were alike for males and females ( $36.10 \pm 11.94$  vs.  $37.61 \pm 8.76$ ) (mean  $\pm$  SD). Trait-anxiety levels were higher for women ( $42.55 \pm 10.39$  vs.  $38.08 \pm 12.25$ ,  $P = 0.041$ ). Patient education level did not influence the state-anxiety level but was inversely related to the trait-anxiety level. Knowledge of the diagnosis was clear for 91.7% of patients, of the surgery for 75.0%, and of anesthesia for 37.5%. Unfamiliarity with the surgical procedure raised state-anxiety levels ( $P = 0.021$ ). A lower state-anxiety level was found among patients who did not know the diagnosis but knew about the surgery ( $P = 0.038$ ).

**CONCLUSIONS:** Increased knowledge of patients regarding the surgery they are about to undergo may reduce their state-anxiety levels.

**KEY WORDS:** Anxiety. Information. Surgery. Anesthesia. Diagnosis.

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Interaction between the patient and the anesthesiologist often occurs during a unique visit on the day before the surgery. The anesthesiologist may follow a short check-up guide, perform a specific physical examination, and prescribe sedatives. Usually, this is the first or even the only opportunity for the anesthesiologist to contact the patient.

In order to avoid unnecessary anxiety, it is advisable that the patient who is to undergo surgery does not fear the upcoming procedure. The anesthesiologist's attention can greatly reduce

anxiety even without using medicines<sup>1</sup>. It is important to also consider that there might be some consideration as to how detailed the information should be that is given to the patient.

In a British study, 82% of patients who underwent surgery had expressed their desire to know more about the

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surgical procedure prior to surgery. In addition, the most desired piece of information was the estimated length of stay in the hospital<sup>2</sup>. In a Danish study, patients asked more about pain, anesthesia duration, and risk of impairment of daily activities and less about sedatives or complications<sup>3</sup>. In a study conducted in the United States, anxiety in the preoperative period was reduced by information about anesthesia procedures, provided either by leaflets or video<sup>4</sup>.

Anxiety is defined as behavioral manifestations that can be classified

into 2 categories: state and trait anxiety. State anxiety refers to any acute situational-driven episode of anxiety and does not persist beyond the triggering situation. Trait anxiety is a pattern of anxiety that can be considered a personality trait. High state-anxiety levels indicate high levels of anxiety at the moment of evaluation and high trait-anxiety levels indicate an anxious personality<sup>5</sup>.

This study aims to observe the state-anxiety level on the day before surgery as related to the amount of information the patient knows regarding the diagnosis, surgery procedure, and anesthesia schedule.

## METHOD

The Institutional Ethical Committee Board approved the protocol. The study protocol was designed as an observational investigation, which dictated that no interference was to be made regarding the provision of information to the patient. Patients were selected randomly from a list of scheduled surgical procedures. Patients were chosen by means of a table of random numbers 2 days in a week, with 10 patients in each group. Each patient was visited by 2 students the evening before the surgery; 5 groups of visiting students were used. Pregnancy, transplant surgery, neurological diseases, and patients aged under 16 or older than 80 were excluding conditions.

After explaining the questionnaire and obtaining the signed consent, the patients answered open questions about their education level and their knowledge about the diagnosis, upcoming surgery procedure, and type of anesthesia. The written questions were: 1) "Do you know what your diagnosis is?" 2) "Do you know what type of surgery you will be undergoing?", and 3) "Do you know what type of anesthesia you will receive?"

The Spielberger State-Trait Anxiety Inventory (STAI) was used to measure the anxiety levels. State anxiety indicates anxiety related to the present moment while trait anxiety indicates a stable dimension of personality<sup>5</sup>. The inventory was presented to the patient to be read and answered. Those patients unable to read or understand the questions were considered illiterate, and their data was discarded after the interview. The following cut-off points have been suggested to define categories of symptoms of trait-anxiety levels: low is less than 33, medium ranges from 33 to 49, and high is above 49<sup>6</sup>.

After the interview, students reviewed the patient's clinical files regarding the diagnosis and prescribed surgical for comparison with the answers from the interview. Those coincident answers were considered correct even with some lack of precision with the medical nomenclature regarding the procedure; for example, "cholecystectomy" from medical files compared to "surgery to get rid of stone in the gallbladder" from patient's answer.

The anxiety level was compared among patients with regard to their information about the diagnosis, surgical procedure, and anesthesia, which was classified into 2 groups: those who were informed correctly and those who were not. The influences of education level and gender on the state-trait anxiety were also considered.

All measures are expressed as mean  $\pm$  SD. Values for state-anxiety as well as trait-anxiety levels from the STAI questionnaire were compared with education level using analysis of variance (ANOVA). The STAI results separated by gender, as well as those from correct or incorrect answers related to surgery, diagnosis, or anesthesia information, were compared using Student's *t* test. The relationship between STAI results for gender and the patient's information regarding diagnosis, surgery, or anesthesia was analyzed using two-way

ANOVA followed by the Bonferroni test for multiple comparisons. Results were considered statistically significant at  $P < 0.05$ . Statistical analyses were performed using SigmaStat 2.0 software (SigmaStat for Windows Version 2.03, SPSS Inc.).

## RESULTS

One hundred and forty-nine patients were selected and interviewed, but only 120 interviews were used; 82 females and 38 males were interviewed. Twenty-nine patients had their interviews discarded due to illiteracy and were excluded from the state-trait anxiety statistical analysis. Patient ages were females,  $48.7 \pm 13.0$ , and males  $49.3 \pm 16.0$ . Education levels were elementary schooling, 76 (63.3%); high school grade, 30 (25%); and graduate achievement, 14 (11.7%).

There was no difference in state-anxiety levels between males and females, ( $36.10 \pm 11.94$  vs.  $37.61 \pm 8.76$ ,  $P = 0.439$ ). However, the mean trait-anxiety level was higher for women ( $42.55 \pm 10.39$ ) compared with men ( $38.08 \pm 12.25$ ) ( $P = 0.041$ ). The education level did not influence the state-anxiety level ( $P = 0.964$ ). It is interesting to note, however, that the trait-anxiety level was inversely related to educational achievement with a statistically significant difference (Table 1).

The majority of the patients had correct knowledge of their diagnosis (110, 91.7%). Ninety (75%) described the surgical procedure quite correctly, but only 45 (37.5%) knew about the anesthesia procedure. The information about diagnosis ( $P = 0.456$ ) or anesthesia ( $P = 0.229$ ) did not influence the state-anxiety. However, patients who did not know the surgery procedure had higher state-anxiety levels ( $P = 0.021$ ) (Table 2). There was no difference in trait-anxiety levels between patients who did or did not have correct

knowledge regarding their diagnosis ( $P = 0.624$ ), surgical procedure ( $P = 0.181$ ), or anesthesia ( $P = 0.946$ ).

There was no interaction of gender and surgery information with state-anxiety ( $P = 0.419$ ), but for those who knew about the surgical procedure the anxiety level was lower. It is interesting to note that state-anxiety levels in men were significantly lower when they had correct knowledge about their surgical procedure. ( $P = 0.036$ ). There was no interaction of gender and information about the anesthesia ( $P = 0.431$ ) as well as for that regarding the diagnosis ( $P = 0.311$ ). Trait-anxiety was higher, although not statistically significant, among women regardless of whether they had correct knowledge of their diagnosis ( $P = 0.513$ ), surgical procedure ( $P = 0.639$ ), or anesthesia ( $P = 0.266$ ).

The interaction between diagnosis and surgery information was not significant for state-anxiety ( $P = 0.170$ ). However, a lower state-anxiety was found for those who had no information about diagnosis but knew about the proposed surgical procedure ( $P = 0.038$ ) (Fig. 1). There were no statistically significant differences in state-anxiety levels in the interaction between anesthesia and surgery ( $P = 0.432$ ) and between anesthesia and diagnosis ( $P = 0.120$ ).

Patients whose files recorded a written diagnosis of cancer (20) did not have higher state-anxiety level ( $P = 0.351$ ) or trait-anxiety ( $P = 0.069$ ) compared to those having a non-cancer diagnosis.

**DISCUSSION**

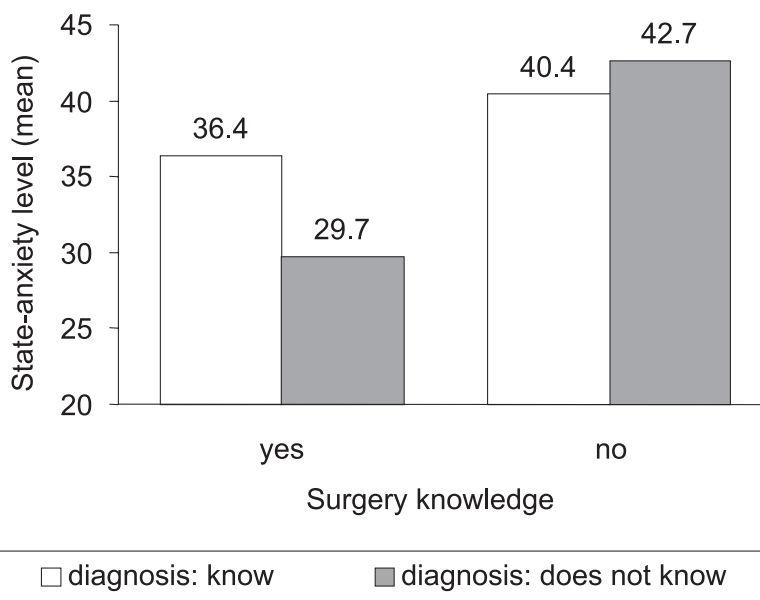
The findings of this study suggest that patients who have information regarding the surgical procedure they are about to undergo may have lower state-anxiety levels. Few patients were informed about anesthesia, but this finding did not affect state-anxiety

**Table 1 - State-trait anxiety results as related to gender and education level.**

		State (Mean ± SD)	Trait (Mean ± SD)
Sex	Female	37.61 ± 8.76	42.55 ± 10.39
	Male	36.10 ± 11.94	38.08 ± 12.25
	P	0.439	0.041
Education	Elementary	36.95 ± 10.70	43.17 ± 11.39
	High School	37.43 ± 7.82	40.73 ± 9.03
	Graduate	37.50 ± 9.52	30.93 ± 8.44
	P	0.964	<0.001

**Table 2 - State-trait anxiety results as related to information for diagnosis, anesthesia, or surgery.**

		State (Mean ± SD)	Trait (Mean ± SD)
Diagnosis	Known	37.34 ± 9.63	40.98 ± 11.42
	Unknown	34.90 ± 12.40	42.80 ± 7.95
	P	0.456	0.624
Anesthesia	Known	36.29 ± 10.62	41.19 ± 11.29
	Unknown	38.53 ± 8.33	41.04 ± 11.05
	P	0.229	0.946
Surgery	Known	35.94 ± 9.33	40.34 ± 10.69
	Unknown	40.70 ± 10.66	43.50 ± 12.34
	P	0.021	0.181



**Figure 1 - Surgery information reduces state-anxiety levels (Lower state-anxiety levels were seen for patients with information about their prescribed surgical procedure regardless of their information about diagnosis).**

levels. In this sample, trait-anxiety was higher for women. The education level apparently does not influence state-

anxiety levels but the trait-anxiety level was inversely related to it.

There is evidence in the literature

that the practice of giving preoperative information can reduce patient anxiety<sup>4-8</sup>. However, some controversy still remains, since for cardiac surgery, information delivered either personally or by pamphlets produced no benefit<sup>9-11</sup>. It is also interesting to note that any complete or minimal written information regarding anesthesia, while not significantly changing the state-anxiety levels, could increase the knowledge regarding anesthesia<sup>12</sup>.

A previous study among Brazilian patients revealed several risk factors for preoperative anxiety. History of cancer, psychiatric disorders, self-perception, depression, trait-anxiety level, pain, history of smoking, extent of the proposed surgery, female gender, level of education, and physical status according to ASA constituted independent risk factors for high preoperative state-anxiety levels<sup>13</sup>. Although not directed towards investigating risk factors, the present study confirms some of those previous findings and contributes further in that it shows that patients who could express their knowledge about the proposed surgery had lower state-anxiety levels.

The patient's right to receive all the information they might want is by no means a subject to be preserved and taught to undergraduate medical students. However, doctors may have a weak awareness of their patients' responses to the diseases they face, considering them to be more negative than are the patients' actual thoughts<sup>14</sup>. Accordingly, it would be reasonable to consider that not just any information would reduce anxiety, but the attending physician has to know the right form and amount of information to provide. This is probably the case for this sample, since knowledge of the diagnosis did not influence the anxiety level, whereas information regarding the surgical procedure did. A cost-effective way of identifying patients who would most likely benefit from

more information has been investigated<sup>15</sup>. However, there is still the possibility that no substitute for a physician presence and attitude could do any better.

The use of pamphlets or standard written information might be questioned. Besides being indifferent to the patients' needs, such material does not aid anxiety control<sup>9</sup>. Patients from this sample with the correct information about surgery had reduced anxiety regardless the diagnosis information (Fig. 1). This may suggest a sick person might have more fear about unexpected surgery outcomes, in addition to dealing with the threat of a changing lifestyle. Patients may not necessarily have a proper background or family support to cope with all of these challenges. All things considered, the physician would still have to participate in this situation, and the use of guidelines may help but not substitute for his role.

Trials on preoperative education have not always shown differences between those who received or did not information regarding the surgery. Shuldham concludes that such conflicting findings could be the result of distinct study designs<sup>16</sup>. This study protocol called for no interference with the patient's knowledge of hospital rules, surgery procedures, or anesthesia proposals at the time of investigating for anxiety. It is reasonable to believe that any information they had may have come from a variety of sources, such as the media, and not only from medical services. This possibility may bring into focus at least 2 considerations. One is related to the human imagination that can be calmed with proper education and careful information. The other is the diversity of medical information provided by the media, either by the Internet (World Wide Web) or by the regular press, which addresses a multitude of events but in a very impersonal way. Physicians have

limits to their time and attention, and perhaps they find that the better way to deal with such large amount of information is to be abbreviated in talking with patients rather than to be informative about all the treatment possibilities.

The number of patients familiar with the surgery proposals was relatively low (73.2%), and very low for anesthesia (37.5%), possibly arousing questions about whether the public health system in Brazil fails to provide information about medical procedures. Providing information about anesthesia to the general population has been considered before. In one study, among a sample of 401 patients, the most frequent concern was fear of the unknown<sup>17</sup>. The state-anxiety finding in this sample correlates well with the STAI measured anxiety in a 734-patient study related to anesthesia procedures<sup>18</sup>. Also, the population studied in this hospital could have been adversely affected by functional illiteracy somehow. How this might affect the state-anxiety outcome has not been addressed and may deserve further investigation.

An important limitation of these results is that a variety of other valuable information has not been addressed. The severity of illnesses, the prognosis, the possibility of life-threatening situations, the type of surgery as palliative or curative, the unexpected adverse effects from the disease, surgery, or even the anesthesia can all affect state-anxiety levels in other important ways. Since this investigation was an observational study, it would be interesting to proceed with further investigations to address these considerable factors even by means of controlled situations.

In conclusion, patients who do not hold information about surgery had higher state-anxiety levels, and this study suggests such information may reduce anxiety regardless of diagnosis

information. Knowledge about anesthesia or diagnosis did not influence state-anxiety levels. The percentage of patients informed about anesthesia was low and might be considered a subject to be addressed.

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#### RESUMO

KIYOHARA LY e col. - Conhecimento sobre cirurgia reduz ansiedade pré-operatória. *Rev. Hosp. Clín. Fac. Med. S. Paulo* 59(2):51-56, 2004.

**PROPÓSITO:** Pacientes que vão ser operados não devem sofrer ansiedade. Este estudo tem por objetivo comparar o grau de ansiedade no dia anterior à cirurgia entre pacientes que têm informação sobre seu diagnóstico, cirurgia e anestesia.

**MÉTODOS:** Pacientes referiram seu conhecimento sobre o diagnóstico, a cirurgia e a anestesia. O inventá-

rio de Spielberger, State-Trait Anxiety Inventory (STAI), mediu a ansiedade.

**RESULTADOS:** Cento e quarenta e nove pacientes foram selecionados, 82 mulheres e 38 homens foram entrevistados. Vinte e nove pacientes foram excluídos do estudo por analfabetismo. A ansiedade-estado foi semelhante para homens e mulheres, ( $36,10 \pm 11,94$  vs.  $37,61 \pm 8,76$ ) (mean  $\pm$  SD). A ansiedade-traço foi maior entre mulheres ( $42,55 \pm 10,39$  vs.  $38,08 \pm 12,25$ ,  $P = 0,041$ ). O nível de educação não influenciou a ansiedade-estado mas mostrou-se inversamente relacionado à ansiedade-traço. O diagnós-

tico fora claro para 91,7% dos pacientes entrevistados, cirurgia para 75% e anestesia para 37,5%. O desconhecimento da cirurgia elevou a ansiedade-estado ( $P = 0,021$ ) cujo menor índice foi encontrado entre pacientes que não conheciam seu diagnóstico, mas sabiam sobre a cirurgia ( $P = 0,038$ ).

**CONCLUSÕES:** O conhecimento sobre a cirurgia a ser realizada pode reduzir o estado de ansiedade.

**UNITERMOS:** Ansiedade. Informação. Cirurgia. Anestesia. Diagnóstico.

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