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Predictors of preoperative Anxiety Among Surgical Patients in Iran: An Observational Study

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ABSTRACT

Background: Patients undergoing surgery experience significant anxiety in the preoperative period. The aim of the present study was to identify the level of preoperative anxiety among Iranian patients in surgery clinics and its predictive factors.

Methods: In this cross-sectional study, the State-Trait Anxiety Inventory questionnaire was used to assess the patients' preoperative anxiety. Results were analysed using the Chi-square test and binary logistic regression analysis.

Results: 246 patients were randomly selected, 222 of which were finally included in our analysis. In this study, the state and trait anxiety levels were moderate and low, respectively. Both state and trait anxiety levels were significantly higher among females (p-value 0.03 and 0.009, respectively). Also, patients with higher education had higher state and trait anxiety levels (p-value 0.001 and <0.001, respectively). Patients undergoing aesthetic surgeries had significantly higher state anxiety levels compared to other surgeries (p-value 0.04). Interestingly, the history of surgery was not significantly associated with state anxiety (p-value 0.96). Logistic regression analysis revealed that age, marital status, and education were the most predictive factors for state anxiety. These factors along with the place of residence were also predictive for trait anxiety (p-value <0.05).

Conclusion: Since these predictive factors are not amenable to change before elective surgery, identification of patients with higher anxiety levels is essential. Further studies investigating preoperative anxiety a few days prior to surgery in the Iranian population should be warranted.

Anxiety is an experience full of fear and vexation. Surgical candidates experience significant psychological distress in the preoperative period. Various factors have an influential effect on preoperative anxiety, e.g. previous experiences, knowledge about the upcoming surgical procedure or anesthesia, and also one's personality traits. It is estimated that the prevalence of preoperative anxiety varies widely with a range of 11-80% among patients [1]. Not only does anxiety cause an unstable hemodynamic status in the preoperative period by stimulating the autonomic and endocrine system, but it is also a major morbidity factor during and after the operation [2]. Many studies have investigated the effect of anxiety on the human body and more specifically, its role in post-operative complications. It is known that severe preoperative anxiety is associated with longer hospital stays after surgery and delayed wound healing [3-7]. In

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addition, satisfaction of management, a marker used for commercial purposes and quality of patient care, reduces with anxiety [8]. Studies have shown that preoperative anxiety may result in suppression of the immune system, increased heart rate and blood pressure during and after the operation, and difficulty in doing daily activities and concentration [9-10]. It also causes a decreased response to analgesics and anesthetic drugs [11–14]. In 1958, Janis et al investigated the role of anxiety on recovery time after surgery for the first time. According to his "anxiety work" theory, a curved relationship exists between preoperative anxiety and postoperative pain; indicating that moderate levels of anxiety help the patient most in coping with the distress of surgery, whereas low or high anxiety levels are incompatible with the surgery outcome [15].

Despite the undesirable clinical outcomes of preoperative anxiety, it has not received much attention by physicians in the past years. Not many years ago, surgery was a neglected aspect of global health. However, recent agreement has been made of the fact that surgery represents a considerable component of health services, which has a significant impact on the global burden of disease. As Debas et al have stated approximately 11% of global DALYs (Disability-Adjusted Life Years) can be subdued with surgical procedures [16]. Based on published data by WHO (World Health Organization) in 2012, annually 4106 surgeries per 100000 population are performed in Iran [17]. Despite progress in technology, techniques, and knowledge, major surgical procedures are still accompanied by high mortality and morbidity rates.

Previous studies have used various questionnaires for measuring anxiety. The most common include the State-Trait Anxiety Inventory (STAI), Amsterdam Preoperative Anxiety Information Scale (APAIS), Hospital Anxiety and Depression Scale (HADS), and Visual Analogue Scale (VAS) [18]. To date, the Spielberger questionnaire remains the gold-standard for measuring anxiety [19]. Certain factors have been shown to predict the preoperative anxiety scores such as age, gender, education, and marital status. History of surgery also has been studied in a number of studies. However, conflicting results are published on this matter, with some studies finding no significant association, while others stating decreased levels of anxiety in patients who have experienced a previous surgery [1,20–25]. Earlier studies conducted in Iran have investigated the potential factors causing anxiety in the operation room [26-27]. However, no study has been carried out to measure the patients' preoperative anxiety in surgery clinics yet. The purpose of this study was to assess the anxiety level among Iranian patients undergoing surgery in the preoperative period and to identify its predictive factors.

Methods

Study design and population

This study was a cross-sectional study in which patients were recruited from the surgery clinics of Imam Khomeini Hospital in Tehran between October-December 2018. The study protocol was approved by the National Ethics Committee for Biomedical Research and the principles of Helsinki Statement have been followed. Patients admitted on even days were selected if their admission number was even and as for odd days, patients with odd admission numbers were selected. The questionnaires were given to the patients after obtaining written informed consents and explanation about the confidentiality of the information. If a patient was not able to read/write, the questionnaire would be filled out by a blind investigator after reading out the questions for her/him. Additional explanation was provided by blind evaluators upon the patients' request. Patients aged 18 years or older undergoing elective surgery with sufficient fluency in Persian language met our inclusion criteria. Our exclusion criteria were emergency surgeries, history of cognitive disorders, history of psychological disorders, previous history of smoking or any other substances, and refusal to participate in the study. No restrictions were made based on the type of surgical operation or anesthesia (local or general). The patients were planned to have their surgery performed in at least 2 weeks after their visit to the clinic. Data was collected by using a three-part questionnaire. The first part consisted of demographic data (age, sex, occupation, level of education, ethnicity, marital status, and place of residence). The second part consisted of disease information such as type of surgery, history of surgery, knowledge of the surgical procedure, and knowledge of surgery adverse events. In the final part of the questionnaire, the State-Trait Anxiety Inventory (Persian version) was used to measure anxiety levels. The validity and reliability of this version have been previously studied in the Iranian population by Dehghan-nayeri et al, in which the Cronbach's alpha value was 0.94 [28]. The Spielberger questionnaire has 20 questions in each section, one addressing state- and the other addressing trait-anxiety. The minimum score that can be achieved in each section is 20 which means absence of anxiety, while the maximum score is 80 meaning the highest amount of anxiety. Scores ranging from 21-39 indicate mild anxiety, 40-59 moderate anxiety, and 60-79 severe anxiety.

Statistical analysis

Data were entered in SPSS version 23 software after collection. The Kolmogorov-Smirnov test was used to assess the normal distribution of continuous variables. Categorical data were reported as frequencies and percentages and for quantitative variables, mean and SD was reported. The Chi-square test was used to analyze relationships between anxiety and independent variables. After performing univariate analysis, variables with a p-value of 0.2 or less entered the binary logistic regression

model with forward elimination. In order to make the analysis more convenient at this stage, the level of anxiety was divided into two groups. Patients with absent or mild anxiety formed the first group and patients with moderate or severe anxiety were in the second group. In this study, p-value <0.05 was considered statistically significant.

Results

In this study, 246 patients were initially enrolled but due to incomplete data, a total of 222 patients were finally included in our analysis. The mean age (± SD) of our participants was 49.3 (± 16.4) years with a range of 18-88 years. 59% (131) of the patients were female and 71% (157) were married. Only 7% (15) of the patients were occupied (or had been previously occupied) in a health-related environment. 57% (126) of the included patients had a prior history of surgery and most of the patients (36%) were candidates for general surgery. A summary of the demographic characteristics is shown in (Table 1). According to the STAI questionnaire, the level of preoperative state anxiety of patients in the surgery clinics was moderate while the level of trait anxiety was low. The mean (± SD) score for state and trait anxiety was 40.2 (± 11.2) and 38.7 (± 11.7), respectively. There was a significant association between state and trait anxiety levels (p <0.001). Regarding state anxiety, 10% of patients had a severe, 31% had a moderate, and 59% had a low level of anxiety. As for trait anxiety, these figures were similar with 13%, 33%, and 54% experiencing severe, moderate, and low levels of anxiety, respectively.

State anxiety

There was a statistically significant association between state anxiety and age, gender, occupation, level of education, marital status, type of surgery, patients' awareness of the surgical procedure and patients' awareness of adverse events (p<0.05). Among various types of surgeries, patients undergoing aesthetic surgery had a significantly higher level of state anxiety (p<0.05). As shown in (Table 2), age, level of education and marital status were the strongest predictive factors for state anxiety. Age was a protective factor, with one-year increase in age resulting in a 2% decrease in preoperative state anxiety (OR= 0.98, 95% CI= 0.96 - 0.99). However, patients with university degrees were 3.29 times more likely to have higher anxiety levels (95% CI= 1.47 - 7.38). The odds of high state anxiety increased by 4.45 in unmarried patients compared to those who were married (95% CI= 2.26 -8.79).

Trait anxiety

There was a statistically significant association between trait anxiety and age, gender, level of education, marital status, place of residence, type of surgery and patients' awareness of adverse events (p<0.05). Occupation and history of surgery had a borderline significant association with trait anxiety (p=0.07). Binary logistic regression performed for the independent variables suggested age, place of residence, marital status, and level of education as the most predictive factors of trait anxiety. According to our results, patients living in urban areas had a 2.46 increase in their trait anxiety levels compared to those living in rural areas (95% CI= 1.29 - 4.72), being unmarried increased the risk of trait anxiety by 2.41 times (95% CI= 1.20 - 4.83) and having university degrees raised this risk by 2.33 times (95% CI= 1.03 - 5.31). Similar to state anxiety, age also had a protective role for trait anxiety (OR= 0.96, 95% CI= 0.94 - 0.98) (Table 2).

Table 1- Demographic characteristics of patients (n=222)

	Mean ± SD	Min-Max
Age, years	49.3 ± 16.4	18-88
	N	%
Gender		
Female	131	59
Male	91	41
Occupation		
Health-related	15	6.8
Non health-related	118	53.2
Homemaker	89	40.1
Ethnicity		
Fars	101	45.5
Kurd	29	13.1
Lor	21	9.5
Turk	44	19.8
Othera	27	12.2
Education		
Illiterate	27	12.2
Primary school	69	31.1
Secondary school	87	39.2
University degree	39	17.6
Marital status		
Single	34	15.3
Married	157	70.7
Otherb	31	14.0
Place of residence		
Rural	77	34.7
Urban	145	65.3
History of surgery		
Yes	126	56.8

No	96	43.2
Surgery		
General	80	36.0
Oncologic	35	15.8
Orthopedics	34	15.3
Aesthetic	18	8.1
Otherc	55	24.8
Knowledge of surgery		
Little	191	86.0
Adequate	31	14.0
Knowledge of AEs		
Little	143	64.4
Adequate	79	35.6

SD: Standard Deviation; AEs: Adverse Events

a Afghan, Balooch

b Divorced or widowed

c Ophthalmic, gynecologic or urologic

Table 2- Predictive factors for state and trait anxiety

Predictive factors	OR	95% CI	SE	P-value
s-STAI				
Marital status				
Married	1			<0.001
Othera	4.45	2.26–8.79	0.35	
Education				
University degree	3.29	1.47–7.38	0.41	0.004
Otherb	1			
Age	0.98	0.96–0.99	0.01	0.03
t-STAI				
Age	0.96	0.94 – 0.98	0.01	<0.001
Place of residence				
Rural	1			0.007
Urban	2.46	1.29 – 4.72	0.33	
Marital status				
Married	1			0.01
Othera	2.41	1.20–4.83	0.36	
Education				
University degree	2.33	1.03–5.31	0.42	0.04
Otherb	1			

OR: Odds Ratio; CI: Confidence Interval; SE: Standard Error; AEs: Adverse Events

a Divorced, single or widowed

b Illiterate, primary school or secondary school

Discussion

This study was performed to assess the level of anxiety among patients undergoing elective surgery in the surgery clinics prior to surgery. In this study, we found a significant association between state and trait anxiety which was consistent with the study performed by Buehrer in 2015 [29]. Also, the mean score of state and trait anxiety in our study was in close agreement with the results of a study published by Caumo estimating the mean scores of trait and state anxiety to be 39.5 and 39.3, respectively [1]. Although in our study state anxiety was higher than trait anxiety, Erkilic and his colleagues found trait anxiety to be higher than state anxiety [25]. Our study demonstrated that females tend to experience a higher level of anxiety compared to men. This finding is similar to many previous studies and could possibly be due to higher emotional sensitivity in females and also sex hormone fluctuations resulting in mood disorders and anxiety [22,30–34]. Women are also more likely to express their anxiety unlike men. Age appeared to be a protective factor against preoperative anxiety with one year increase in age resulting in a 2% decrease in state anxiety and a 4% decrease in trait anxiety. This finding was in accordance with multiple previous studies [21,25,35]. In contrast, Basak et al. concluded that preoperative anxiety is higher among elderly patients possibly due to the higher risk of comorbidities in the older population [36].

It is generally accepted that married people have lower levels of anxiety. Similarly, in this study married patients had a lower level of state and trait anxiety in the preoperative period compared to others (e.g. single, divorced or widowed patients) which confirms the role of family and social support on reducing anxiety. Yilmaz and his colleagues also demonstrated that preoperative anxiety is lower among married patients [31]. The present results showed that patients residing in urban areas had significantly higher trait anxiety compared to rural residents. This finding, which could be due to the fact that urban residents face more daily life struggles, is consistent with the results of a study conducted by Woldegerima in 2018 [37]. Previous studies have indicated a variable effect of patients' level of education on preoperative anxiety. Some of these studies, in line with our study, have shown the negative effect of higher education on the level of state anxiety before surgery [31,38]. It has been suggested that educated people have more of an information-seeking character and a higher tendency to receive medical information from their physicians [39-40]. Also, patients with a higher level of education are more likely to be aware of the risks and side effects associated with anesthesia and surgery thus causing them more stress. The results of our study which revealed a significant association between patients' awareness of surgery and adverse events and

preoperative state anxiety support this notion. Although numerous studies have studied the association between patients' knowledge about the type of surgery and preoperative anxiety, no study so far has exclusively investigated the role of patients' knowledge of adverse events on anxiety [41-42]. On the other side, there have been studies showing higher levels of preoperative anxiety among less educated patients that have related it to the "fear of unknown" among this population [1,36]. In the present study, patients with an occupation related to the healthcare system seemed to experience significantly higher anxiety compared to others. To the best of our knowledge, the relationship between exposure to the healthcare environment on a daily basis and preoperative anxiety has not yet been studied. Our study showed that candidates of aesthetic surgeries had a significantly higher state anxiety level compared to patients undergoing other types of surgeries. This finding was also found in a study by Erkilic. et al [25]. Interestingly, patients undergoing oncologic surgeries did not experience higher levels of anxiety compared to others, a result that could be explained by the assumption that cancer patients are not aware of their disease, especially those who are not well educated. Kiyohara et al also did not find a significant difference in state and trait anxiety levels of cancer patients compared to non-cancer patients in their study [42]. Having a previous history of surgery did not have a significant effect on preoperative state anxiety in our study. While some studies have found a similar result, others have demonstrated that patients with a prior history of surgery experience lower levels of anxiety [1,20,22-23].

Our study was conducted in a university-based referral hospital where most patients had a low socioeconomic background; results of other private hospitals can vary due to the socioeconomic status of admitted patients. Another limitation to our study was that we did not evaluate the effect of present comorbidities on preoperative anxiety which could have been helpful in predicting this outcome more precisely. We suggest a more comprehensive study enrolling patients from different socioeconomic backgrounds and evaluating comorbidities to overcome these potential hurdles of our study. Also, considering the fact that the STAI questionnaire consists of 40 items and the limited time of patients in surgery clinics, using the shorter version of this questionnaire can help recruit a larger population.

Conclusion

In conclusion, considering the fact that almost all of the factors significantly associated with preoperative anxiety in our study were not amenable to change before surgery, identifying vulnerable patients (e.g. females, younger and educated people) and providing social and psychological support to them can be beneficial in reducing their anxiety and increasing patient satisfaction. This support can be either administered through the nursing system or psychologic/psychiatric consultations. Other methods that have been applied to reduce preoperative anxiety consist of music therapy and recently, aromatherapy. In addition, this study was performed approximately two weeks prior to operation; thus, further studies assessing the preoperative anxiety a few days prior to surgery should be warranted.

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Ethics approval and consent to participate

The study protocol was approved by the National Ethics Committee for Biomedical Research (Ethics code: IR.TUMS.IKHC.REC.1397.273). Patients participated in the study after written informed consents were obtained.

References

[1] Caumo W, Schmidt AP, Schneider CN, Bergmann J, Iwamoto CW, Bandeira D, et al. Risk factors for preoperative anxiety in adults. Acta Anaesthesiol Scand. 2001; 45(3):298–307.

[2] Weissman C. The metabolic response to stress: an overview and update. Anesthesiology. 1990; 73(2):308-27.

[3] Vileikyte L. Stress and wound healing. Clin Dermatol. 2007; 25(1):49–55.

[4] Christian LM, Graham JE, Padgett DA, Glaser R, Kiecolt-Glaser JK. Stress and Wound Healing. Neuroimmunomodulation. 2006; 13(5–6):337-46.

[5] Linn BS, Linn MW, Klimas NG. Effects of psychophysical stress on surgical outcome. Psychosom Med. 1988; 50(3):230-44.

[6] Boeke S, Jelicic M, Bonke B. Pre-operative anxiety variables as possible predictors of post-operative stay in hospital. Br J Clin Psychol. 1992; 31(3):366–8.

[7] Kiecolt-Glaser JK, Page GG, Marucha PT, MacCallum RC, Glaser R. Psychological influences on surgical recovery: Perspectives from psychoneuroimmunology. Am Psychol. 1998; 53(11):1209-18.

[8] Thomas T, Robinson C, Champion D, McKell M, Pell M. Prediction and assessment of the severity of post-operative pain and of satisfaction with management. Pain. 1998; 75(2–3):177–85.

[9] Williams JGL, Jones JR. Psychophysiological Responses to Anesthesia and Operation. JAMA. 1968; 203(6):415-7.

[10] Hughes BM, Howard S, James JE, Higgins NM. Individual differences in adaptation of cardiovascular responses to stress. Biol Psychol. 2011; 86(2):129–36.
[11] Osborn TM, Sandler NA. The effects of preoperative anxiety on intravenous sedation. Anesth Prog. 2004; 51(2):46–51.
[12] Maranets I, Kain ZN. Preoperative anxiety and intraoperative anesthetic requirements. Anesth Analg. 1999; 89(6):1346-51.
[13] Goldmann L, Ogg TW, Levey AB. Hypnosis and daycase anaesthesia. Anaesthesia. 1988; 43(6):466-9.
[14] Kim W-S, Byeon G-J, Song B-J, Lee HJ. Availability of preoperative anxiety scale as a predictive factor for hemodynamic changes during induction of anesthesia. Korean J Anesthesiol. 2010; 58(4):328–33.
[15] Janis I. Psychological stress: Psychoanalytic and behavioral studies of surgical patients. New York: John Wiley & Sons; 1958.
[16] Debas H, Laxminarayan R, Straus S. Complementary and alternative medicine. In: Jamison DT, Breman JG, Measham AR, Alleyne G, Claeson M, Evans DB, et al., editors. Disease control priorities in developing countries [Internet]. 2nd ed. Washington (DC): The International Bank for Reconstruction and Development / The World Bank; 2006 [cited 2019 May 8]. Available from: https://www.ncbi.nlm.nih.gov/books/NBK11796/
[17] Weiser TG, Haynes AB, Molina G, Lipsitz SR, Esquivel MM, Uribe-Leitz T, et al. Size and distribution of the global volume of surgery in 2012. Bull World Health Organ. 2016; 94(3):201–209F.
[18] Boker A, Brownell L, Donen N. The Amsterdam preoperative anxiety and information scale provides a simple and reliable measure of preoperative anxiety. Can J Anesth Can. 2002; 49(8):792–8.
[19] Spielberger CD. Manual for the State-trait anxiety inventory: STAI. Palo Alto, CA: Consulting Psychologists Press; 1983.
[20] Matthias AT, Samarasekera DN. Preoperative anxiety in surgical patients - experience of a single unit. Acta Anaesthesiol Taiwanica. 2012; 50(1):3-6.
[21] Jafar MF, Khan FA. Frequency of preoperative anxiety in Pakistani surgical patients. J Pak Med Assoc. 2009; 59(6):359-63.
[22] Perks A, Chakravarti S, Manninen P. Preoperative anxiety in neurosurgical patients. J Neurosurg Anesthesiol. 2009; 21(2):127-30.
[23] Göktay F, Altan ZM, Talas A, Akpınar E, Özdemir EÖ, Aytekin S. Anxiety Among Patients Undergoing Nail Surgery and Skin Punch Biopsy. J Cutan Med Surg. 2016; 20(1):35-9.
[24] Almalki M, Hakami O, Al-Amri A. Assessment of Preoperative Anxiety among Patients Undergoing Elective Surgery. Egypt J Hosp Med. 2017; 69(5):2329–34.
[25] Erkilic E, Kesimci E, Soykut C, Doger C, Gumus T, Kanbak O. Factors associated with preoperative anxiety levels of Turkish surgical patients: from a single center in Ankara. Patient Prefer Adherence. 2017; 11:291-6.
[26] Ravangard R, Bastani P, Moradi A, Ahmadzadeh M. Factors affecting the preoperative anxiety from the patients' perspective. Daneshvar. 2016; 23(124):61–70.
[27] Nazari-Vanani R, Rahimi-Madiseh M, Drees F. Evaluation of preoperative anxiety and stress, and ways to modify it, the patients in Kashani hospital operating room in 2013. J Clin Nurs Midwifery. 2014; 2:53-60.
[28] Dehghan-nayeri N, Adib-Hajbaghery M. Effects of progressive relaxation on anxiety and quality of life in female students: A non-randomized controlled trial. Complement Ther Med. 2011; 19(4):194-200.
[29] Buehrer TW, Rosenthal R, Stierli P, Gurke L. Patients' Views on Regional Anesthesia for Elective Unilateral Carotid Endarterectomy--A Prospective Cohort Study. Ann Vasc Surg. 2015; 29(7):1392-9.
[30] Masood Z, Haider J, Jawaid M, Alam SN. Preoperative anxiety in female patients: the issue needs to be addressed. KMUJ KHYBER Med Univ J. 2009; 1(2):38-41.
[31] Yilmaz M, Sezer H, Gürler H, Bekar M. Predictors of preoperative anxiety in surgical inpatients. J Clin Nurs. 2012; 21(7–8):956-64.
[32] Forlani M, Morri M, Belvederi Murri M, Bernabei V, Moretti F, Attili T, et al. Anxiety Symptoms in 74+ Community-Dwelling Elderly. PLoS One. 2014; 9(2):e89859.
[33] Weinstock LS. Gender differences in the presentation and management of social anxiety disorder. J Clin Psychiatry. 1999;60(9):9–13.
[34] Wang Y, Shen J, Lu J, Yang X. [Preoperative anxiety and depression in patients undergoing cardiac surgery and related influencing factors]. Zhonghua Yi Xue Za Zhi. 2008; 88(39):2759-62.
[35] Karanci A., Dirik G. Predictors of pre- and postoperative anxiety in emergency surgery patients. J Psychosom Res. 2003; 55(4):363-9.
[36] Basak F, Hasbahceci M, Guner S, Sisik A, Acar A, Yucel M, et al. Prediction of anxiety and depression in general surgery inpatients: A prospective cohort study of 200 consecutive patients. Int J Surg. 2015; 23:18–22.
[37] Woldegerima Y, Fitwi G, Yimer H, Hailekiros A. Prevalence and factors associated with preoperative anxiety among elective surgical patients at University of Gondar Hospital. Gondar, Northwest Ethiopia, 2017. A cross-sectional study. Int J Surg Open. 2018; 10:21-9.
[38] Aykent R, Kocamanoglu IS, Ustun E, Tur A, Sahinoglu H. The reasons and evaluation of preoperative anxiety: a comparison of APAIS and STAI scores. Turkiye Klin J Anesthesiol Reanim. 2007;5(1):7–13.
[39] Uysal A, Altiparmak, Guner O. The Effect of an

Informative Leaflet on Preoperative Anxiety and Patient's Knowledge of Anesthesia and Anxiety. J Clin Anal Med. 2017; 8(5):370-4.
[40] Moerman N, van Dam F, Muller M. The Amsterdam preoperative anxiety and information scale (APAIS). Anesth Analg. 1996; 82(3):445–51.
[41] Williams OA. Patient knowledge of operative care. J R Soc Med. 1993; 86(6):328–31.
[42] Kiyohara LY, Kayano LK, Oliveira LM, Yamamoto MU, Inagaki MM, Ogawa NY, et al. Surgery information reduces anxiety in the pre-operative period. Rev Hosp Clin Fac Med Sao Paulo. 2004; 59(2):51-6.