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Official Publication of the Brazilian Society of Anesthesiology  
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## SCIENTIFIC ARTICLE

# Preoperative patient education: can we improve satisfaction and reduce anxiety?

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Received 24 June 2013; accepted 15 July 2013

Available online 29 October 2013

### KEYWORDS

Preoperative assessment;  
Patient education;  
Patient satisfaction;  
Anxiety

### Abstract

**Background and objectives:** Patients' knowledge deficits concerning anesthesia and the anesthesiologist's role in their care may contribute to anxiety. The objective of this study was to develop anesthesia patient education materials that would help improve patient's satisfaction regarding their knowledge of the perioperative process and decrease anxiety in a community hospital with a large Spanish-speaking population.

**Methods:** A survey (Survey A) in English and Spanish was administered to all adult anesthesiology preoperative clinic patients during a 4-week period. The data were analyzed and then a patient education handout was developed in both English and Spanish to assist with our patients' major concerns. A second survey (Survey B) was administered that was completed after the education handout had been put into use at the clinic. The survey asked for basic demographic information and included questions on satisfaction with regard to understanding of anesthesia as well as worries regarding surgery and pain.

**Results:** In the patients who received the handout, statistically significant improvement was found in the questions that asked about satisfaction with regard to understanding of type of anesthesia, options for pain control, what patients are supposed to do on the day of surgery, and the amount of information given with regard to anesthetic plan. There was no difference in anxiety related to surgery in patients who received the educational handout compared to those patients who did not.

**Conclusions:** Patient education handouts improved patient's satisfaction regarding their knowledge of the perioperative process but did not reduce anxiety related to surgery.

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**PALAVRAS-CHAVE**

Avaliação  
pré-operatória;  
Informação ao  
paciente;  
Satisfação do  
paciente;  
Ansiedade

**Informação pré-operatória ao paciente: podemos melhorar a satisfação e reduzir a ansiedade?****Resumo**

*Justificativa e objetivos:* A falta de conhecimento dos pacientes em relação à anestesia e ao papel do anestesiológista em sua assistência pode contribuir para a ansiedade. O objetivo deste estudo foi desenvolver materiais explicativos para o paciente sobre a anestesia que poderiam ajudar a melhorar a satisfação do paciente em relação ao seu conhecimento do processo perioperatório e a diminuir a ansiedade em hospital comunitário com uma grande população de língua espanhola.

*Métodos:* Durante um período de quatro semanas, uma pesquisa (Pesquisa A) em inglês e espanhol foi realizada no período pré-operatório com todos os pacientes adultos que seriam submetidos à anestesia. Os dados foram analisados e, posteriormente, um folheto explicativo foi desenvolvido em inglês e espanhol para esclarecer as principais preocupações dos pacientes. Uma segunda pesquisa (Pesquisa B) foi realizada e concluída após a colocação do folheto explicativo em uso na clínica. A pesquisa investigou as informações demográficas básicas e incluiu perguntas sobre a satisfação relacionada à compreensão da anestesia, bem como as preocupações com a cirurgia e a dor.

*Resultados:* Nos pacientes que receberam o folheto houve melhora estatisticamente significativa em relação às perguntas sobre a satisfação com a compreensão do tipo de anestesia, as opções para o controle da dor, o que os pacientes deveriam fazer no dia da cirurgia, bem como a quantidade de informações prestadas sobre o plano anestésico. Não houve diferença na ansiedade relacionada à cirurgia entre os pacientes que receberam e os que não receberam o folheto educativo.

*Conclusões:* Os folhetos explicativos melhoraram a satisfação do paciente em relação ao conhecimento do processo perioperatório, mas não reduziram a ansiedade relacionada à cirurgia.

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**Introduction**

One of the goals of preoperative anesthesia consultation is reassuring the patient and reducing anxiety.<sup>1</sup> Anxiety has been associated with several pathophysiological responses such as hypertension and dysthythmias, which can increase perioperative morbidity.<sup>2</sup> Patients' knowledge deficits concerning anesthesia and the anesthesiologist's role in their care may contribute to these fears and anxieties. Previous patient surveys concerning anesthesia revealed that patients are very fearful of death during anesthesia (8–55%), awakening during anesthesia (5–54%), experiencing postoperative pain (5–65%), and experiencing postoperative nausea (5–48%).<sup>1,3</sup>

Patients typically have only one preoperative visit with a member of the anesthesia team prior to surgery. This takes place either in a preoperative clinic visit or the night before their surgery if they are inpatients. Some patients, especially those deemed healthy or undergoing uncomplicated procedures, may only meet a member of the anesthesia team immediately prior to surgery. Because of the limited interactions between patients and anesthesiologists, different methods of communication have been utilized to pass on information regarding anesthesia to patients, including handouts, videos, and the internet. Fitzgerald and Elder<sup>4</sup> reported that a one-page handout that explained anesthesia and discussed common patient fears associated with anesthesia and surgery resulted in a statistically significant reduction in patient fears in over 40% of patients studied.

Other investigators have reported beneficial outcomes after presenting a video with information concerning anesthesia to patients before their surgery.<sup>1,5,6</sup>

We are unaware of any previous studies that have examined patient's knowledge of anesthesia and their fears associated with anesthesia conducted in a community hospital with a large Spanish-speaking population. Our hypothesis was that the development and use of anesthesia patient education materials in English and Spanish given to patients in the anesthesiology preoperative clinic would help improve patient's satisfaction regarding their knowledge of the perioperative process and decrease anxiety within the community hospital setting.

**Methods**

A survey was developed in order to assess the level of understanding of our patients with regard to anesthesia and surgery and the level of anxiety associated with the perioperative period. After approval by the Baylor College of Medicine IRB in February 2010, our survey was administered to patients presenting to the Ben Taub General Hospital anesthesiology preoperative clinic during a 4-week period in April 2010. The IRB waived the requirement for written consent. The survey was anonymous and optional, and it included a statement of the purpose of the survey and that the information collected anonymously would be used for research purposes only. By completing the survey and returning it to their anesthesiologist, the patients were providing



## Anesthesia

### ***What is anesthesia?***

Anesthesia is medicine given to cause loss of sensation and put the entire body to sleep. There are four types of anesthesia:

1. General anesthesia - Medicines are given that will cause you to fall asleep and keep you asleep during surgery. During the surgery you will not feel anything.
2. Regional anesthesia - Medicines are given to block pain from a part of the body without causing you to fall asleep.
3. Local anesthesia - Medicines are given in the surgical site to help numb a small area of the body.
4. Monitored Anesthesia Care (MAC) anesthesia - Medicines are given to help you relax during the procedure. You are awake and breathing on your own.

### ***Is anesthesia safe?***

In general, anesthesia is very safe. However, each person is different and the risk will vary depending on your medical history and the type of surgery. A member of your healthcare team will explain the risks and benefits of anesthesia during your preoperative visit. Your healthcare team will develop a plan that is safest for you.

### ***Who gives anesthesia?***

Anesthesia is given by a team of doctors and nurses who specialize in anesthesia. You will be under the care of a doctor at all times during your procedure or surgery. The team will also take care of you in the recovery room. Additional members of the healthcare team may include:

- Anesthesia resident - a doctor in training to become an anesthesiologist.
- Medical student - a student in training to become a doctor may be assigned to help take care of you. They are learning about the practice of anesthesia.
- Certified registered nurse anesthetist (CRNA) - a registered nurse who has completed specialized training in the practice of anesthesia.
- Student registered nurse anesthetist (SRNA) - registered nurse who is receiving specialized training in anesthesia.

### ***Who will look after me while I am under anesthesia?***

At least one member of the anesthesia team will be with you at **all times** during your surgery. The team member will monitor your blood pressure, heart, and oxygen levels in your blood. They make sure you are safe during the surgery.

### ***Will I wake up during the procedure or surgery?***

It is normal for individuals to remember parts of the procedure or surgery when under certain types of anesthesia. When general anesthesia is used, it is rare for one to wake up or remember any part of the procedure or surgery. Please talk to your healthcare team if you have any concerns prior to your procedure or surgery.

**Figure 1** What is anesthesia? Patient education handout.

consent for the study. All patients aged 18 years and older were given this survey upon arrival to the preoperative clinic and before meeting with a member of the anesthesiology team. There were both English and Spanish versions of the survey to accommodate the large Spanish-speaking population in our hospital, which is around 40% of our patient population. Patients were given a choice as to which version to complete if they spoke both languages.

The purpose of Survey A (Fig. 1) was to obtain baseline data on our patients' knowledge base and anxieties that we hoped would improve once the handouts were put into use. The questions were created by Dr. Ortiz and Dr. Tolpin with the goal of addressing potential areas of weakness. Local faculty also gave input on the content of the survey

questions. Survey A asked questions concerning age, sex, primary language, and education level. There were also multiple questions on patient's satisfaction with regard to understanding of anesthesia as well as their worries regarding surgery and pain associated with surgery.

The results of Survey A were used to help develop an anesthesia patient education handout, which we planned to distribute to patients as part of the routine preoperative visit. The handout was sent to the Harris County Hospital District's patient education committee for approval. The handout was written at a 6th grade reading level by the primary authors and both English and Spanish versions were approved by the committee. Once approved for use, the handouts were distributed to all patients upon arrival to the

### PERIOPERATIVE PATIENT SURVEY (B)

This questionnaire is part of a research project with the purpose of improving the information our patients receive as part of the anesthetic evaluation and preparation for surgery. Completion of the survey is entirely voluntary. By completing and returning the survey to your anesthesiologist, you are consenting to the research study.

AGE:\_\_\_\_ SEX: Male\_\_ Female\_\_ PRIMARY LANGUAGE: English\_\_ Spanish\_\_ Other\_\_  
 HIGHEST LEVEL OF EDUCATION OBTAINED: 1 – Less than 8th grade 2 – Less than 12th grade 3 – High School  
 4 – College graduate 5 – Graduate School

**Please answer the following questions:**

1. How satisfied are you with your understanding of the role of your anesthesiologist)  
 1-Not Very Satisfied 2- Somewhat Satisfied 3- Neutral 4- Satisfied 5- Very Satisfied
2. How satisfied are you with your understanding of the type of anesthesia that you will be receiving?  
 1-Not Very Satisfied 2- Somewhat Satisfied 3- Neutral 4- Satisfied 5- Very Satisfied
3. How satisfied are you with your understanding of your options for pain control after surgery?  
 1-Not Very Satisfied 2- Somewhat Satisfied 3- Neutral 4- Satisfied 5- Very Satisfied
4. How satisfied are you with your understanding of what you are supposed to do the day of surgery?  
 1-Not Very Satisfied 2- Somewhat Satisfied 3- Neutral 4- Satisfied 5- Very Satisfied
5. How worried or concerned are you about undergoing anesthesia?  
 1-Not Very Worried 2- Somewhat Worried 3- Neutral 4- Worried 5- Very Worried
6. How worried or concerned are you about your surgery?  
 1-Not Very Worried 2- Somewhat Worried 3- Neutral 4- Worried 5- Very Worried
7. How worried or concerned are you about being awake during the surgery?  
 1-Not Very Worried 2- Somewhat Worried 3- Neutral 4- Worried 5- Very Worried
8. How worried or concerned are you about being in pain after surgery?  
 1-Not Very Worried 2- Somewhat Worried 3- Neutral 4- Worried 5- Very Worried
9. What are you most worried or concerned about today?  
 1-Surgery 2- Anesthesia 3- Pain 4- Nausea 5- Other
10. How would you rate the amount of information given to you about your anesthetic plan?  
 1-Very Poor 2- Poor 3- Neutral 4- Good 5- Excellent
11. How easy or difficult was it for you to find information about anesthesia on the internet? If this question does not apply to you, please leave it blank  
 1-Very Difficult 2- Difficult 3- Neutral 4- Easy 5- Very Easy
12. How satisfied are you with the written materials in helping your understanding of the type of anesthesia that you will be receiving?  
 1-Not Very Satisfied 2- Somewhat Satisfied 3- Neutral 4- Satisfied 5- Very Satisfied

**Figure 2** Surveys A and B. As noted, Survey B had the additional Question #12.

preoperative clinic. Fig. 2 shows a copy of the education handout that was developed and given to our patients.

A second survey, Survey B, was administered to our patients over a four-week period in September 2011. This survey was completed by patients after reviewing the education materials but before meeting with a member of the anesthesia team. As seen in Fig. 1, Survey B differed from

Survey A in that it included Question #12, which referred to the new handout.

We chose a 4-week period for each survey in order to obtain a representative sampling of our patients scheduled for outpatient or same-day admit surgery. Survey data are expressed as mean  $\pm$  SD and normality for survey data was analyzed by Shapiro–Wilk tests. For normally distributed

**Table 1** Survey demographics.

Variable	Survey A (N=206)	Survey B (N=145)	p
Age – mean (SD)	51 (16)	51 (14)	0.59
Gender %			
Male	42	46	
Female	58	54	0.44
Education level (scale 1–5)			
Mean (SD)	2.6 (1.1)	2.7 (1.1)	0.42
Language %			
English	59	61	
Spanish	41	39	0.57

survey data, differences of survey score between two surveys were compared using Student *t*-test. Nonparametric test (Wilcoxon test) was used to compare survey data that were not normally distributed. To investigate the differences about satisfaction or worry between two surveys, the survey data were categorized into either satisfactory (survey score  $\geq 4$ ) or not satisfactory (score  $\leq 3$ ) for survey questions about satisfaction. For survey questions about worry, the survey data were divided into either worry (score  $\geq 4$ ) or not worry (score  $\leq 3$ ). Chi square tests were performed for comparing the frequency of satisfaction and/or worry between two surveys. All analyses were performed using SAS 9.1 software (SAS Institute, Cary NC). A value of  $p < 0.05$  was considered statistically significant for all analyses.

## Results

Demographics for both survey populations are shown in [Table 1](#). There were no significant differences between the two groups surveyed. The age distribution for the patients included in both surveys was similar and is displayed in [Table 2](#). The average education score was 2.6 and 2.7, indicating that the average patient in our study lacked a high school diploma. In addition, 40% of the patients were primarily Spanish-speaking and received the Spanish version of the survey and materials. Of note, Spanish-speaking patients and English-speaking patients did not differ based on mean age (51 years old vs. 50.2 years old,  $p=0.7$ ). However, Spanish-speaking patients were less likely to be male (33.5% vs. 47.8%,  $p=0.02$ ) and were more likely to report

fewer years of education (2.23 vs. 2.86,  $p < 0.001$ ) than the English-speaking patients in the study cohort.

After Survey A was completed, a patient education handout was developed and Survey B was performed. [Table 3](#) shows the summarized survey results. The group of patients who completed the survey after reviewing the handout reported significantly higher satisfaction with their understanding of the type of anesthesia they would be receiving (Question 2, 4.15 vs. 4.45,  $p=0.0028$ ). Additionally, they were significantly more satisfied with their understanding of their options for pain control after surgery (Question 3, 3.98 vs. 4.33,  $p=0.0027$ ) and with what they were supposed to do the day of surgery (Question 4, 4.19 vs. 4.52,  $p=0.0004$ ). The second group of patients rated the amount of information given to them concerning their anesthetic plan higher than the patients who did not receive the handout (Question 10, 4.31 vs. 4.60,  $p=0.0038$ ).

Data from Question 9, regarding what worried patients the most, signified that in both Survey A and B, worries about surgery (33.2% vs. 35.8%,  $p=0.62$ ) and pain (36.5% vs. 34.3%,  $p=0.96$ ) were the most common answers. Worries about anesthesia were third on the list (14.4% vs. 9.0%,  $p=0.16$ ). Question 11, which asked about ease of finding information on the internet, was only answered by 32% of those surveyed. We instructed those who do not use the internet to search for medical information to leave that question blank. The respondents in Survey B rated their satisfaction with the education handout highly (Question 12, mean  $4.23 \pm 0.89$ ).

**Table 2** Survey age distribution. Number of patients within each age group (percent).

Age group	Survey A (N=206)	Survey B (N=145)
18–20	8 (3.9)	3 (2.1)
21–30	16 (7.8)	14 (9.7)
31–40	18 (8.7)	14 (9.7)
41–50	50 (24.3)	36 (24.8)
51–60	58 (28.6)	43 (29.7)
61–70	34 (16.5)	25 (17.2)
>70	22 (10.7)	10 (6.9)

**Table 3** Survey results (Question Scale 1–5). Data presented as mean (SD).

Question	Survey A	Survey B	p
1	4.35 (0.92)	4.53 (0.80)	0.5500
2	4.15 (0.99)	4.45 (0.78)	0.0028
3	3.98 (1.07)	4.33 (0.83)	0.0027
4	4.19 (0.94)	4.52 (0.72)	0.0004
5	2.38 (1.26)	2.35 (1.46)	0.4777
6	2.59 (1.28)	2.48 (1.45)	0.2939
7	2.70 (1.47)	2.46 (1.57)	0.1005
8	2.88 (1.37)	2.60 (1.44)	0.0523
10	4.31 (0.87)	4.60 (0.55)	0.0038
11	3.37 (1.27)	3.74 (1.06)	0.1673

**Table 4** The percentage of patients reporting satisfaction (score  $\geq 4/5$ ) and/or worried (score  $\geq 4/5$ ) on Survey A and Survey B.

Question	Survey A satisfaction %	Survey B satisfaction %	p-Value
#1	85.3	95.2	0.002
#2	80.6	91.8	0.0034
#3	73.5	86.3	0.004
#4	80.6	94.5	0.0002
Question	Survey A worried %	Survey B worried %	p-Value
#5	21.8	24.7	0.52
#6	28.4	28.1	0.94
#7	32.7	30.7	0.61
#8	37.9	30.1	0.12

Table 4 reports the percentage of patients which gave a score of 4 or 5 (satisfied or very satisfied, worried or very worried) for Questions 1–8. There were significantly more respondents who reported to be satisfied or very satisfied in Questions 1–4 on Survey B ( $p < 0.05$ ). The average satisfaction for the four questions combined went from 80% in Survey A to 92% in Survey B. There was no statistically significant difference found in the percentage of respondents who reported being worried or very worried between Survey A and Survey B.

## Discussion

The authors surveyed a general sampling of patients at a community hospital with a large Spanish-speaking population and found the need for providing more information concerning anesthesia and the perioperative period. These survey results led to the development of a patient education handout that resulted in a significant improvement in patient satisfaction concerning their understanding of the anesthesiologist's role, types of anesthesia, options for pain control, and instructions for the day of surgery. The study did not find a significant difference in the amount of anxiety related to surgery in the two groups surveyed.

Limited health literacy in this country is an increasing problem.<sup>7</sup> It is estimated that 90 million people in the United States have difficulties understanding health information.<sup>8</sup> Additionally, the average American reads at the 8th to 9th grade level, and one in five Americans read at a fifth grade level or below.<sup>9</sup> This low level of health literacy is estimated to contribute 50–70 billion dollars to the annual cost of healthcare in this country.<sup>10</sup> Therefore, it is imperative that all health care providers put more effort into education of patients by any available means, at all available opportunities. In addition, special effort should be put into providing medical information at a reading level appropriate for the average patient. At our hospital, all patient documents are written at no higher than a 6th grade level.

The 2010 census<sup>11</sup> reported that the Hispanic population in the United States has risen to 16% with estimates of it increasing to 24% by 2050. In the state of Texas, where this

study was completed, 38% of the residents are Hispanic.<sup>11</sup> Providing information in both English and Spanish to our patients was very beneficial considering that our average surveyed patient did not complete a high school education and 40% spoke primarily Spanish. Combining the lower education level of our hospital's population with an increasing Spanish-speaking population is a challenge when it comes to communicating important health information to our patients.

A study by Zach et al.<sup>12</sup> found that even patients in medically underserved populations have access to the internet through computers and cell phones, but are less likely to utilize the internet to seek health information than the general public. Although 72% of the patients surveyed in their study had access to the internet, only 21% used the internet to search for health information.<sup>12</sup> In our survey, we instructed patients who did not utilize the internet to search for health information to not answer that specific question. Only 32% of our patients responded to that question. Despite the fact that there are countless websites dedicated to providing health information, our findings as well as previous findings suggest that the people who may benefit the most are not accessing this information. Although some patients may benefit from accessing health information, such as education handouts, on the internet, there is no guarantee that it will be read or understood by patients in the community hospital setting. Therefore, a paper handout may still be the most efficient way to communicate with patients.

While this study investigated patient's knowledge and anxiety in the perioperative setting, it is not without limitations. First, the survey did not include information regarding previous anesthesia experience or baseline anxiety levels. Although we chose not to include those questions in this survey, they would be beneficial in any future in-depth surveys on this topic. Second, the questions on our survey were not formally validated. Although using a validated survey tool would add to the strength of our conclusions, we believe the results of this investigation remain substantiated.

We conclude that a patient education handout written at the appropriate reading level and available in their primary language resulted in a significant improvement in patient satisfaction concerning their understanding of the anesthesiologist's role, types of anesthesia, options for pain control, and instructions for the day of surgery. Future studies are needed to explore the impact of improving patient's knowledge of the perioperative process in the community hospital setting. Additionally, future studies are needed to further understand how to best communicate with patients.

## Conflicts of interest

The authors declare no conflicts of interest.

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