



Preoperative Anxiety Assessment of Gynecology Surgeries in a Referral Hospital; Prevalence and Some Related Factors: A Cross-sectional study

Ali Mohammadzadeh Jouryabi¹, Vali Imantalab¹, Mandana Mansour Ghanaie², Robabeh Soleimani³, Gelareh Biazar^{1*}, Reyhaneh Shahrokhi Rad¹, Rayehe Rahimi⁴, Mohammad Amin Ashoobi⁴

Abstract

Objectives: Preoperative anxiety (POA) as an unpleasant reaction in surgical cases is associated with negative intra-postoperative outcomes. This study aimed to determine the main influencing factors on moderate to severe POA in elective surgeries in our hospital.

Materials and Methods: This Cross-sectional study was conducted at Alzahra hospital, Rasht, Iran. Firstly 1772 participants were interviewed for the State-Trait Anxiety Inventory to screen cases with more than or equal to 44 scores indicating at least moderate anxiety. Then eligible cases enrolled in the survey and demographic data and the causes of POA were documented.

Results: Among 1772 cases candidate for elective surgeries, the data from 530(29.6%) with at least moderate POA were analyzed. Fear of Anesthesia complications (22.45%), post-operation pain (21.16%), and surgery complications (12.5%) were the most common causes of POA. While fear of transfusion was the least important cause (0.64%). Two hundred forty-one participants suffered from one POA factor and 11 from 4 factors. A higher level of education, occupation, and the history of anesthesia and surgery were significantly associated with lower degrees of POA ($P = 0.0001$).

Conclusions: The prevalence of moderate to high degrees of POA was acceptable in this study; however, most were avoidable. Therefore individuals screening for detecting high-risk cases in the routine workup and assessing the need for psychiatrists' intervention would be helpful to improve the conditions.

Keywords: Anxiety, Assessment, Gynecology, Operations

Introduction

Generally, a range of 11%-80% has been reported as preoperative anxiety (POA) among adult individuals (1). Pharmacological and non-pharmacological interventions have been investigated to reduce POA (2). Additionally, anesthesia and surgery techniques have been significantly improved to a safer status. However, POA is still frequently reported. However individuals awaiting operations still experience degrees of anxiety (3).

POA with a negative impact on individuals' physiological and psychological status results in intra-postoperative unwanted outcomes, such as increased anesthesia requirements, post-operative pain, risk of nausea and vomiting, length of hospital stay, autonomic system activity, serum cortisol levels, higher risk of infection, and hemodynamic instability (4). Studies demonstrate that type of surgeries gender and age influence anxiety (5). The current literature from Iran have demonstrated that individuals waiting for surgery experience a moderate to high degrees of POA with different predisposing

factors (6-8).

Although a few similar studies have examined the preoperative status in different types of surgeries (5, 9-12), their findings could not be practical and generalized to the other centers due to the differences among the studies' structures and methods. Therefore considering the adverse effects of POA, to find preventive strategies for the best management of individuals' anxiety being aware of the actual conditions in each hospital seems crucial. No research has specifically investigated the issue in this hospital as an academic and referral center admitting all types of obstetric surgeries.

The aim of this study was to investigate the prevalence and the main causes of moderate to severe POA in elective gynecology surgeries in AlZahra teaching hospital.

Materials and Methods

This cross-sectional study was conducted at AlZahra hospital an academic and referral center affiliated to Guilan University of Medical Sciences, Rasht, Iran. From

Received 4 April 2022, Accepted 20 November 2022, Available online 26 June 2023

¹Anesthesiology Research Center, Department of Anesthesiology, Alzahra Hospital, Guilan University of Medical Sciences, Rasht, Iran.

²Reproductive Health Research Center, Department of Obstetrics and Gynecology, AlZahra Hospital, School of Medicine, Guilan University of Medical Sciences, Rasht, Iran. ³Department of Psychiatry, Kavosh Behavioral Cognitive and Addiction Research Center, Shafa Hospital, Guilan University of Medical Sciences, Rasht, Iran. ⁴Student Research Committee, Anesthesiology Research Center, Department of Anesthesiology, Alzahra Hospital, Guilan University of Medical Sciences, Rasht, Iran.

*Corresponding Author: Gelareh Biazar, Tel: +989111350987, Email: gelarehbiazar1386@gmail.com



Key Messages

- ▶ POA as an unpleasant reaction in surgical cases is associated with negative intra-postoperative outcomes.
- ▶ The current study suggests that individuals screening for detecting high-risk cases in the routine workup and assessing the need for psychiatrists' intervention would be helpful to improve the conditions.

February 2019 to March 2020 eligible participants were interviewed when they arrived in the operation room.

Inclusion Criteria

Women candidate for elective gynecology surgeries, admitted to AlZahra hospital, giving informed consent.

Exclusion Criteria

Emergency cases, not to be able to communicate properly, refuse to participate for any reasons.

After informed consent was obtained, State-Trait Anxiety Inventory (STAI), a self-report easy and reliable questionnaire consisting of two parts, and forty questions were filled out for each participant. The first 20-items assess how the patient feels at the moment, and the next 20-items are about how they generally feel. The participants could achieve scores between 20 to 80, and scores higher than 44 indicate moderate to severe anxiety (1). participants who achieved at least 44 scores enrolled in the survey, and a face-to-face interview was performed to record the demographic data and the causes of POA.

Sample Size

Based on a pilot study which indicated that the most

frequent cause of POA was fear of anesthesia, $Z1-\alpha/2 = 1.96$, $p = 0.33$, $q = 0.67$, $d = 0.04$, 530 cases was determined as a proper sample size for this study.

Statistical Analysis

The collected data were analyzed by SPSS version 21 (SPSS Inc., Chicago, IL, USA). For comparing the means of groups, *t* test and one-way ANOVA were applied. Statistically, a *P* value < 0.05 was considered significant.

Results

Among 1772 cases candidate for elective surgeries, the data from 530 (29.6%) with at least moderate POA were analyzed. A higher level of education, occupation, and the history of anesthesia and surgery were significantly associated with lower degrees of POA ($P = 0.0001$). The general characteristics of our participants are presented in Table 1. Fear of anesthesia complications (22.45%), post-operation pain (21.16%), and surgery complications (12.5%) were the most common causes of POA, while fear of transfusion was determined as the least important cause (0.64%). 241 participants suffered from one POA factor and 11 participants from 4 factors. Factors that may cause POA and the number of POA causes are presented in Table 2. A significant association was found between the severity of POA and types of surgeries so that myomectomy and dilation & curettage had the highest degree of POA ($P = 0.038$) (Table 3).

Discussion

This survey assessed the prevalence of moderate to severe POA, the main causes, and some related factors among elective obstetric surgeries. During the study period,

Table 1. The Demographic Data and General Characteristics of cases Candidates for Elective Gynecology Surgeries

Variable	Status	Number	Mean \pm SD	P Value
Age (y)	18-30	170	50.59 \pm 12.97	0.272 ^a
	30-40	238	50.06 \pm 15.05	
	40 \leq	122	52.61 \pm 14.6	
Level of education	Illiterate	78	64.94 \pm 11.5	0.0001 ^a
	Under Diploma	221	52.43 \pm 12.4	
	Diploma	193	46.61 \pm 12.44	
	College-educated	38	44.81 \pm 10.86	
Occupation	Employed	82	44.89 \pm 14.24	0.0001 ^b
	Non-Employed	448	53 \pm 13.25	
Marital status	Married	474	51.2 \pm 13.78	0.076 ^b
	Single/Separated	56	47.6 \pm 18.22	
ASA class	I	316	49.8 \pm 13.83	0.131 ^a
	II	198	52.23 \pm 15.13	
	III	15	53.53 \pm 12.64	
History of surgery & anesthesia	Yes	232	48.06 \pm 14.71	0.0001 ^b
	No	298	52.96 \pm 13.68	

ASA: American Society of Anesthesiologists' classification.

^a One-way ANOVA, ^b t-test.

Table 2. The Causes of Preoperative Anxiety in cases Candidates for Elective Gynecology Surgeries

Factors	No. (%)
Anesthesia complications	174 (22.45)
Surgery complications	97 (12.51)
Results of surgery	47 (6.06)
Fears of Death	33 (4.25)
Post-operative pain	164 (21.16)
Awareness during surgery	68 (8.77)
Fear of disability	38 (4.90)
Concern about family	46 (5.93)
Need of blood transfusion	5 (0.64)
Waiting for operation	12 (1.54)
Financial loss	42 (5.41)
Harm from doctor/ nurse mistake	13 (1.67)
Nil per mouth	23 (2.96)
Fears of unknown	13 (1.67)
The number of POA causes	
One	241 (47.45)
Two	194 (36.6)
Three	84 (15.8)
Four	11 (07.2)

Table 3. The Severity of Pre-operative Anxiety Regarding Surgery Types in cases Candidate for Elective Gynecology Surgeries

Type of Surgery	Number	Mean \pm SD
Myomectomy	21	54.42 \pm 13.2
Dilation & curettage	113	53.12 \pm 13.06
Cesarean section	160	51.18 \pm 13.38
Hysterectomy	87	50.82 \pm 14.47
Laparoscopy	56	49.08 \pm 15.69
Hysteroscopy	69	49.28 \pm 15.82
Others	24	44.83 \pm 16.53

P value = 0.038, One way ANOVA.

1772 participants were interviewed in terms of obtaining informed consent and detecting eligibility. Among them, cases that did not have the mentioned inclusion criteria, for example, not proper communication or not accepting to participate for personal reasons, were excluded, and finally, 530 eligible cases participated. It means that 29.6% of our cases, candidates for elective surgeries, suffer from a moderate to severe POA. It was found that, fear of anesthesia complications, post-operation pain, and surgery complications were the most common causes of POA. While fear of transfusion leads to the least POA. Considering that some degrees of anxiety are expected as a natural reaction, only cases suffering from moderate to high degrees of anxiety were enrolled. In our research,

a significant difference was found between the type of surgeries and the severity of POA. Myomectomy followed by dilatation & curettage was associated with higher degrees of POA compared to the other surgeries. It was a considerable result because it might be expected that major surgeries like hysterectomy induce much more anxiety. This finding indicates that contrary to our belief, minor surgeries could be so anxious to the patient and requires enough attention. Various factors have been reported to be responsible for POA (13). Another study showed that the most common cause of POA was concern about their family, while in this study, it ranked fifth (14). Another study from Nigeria reported that 51.0% of their patients had severe POA while the major reasons were fear of surgery complications (1). Compared to our findings, they had a significantly higher rate of POA. In the Another study waiting for surgery was determined as the greatest concern while not highlighted in our patients (15). Another study found that POA due to surgery factors was significantly higher than anesthesia-related factors. They also considered several risk factors for POA, including psychiatric diseases, smoking, female gender, and level of education (14). Notably, studies do not have an agreement even regarding some confirmed predisposing factors, such as female gender (16). In the Another study, patients with previous surgery experiences were the same as those with no experiences. They declared that most of their patients suffered from high degrees of POA, and brief and fast preoperative anesthesia visits were suggested as the main reason (14). Supporting them, Similar article indicated anesthesiologists role in providing preoperative information to reduce POA (16). in similar research, found that 40.5% of patients candidate for elective surgeries reported a severe POA, and supporting our findings, fear of anesthesiologists errors was the main cause (11) In the Another study investigated the POA pattern in cataract surgeries. They found that their patients suffered from severe anxiety, which was significantly associated with postoperative pain (17). Based on the current literature, different prevalence, causes, and related factors have been reported for POA. It refers to the differences among study structures. The studied populations are not similar in terms of the average age, social background, personality, previous experience of surgery and anesthesia, ethnicity, culture, and beliefs which can affect patients' definition and expression of anxiety. For example, in one study, psychiatric cases were enrolled; however, in some other studies like the present work, these individuals were excluded. (14) The type of surgeries could be the other important factor. Obviously, the prevalence and the degree of anxiety are not the same, in patients undergoing general surgeries comparing to cardiac surgeries and patients scheduled for cosmetic surgeries such as rhinoplasty have more concern for the result of surgery. Furthermore, the characteristics of a hospital should be considered as well. Definitely conditions in a private center with

limited admissions are different from a tertiary and educational hospital with a high turnover. Health care providers and medical team experience for appropriate communication with patients could reduce their level of anxiety. Moreover there is not a general agreement on the standard instrument to assess POA as another influencing factor. Studies have evaluated their cases based on various measurement tools such as; Depression, Anxiety and Stress Scale, Amsterdam preoperative anxiety, and information scale (18). Visual Analogue Scale of Anxiety (19), State-Trait Anxiety Inventory questionnaire (20, 21). The time of the interview also affects the results, when the patient is visited the day before surgery or in preoperative clinics or just before surgery in the operating room, the degree of anxiety would be different. According to the main causes of POA, improving the quality of preoperative visits, providing more information, detecting patients with high degrees of POA, and planning appropriate strategies to manage them are crucial.

Limitations

Although the results of this research were informative and practical, we acknowledge that we have a few limitations which by future studies would address. It was a single-center study with small sample size and restricted to female gender and obstetric surgeries. Individuals with mild anxiety were excluded. Because, as soon as an operation is planned, anxiety begins and gradually increases to the most severe in the operating room just before the surgery. Even the individuals may declare the day of surgery as the most threatening day of their whole lives, so we evaluated our case once before the operation. However, we are not aware of their experience after surgery.

Conclusions

The prevalence of moderate to high degrees of POA was acceptable in this study. Anesthesia complications, post-operation pain, and surgery complications were the most common causes of POA, which seem to be avoidable. Indeed individuals screening for high-risk cases in routine workup and assessment for psychiatric intervention would be practical to solve the problem.

Authors' Contribution

Conceptualization: Ali Mohammadzadeh Jouryabi, Gelareh Biazar.

Investigation: Gelareh Biazar, Reyhaneh Shahrokhi Rad

Resources: Vali Imantalab, Mandana Mansour Ghanaie, Robabeh Soleimani

Data curation: Reyhaneh Shahrokhi Rad, Rayehe Rahimi, Mohammad Amin Ashoobi

Writing—original draft: Mandana Mansour Ghanaie, Robabeh Soleimani

Writing—review and editing: All authors.

Supervision: Vali Imantalab, Ali Mohammadzadeh Jouryabi.

Conflict of Interests

The authors report no conflicts of interest in this work.

Ethical Issues

The study protocol was approved by the Research Ethics Committee of Guilan University of Medical Sciences, Rasht, Iran (No. IR.GUMS.REC.1397.216).

Financial Support

Nil.

Acknowledgments

The authors would like to thank Anesthesiology Research Center members Ms. Mohadese Ahmadi and Ms. Mahin Tayefeh Ashrafie for their collaboration in this study.

References

1. Akinsulore A, Owojuyigbe AM, Faponle AF, Fatoye FO. Assessment of preoperative and postoperative anxiety among elective major surgery patients in a tertiary hospital in Nigeria. *Middle East J Anaesthesiol*. 2015;23(2):235-240.
2. Bradt J, Dileo C, Shim M. Music interventions for preoperative anxiety. *Cochrane Database Syst Rev*. 2013;2013(6):CD006908. doi:10.1002/14651858.CD006908.pub2
3. Yilmaz M, Sezer H, Gürlü H, Bekar M. Predictors of preoperative anxiety in surgical inpatients. *J Clin Nurs*. 2012;21(7-8):956-964. doi:10.1111/j.1365-2702.2011.03799.x
4. Lee JS, Park YM, Ha KY, Cho SW, Bak GH, Kim KW. Preoperative anxiety about spinal surgery under general anesthesia. *Eur Spine J*. 2016;25(3):698-707. doi:10.1007/s00586-015-3788-2
5. Majumdar JR, Vertosick EA, Cohen B, Assel M, Levine M, Barton-Burke M. Preoperative anxiety in patients undergoing outpatient cancer surgery. *Asia Pac J Oncol Nurs*. 2019;6(4):440-445. doi:10.4103/apjon.apjon_16_19
6. Ghardashi F. Factors affecting preoperative anxiety. *Koomesh*. 2007;8(3):123-130. [Persian].
7. 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(4):53-60. [Persian].
8. Ghanei R, Rezaei K, Mahmoodi R. The relationship between preoperative anxiety and postoperative pain after cesarean section. *Iran J Obstet Gynecol Infertil*. 2013;15(39):16-22. doi:10.22038/ijogi.2013.543
9. Bedaso A, Ayalew M. Preoperative anxiety among adult patients undergoing elective surgery: a prospective survey at a general hospital in Ethiopia. *Patient Saf Surg*. 2019;13:18. doi:10.1186/s13037-019-0198-0
10. Baytar Ç, Bollucuoglu K. Effect of virtual reality on preoperative anxiety in patients undergoing septorhinoplasty. *Braz J Anesthesiol*. 2023;73(2):159-164. doi:10.1016/j.bjane.2021.08.014
11. Eberhart L, Aust H, Schuster M, et al. Preoperative anxiety in adults - a cross-sectional study on specific fears and risk factors. *BMC Psychiatry*. 2020;20(1):140. doi:10.1186/s12888-020-02552-w
12. Kuzminskaitė V, Kaklauskaitė J, Petkevičiūtė J. Incidence and features of preoperative anxiety in patients undergoing elective non-cardiac surgery. *Acta Med Litu*. 2019;26(1):93-100. doi:10.6001/actamedica.v26i1.3961
13. McGaw CD, Hanna WJ. Knowledge and fears of anaesthesia and surgery. The Jamaican perspective. *West Indian Med J*. 1998;47(2):64-67.
14. Jawaid M, Mushtaq A, Mukhtar S, Khan Z. Preoperative anxiety before elective surgery. *Neurosciences (Riyadh)*. 2007;12(2):145-148.
15. Kindler CH, Harms C, Amsler F, Ihde-Scholl T, Scheidegger D. The visual analog scale allows effective measurement

- of preoperative anxiety and detection of patients' anesthetic concerns. *Anesth Analg*. 2000;90(3):706-712. doi:10.1097/00000539-200003000-00036
16. Kiyohara LY, Kayano LK, Oliveira LM, et al. Surgery information reduces anxiety in the pre-operative period. *Rev Hosp Clin Fac Med Sao Paulo*. 2004;59(2):51-56. doi:10.1590/s0041-87812004000200001
 17. Socea SD, Abualhasan H, Magen O, et al. Preoperative anxiety levels and pain during cataract surgery. *Curr Eye Res*. 2020;45(4):471-476. doi:10.1080/02713683.2019.1666996
 18. Moerman N, van Dam FS, Muller MJ, Oosting H. The Amsterdam preoperative anxiety and information scale (APAIS). *Anesth Analg*. 1996;82(3):445-451. doi:10.1097/00000539-199603000-00002
 19. Yumul R, Ahdout J, Goodman A, et al. Assessment of preoperative anxiety using visual facial anxiety scale: an alternative to the verbal rating scale? *Med Res Arch*. 2015;2(2):1-14. doi:10.18103/mra.v0i4.281
 20. Vergara-Romero M, Morales-Asencio JM, Morales-Fernández A, Canca-Sanchez JC, Rivas-Ruiz F, Reinaldo-Lapuerta JA. Validation of the Spanish version of the Amsterdam preoperative anxiety and information scale (APAIS). *Health Qual Life Outcomes*. 2017;15(1):120. doi:10.1186/s12955-017-0695-8
 21. Cao X, Yumul R, Elvir Lazo OL, et al. A novel visual facial anxiety scale for assessing preoperative anxiety. *PLoS One*. 2017;12(2):e0171233. doi:10.1371/journal.pone.0171233

Copyright © 2026 The Author(s); This is an open-access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.