

## PREOPERATIVE ANXIETY IN PATIENTS UNDERGOING THORACIC SURGERY

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### Abstract

**Introduction:** Anxiety is described as an uneasy feeling with a nonspecific and unknown source that can cause abnormal hemodynamics. The World Health Organization reported that about 20% of adolescents experience mental disorders mainly anxiety and depression. Anxiety may occur due to several reasons including the presence in hospitals and health-care centers even for healthy people, fear of illness, hospitalization, anesthesia, or surgery.

**Materials and methods:** A cross sectional, questionnaire-based study was conducted to include 50 patients who would undergo elective thoracic surgery under general anaesthesia for both benign and malignant diseases resulting from non-traumatic aetiology between September 2020 to August 2021 (1 year). This study included patients aged over 18 years who had consented to reply the questionnaire. The patients with a psychiatric illness or ongoing anxiolytic treatment or alcohol addiction were excluded from the study. Moreover, the surveys including three or more unanswered statements were regarded as invalid and not graded.

**Results:** The mean age was  $54.1 \pm 11.5$  (range=23-74) years among the whole group of patients including 65 (65%) males and 35(35%) females. The majority of the patients (n=22) were high school graduate. Mean preoperative length of hospital stay was  $2.16 \pm 1.15$  days. 16 (32%) cases shared a past surgical history whereas 28 (56%) patients had been diagnosed with a malignant disease. Mean score was calculated as  $51.1 \pm 10.2$  by state and  $48 \pm 10.7$  by trait anxiety scales, respectively. High level of anxiety was presented in 56% of the patients.

**Conclusion:** Regarding the conflicting findings obtained from recent reports and this study, individual assessment of each surgical patient is necessary to perform a valid risk analysis of preoperative anxiety.

**Key words:** Anxiety, World Health Organization, aetiology, questionnaire.

### INTRODUCTION

Anxiety is described as an uneasy feeling with a nonspecific and unknown source that can cause abnormal hemodynamics. The World Health Organization reported that about 20% of adolescents experience mental disorders mainly anxiety and depression. Anxiety may occur due to several reasons including the presence in hospitals and health-care centers even for healthy people, fear of illness, hospitalization, anesthesia, or surgery.<sup>2</sup> Besides, prolonged anxiety may lead to stress and delay in the patient's recovery. Approximately 47% of patients in Iran reported preoperative anxiety.<sup>3</sup>

The degree of each patient's reaction to preoperative anxiety ranges widely depending on many factors such as age, gender, educational status, past surgical experiences, current health status, indication of the proposed surgery and natural susceptibility to anxiety.<sup>4</sup> The objective of this study was to assess the prevalence preoperative anxiety and causative factors among the adult patients undergoing thoracic surgery.

### MATERIALS AND METHODS

**Study design:** A cross sectional, questionnaire-based study.

**Study location:** Department of Cardiothoracic surgery, Government General Hospital, Guntur, Andhra Pradesh, India.

**Study Duration:** September 2020 to August 2021 (1 year).

**Sample Size:** 50 patients.

A cross sectional, questionnaire-based study was conducted to include 50 patients who would undergo elective thoracic surgery under general anaesthesia for both benign and malignant diseases resulting from non-traumatic aetiology between September 2020 to August 2021 (1 year). This study included patients aged over 18 years who had consented to reply the questionnaire. The patients with a psychiatric illness or ongoing anxiolytic treatment or alcohol addiction were excluded from the study. Moreover, the surveys including three or more unanswered statements were regarded as invalid and not graded.

The main outcome measure was demonstrating the factors affecting the level of preoperative anxiety. Regarding that the preoperative anxiety rate in surgical patients was reported as  $80\pm 8\%$  in the current literature, population proportion was taken as 80% with 95% confidence level and 8% margin of error estimating a number of 50 patients.

For each participant, the following data were collected: age, gender, educational status, length of preoperative hospital stay, past surgical history and indication of the proposed operation. Educational status was determined in four levels as the graduation from primary, secondary, high schools and university. Any surgical intervention which had been performed under general or spinal anaesthesia was approved as a positive past surgical history. The indication of the present surgery was noted as a benign or a malignant disease. Spielberg's State-Trait Anxiety Inventory (STAI Form TX-1 and TX-2) were applied to patients thirty minutes before the transportation to operating room. The answers were recorded and calculation of scores was performed via computer aided software. The scores obtained from each scales range between 20 and 80 whereas higher points express elevated levels of anxiety<sup>10</sup>. High and low anxiety levels were defined as over and under 52 points which was the median value of state anxiety scores in this series.

**Statistical Analysis:** SPSS (IBM SPSS for Windows, Ver. 24) statistical package program was used for calculations. Descriptive statistics for continuous variables in this study were expressed as mean, standard deviation, minimum and maximum; categorical variables were expressed as number (n) and percentage (%). Independent T-test was used to compare average of measurements for patient groups and Chi-square test was employed to reveal the relation between categorical variables. The statistical significance level ( $\alpha$ ) was taken as 5%.

## RESULTS

The mean age was  $54.1\pm 11.5$  (range=23-74) years among the whole group of patients including 65 (65%) males and 35(35%) females. The majority of the patients (n=22) were high school graduate. Mean preoperative length of hospital stay was  $2.16\pm 1.15$  days. 16 (32%) cases shared a past surgical history whereas 28 (56%) patients had been diagnosed with a malignant disease. Mean score was calculated as  $51.1\pm 10.2$  by state and  $48\pm 10.7$  by trait anxiety scales, respectively. High level of anxiety was presented in 56% of the patients. Data concerning the demographic and clinical features of the patients are given in Table 1 and Table 2.

Analysing the subgroups of patients, higher level of state anxiety score was detected in the highly educated male patients with younger age who had undergone a previous surgery, scored higher points in the trait anxiety scale and presented with the diagnosis of a benign disease ( $p<0.05$ ) whereas longer length of preoperative hospital stay did not reveal a significant difference in the state anxiety level ( $p>0.005$ ) (table 3).

| Parameters           | Mean | SD   | Minimum | Maximum |
|----------------------|------|------|---------|---------|
| Age (years)          | 54.4 | 11.3 | 23      | 75      |
| Hospital stay (days) | 2.18 | 1.16 | 1       | 6       |
| State anxiety score  | 51.7 | 10.3 | 28      | 73      |
| Trait anxiety score  | 48.2 | 10.7 | 25      | 71      |

**Table 1: General Features of the Study Group**

| Parameters             | Groups           | n  | 100% |
|------------------------|------------------|----|------|
| Gender                 | Male             | 33 | 65%  |
|                        | female           | 17 | 35%  |
| Educational status     | Primary School   | 10 | 20%  |
|                        | Secondary school | 6  | 12%  |
|                        | High school      | 22 | 44%  |
|                        | University       | 12 | 24%  |
| Past surgical history  | Yes              | 16 | 32%  |
|                        | No               | 34 | 68%  |
| Indication of surgery  | Benign disease   | 22 | 44%  |
|                        | Malignancy       | 28 | 56%  |
| Level of state anxiety | Low              | 22 | 44%  |
|                        | High             | 28 | 56%  |
| Total                  |                  | 50 | 100  |

**Table 2: Data Concerning the Categorical Variables**

| Parameters                                   |                  | Low level anxiety | High level anxiety | P Value |
|--|------------------|-------------------|--------------------|---------|
| Gender                                       | Male             | 7                 | 26                 | 0.001   |
|  | Female           | 15                | 2                  |         |
| Education                                    | Primary School   | 8                 | 1                  | 0.001   |
|  | Secondary school | 1                 | 8                  |         |
|  | High school      | 10                | 12                 |         |
|  | University       | 1                 | 9                  |         |
| Past History of Surgery                      | Yes              | 21                | 13                 | 0.001   |
|  | No               | 1                 | 15                 |         |
| Indication of Surgery                        | Benign disease   | 3                 | 19                 | 0.001   |
|  | Malignancy       | 19                | 9                  |         |
| Age (Mean ± SD, years)                       |                  | 62.3±5.98         | 47.6±10.7          | 0.006   |
| Preoperative Hospital Stay (Mean ± SD, days) |                  | 1.85±1.12         | 2.38±1.14          | 0.076   |
| Trait Anxiety Score (Mean ± SD)              |                  | 38.2±6.25         | 55.7±6.17          | 0.001   |

**Table 3: Factors Contributing to the Level of Anxiety**

## DISCUSSION

The other factors closely related and also associated with preoperative anxiety were young age and presence of a benign disease as the ground for the forthcoming surgery. The current reports claiming that the younger patients are more vulnerable to develop preoperative

anxiety appear to be parallel to the findings of this study. Strongly arguing against previous studies which had announced the history of cancer as an independent risk factor for preoperative anxiety, this series revealed higher prevalence of preoperative anxiety in the patients who had developed benign diseases.<sup>5</sup> The difference could be because of the common and routine practices of the thoracic surgery in which the majority of patients present malignant diseases such as lung cancer at elder ages while unexpected surgical interventions including lung and pleural biopsies or pneumothorax surgery such as bullectomy and wedge resections are performed for young patients regarding that the prevalence of pneumothorax is naturally higher for the patients aged between 19 and 25 years.<sup>6</sup> Moreover, younger patients may be more distressed by predicting the potential complications and outcomes of the proposed surgery but elder patients with malignancies adapt to the situation during a relatively longer period required for diagnosis and preoperative arrangements.<sup>7</sup>

In this study the prevalence of preoperative anxiety presented positive correlation with the history of previous surgical experiment. This may result from the expectation of more serious complications and outcomes than the previous less risky operation. The literature includes studies that both confirm and stand against this finding.<sup>8</sup> The results of this study revealed that the level of anxiety elevated with the increasing level of education. Education is believed to raise awareness related to surgery and helps patients prepare themselves preoperatively. On the other hand, highly educated patients obtain detailed information about the potential complications which is likely to increase preoperative anxiety.<sup>9</sup> This evidence was supported but also declined by other similar studies. Unfortunately, recent studies include more heterogeneous cohorts for whom comparisons of preoperative hospital stay were performed in intervals rather than days.<sup>10</sup> However, the analysis of this study failed to demonstrate an association between preoperative anxiety and duration of preoperative hospital admission.

### CONCLUSION

In this study, the prevalence of preoperative anxiety was significantly associated with gender, age, educational status, presence of past surgical history and type of the underlying disease. Regarding the conflicting results obtained in dissimilar populations and different surgical cohorts, individual assessment of each surgical patient is necessary in order to perform a valid risk analysis of preoperative anxiety.

### REFERENCES

1. Wetsch WA, Pircher I, Lederer W, et al. Preoperative stress and anxiety in day-care patients and in patients undergoing fast-track surgery. *British J Anaes* 2009;103(2):199-205.
2. Chow CHT, Rizwan A, Xu R, et al. Association of temperament with preoperative anxiety in pediatric patients undergoing surgery. *JAMA Network Open* 2019;2(6):e195614.
3. Williams H, Jajja MR, Baer W, et al. Perioperative anxiety and depression in patients undergoing abdominal surgery for benign or malignant disease. *J Surg Oncol* 2019;120(3):389-96.
4. Spielberger CD, Gorsuch RL. *Manual for the State-Trait Anxiety Inventory (Form Y) ("Self-Evaluation Questionnaire")*. Palo Alto, CA: Consulting Psychologists Press 1983.
5. Socea SD, Abualhasan H, Magen O, et al. Preoperative anxiety levels and pain during cataract surgery. *Current Eye Research* 2019: p. 1-6.

6. Ralph N. Current opinion about surgery-related fear and anxiety. *J Periop Nurs* 2018;31 (4):1-5.
7. Stoddard JA, White KS, Covino NA, et al. Impact of a brief intervention on patient anxiety prior to day surgery. *J Clin Psychol Med Set* 2005;12 (2):99-110.
8. Kuzminskaitė V, Kaklauskaitė J, Petkeviciute J. Incidence and features of preoperative anxiety in patients undergoing elective non-cardiac surgery. *Acta Med Lituannica* 2019;26 (1):93-100.
9. Bedaso A, Ayalew M. Preoperative anxiety among adult patients undergoing elective surgery: a prospective survey at a general hospital in Ethiopia. *Patient Safety in Surgery* 2019;13:18.
10. Stamenkovic DM, Rancic NK, Latas MB, et al. Preoperative anxiety and implications on postoperative recovery: What can we do to change our history? *Minerva Anesthesiologica* 2018;84 (11):1307-17.