

Factors associated with Preoperative Anxiety and Fear of Anesthesia using APAIS Score in a Tertiary Care Hospital, Telangana

Lakkam Vamsee Kiran¹, C.R.Vijay Mohan², Kotina Shridevi³, Doddoju Veera Bhadrashwara Anusha⁴, Srinivas Subudhi⁵

ABSTRACT

Introduction: It was estimated that 25% to 80% of patients admitted to hospital for surgery experience preoperative anxiety and it is important to know both the level of anxiety and various factors contributing to reduce the complications and post operative effects. Study aimed to estimate the prevalence of preanesthetic anxiety and average score of anxiety using Amsterdam Preoperative Anxiety and Information Scale (APAIS) and to know the factors contributing to Anxiety.

Material and methods: Cross sectional study was done in Jan 2020 to Aug 2021 in Tertiary care hospital in Mulugu Mandal, Sidhipet district. 256 patients were admitted for elective surgery. universal sampling was followed. Ethical Clearance was obtained from the Institutional Ethical committee. Pretested Prevalidated semi-structured questionnaire was developed which was divided into four sections.

Results: Factors associated with Preoperative anxiety were Age, Females, Purpose for which surgery is performed, Method of Anaesthesia, exposure to previous surgery or anaesthesia, provision of preoperative information. Preoperative anxiety was found higher among persons who had certain fears like fear of death/Permanent disablement, fear of waking up/feeling pain during surgery, having doubts on experience of surgeon/Anaesthetist.

Conclusion: Prevalence of Preoperative anxiety was found to be 35.16% and certain factors contributing to anxiety were also elicited.

Keywords: APAIS, Preoperative Anxiety, Influencing Factors

as preoperative visit, induction, perioperative, and recovery periods.⁵

It was estimated that 25% to 80% of patients admitted to hospital for surgery experience preoperative anxiety.² In a study conducted in Pakistan, Ethiopia, Saudi Arabia, Sri Lanka, Canada, Austria, Spain, China the prevalence of preoperative anxiety was found to be 62.8%,61%, 55%, 76.7%, 89%,43.5%,22.6% and20.75% respectively.⁶⁻¹⁰

In India, only few studies have addressed the Preoperative anxiety Issue among adults.

So it is very Important to know both the level of anxiety (exact measure) of patients and also various factors contributing to pre operative anxiety to reduce the complications and post operative effects.

Amsterdam preoperative anxiety and Information scale (APAIS) is a validated tool for measurement of anxiety. The scale has been used in many countries like Germany, Mexico, Ethiopia, Thailand, Sri Lanka and India.³

The present study was conducted with the following objectives

1. To estimate the prevalence of preanesthetic anxiety and average score of anxiety using Amsterdam Preoperative Anxiety and Information Scale (APAIS).
2. To know the factors related to patient and other surgery and anaesthesia related factors contributing to Anxiety.

Hence based on the results of the study, best strategies can be Identified and can be recommended to reduce preoperative anxiety and hence improving Intra operative and post operative outcome.

MATERIAL AND METHODS

Study design - Cross sectional study design

Study Period - Conducted between Jan 2020 to Aug2021 which included Preparation of data collection tool and

INTRODUCTION

Anxiety means “an uncomfortable feeling of nervousness or worry about something that is happening or might happen in the future”¹ and pre operative anxiety is called as “an unpleasant state of uneasiness or tension that is secondary to a patient being concerned about a disease, hospitalization, anaesthesia and surgery, or the unknown”.²

Preoperative period that is period before surgery is one of the most worrying events for most surgical patients and is associated with deleterious effects like tachycardia, hypertension, cardiovascular disturbances due to sympathetic stimulation and elevated Intraoperative cortisol levels.³ Other effects of Preoperative anxiety were post operative nausea and vomiting, increased requirement of anaesthesia, increased risk of infection, augmented pain during postoperative period and many physical, psychiatric and emotional problems ultimately extending the recovery period and length of stay in hospital.⁴ It was found that Preoperative anxiety has potential to affect all aspects of anaesthesia such

¹Associate Professor, Department of Anesthesiology, ²Assistant Professor, Department of Anesthesiology, ³Professor, Department of Community Medicine, ⁴Assistant Professor, Department of Community Medicine, ⁵Professor, Department of Pediatrics, RVM Institute of Medical Sciences and Research Center, India

Corresponding author: Dr Vijay Mohan, Assistant Professor, Department of Anesthesiology, RVM Institute of Medical Sciences and Research Center, India

How to cite this article: Kiran LV, Mohan CRV, Shridevi K, Anusha DVB, Subudhi S. Factors associated with preoperative anxiety and fear of anesthesia using APAIS Score in a tertiary care hospital, Telangana. International Journal of Contemporary Medical Research 2021;8(11):K16-K23.



review of literature (Jan & Feb 2020), data collection (March 2020 to March 2021), Data entry and Analysis (April,2021) and preparation of final manuscript (May and June,2021).

Study setting - The study was conducted in a Tertiary care Hospital having 880 beds attached to a Private medical college, Sidhipet district, Telangana. In this tertiary care hospital, all types of surgeries related to General surgery, Urology, Orthopaedics, Obstetrics, Gynaecology, Ear, Nose and throat etc. were performed.

Study Population - The study was performed on patients admitting to all the surgical departments who are scheduled to undergo elective surgery and have to undergo Preoperative anaesthetic check-up during study period. Total surgeries (only major requiring admission) performed during the study period were 1634 and among them 256 patients were included which is explained in flow chart (fig 1).

Inclusion criteria

1. Patients belonging to ASA I (normal Healthy patient), ASA II (Patient with mild systemic disease) categories and ASA III (patients with severe systemic disease).¹¹
2. Patients posted for Elective surgery
3. Who gave consent to participate in the study
4. Who have adequate language skills to communicate

Exclusion Criteria

1. Children less than 18 years
2. Patients with Mental retardation, Dementia, Alzheimer's disease or other Psychiatric disorders
3. Patients requiring emergency surgeries
4. Patients in ASA in IV and above Categories¹¹

Sample size¹² - was calculated using formula for quantitative studies for cross sectional studies where Z_{α} is the standard normal deviate, which is equal to 1.96 at 95% confidence interval and Standard deviation was taken as 4.08 from

previous study³ conducted to find out Preoperative anxiety using APAIS score in Puducherry and margin of error taken as 0.5 and after substituting values in the formula, $(1.96)^2 \text{SD}^2 / L^2$, required sample was found to be 256.

Sampling Method- All the patients compiling to Inclusion and eligibility criteria were included in the study and hence universal sampling method followed.

Informed Consent - Before collection of data all the participants were explained about the purpose and importance of conducting the study and after receiving their verbal consent, data was collected. All the participants were assured regarding maintenance of confidentiality with respect to their Identity.

Ethical Clearance - The study was conducted after obtaining ethical clearance from the Institutional Ethics Committee.

Data collection - Information was collected by Face-to-Face Interview technique using Pretested Prevalidated structured questionnaire. Data was collected between six to twelve hours before surgery. For data collection 2 Nurses were hired and trained regarding importance of completing the questionnaire.

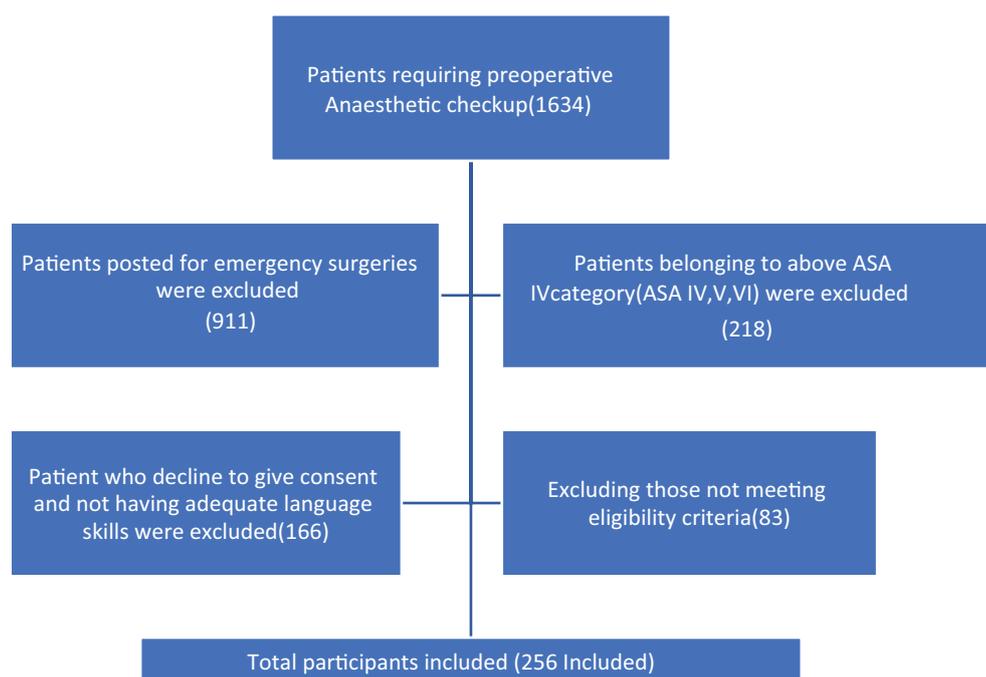
Data Collection tool - Pretested Prevalidated semi-structured questionnaire which was divided into four sections.

1st section includes Demographic characteristics like age, sex, religion, occupation and education etc.

2nd section includes Amsterdam Preoperative Anxiety and Information Scale (APAIS)³, which comprises following six statements and based on their response scores are given The answers were evaluated in the following way:

Anaesthesia-related anxiety score assessed by adding scores of Questions 1 + 2

Surgery-related anxiety score assessed by adding scores of



APAIS Questionnaire (5 point Likert scale) (scores)	Not at all (1)	Slightly (2)	Modertely (3)	Very (4)	Extremely (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					

Questions 4+5

Information desired component score assessed by adding scores of Questions 3+6

Combined anxiety component score assessed by adding questions 1+2+3+4

And Higher scores indicate higher level of anxiety or desire for Information based on Likert scores

3rd section includes certain factors about the awareness on surgery and anaesthesia and certain factors contributing to anxiety which are related to surgery and Anaesthesia like fear of death, fear of waking up in middle of the surgery, Fear of not receiving proper anaesthesia or anaesthesia being not effective etc.

4th section – Information is gathered from surgeons and from records regarding type of surgery, duration, type of Anaesthesia, purpose of surgery etc.

The following are the surgical procedures performed during study period and classified as,

1. Diagnostic procedures – Arthroscopy, Diagnostic laparoscopy, Endoscopies, excisional biopsy, Magnetic resonance imaging (MRI), Brachytherapy, CAPD catheter, Pacemaker and ICD implantation.
2. Gynaecological- Hysterectomy, laparoscopic salpingectomy, DUB, Tubectomy.
3. Obstetric- Lower segment caesarean section, Normal delivery with Epidural anaesthesia.
4. Orthopaedic- Total knee replacements, cruciate ligament repairs, K wire fixation
5. Ears nose and throat- Thyroidectomy, septo rhinoplasty, DNS
6. Abdominal-cholecystectomy, Appendectomy, Hernia, Hydrocele, Haemorrhoids, Fistulotomy
7. Ophthalmic- Cataract, vitrectomy, Retinal surgeries.
8. Traumatic- Open reduction and interna fixation, Foreign body removal, Sutures
9. Urological- Renal calculous
10. Neurosurgical – Craniotomy, Cervical disectomy, laminectomy
11. Oral and maxillofacial surgeries
12. Cardiac – Coronary angioplasty and stents

STATISTICAL ANALYSIS

Data from the filled forms was entered and analysed using Microsoft Excel Version 2019 software. Based on Likert Scores of APAIS questions, Range, mean \pm SD for each question was computed and then mean \pm SD of anxiety related

to anaesthesia, surgery and Information desired component determined. Mann–Whitney U Test (z score) and Kruskal–Wallis Test (H statistic) were determined to compare the significance of various factors with anxiety.

RESULTS

In the present study, 256 patients were assessed for preoperative anxiety using APAIS score.

Table 1 describes the demographic characteristics of the participants, mean age of the Participants was 41.79 years (Range 18-74 years) and majority (32.81%) of the participants belong to 26 to 40 years of age group then followed by 56-70 years age group. Majority of the study participants were males (66.02%). Most of the participants were educated less than middle school (47.27%), next followed by graduates and post graduates (32.42%). Majority of the participants belong to class IV & V (59.77%) socio economic status scale. Participants posted for various surgeries/procedures were diagnostic procedures (13.28%), Abdominal (14.06%) surgeries, obstetric (10.94%) etc. Majority of surgeries done to reduce pain or discomfort (66.41%), obstetric surgeries (10.94%), resection surgeries (8.98%) etc. Most of the surgeries were done under spinal anaesthesia (43.75%) then followed by regional anaesthesia (39.84%) and 43.75% had history of previous surgery.

Table 2 describes the distribution of participants based on 5-point Likert scoring for each APAIS question separately. APAIS Scores for anxiety related to Anaesthesia and surgery (Q 1,2,4,5) were also calculated. 90 out of 256 were having score ≥ 11 , making prevalence of 35.16%. Range Interquartile range, mean and Standard deviation of the various parts of APAIS questions were calculated and presented.

Table 3 describes the awareness of the study participants regarding disease and operative procedure and majority (83.59%) knew about their disease diagnosis, 48.05% knew the type of surgery to be performed, 32.42% knew the type of anaesthesia to be given and all were given preoperative information and among them 52.34% were satisfied about the information provided. Certain factors responsible for preoperative anxiety were also elicited among study participants and those were Fear of death (13.28%), fear of becoming permanently disabled (10.16%), fear of post operative pain, nausea and vomiting (13.28%) etc.

In Table 4, Mann–Whitney U Test and Kruskal–Wallis H Test were used to find the significant association with total APAIS score, Anxiety score and information desire score with various factors and it was found that, Anxiety and Information

S. No	Characteristic	Number	Percentage
I	Age		
	18-25	53	20.7
	26- 40	84	32.81
	41-55	29	11.33
	56-70	72	28.13
	>70	18	7.03
II	Gender		
	Male	169	66.02
	Female	87	33.98
III	Education		
	Primary and Middle	121	47.27
	Higher (8 th ,9 th and 10 th)	21	8.2
	Intermediate	31	12.11
	Graduate and Post Graduate	83	32.42
Iv	Religion		
	Hindhu	118	46.09
	Muslim	103	40.23
	Christian	28	10.94
	Others	7	2.73
V	Socio economic status		
	Class I &II	33	12.89
	Class III	70	27.34
	Class Iv &V	153	59.77
	Total	256	100
Distribution of participants in relation to type of surgery and Anesthesia			
VI	Type of Surgery /diagnostic procedures	Number	Percentages
1	Diagnostic procedures	34	13.28
2.	Gynaecological	32	12.5
3	Obstetric	28	10.94
4	Orthopaedic	18	7.03
5	Ears nose and throat	22	8.59
6	Abdominal	36	14.06
7	Ophthalmic	21	8.2
8	Traumatic	32	12.5
9	Urological	16	6.25
10	Neurosurgical	6	2.34
11	Oral and maxillofacial	8	3.13
12	Cardiac	3	1.17
VII	Purpose of surgery		
1	Surgeries done to relieve pain or discomfort	170	66.41
2	Resection surgeries (benign or malignant)	23	8.98
3	Obstetrics	28	10.94
4	Cosmetic and reconstructive surgeries	23	8.98
5	Surgeries done to improve function	12	4.69
VIII	Type of Anesthesia		
	Spinal/Epidural	112	43.75
	General	82	32.03
	Regional/Nerve block	62	24.22
IX	History of Anesthesia		
	History of general/spinal anaesthesia	39	15.23
	History of regional anaesthesia	83	32.42
	History of both general/spinal and regional anaesthesia	102	39.84
X	History of surgery		
	Present	112	43.75
	Absent	144	56.25

Table-1: Demographic characteristics of the participants

APAIS Questionnaire	Not at all (1)	Slightly (2)	Moderately (3)	Highly (4)	Extremely (5)
1. I am worried about the anaesthesia	84(32.81)	59(23.05)	87(33.98)	20(7.81)	6(2.34)
2. The anaesthesia is on my mind continually	123(48.05)	31(12.11)	84(32.81)	13(5.08)	5(1.95)
3. I would like to know as much as possible about the anaesthetic	15(5.86)	33(12.89)	59(23.05)	143(55.86)	6(2.34)
4. I am worried about the procedure	87(33.98)	110(42.97)	33(12.89)	18(7.03)	8(3.13)
5. The procedure is on my mind continually	79(30.86)	108(42.19)	28(10.94)	31(12.11)	10(3.91)
6. I would like to know as much as possible about the procedure	31(12.11)	13(5.08)	56(21.88)	148(57.81)	8(3.13)
Combined surgery and Anesthesia related Anxiety (Q1,2,4,5)	(Score 4or <4) 67	(Score 5-8) 61	(Score 9-12) 87	Score (13-16) 28	Score (17-20) 13

Range, Interquartile range, median and Mean \pm SD of the APAIS Scores of the Participants

	Anaesthesia related anxiety (q1 &q2)	Surgery related anxiety (q5 &q6)	Combined anxiety component(q1,2,4&5)	Information desired component (q3&q6)	Total APAIS
Range	2-10	2-10	4-20	2-10	6-30
Median	5	5	9	8	16
Interquartile range (Q2-Q3)	2-6	2-6	4-8	4-8	8-16
Mean \pm SD	4.2346 \pm 1.087	4.166 \pm 1.077	8.4 \pm 1.082	7.6706 \pm 1.004	15.07 \pm 1.053

Table-2: Pre anesthetic anxiety assessment using APAIS Score

Awareness	Number	Percentage
Know the disease (diagnosis)	214	83.59
Know the type and procedure of surgery to be performed	123	48.05
Know the type and procedure of Anaesthesia to be given	83	32.42
Doubts clarified by surgeon and anesthetist	170	66.41
Preoperative information provided	256	100
Satisfaction with information provided	134	52.34
Factors responsible for preoperative anxiety		
Factors	Number	Percentage
Fear of death	34	13.28
Fear of becoming permanently disabled	26	10.16
Fear of harm from Doctor/Nurse mistake	21	8.2
Fear of not receiving proper anaesthesia or anaesthesia being not effective	14	5.47
Fear of waking up in middle of the surgery	14	5.47
Fear of feeling of pain during the surgery	53	20.7
Fear of experience of anaesthesiologist	12	4.69
Fear of experience of Surgeon	24	9.38
Fear of postoperative pain, nausea, vomiting	34	13.28
Fear of Financial loss	27	10.55
Total	132	51.56

Table-3: Awareness of study participants regarding operative procedure/surgery and factors responsible for Preoperative anxiety

desire score will reduce with increasing age, males were having significant lesser anxiety compared to females but no significant difference was found with respect to information desire component, with respect to education, no significant difference was found with anxiety. Significant association was found between purpose of surgery and anxiety scores, scores were higher among surgeries done to relieve pain, resection surgeries and obstetric surgeries and information desire component was significantly higher among resection surgeries, cosmetic and reconstructive and surgeries done to improve function. Anxiety scores were found significantly higher among patients who were informed that surgery will

be performed under general or spinal anaesthesia compared to persons who will receive regional anaesthesia. Anxiety was significantly lesser among participants who had history of previous anaesthesia. Anxiety scores were significantly lesser among participants who were aware, were informed about the type and procedure of surgery and anaesthesia on the other hand anxiety was significantly higher among participants on whom factors causing anxiety were elicited.

DISCUSSION

In the present study, 256 patients posted for elective surgery were assessed for preoperative anxiety using APAIS score.

	Number (%)	Anxiety score Range (4-20) Mean±SD (median) 8.4±1.082	Information desire score Range (2-10) Mean±SD (median) 7.6706±1.004	Total score Range (6-30) Mean±SD (median)
Age				
18-25	53	9.7±1.13	9.1±1.08	18.8±1.11
26-40	84	9.1±1.03	8.8±1.09	17.9±1.06
41-55	29	8.1±1.21	7.9±0.91	16±1.11
56-70	72	7.1±0.92	7.1±0.88	14.2±0.9
>70	18	6.4±0.94	6.3±0.89	12.7±0.92
Kruskall-Wallis Test (H statistic) (P Value)		11.6(0.02)	12.1(0.016)	11.8(0.019)
Gender				
Male (169)	169(66.02)	6.8±0.98(7)	6.12±0.93(6)	12.92±0.92(12)
Female (87)	87(33.98)	9.8±1.23(10)	6.23±1.33(8)	14.03±1.32(18)
Mann-Whitney U Test(z score) (P Value)		4.95 (<0.001)	1.43 (>0.05)	2.93 (<0.05)
Education				
Primary & middle	121(47.27)	8.21±0.88(8)	6.23±1.23(6)	14.44±0.92(14)
Higher & Intermediate	52(20.31)	8.62±1.02(8)	6.74±0.82(7)	15.36±0.93(15)
Graduate & post graduate	83(32.42)	8.37±1.27(8)	7.04±0.93(7)	15.41±1.17(15)
Kruskall-Wallis Test (H statistic) (P Value)		5.23 (0.073)	6.81 (0.033)	5.81 (0.054)
Purpose of surgery				
Surgeries done to relieve pain or discomfort	170(66.41)	9.91±0.93(9)	2.56±0.82(3)	11.47±0.88(12)
Resection surgeries (benign or malignant)	23(8.98)	8.46±1.12(8)	9.21±1.21(9)	17.66±1.17(17)
Obstetrics	28(10.94)	6.68±1.11(8)	2.83±0.72(2)	7.51±1.02(11)
Cosmetic and reconstructive surgeries	23(8.98)	3.42±1.21(3)	9.23±1.22(9)	11.65±1.22(16)
Surgeries done to improve function	12(4.69)	3.63±1.31(3)	9.52±1.18(9)	12.15±1.21(17)
Kruskall-Wallis Test (H statistic) (P Value)		67.324(7) (<0.001)	116.78 (<0.0001)	84.23 (<0.0001)
Type of Anesthesia				
Spinal/Epidural	112(43.75)	8.93±1.23(9)	6.82±0.97(6)	15.75±0.98(16)
General	82(32.03)	11.04±1.12(11)	7.98±1.12(8)	19.02±1.12(19)
Regional	62(24.22)	5.23±0.92(5)	5.3±0.96(6)	10.53±0.94(11)
Kruskall-Wallis Test (H statistic) (P Value)		23.356 (<0.0001)	13.234 (<0.0013)	17.23 (<0.0001)
History of general/spinal and regional anaesthesia	122(47.66)	6.24±0.82(6)	6.23±0.96(6)	12.47±0.88(12)
No History of Anesthesia	134(52.34)	10.56±1.24(9)	7.11±1.09(7)	17.67±1.17(17)
Mann-Whitney U Test(z score) (P Value)		7.232 (<0.0001)	6.823 (>0.05)	6.934 (<0.001)
Awareness on operative procedure				
Know the disease (diagnosis) - yes	214(83.59)	6.23±1.02(7)	3.23±0.92(3)	9.46±0.98(9)
Do not Know the disease (diagnosis)	42(16.41)	10.57±1.11(10)	10.11±1.23(10)	20.68±1.18(20)
Mann-Whitney U Test(z score) (P Value)		7.435 (<0.001)	9.234 (<0.001)	8.653 (<0.001)
Know the type of surgery to be performed	123(48.05)	5.3±0.92(5)	3.8±0.82(4)	9.1±0.88(9)
Do not Know the type of surgery to be performed	133(51.95)	11.5±1.12(11)	9.54±1.28(9)	21.04±1.18(21)
Mann-Whitney U Test(z score) (P Value)		8.463 (<0.001)	8.986 (<0.001)	8.755 (<0.001)
Know the type of Anaesthesia to be given	83(32.42)	5.23±0.94(5)	2.8±0.82(2)	8.03±0.88(8)
Do not Know the type of Anaesthesia to be given	173(67.58)	11.57±1.18(12)	10.54±1.28(11)	22.11±1.19(22)
Mann-Whitney U Test(z score) (P Value)		8.212 (<0.001)	11.234 (<0.001)	9.897 (<0.001)
Preoperative information provided	134(52.34)	5.8±0.92(6)	3.32±0.83(3)	9.12±0.88(9)
Did not provide Preoperative information	122(47.66)	11±1.19(11)	10.02±1.24(10)	21.02±1.21(21)
Mann-Whitney U Test(z score) (P Value)		8.346 (<0.001)	9.923 (<0.001)	8.923 (<0.001)
Factors causing anxiety are present	132(51.56)	10.23±1.23(10)	7.23±1.08(7)	17.46±1.18(17)
Factors causing anxiety are not present	124(48.44)	6.57±0.87(7)	6.11±0.94(6)	12.68±0.88(12)
Mann-Whitney U Test(z score) (P Value)		7.234 (<0.001)	2.894 (0.0038)	5.675 (<0.001)

Table-4: Association of various factors with anxiety and information desire score components of APAIS pre anxiety scoring scale

APAIS scoring system was considered as a suitable tool to measure Pre operative anxiety and desire for information as it is planned with far-reaching answers, can be quickly performed, easy to understand and is well known by most of

the health professionals.

The prevalence of Preoperative anxiety was found to be 35.16% (APAIS score ≥ 11 for questions 1,2,4 and 5) in the present study. Lesser Prevalence (22.6%) was observed in

Seville, Spain⁹, Le Xu et al study (20.75%) in China¹⁰ where as in Arshia Kanwal et al study⁶ in Rawalpindi (62.8%), Woldegerima YB et al study¹³ in Ethiopia (59.6%), Ayman Mohammed Yaakba et al study¹⁴ in Sri Lanka (76.7%), Perks A et al study¹⁵ in Canada(89%), Matthias AT et al study¹⁶ in Saudi Arabia(55%), Wetsch WA et al study⁸ in Austria(45.3%), Akinsulore A et al study¹⁷ in Nigeria(51.0%) higher Preoperative prevalence was observed.

In the present study, it was found that anxiety and information desired component decreases with increase in age similar to Fatma Celik et al study⁵ in Turkey, Shevde K et al study¹⁸ in New York, Taşdemir et al study¹⁹ in Turkey.

Lesser Anxiety in elders might be due to better confidence on surgeon, their fatalistic attitude, lesser exposure to negative media news on failure of surgeries.

Results from the present study showed significantly higher anxiety in females than males but not in Information desire component similar to Fatma Celik et al study in Turkey⁵, Mavridou P¹⁸ et al study.

More anxiety in females might be due to lesser exposure and lesser awareness to outside(hospital) atmosphere, previous studies also support and suggest that increase in anxiety might be due to mood changes due to hormones (oestrogen and progesterone levels).²¹

Education did not show any influence on preoperative anxiety scores in the current study similar to Fatma Celik et al study⁵ in Turkey, Burkle CM et al²² reported decrease in anxiety with education.

In the present study anxiety was significantly associated with purpose of surgery, more anxiety was seen among patients on whom surgeries were done to relieve pain & resection surgeries and lesser anxiety was seen in obstetric surgeries, cosmetic and reconstructive surgeries. The difference might be due to more regular visits and rapport with doctor before surgery and also due to health condition before surgery.

Anxiety was found significantly higher among patients scheduled for general anaesthesia followed by spinal and least among patients scheduled for regional anaesthesia similar to Fatma Celik et al study in Turkey.⁵ The reason might be due to the level of consciousness with the surroundings and having control on available health care staff during the surgery.

In the present study significantly lesser anxiety scores and higher information desire scores were seen among patients having previous experience of surgery/Anaesthesia as expected similar to Fatma Celik et al study⁵ in Turkey, Buonanno P et al²³ study.

In the present study anxiety was significantly lesser among patients who were aware on the operative procedure, disease, type of surgery and anaesthesia to be given and who were satisfied with preoperative information given showing the significance of education to patients regarding the surgery details whereas in Matthias AT et al¹⁶ study, it was found that awareness was the cause of anxiety.

Various factors elicited as responsible for preoperative anxiety were fear of death/permanently disabled/unknown harm, fear of improper anaesthesia/ waking up in the

middle of the surgery, fear of post operative pain, nausea and vomiting during surgery, not confident on experience of surgeon/Anaesthesiologist, fear of financial loss. Individuals with above fears were having significantly higher Preoperative anxiety similar to Fatma Celik et al study in Turkey.⁵ In Sheved et al study¹⁸ postoperative pain was elicited as cause of anxiety, In Burkle et al study²² fear of postoperative death was Identified. Matthias AT et al¹⁶ study found that information on factors causing anxiety may reduce preoperative anxiety.

In the present study APAIS tool was used which has the capacity to differentiate anxiety due to Surgery and Anaesthesia, hence Anaesthesiologist can Identify, council, clarify doubts and act accordingly on patients with more anaesthesia related anxiety score like management of perioperative pain, giving required information on Anaesthesia procedure and drugs used. There is also evidence from the Literature that correct preoperative information, use of audio-visual aids, psychoeducational information, and preoperative nursing visits play crucial role in diminishing perioperative anxiety.²⁴ It was also known that lower perioperative anxiety was associated with lower autonomic variations and decreased anaesthetic requirement and reduced post operative pain.⁵

Limitations

Present study was a monocentric study and for better validity of results multicentric studies should be encouraged. Present study was cross sectional study, effects would have been compared if it was a longitudinal follow up study.

CONCLUSION

Prevalence of Preoperative anxiety due to surgery and anesthesia (APAIS Score ≥ 11) was 35.16%. Factors associated with Preoperative anxiety were lesser age, females, purpose for which surgery is performed like surgeries done to relieve pain etc, surgeries performed under general or spinal anaesthesia, not having exposure to previous surgery or anaesthesia, who were not informed about the type and procedure of surgery and anaesthesia. It was also found higher among persons who had certain fears like fear of death/Permanent disablement, fear of waking up/ feeling pain during surgery, having doubts on experience of surgeon/Anaesthetist etc.

REFERENCES

1. Anxiety.noun. Cambridge Dictionary. Available from : <https://dictionary.cambridge.org/dictionary/english/anxiety> accessed on 14/9/2021
2. Stamenkovic DM, Rancic NK, Latas MB, Neskovic V, Rondovic GM, Wu JD, Cattano D. Preoperative anxiety and implications on postoperative recovery: what can we do to change our history. *Minerva Anestesiol.* 2018;84:1307-1317.
3. Vadhanan P, Tripathy DK, Balakrishnan K. Pre-operative anxiety amongst patients in a tertiary care hospital in India- a prevalence study. *Journal of Society of Anesthesiologists of Nepal (JSAN)* 2017;4:5-10.
4. Pokharel K, Bhattarai B, Tripathi M, Khatiwada S, Subedi A. Nepalese patients' anxiety and concerns

- before surgery. *J Clin Anesth.* 2011;23:372–8.
5. Celik F, Edipoglu IS. Evaluation of preoperative anxiety and fear of anesthesia using APAIS score. *Eur J Med Res.* 2018;23:41.
 6. Arshia Kanwal, Ayesha Asghar, Ayesha Ashraf, Abdul Qadoos. Prevalence Of Preoperative Anxiety And Its Causes Among Surgical Patients Presenting In Rawalpindi Medical University And Allied Hospitals, Rawalpindi. *Journal of Rawalpindi Medical College;* 2018;22: 64-67.
 7. Mulugeta H, Ayana M, Sintayehu M, Dessie G, Zewdu T. Preoperative anxiety and associated factors among adult surgical patients in Debre Markos and Felege Hiwot referral hospitals, Northwest Ethiopia. *BMC Anesthesiol.* 2018;18:155.
 8. Wetsch WA, Pircher I, Lederer W, Kinzl J, Traweger C, Heinz-Erian P, Benzer A. Preoperative stress and anxiety in day-care patients and inpatients undergoing fast-track surgery. *Br J Anaesth.* 2009;103:199–205.
 9. Navarro-Gastón D, Munuera-Martínez PV. Prevalence of Preoperative Anxiety and Its Relationship with Postoperative Pain in Foot Nail Surgery: A Cross-Sectional Study. *Int J Environ Res Public Health.* 2020 ;17:4481.
 10. Xu L, Pan Q, Lin R. Prevalence rate and influencing factors of preoperative anxiety and depression in gastric cancer patients in China: Preliminary study. *J Int Med Res.* 2016;44:377-88.
 11. ASA Physical Status Classification System. Committee of Oversight: Economics. Guidelines, statements, clinical resources. American society of Anesthesiologists. Last amended: December 13, 2020 (original approval: October 15, 2014) available from <https://www.asahq.org/standards-and-guidelines/asa-physical-status-classification-system>. Last accessed on 14/9/2021.
 12. Khanal Arun Bhadra. Sampling. In: Mahajan's Methods in Biostatistics for Medical Students and Research Workers. 8th ed. New Delhi: Jaypee Brothers Medical Publisher (P) Ltd;2016. pp.114-120.
 13. Woldegerima YB, Fitwi GL, Yimer HT, Hailekiros AG. 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 Sur* 2018;10:21-29.
 14. Ayman Mohammed Yaakba. Prevalence of Preoperative Anxiety and its contributing Risk Factors in Adult Patients undergoing Elective surgery. An-Najah National University. Faculty of Graduate studies.
 15. Perks A, Chakravarti S, Manninen P. Preoperative anxiety in neurosurgical patients. *J Neurosurg Anesthesiol* 2009;21:127-30.
 16. Matthias, A.T, Samarasekera, D.N. Preoperative anxiety in surgical patients. Experience of a single unit. *Acta Anaesthesiol. Taiwanica* 2012;50:3–6.
 17. 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; 23:235–40.
 18. Shevde K, Panagopoulos G. A survey of 800 patients' knowledge, attitudes, and concerns regarding anesthesia. *Anesth Analg.* 1991;73:190–8.
 19. Taşdemir A, Erakgün A, Nuri Deniz M, Çertuğ A. Comparison of preoperative and postoperative anxiety levels with State-Trait Anxiety Inventory Test in preoperatively informed patients. *Turk Anesteziyoloji ve Reanimasyon Dern Derg.* 2013;41:44–9.
 20. Mavridou P, Dimitriou V, Manataki A, Arnaoutoglou E, Papadopoulos G. Patient's anxiety and fear of anesthesia: effect of gender, age, education, and previous experience of anesthesia. A survey of 400 patients. *J Anesth.* 2013;27:104–8.
 21. Weinstock LS. Gender differences in the presentation and management of social anxiety disorder. *J Clin Psychiatry.* 1999;60:9–13.
 22. Burkle CM, Mann CE, Steege JR, Stokke JS, Jacob AK, Pasternak JJ. Patient fear of anesthesia complications according to surgical type: potential impact on informed consent for anesthesia. *Acta Anaesthesiol Scand.* 2014;58:1249–57.
 23. Buonanno P, Laiola A, Palumbo C, Spinelli G, Terminiello V, Servillo G. Italian validation of the Amsterdam preoperative anxiety and information scale. *Minerva Anesthesiol.* 2017;83:705–11.
 24. Vergara-Romero M, Morales-Asencio JM, Morales-Fernández A, CancaSanchez 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;15:120.

Source of Support: Nil; **Conflict of Interest:** None

Submitted: 07-10-2021; **Accepted:** 29-10-2021; **Published:** 30-11-2021