Original Article

Prevalence Of Pre-Operative Anxiety Among Patients In A Tertiary Care Hospital In South India, Chennai

Dr. S. SreeRanjani[1] , Dr. D. Venkateswarlu[2] , Dr. N. Sudhakar[3] , Dr. J. Mohanasundaram[4] , Dr. S. Gothai Nachiyar[5]

[1]MBBS, DA, DNB (Anaesthesiology), FIPM, MHA Vice Principal (Admin) and Professor & Head, Dept. Of Anaesthesiology, Bhaarath Medical College & Hospital, (A unit of BIHER), Chennai, Tamil Nadu, Corresponding Author:
[2]MBBS, MD (Gen. Medicine) Professor & Head, Dept. Of General Medicine, Bhaarath Medical College & Hospital, (A unit of BIHER), Chennai, Tamil Nadu
[3]MBBS, MS (Gen. Surgery), MRCS, MCh (Urology) Professor & Head, Dept. Of General Surgery, Bhaarath Medical College & Hospital, (A unit of BIHER), Chennai, Tamil Nadu
[4]MBBS, M.D Professor, Dept. Of Pharmacology, Bhaarath Medical College & Hospital, (A unit of BIHER), Chennai, Tamil Nadu
[5]M.Sc., M.Phil., PhD (Statistics) Bio-Statistician, Department of Community Medicine, Bhaarath Medical College & Hospital, (A unit of BIHER), Chennai, Tamil Nadu
DOI: 10.47750/pnr.2023.14.02.117

Abstract

Background

The thought of experience of surgery with anaesthesia promotesintense anxiety. Thisstresscan give rise todetrimental events like perioperative cardiac problems, increased anaesthesia requirements, intense postoperative pain and increased length of hospital stay.Many factors impact the anxiety statusat the time of surgery. This study was designed to evaluate the prevalence of anxiety in adultsscheduled for elective surgery in a tertiary care hospital.

Methods

428 patients scheduled for differentelective surgeries were asked 6 questions based on the Amsterdam preoperative anxiety score to determine their anxiety status. The factorsevaluated were age, sex, socioeconomic status, type of surgery and history of prior surgery. The patients were asked questions regarding problems in surgery, recovery from anaesthesia, needle pricks,etc as these can cause anxiety.

Results

The incidencerate of anxiety was 89.71%. The mild anxiety prevalence in male patients and female patients were 170 (44.27%) and 214 (55.73%%)with a p value of <0.005. Patients with nil anxiety were 44 (10.28%), mild anxiety were 207 (48.36%), moderate anxiety were 121 (28.27), severe anxiety were 56 (13.08%).

Conclusion

Preoperative anxiety has a significantimpact on the surgery outcomes. It could cause increase heart rate, and thus, might accelerate bleeding. Besides, it has been shown that increased level of preoperative anxiety may lead to increased postoperative pain-relieving drug requirement. Hence on assessment of the presence of anxiety and the level, adequate anxiolytic premedication can be prescribed. In addition, the relationship between anxiety and age, gender, type of surgery, education and socioeconomic status can be evaluated, as these may have an influence on the anxiety levels and severity. The overall prevalence of anxiety in this part of the country was found to be higher. The prevalence was increased in females.

Introduction:

Anxiety is a condition characterised by fear, nervousness, and worry onuncertain events which is accompanied by restlessness, tiredness, problems in concentration and tension.Extreme anxiety causes hypertension and tachycardia due to sympathetic stimulation and can increase anaesthetic requirementscausing confusions;long drawn recovery, increased post-operative pain etc. The neurohumoraleffectof anxiety can lead toraised intraoperative cortisol status. Anxiety can be a potent risk featurewhich may help in forecasting postoperative cardiac episodes[1].

Conditions-related to the patients like age, gender, the standard of education, economic status, toleration of pain, pasthistory of surgery and social supportcan affect the anxiety rate. High risksurgeries, prolonged hospitalization, emergency surgeriesand unplanned surgeriesmay play a role in increased anxiety.The approach of the hospital staff, communication competence of the doctors, the generalcredits of the organization, and view-points of adjacent patients also impacts. Preoperative anaesthetic information, anaesthetic extension and threat of surgery were cruciallyrelated with an elevatedrange of anxiety. Other determinants like special needs of patients, knowledge of medical flaws, noise levels, displeasingodour, financial issues, postponement of the surgeryare important criteria[2].

Pharmacological anxiolysis is a frequentlyused method to decrease anxiety, the efficacyof which varies.Awarmpersonality of the anaesthesiologist during assessment of the patient can reduce anxiety,provided the patient is supervised by same anaesthesiologist till surgery. This may not be possible in some hospitals.Preoperative projection on multimedia about the protocolwilllessen anxiety prior the surgery. Informed individuals are at decreasedstress. Very few reports have been published on the pre-operative anxiety among adults from India.The Amsterdam preoperative anxiety and Information scale is a proven tool to evaluate anxiety. We have implemented this in the present study. The questions were given inthe regional language, Tamil to address the patients[3].

On assessment of the presence of anxiety and its level, adequate anxiolytic premedication can be prescribed. In addition, the relationship between anxiety and age, gender, type of surgery, education and socioeconomic status can be evaluated, as these may have an influence on the anxiety levels and severity[4].

The aim of the present study was to evaluate the preoperative anxiety and determine its predictors among adultsawaiting elective surgery in General Surgery Departmentat the time of pre-operative assessment. The primeobjective of the study is to evaluate prevalence of preoperative anxiety, level of anxiety and the secondary objective was to determine the effect of age, gender, type of surgery, previous surgery, education and socioeconomic status on pre-operative anxiety.

Methods:

Ethical Approval:

Ethical approval was secured from Institutional Review Board of Bharath Medical College and Hospital with Ref No: BIEC/016/21. The participants were informed about the aim of the study clearly. All the queries and doubts of the individuals was addressed and clarified. Consent was obtained from subjects who were chosen to participate in our study. Fingerprint was sought from illiterate patients to declare consent. Secrecy and privacy was assertedat the time of evaluation of the members. Participants who were not willing to take part were not forced.

Inclusion and Exclusion Criteria:

Patients with ASA – PS classification III physical status or greater, less than 18 years of age and 60 years beyond,previous psychiatric ill health, on anti-psychotic drugs, those who have difficulty in understanding and communicating or unwilling to participate and renal or hepatic derangement, low intelligence quotient were excluded[5].

428 patients participated in our study.The study period was from November2021 to August 2022. The patients were seated in a comfortable posture. The APAIS comprised of 6 questions, 2 each for anaesthesia and 2

for electivesurgeryassociated anxiety. 2 more for desire to know more about anaesthesia and surgery. Each question is scored on a 1 to 5 scale, 1 being the least and 5 denoting the highest value. The Pre-operative anxiety scores were fixed as minimum from 6 to maximum of 30, wherein <6 denoted as no anxiety, 6 to 10 was denoted as mild anxiety, 11 to 20 as moderate level of anxiety and 21 to 30 as severe anxiety.

Table 1 Questionnaire

Questionnaire	Not at all	1	2	3	4	5
1. I am worried about the anaesthetic						
2. The anaesthetic is on my mind continually						
3. I would like to know as much as possible about the anaesthetic						
4. I am worried about the procedure						
5. The procedure is on my mind continually						
6. I would like to know as much as possible about the procedure						
The subscales						
Anaesthesia-related anxiety	Sum A = 1 + 2					
Surgery-related anxiety	Sum S = 4 + 5					
Information desired component/Knowledge component	Sum I= 3 + 6					
Combined anxiety component	Sum C = sum A + sum S (1 + 2 + 4 +5)					

Statistical Analysis:

Pearson's correlation was carried out to coordinate anxiety and information score. Chi Square test demonstrate the influence of gender, income, education and previous surgery exposure.

Results:

The generalincidence of anxiety was 89.71% in our study. The patients with score <6 were unanxious.The proportion of in male and female were 170 (44.27%) and 214 (55.73%%) correlating a p value of <0.005. As the age increases the anxiety levels decreases. In our study, the age group of 18-40 was analysed based on their anxiousness; 23 (52.27%) was not anxious, 110 (53.14%) had mild anxiety, 98 (80.99%) had moderate level of anxiety and 41(73.29%) had severe anxiousness. Among the age group 41-60; 21 (47.73%) was not anxious, 97 (46.86%) had mild anxiousness, 23 (19.01%) had moderate anxiety levels, 15 (26.79%) had severe anxiety (Fig1). Patients with no anxiety were 44 (10.28%), mild anxiety were 207 (48.36%), moderate anxiety were 121 (28.27), severe anxiety were 56(13.08%). Income <1,00,000 group of patients with no anxiety were 20(45.45%), anxiety was 123(32.03%). Income >1,00,000 group of patients with no anxiety were 24(54.55%), anxiety was 261(67.97%), the p value was <0.001 (Table 2).

Anxiety level of patients with education status was evaluated, graduate patients with no anxiety were 3(6.82%), patients with secondary level of education anxiety status was29(65.91%) and withprimary level of education status was 12(27.27%). Patients holding graduation level of education with mild, moderate and severe level of anxiety was 76(36.71%), 65(53.72%) and 94.64%, secondary;24(11.59%), 15(12.4%), nil, primary level;107 (51.69%), 41 (33.88%), 3 (5.36%) respectively. The p value was found to be <0.001.

Influence of previous surgery upon anxiety scores were statistically significant.Patients who had previous surgery; 19 (43.18%) patients with no anxiety, 125(60.39%) had mild anxiety, 28(23.14%) had moderate anxiety, 4(7.14%) had severe anxiety. Individuals who did not undergo previous surgery; 25 (56.82%) patients with no anxiety,

82(39.61%) had mild anxiety, 93(76.86%) had moderate anxiety, 52(92.86%)had severe anxiety.The mean anaesthesia, surgery and total anxiety scores were 2.95 (1.43), 5.54 (26) and 12.43 (4.75) respectively (Table 3, Fig 2). Combined anxiety has a good correlation with information desired component (0.8271). Surgery related anxiety have a good correlation with information desired component (0.8089).Anaesthesia related anxiety have a moderate correlation with information desired component (0.5905)

Table 2:Additional Factors affecting anxiety

Variables		No Anxiety(44)	Mild Anxiety(207)	Moderate Anxiety(121)	Severe Anxiety(56)	P-Value
Gender	Female (226) Male (202)	12(27%) 32(72.73%)	114(55.07%) 93(44.93%)	69(57.02%) 52(42.98%)	31(55.36%) 25(44.64%)	<0.005*
Income	Less than 1,00,000 (143) More than 1,00,000 (285)	20(45.45%) 24(54.55%)	99(47.83%) 108(52.17%)	24(19.83%) 97(80.17%)	0(0%) 56(100%)	<0.001*
Previous Surgery	Yes (176) No (252)	19(43.18%) 25(56.82%)	125(60.39%) 82(39.61%)	28(23.14%) 93(76.86%)	4(7.14%) 52(92.86%)	<0.001*
Age	18-40 (272) 41-60 (156)	23(52.27%) 21(47.73%)	110(53.14%) 97(46.86%)	98(80.99%) 23(19.01%)	41(73.29%) 15(26.79%)	<0.001*
Education	Primary (163) Secondary (68) Graduate (197)	12(27.27%) 29(65.91%) 3(6.82%)	107(51.69%) 24(11.59%) 76(36.71%)	41(33.88%) 15(12.40%) 65(53.72%)	3(5.36%) 0(0%) 53(94.64%)	<0.001*

Fig 1: Level of anxiety among the study group

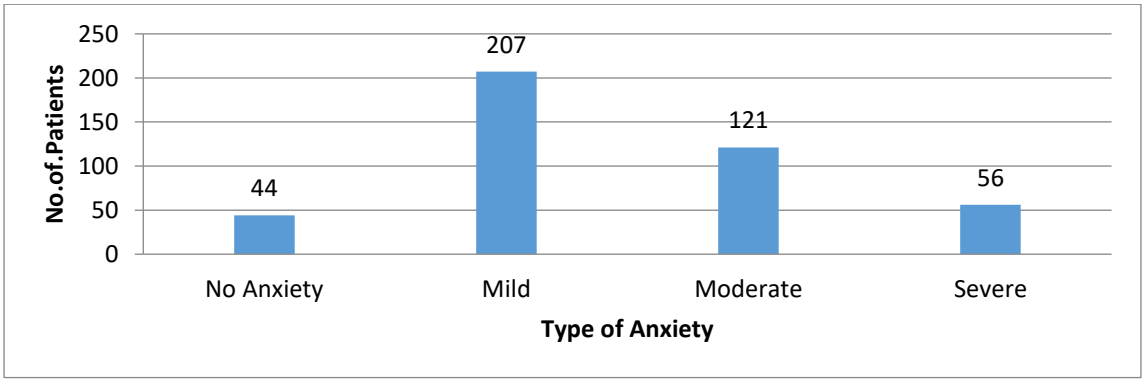
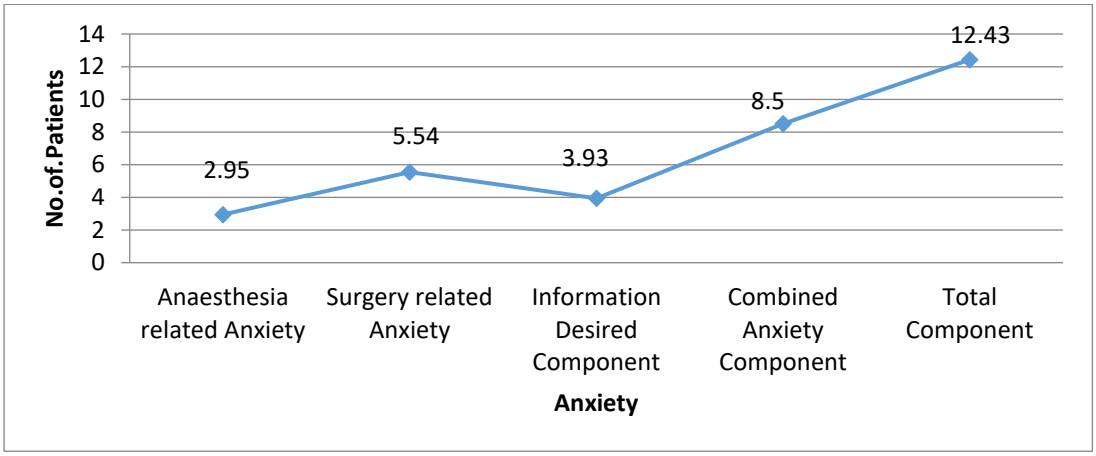


Table 3: Anxiety scores association with information desired component of APAIS

	Anaesthesia related Anxiety	Surgery related Anxiety	Combined Anxiety Component	Information Desired Component	Total Component
Mean (SD)	2.95(1.43)	5.54(2.36)	8.50(3.33)	3.93(1.60)	12.43(4.75)
Median	2	6	8	4	12

Range	2 to 6	2 to 10	4 to 16	2 to 7	6 to 23
Pearson Correlation (r)	0.5905	0.8089	0.8271		

Fig 2 : Correlation between Anaesthesia related Anxiety, Surgery related Anxiety, Combined Anxiety Component and Information Desired Component



Discussion:

Patient stress is often overlooked during anaesthesia and surgery. Anxiety is likely tobeinitiatedin the patientsfewdays'prior the surgery and maybe present until the post-operative phase. It is being observed by many anaesthetists that patients with anelevatedrangeof preoperative anxiety have high postoperative anxiety. The period of anxiety evaluationis also significant. Patients may have maximum levels of anxiety at the pre-operative room as related to the ward[6-9].

The State-trait anxiety Inventory Questionnaire (STAI) is the gold standard for the measurement of anxiety score. It comprises 20 statements wherein each question can take values from not to all. The STAI is accessible in different languages yet the statements are hard to translate and becomes unclear to people who are uneducated. There are other scoring methodologies which are not specific or differentiate surgical and anaesthesia related anxiety. The APAIS scoring is easy to understand and suitable for the measurement of anxiety (Table 1). APAIS anxiety scores of higher than 10 was accounted as important scoring and was observed to have asignificant sensitivity and specificity[10-14].

To calculate sample size,weanalysed Indian studies using similar assessment tests. A sample size of 412 patients is taken, determined from previous studies Sumansaini et al and Jiwanmall et al, where the prevalence of preoperative anxiety was computed to be around 58%. However, in our study we recruited 428 patients. Few observed reports have chosen a sample size ranging from 100 to 500 (Fig 1)[15-18].

In present study, overall prevalence of anxiety was higher at 89.71%. Our result correlate with the previous study ofJafar et al (62%) and Romnaik et al (66%).Mavridou et al and Mattias et al noticedincreased prevalence of 81% and 76.6% respectively.Parallelresults were observed by few other authors Pokharel K et al[22].In a report with 79 patients, the rate of pre-operative anxiety was 45.7% [21]. The total number of cases was 428 and the prevalence was 89.71 %, comparatively higher than previous reported studies. The components which induces anxiety differ across the countries and reveal the ethnic and custom merit of the mankind. In western countries, pain and waiting were few anxiety rising factors. Worries about the dear ones, financial loss were also some significant factors in some noted studies. No specific anxiety-inducing factor was observed in our study. [19,20].

In the present study the age group of patients of 18-40 were more anxious rather than the 41 to 60 age group of patients. As age increases the anxiety level of the patients decreases. Our study was comparable to the study conducted by Ebirim LN et al [10]. The presence of anxiety was greater in females which align with previous studies [18]. A ratio of anxious patients increases with increasing range of education and decrease with increasing age. Participants with earlier anaesthetic exposure were less anxious than patients who were reporting for the first time. Our report wasin line with otherformer studies. Major segment of our study population of anxious patients with higher education corresponds to better knowledgeon complications related to anaesthesia and surgery. Comparativelyminor level of anxiety among patients with past anaesthetic exposure could be because of less "fear of unknown or less misconceptions about anaesthesia and surgery. In our study we observed that higher income group and higher education levels were more anxious[23,24].

In our study, patients of higher income status were more anxious, severe was 56 (100%), moderate was 97 (80.17%) and mild was 108 (52.17%) than lesser income group 32.03%.Income status play an important role and observed to be a separate predictor.Economic and social status present a vital part in anxiety. In many studies lower anxiety prevalence rate may invariably relate to lower economic status. High income patients were found to be more anxious than less income population[25,26].

Preoperative anxiety remains a difficult situation in our patient population. Anxiety related to anaesthesia and surgery substantiallyelevatedwhen patients were shifted from the ward to the operation room. Combined anxiety and surgery related anxiety have a good correlation with information desired component. Anaesthesia related anxiety have a moderate correlation with information desired component. Our prevalence percentage was higher as compared to other studies. A graph depicts the scores differences in the components studied in the present study (Fig 2)[27,28].

In conclusion, we determined pre-operative anxiety in patients using the regional language Tamil version of the modified APAIS scale during preoperative assessment. The result shows a prevalence of 89.71% and is notablyhigher in female patients. The upper social strata group had increased anxiety status.Patients who underwent surgery previously have lesser anxiety levels rather than the patients who did not undergo surgery. Younger age group of patients have more anxiety compared to the middle and older age group of patients.Educated have more proportion of anxiety compared to the uneducated.On assessing presence of anxiety and its severity, anxiety reduction methods can be employed to make it more pleasant for the patient and for a better intra and post-operative outcome.

REFERENCES:

1. AbdulazizBoker, Laurence Brownell, Neil Donen. The Amsterdam preoperative anxiety and information scale provides a simple and reliable measure of preoperative anxiety. CAN J ANESTH 2002 / 49: 8 / pp 792–798.
2. Adesanmi A, Afolabi M. Owojuyigbe, Aramide F. Faponle and Femi O. Fatoye. Assessment of preoperative and postoperative anxiety among elective major surgery patients in a tertiary hospital in Nigeria. M.E.J. Anesth 2015; 23 (2):235-240.
3. Akkamahadevi P, Subramanian VV. The efficacy of different methods of pre-operative counselling on perioperative anxiety in patients undergoing regional anaesthesia. Indian J Anaesth 2016;60(1):58. https://doi.org/10.4103/0019-5049.174812 [PMid:26962258] [PMCid: PMC4782426]
4. Alattas SA, Smith T, Bhatti M, Wilson-Nunn D, Donell S. Greater preoperative anxiety, pain and poorer function predict a worse outcome of a total knee arthroplasty. Knee Surg Sports TraumatolArthrosc 2017;25(11): 3403e10.
5. Ali A, Altun D, Oguz BH, Ilhan M, Demircan F, Koltka K. The effect of preoperative anxiety on postoperative analgesia and anesthesia recovery in patients undergoing laparascopic cholecystectomy. J Anesth 2014;28(2): 222e7.
6. Balasubramaniyan N, Rayapati DK, Puttiah RH, Tavane P, Singh SE, Rangan V, et al. Evaluation of anxiety induced cardiovascular response in known hypertensive patients undergoing exodontias- a prospective study. J ClinDiagn Res. 2016;10(8): ZC123–7.
7. Berth H, Petrowski K, Balck F. The Amsterdam Preoperative Anxiety and Information Scale (APAIS) - the first trial of a German version. Psycho-Soc Med 2007;4. [PMid:19742298] [PMCid: PMC2736533.
8. Chunta KS. Expectations, anxiety, depression, and physical health status as predictors of recovery in open-heart surgery patients. J CardiovascNurs 2009;24(6):454e64.
9. Dudala SR. Updated Kuppuswamy's socioeconomic scale for 2012. J NTR Univ Health Sci 2013; 2:201-2. https://doi.org/10.4103/2277- 8632.117195
10. Ebirim LN, Tobin M. Factors Responsible for Pre-Operative Anxiety In Elective Surgical Patients At A University Teaching Hospital: A Pilot Study. Internet J Anesthesiol [Internet]. 2010 Dec 31 [cited 2017 Jan 15];29(2). Available from: http://ispub.com/IJA/29/2/8534.

11. Haugen AS, Eide GE, Olsen MV, Haukeland B, Remme AR, Wahl AK. Anxiety in the operating theatre: a study of frequency and environmental impact in patients having local, plexus or regional anaesthesia. J ClinNurs 2009;18(16):2301-10. https://doi. org/10.1111/j.1365-2702.2009. 02792.x [PMid:19583663]
12. Jafar MF, Khan FA. Frequency of preoperative anxiety in Pakistani surgical patients. J Pak Med Assoc 2009;59(6):359-63. [PMid:19534368]
13. Jiwanmall M, Jiwanmall SA, Williams A, Kamakshi S, Sugirtharaj L, Poornima K, Jacob KS. Preoperative Anxiety in Adult Patients Undergoing Day Care Surgery: Prevalence and Associated Factors. Indian J Psychol Med. 2020 Jan 6;42(1):87-92. doi: 10.4103/IJPSYM.IJPSYM_180_19. PMID: 31997870; PMCID: PMC6970311.
14. Jlala HA, French JL, Foxall GL, Hardman JG, Bedforth NM. Effect of preoperative multimedia information on perioperative anxiety in patients undergoing procedures under regional anaesthesia. Br J Anaesth 2010;104(3):369-74. https://doi.org/10.1093/bja/aeq002 [PMid:20124283]
15. Koivula M, Paunonen-Ilmonen M, Tarkka MT, Tarkka M, Laippala P. Fear and anxiety in patients awaiting coronary artery bypass grafting. Heart Lung 2001; 30:302e11.
16. Labour Bureau; Ministry of Labour; Government of India. Consumer Price Index for Industrial Workers. Available from: http://labourbureaunew.gov.in. [Last accessed on 2019 Feb 28]
17. Matthias AT, Samarasekera DN. Preoperative anxiety in surgical patients-experience of a single unit. ActaAnaesthesiolTaiwanica 2012;50(1):3-6. https://doi.org/10.1016/j.aat.2012.02.004 [PMid:22500906]
18. Mitchell M. Anaesthesia type, gender and anxiety. J PerioperPract 2013;23(3):41-7. [PMid:23586187]
19. Moerman N, van Dam FS, Muller MJ, Oosting H. The Amsterdam Preoperative Anxiety and Information Scale (APAIS). AnesthAnalg 1996;82(3):445-51. [PMid:8623940]
20. Nigussie S, Belachew T, Wolancho W. Predictors of preoperative anxiety among surgical patients in Jimma University Specialized Teaching Hospital, South Western Ethiopia. BMC Surg 2014; 14:67. https://doi.org/10.1186/1471-2482-14-67 [PMid:25189274] [PMCid: PMC4167307.
21. Nikumb VB, Banerjee A, Kaur G, Chaudhury S. Impact of doctor patient communication on preoperative anxiety: Study at industrial township, Pimpri, Pune. Ind Psychiatry J 2009;18(1):19- 21. https://doi.org/10.4103/0972-6748.57852 [PMid:21234156] [PMCid: PMC3016692]
22. Pokharel K, Bhattarai B, Tripathi M, Khatiwada S, Subedi A. Nepalese patients anxiety and concerns before surgery. J ClinAnesth 2011;23(5):372-8. https://doi.org/10.1016/j.jclinane.2010.12.011 [PMid:21802628]
23. Sigdel S. Perioperative anxiety: a short review. Glob AnaesthPerioper Med. 2015;1. https://doi.org/10.15761/GAPM.1000126.
24. Suman Saini et al. Preoperative Anxiety in Indian Surgical Patients - Experience of a Single Unit. IJAR. Volume: 6 | Issue: 9 | September 2016 | ISSN - 2249-555X | IF: 3.919 | IC Value: 74.50
25. Tolksdorf W, Berlin J, Rey ER, Schmidt R, Kollmeier W, Storz W, Ridder T, Schaetzle P. Preoperative stress. Study of the mental behavior and parameters of physiological stress in non premedicated patients during the preoperative period. Anaesthesist. 1984;33: 212–7.
26. Yilmaz M, Sezer H, Gürler H, Bekar M: Predictors of preoperative anxiety in surgical inpatients. J ClinNurs 2011, 21(7–8):956–964.
27. Yin Q-Y, Ma Z-S, Feng F-Y, Wang L-X. Postoperative anxiety and depression in patients undergoing thoracoscopic closure of congenital heart defects. J CardiovascNurs 2012;27(6):547e52.
28. Zigmond AS, Snaith RP. The Hospital Anxiety and Depression Scale. ActaPsychiatricaScandinavica 1983; 67:361-70. 11. Kindler CH, Herms CH, Amsler F, Ihde Scholl T, Scheidegger D. The visual analogue scale allow effective measurement of preoperative anxiety and detection of patients anesthetic concerns. AnesthAnalg 2000; 90: 706-12.