The Egyptian Journal of Hospital Medicine (October 2017) Vol. 69 (4), Page 2329-2333

Assessment of Preoperative Anxiety among Patients Undergoing Elective Surgery

Mohammed Saleh Almalki [(1)], Othman Ahmed Othman Hakami [(2)], Areej Mohammed Al-Amri[(3)]
[1]College of Medicine, Umm Al-Qura University; [2]Faculty of Medicine, Jazan University;
[3]College of Medicine, Taibah University

ABSTRACT

Introduction: Although patients undergoing elective surgery are assumed to have a lower level of preoperative anxiety, studies reported a high level of anxiety among those patients.
. This study aimed at assessing the level of preoperative anxiety and its predictors in adult patients undergoing elective surgery.

Methods: This study is a cross-sectional design conducted among patients admitted for elective surgery. A total of 278 patients with non-life-threatening surgeries were included and those who had mental or psychological problems were excluded from this study. Sample type and sample size. The data collected through a questionnaire about demographics, preoperative knowledge and anxiety in the preoperative room 24 hours before the operation. The frequencies, percentages, mean and SD were calculated, and t-test was used to detect significant associations.

Results: The overall preoperative anxiety score had a mean ±SD of 18.2±5.8 and the questions regarding knowledge component reported higher scores than those about anxiety component. The components of anxiety about surgery reported higher scores than those of anxiety about anesthesia. Age, gender, availability of family support and type of surgery were found as significant predictors for preoperative anxiety prior to elective surgery. However, the association between preoperative anxiety and marital status and previous experience of surgery were found statistically non-significant.

Conclusion: This study concluded that patients underwent elective surgery had high preoperative anxiety. The patients with younger age, female gender, patients under general anesthesia, or those who had no family support showed a higher level of preoperative anxiety.

Keywords: Anxiety, Surgery, Elective, Anesthesia, Fear.

INTRODUCTION

Anxiety is an emotional state of fear, nervousness, and worry about threatening events associated with the physiological alertness [(1)]. Surgery is a traumatic treatment that usually associated with bleeding, pain, the risk of morbidity or sometimes death. Thus, the preoperative anxiety is common and the reported prevalence of preoperative anxiety among patients underwent various types of surgery was found as high as 60% to 90% [(2)].

The elevated levels of preoperative anxiety have serious outcomes and can increase the risk of postoperative complications such as pain, prolonged recovery, longer hospitalization, and death [(3)]. Furthermore, the high level of preoperative anxiety is associated with the increased need of anesthesia [(4)]. The common causes for elevated preoperative anxiety include fear of pain, physical injury, complications, and death. In addition, concerns about loss of physical capacity and worry about family members and children [(5, 6)]. The psychological hypotheses have postulated that surgical intervention is a psychological stress that needs an intervention [(7)]. The psychological stress is associated with activation of central nervous system and suppression of immunological response, which increases the vulnerability to diseases and postoperative complications [(8)]. Methods those found to reduce the level of preoperative anxiety include pharmacological therapy and non-pharmacological methods such as spiritual practices, music, provision of information, and social support [(9-11)]. The elevated levels of preoperative anxiety have serious outcomes and can increase the risk of postoperative complications such as pain, prolonged recovery, longer hospitalization, and death [(3)]. Furthermore, the high level of preoperative anxiety is associated with the increased need of anesthesia [(4)]. The methods used to assess the preoperative anxiety either subjective self-assessment of anxiety by the patients or objective evaluation using visual analog scales (VAS) [(12, 13)]. The subjective assessment usually tends to overestimate the level of anxiety, while the objective assessment using VAS was found more accurate [(1)]. The aggravating factors that lead to increasing the preoperative anxiety include female gender, young age, married status, and low educational level [(5, 14, 15)]. In addition, the type

Received:28 / 7 /2017
Accepted: 7 / 8 /2017
DOI : 10.12816/0041537

and extent of surgical operation is an important factor that associated with a high level of preoperative anxiety [7].

Although patients undergoing elective surgery are assumed to have a lower level of stress and subsequent anxiety, a study conducted by **Jawaid *et al*.** reported a high level of preoperative anxiety among those patients [5]. The present study aimed at assessing the level of preoperative anxiety and its predictors in adult patients undergoing elective surgery in King Fahd Hospital, Saudi Arabia.

METHODS

This study is a cross-sectional design conducted among patients admitted for elective surgery in King Fahd Hospital, Jeddah, Saudi Arabia. The hospital located in Jeddah city and served the population of Jeddah city in addition to the people come from the Western region in Saudi Arabia. The included patients were adults with non-life-threatening conditions and surgeries were planed under general or spinal anesthesia. Patients with mental or psychological problems were excluded from this study.

A sample of 278 consecutive patients was surveyed, as this number was found sufficient to detect a small effect size of 0.3 at a statistical power of 0.80 and confidence level of 95% (G*Power software, Version 3.0.1). The data collected through questionnaires consisted of two sections, section 1 contained questions about important predictors of preoperative anxiety such as age, sex, marital status, educational level, type of surgery, previous experience of surgery, and availability of family support. The section 2 of the questionnaires contained the 6 questions of Amsterdam Preoperative Anxiety and Information (APAIS) where four questions investigating anxiety level and 2 questions investigating knowledge component. The data collected by interviews in the preoperative room 24 hours before the operation by trained nurses after obtaining written informed consents.

The study was approved by the Ethics Board of Umm Al-Qura University.

The percentages of study participants who answered yes to the inquiries in section 1 were calculated, while the mean and SD were obtained for questions in section 2 and 3. The associations between preoperative anxiety level and certain predictors were assessed using t-test and considered significant where P value found less than 0.05. The statistical analysis performed by Statistical Package for Social Science (SPSS).

RESULTS

The majority of 278 study participants were males, while 42.1% of them were females. Approximately, 71% of the study participants were ≥ 40 years old and 55% had a university educational level or more. About three-quarters of the patients were married and more than 80% had a family support before the operation. The majority of patients subjected to the surgery under general anesthesia (63.7%), and about 66% of the patients had previous experience of surgery (table 1). The APAIS scores, demonstrated in table 2, showed high levels of preoperative anxiety. In general, the questions regarding knowledge component had higher scores than those about anxiety component. Furthermore, the questions of anxiety about surgery reported higher scores than those investigating anxiety about the anesthesia. Concerns about anesthesia had a mean ±SD anxiety score of 2.1±1.4, while the mean ±SD anxiety score of concerns about surgery was 3.7±1.2. The score of thinking of anesthesia was the lowest among all reported scores of anxieties with mean ±SD equals to 1.9±1.2. In regard to the knowledge component of the APAIS questionnaire, the mean ±SD score of "need information about anesthesia" was 2.9±1.3, while the reported score of "need information about surgery" was the highest among all scorers with mean ±SD equals to 4.1±1.2. The overall preoperative anxiety score had a mean ±SD of 18.2±5.8.

The influence of important factors on the level of preoperative anxiety was assessed in this study. Age, gender, availability of family support and type of surgery were found as significant predictors for preoperative anxiety prior to elective surgery. However, the association between preoperative anxiety and marital status and previous experience of surgery were found statistically non-significant.

Patients, who were younger than 50 years old, had a significantly higher mean ±SD score of 18.7±5.6 preoperative anxiety than those who aged more than 50 years old. The female gender was associated with a significantly higher preoperative anxiety compared to males with mean ±SD equal to 19.2±5.6. Patients who had family support scored significantly lower preoperative anxiety than those who had no family support. Similarly, patients who were subjected to the spinal anesthesia had a significantly lower preoperative anxiety than those underwent surgery under general anesthesia (table 3).

Table (1): Distribution of factors influencing preoperative anxiety in elective surgery patients

Important preoperative factors		Frequency	Percent
Gender	Male	161	57.9%
	Female	117	42.1%
Age group	18 - 29	20	7.0%
	30 - 39	61	21.9%
	40 -49	113	40.6%
	≥50	84	30.2%
Educational level	Illiterate	17	6.1%
	high school level or less	106	38.1%
	university level or more	155	55.8%
Marital status	Yes	204	73.4%
	No	74	26.6%
Type of anesthesia	General	177	63.7%
	spinal	101	36.3%
Previous experience of surgery	Yes	95	34.2%
	No	183	65.8%
Availability of family support	Yes	223	80.2%
	No	55	19.8%

Table (2): The findings of APAIS scores regarding 4 questions of anxiety and 2 questions of knowledge

APAIS questions	Mean ± SD
Concerns about anesthesia	2.1±1.4
Thinking of anesthesia	1.9±1.2
Needs information about anesthesia	2.9±1.3
Concerns about surgery	3.7±1.2
Thinking of surgery	3.5±1.5
Needs information about surgery	4.1±1.2
Total	18.2±5.8

Table (3): The associations between overall preoperative anxiety and important

Important predictors		Overall preoperative anxiety (Mean)	t-test	Standard error of difference	P value
Age group	18 – 49	18.7±5.6	5.027	0.716	0.000
	≥ 50	15.1±5.2			
Gender	Male	16.6±5.4	3.902	0.666	0.000
	Female	19.2±5.6			
Marital status	Yes	16.7±5.3	0.553	0.723	0.583
	No	17.1±5.4			
Previous experience of surgery	Yes	17.3±6.1	1.219	0.738	0.231
	No	18.2±5.7			
Availability of family support	Yes	16.6±5.8	3.217	0.870	0.001
	No	19.4±5.7			
Type of surgery	General	19.3±6.2	2.094	0.764	0.038
	Spinal	17.7±6.0			

DISCUSSION

Patients usually consider surgery as a life-threatening or a major concern that needs significant psychological adaptation even in minor surgeries such as third molar extraction [16]. The patients felt fear and anxiety in the theater room, which dramatically affects the postoperative outcomes of the surgery [3]. Studies used different methodology to assess the preoperative anxiety, however, the objective assessment have found more accurate [1].

In this study, the APAIS scores showed high levels of preoperative anxiety. In general, the questions regarding knowledge component had higher scores than those about anxiety component. This reflects the insufficiency or ambiguity of the information provided to the patients about their surgery. Three decades ago, a study conducted by **Miller** and **Mangan** [17] divided patients into two types. Monitors and blunters, where monitors those patients who need information to allay their fears and blunters are those who avoid information as they make them more nervous. After that, **Moerman *et al.*** [12] have provided evidence about the lack of information and the increased preoperative anxiety. Therefore, healthcare staff should spend more time in the provision of information about the surgery in a clear and understandable manner.

In the present study, the overall preoperative anxiety APAIS score registered a mean ±SD of 18.2±5.8, which even higher than the scores of 16.9±5.5 reported among patients who were indicated for neurosurgery [18]. Although preoperative anxiety expected to be higher in neurosurgery patients than among our patients of elective surgery, this finding reflected the effect of different timing of anxiety assessment. In a study conducted by **Perks *et al.*** [18] the preoperative anxiety was assessed starting from 10 days to 24 hours before surgery. However, in the present study, it was assessed only 24 hours prior to surgery in the preparatory room. The preoperative anxiety starts from treatment planning and gradually increases until reaching the peak during the entry to the operation room. Thus, the present study assessed the preoperative anxiety when it was expected to be at a high level. Similar high level of preoperative anxiety reported by **Jawaid *et al.*** [5] who conducted an assessment among patients before the elective surgical intervention.

In this study, the components of anxiety about surgery reported higher scores than components of anxiety about anesthesia. Similar results reported by **Perks *et al.*** [18] and **Jawaid *et al.*** [5] as patients had more fear of surgery than anesthesia. Concerns about anesthesia had a mean ±SD anxiety score of 2.1±1.4, while the mean ±SD anxiety score of concerns about surgery was 3.7±1.2. The score of thinking of anesthesia was the lowest among all reported scores of anxieties with mean ±SD equals to 1.9±1.2. As we know the negative association between preoperative anxiety and postoperative outcomes, it is important to answer the question "who had a high level of preoperative anxiety". In this study, patients with high preoperative anxiety were younger, female, underwent surgery under general anesthesia, or had no family support. In the present study, the association between previous experience of surgery and preoperative anxiety was found statistically non-significant. Similarly, **Perks *et al.*** [18] reported that exposure to previous surgery would not decrease preoperative anxiety. While other studies found conflicting results regarding the association between exposure to previous surgery and preoperative anxiety [19]. Furthermore, **Jawaid *et al.*** [5] found a non-significant association between previous experience of surgery and preoperative anxiety. This could be attributed to the previous postoperative pain, nausea, and other complications. In this study, patients who were subjected to the spinal anesthesia had a significantly lower preoperative anxiety than those underwent surgery under general anesthesia. This conclusion agrees with that found by **Jawaid *et al.*** [5]. About the age and gender predictors, patients who were younger than 50 years old had a significantly higher mean ±SD score of 18.7±5.6 preoperative anxiety than those who aged more than 50 years old. This result agrees with that obtained by **Mavridou *et al.*** [20] who found that preoperative anxiety was higher in younger patients. **Ramsay** [21] reported a lower preoperative anxiety among children under 12 years old than adults, this age group have been excluded from the present study. The female gender was associated with a significantly higher preoperative anxiety than males with mean ±SD equal to 19.2±5.6. Similarly, the preoperative anxiety was found higher among women than men in a study conducted by **Jawaid *et al.*** [5], and **Mavridou *et al.*** [20]. Furthermore, **Perks *et al.*** [18] identified gender as a predictor who only had a positive significant correlation with the preoperative anxiety. In addition, **Koivula *et al*.** [22] reported that women were more stressed before coronary artery surgery. Another study reported different findings of the non-significant effect of female gender [23]. The most interesting objects of the present study were

the use of validated APAIS questionnaire to assess the preoperative anxiety, in addition to proper sample size calculation, while the lack of questions about specific reasons of fear, it could the weak limiting factor of this study. This study highlighted the high level of preoperative anxiety that has been associated even with elective surgery. The literature have demonstrated the negative association between preoperative anxiety and postoperative outcomes and this study tried to identify patients who could be susceptible to suffer from anxiety before being subjected to the surgery processing.

CONCLUSION

This study concluded patients underwent elective surgery had high preoperative anxiety. The patients with younger age, female gender, patients under general anesthesia, or those who had no family support showed the significantly higher level of preoperative anxiety.

CONFLICT OF INTEREST

The authors stated no financial support was received for this study.

ACKNOWLEDGEMENT

The authors appreciate the high cooperation of King Fahd Hospital which facilitates the interviewing of the patients and the collection of data.

REFERENCES

1.Julian LJ (2011): Measures of anxiety: State-Trait Anxiety Inventory (STAI), Beck Anxiety Inventory (BAI), and Hospital Anxiety and Depression Scale-Anxiety (HADS-A). Arthritis Care Res (Hoboken),63(11): S467-72

2.Pochard F, Bellivier F, Squara P (1996): Prevalence and prognostic value of anxiety and depression in patients undergoing cardiac surgery. Eur Psychiatry,11:326s.

3.Kain ZN, Mayes LC, Caldwell-Andrews AA, Karas DE, McClain BC (2006): Preoperative anxiety, postoperative pain, and behavioral recovery in young children undergoing surgery. Pediatrics,118(2):651-8.

4.Maranets I, Kain ZN (2000): Preoperative Anxiety and Intraoperative Anesthetic Requirements. Surv. Anesthesio., 44(5):272-3.

5.Jawaid M, Mushtaq A, Mukhtar S, Khan Z (2007): Preoperative anxiety before elective surgery. Neurosciences, 12(2):145-8.

6.Caumo W, Schmidt AP, Schneider CN, Bergmann J, Iwamoto C, Bandeira D *et al.* (2001): Risk factors for preoperative anxiety in adults. Acta Anaesthesiol Scand., 45(3):298-307.

7.Salmon P (1992): Surgery as a psychological stressor: paradoxical effects of preoperative emotional state on endocrine responses. Stress Health, 8(3):193-8.

8.García F, Blanco G, González E (2008): Influence of the grade of anxiety and level of cortisol on post-surgical recovery. Actas Esp Psiquiatr., 36(3):133-7.

9.Kalkhoran MA, Karimollahi M (2007): Religiousness and preoperative anxiety: a correlational study. Ann Gen Psychiatry, 6(1):17.

10.Cooke M, Chaboyer W, Schluter P, Hiratos M (2005): The effect of music on preoperative anxiety in day surgery. J Adv Nurs., 52(1):47-55.

11.Okkonen E, Vanhanen H (2006): Family support, living alone, and subjective health of a patient in connection with a coronary artery bypass surgery. Heart Lung, 35(4):234-44.

12.Moerman N, van Dam FS, Muller MJ, Oosting H (1996): The Amsterdam preoperative anxiety and information scale (APAIS). Anesth Analg., 82(3):445-51.

13.Laufenberg-Feldmann R, Kappis B, Schuster M, Ferner M (2016): Relevance of preoperative anxiety for postoperative outcome in urological surgery patients: A prospective observational study. Schmerz., 30(2):166-73.

14.Wang Y, Shen J, Lu J, Yang X (2008): Preoperative anxiety and depression in patients undergoing cardiac surgery and related influencing factors. Zhonghua yi xue za zhi., 88(39):2759-62.

15.Karanci A, Dirik G (2003): Predictors of pre-and postoperative anxiety in emergency surgery patients. J Psychosom Res., 55(4):363-9.

16.Lago-Méndez L, Diniz-Freitas M, Senra-Rivera C, Seoane-Pesqueira G, Gándara-Rey J-M, Garcia-Garcia A (2006): Dental anxiety before removal of a third molar and association with general trait anxiety. J Oral Maxillofac Surg., 64(9):1404-8.

17.Miller SM, Mangan CE (1983): Interacting effects of information and coping style in adapting to gynecologic stress: should the doctor tell all? J Pers Soc Psychol., 45(1):223.

18.Perks A, Chakravarti S, Manninen P (2009): Preoperative anxiety in neurosurgical patients. J Neurosurg Anesthesiol., 21(2):127-30.

19.Shafer A, Fish MP, Gregg KM, Seavello J, Kosek P (1996): Preoperative anxiety and fear: a comparison of assessments by patients and anesthesia and surgery residents. Anesth Analg., 83(6):1285-91.

20.Mavridou P, Dimitriou V, Manataki A, Arnaoutoglou E, Papadopoulos G (2013): Patient's anxiety and fear of anesthesia: effect of gender, age, education, and previous experience of anesthesia. A survey of 400 patients. J Anesth., 27(1):104-8.

21.Ramsay M (1972): A survey of pre–operative fear. Anaesthesia, 27(4):396-402.

22.Koivula M, Paunonen-Ilmonen M, Tarkka M-T, Tarkka M, Laippala P (2001): Fear and anxiety in patients awaiting coronary artery bypass grafting. Heart Lung, 30(4):302-11.

23.Kiyohara LY, Kayano LK, Oliveira LM, Yamamoto MU, Inagaki MM, Ogawa NY *et al.* (2004): Surgery information reduces anxiety in the pre-operative period. Rev Hosp Clin., 59(2):51-6.