Preoperative Anxiety and Fear of Anesthesia in Patients admitted in Tertiary Care Hospitals of Rawalpindi

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Author’s Contribution
1 Conception of study
2,3 Experimentation/Study conduction
2,3 Analysis/Interpretation/Discussion
2,3 Manuscript Writing
1 Critical Review

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Abstract

Background: Preoperative apprehension is a widespread global problem. This anxiety and apprehension can significantly affect all aspects of anesthesia and surgery. Thus, it is essential to detect and address the patient's anxiety to assist in recovery after surgery and improve the patient's outcome.

Material and Methods: This is a cross-sectional study conducted over one year in the allied hospitals of Rawalpindi Medical University (RMU). Our sample size was 380 preoperative patients, who were selected by convenience sampling. The Amsterdam Preoperative Anxiety and Information Scale (APAIS) was used.

Results: The overall prevalence of anxiety was 30.5%, while the prevalence of information requirement was 33.2%. The mean total APAIS was 12.73 ± 8.56, the mean anxiety subscore was 8.25 ± 5.58, and the mean need for information subscore was 4.48 ± 3.16. A statistically significant difference was found in the scores of the patients based on age, gender, education, type of anesthesia, and type of surgery (p<0.05). The previous history of anesthesia and the presence of comorbidities did not bring a significant difference in the scores of the patients (p>0.05). Postoperative pain was the most important concern, found in 32% of the patients.

Conclusion: Younger age group, female gender, having no formal education, surgery under regional anesthesia, and undergoing C-section, IOL implantation and septoplasty are associated with higher preoperative anxiety, while the presence of comorbidities and previous history of anesthesia are factors that do not significantly affect preoperative anxiety in our population.

Keywords: Preoperative, Anesthesia, IOL.
Introduction

Preoperative apprehension is a widespread problem worldwide. This anxiety and apprehension are of note because it significantly affects all aspects of anesthesia from preoperative visit, induction, and perioperative period to recovery after surgery. The angst during preoperative visits may create hurdles in preoperative assessment, history, and examination. During induction and preoperatively, this apprehension may cause unexpected autonomic fluctuations and an increased requirement of anesthetic medication. Postoperatively this discomposure may hinder the recovery after surgery and increase the rate of multiple complications such as postoperative nausea and vomiting, and prolong hospital stay after surgery.\(^1\) The preoperative anxiety levels have also been found to be associated with postoperative pain sensation.\(^2\) Thus, it is vital to detect and address the patient's anxiety to assist enhanced recovery after surgery and improve the patient's outcome.

Many studies have been conducted worldwide to assess the anxiety and fear of anesthesia among preoperative patients. These studies have also considered the effect of different factors like age, gender, level of education, history of previous surgery, type of anesthesia, and need for information on preoperative anxiety levels. According to some researches including a study conducted in Agha Khan University Hospital, Karachi, higher anxiety levels were associated with female gender, surgery under general anesthesia, and a high information requirement.\(^1,3,6,8,9\) A higher desire for information subscore was associated with a higher level of education, younger age group, and no previous history of surgery.\(^1,6\) An Indian study, using APAIS showed the overall prevalence of preoperative anxiety to be 31% \(^4\) while a study carried out in Greece showed 81% of the patients to be suffering from preoperative anxiety, with women being more afraid than men. The most important source of their anxiety was the fear of postoperative pain and not waking up after surgery.\(^5\)

A study conducted in Amsterdam, using both the APAIS and the Spiel Berger's State-Trait Anxiety Inventory (STAI-State), showed that 32% of the patients could be considered as anxiety cases and over 80% have a positive attitude towards receiving information.\(^6\) In 2009, research carried out in Agha Khan University Hospital Karachi, Pakistan showed preoperative anxiety to be present in 62% of patients.\(^8\) High levels of preoperative anxiety were also found in patients undergoing surgery on the thyroid gland.\(^7\) Young patients, female patients, patients with no previous anesthesia experience and higher educational status were found to have greater anxiety scores in a study conducted by the University of Basel, Switzerland and in another study conducted by Agha Khan University Hospital Karachi, both used VAS and STAI scales.\(^8,9\) Moreover, it was also depicted that preoperative anxiety scores were 62% in patients.\(^9\)

A study carried out to assess anxiety in neurosurgical patients using APAIS showed that anxiety and information scores were higher for surgery than for anesthesia.\(^10\) Similarly, a study carried out in Civil Hospital Karachi, Pakistan, used two Visual Analogue Scales (VAS) regarding anxiety about the proposed surgical procedure and anesthesia. The results showed that the anxiety score for surgery was 57.65 and for anesthesia was 38.14, with females having higher levels of preoperative anxiety than males.\(^11\)

The objective of this study is to assess preoperative anxiety among different age groups of our population undergoing different elective surgeries under general and regional anesthesia, to identify how the patient's age, gender, education, previous experience of anesthesia, type of surgery, and type of anesthesia affects patient's anxiety level and to reveal the cause behind anxiety regarding anesthesia if there is any. This will allow health care professionals to improve the information scale of that particular age, gender, or educational group who are found to have a high prevalence of anxiety.

Materials and Methods

A cross-sectional study was conducted for the evaluation of preoperative anxiety and fear of anesthesia in our population during the year 2019. For this study, convenience sampling was used, and data were collected from the preoperative patients admitted in the allied hospitals of Rawalpindi Medical University (RMU) with their surgery scheduled. The allied hospitals of RMU include the Holy Family Hospital (HFH), Benazir Bhutto Hospital (BBH), and District Headquarter Hospital (DHQ). A total of 380 preoperative patients were part of the study. This sample size was calculated by the WHO sample size calculator using a reference study.\(^1\) The value of the anticipated population proportion was 0.443. Both male and female patients were part of the study but not necessarily in equal numbers. Our data collection
technique was a preformed questionnaire. Our inclusion criteria were all preoperative patients presenting in the tertiary care hospitals of Rawalpindi who were admitted for elective surgery, aged between 15 and 90 years, and ASA-PS I and II (American Society of Anesthesiologists Physical Status classification system is a system for assessing the fitness of patients before surgery). Our exclusion criteria were patients undergoing emergency surgical procedures, patients in the pediatric age group, patients having mental retardation, dementia, or any psychiatric illness, and having ASA PS >III. Those preoperative patients who did not give consent to be a part of the study were also excluded from the study. The instrument employed for this study was The Amsterdam Preoperative Anxiety and Information Scale (APAIS). This scale has also been used previously for the evaluation of preoperative anxiety and fear of anesthesia. It is easy to apply, less time consuming, and easy to understand. It comprises six statements each scored on a 5 point Likert scale, ranging from 'not at all' to 'extremely'. The total score ranges from 6 to 30. It has two subscales, the anxiety score and the desire for information score. The anxiety score is calculated from statements 1,2,4 and 5 of the questionnaire and ranges from 4 to 20, while the need for information score is calculated from statements 3 and 6 and ranges from 2 to 10. To find out the cause of anesthesia-related anxiety in patients, we asked them closed questions about what was their most important anesthesia-related concern. The options included feeling pain during surgery, fear of needle and intervention, the experience of anesthesiologists, becoming permanently disabled, postoperative nausea and vomiting, postoperative pain, waking up in the middle of surgery, and fear of death. The patients were allowed to choose as many options as they found relevant.

The questionnaire was administered to the patients while they were in the surgical ward with their operation scheduled. For ease of the patients and keeping in mind their level of education, we translated the questions into Urdu and asked them orally. We got an informed consent signed by the patients at the beginning of the questionnaire. The demographic information obtained was age, gender, and educational status. Other information obtained was regarding any comorbid medical condition falling in ASA-PS, history of anesthesia, type of anesthesia, i.e. regional or general, and type or name of the surgery that the patient was going to have.

The data were analyzed using the Statistical Product and Service Solutions (SPSS) version 22. For categorized data, frequency along with percentage was calculated. For continuous variables, the mean along with standard deviation was calculated. T-test at 5% level of significance was applied to determine any statistically significant difference between the APAIS scores based on gender, type of anesthesia, and the presence or absence of any comorbid condition. ANOVA test at 5% level of significance was applied to determine any statistically significant difference between the APAIS scores based on age, education, history of anesthesia, and type of surgery. P-value of less than 0.05 was considered statistically significant.

### Results

A total of 380 preoperative patients were included in the study. Of these 380 participants, 134 (35.3%) were males, while female patients were 246 (64.7%). The majority of the patients, 188 (49.5%) fell in the age group of 15-39 years, 153 (40.3%) in the age group of 40-64 years, while minimum number, 39 (10.3%) were in the age group of 65-90 years. Their ages ranged between 15-82 years, the mean age being 40.73 ± 16.36. Most of the patients, 190 (50%) were secondary school graduates, while only 32 (8.4%) patients had received higher education. History of anesthesia was present in 141 (37.1%) of the patients, out of which 62 (16.3%) had a history of regional, while 79 (20.8%) had a history of general anesthesia. There was no history of anesthesia in 239 (62.9%) patients. 225 (59.2%) patients were going to have their operation done under general anesthesia, while 155 (40.8%) patients were going to have their surgery under regional anesthesia. (Table 1)

<table>
<thead>
<tr>
<th>Variable</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>134(35.3)</td>
</tr>
<tr>
<td>Female</td>
<td>246(64.7)</td>
</tr>
<tr>
<td>Age</td>
<td></td>
</tr>
<tr>
<td>15-39 years</td>
<td>188 (49.5)</td>
</tr>
<tr>
<td>40-64 years</td>
<td>153 (40.3)</td>
</tr>
<tr>
<td>65-90 years</td>
<td>39 (10.3)</td>
</tr>
<tr>
<td>Education</td>
<td></td>
</tr>
<tr>
<td>No formal education</td>
<td>72 (18.9)</td>
</tr>
<tr>
<td>Primary</td>
<td>86 (22.6)</td>
</tr>
<tr>
<td>Secondary</td>
<td>190 (50)</td>
</tr>
</tbody>
</table>
The most commonly performed surgery was cholecystectomy (21.6%), followed by Caesarean section (13.2%). The least commonly performed surgeries have been grouped in the ‘Others’ category, which together contributed to 30.5% of all operations in our sample. Further details are shown in Table 2.

Table 2: Frequency and percentage of patients undergoing different surgeries

<table>
<thead>
<tr>
<th>Type of surgery</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cholecystectomy</td>
<td>82 (21.6)</td>
</tr>
<tr>
<td>C section</td>
<td>50 (13.2)</td>
</tr>
<tr>
<td>Herniotomy and hernioplasty</td>
<td>22 (5.8)</td>
</tr>
<tr>
<td>Septoplasty</td>
<td>22 (5.8)</td>
</tr>
<tr>
<td>IOL implantation</td>
<td>22 (5.8)</td>
</tr>
<tr>
<td>Thyroidectomy</td>
<td>20 (5.3)</td>
</tr>
<tr>
<td>ORIF</td>
<td>19 (5.0)</td>
</tr>
<tr>
<td>Stoma reversal</td>
<td>15 (3.9)</td>
</tr>
<tr>
<td>Nasal polypectomy</td>
<td>12 (3.2)</td>
</tr>
<tr>
<td>Others</td>
<td>116 (30.5)</td>
</tr>
</tbody>
</table>

The overall prevalence of anxiety in our sample (anxiety subscore >10) was 30.5%, while the prevalence of information requirement was 33.2% (need for information subscore > 5). The total APAIS score of the patients ranged between 6 and 30, while the mean score of our sample was 12.73 ± 8.56. Anxiety subscore ranged between 4 and 20, the mean score being 8.25 ± 5.58. Also, the need for information subscore ranged between 2 and 10, while the mean score of our sample was 4.48 ± 3.16.

A statistically significant difference was found in the scores of the patients based on their age, gender, education, type of anesthesia, and type of surgery. Patients in the age group of 15-39 years had significantly high total APAIS score (p=0.00), anxiety subscore (p=0.00), and need for information sub score (p=0.00). Based on education, the total APAIS score (p=0.023) and anxiety subscore (p=0.04) were higher in patients with no formal education, but the need for information sub score (p=0.005) was higher in secondary school graduates. Similarly, female patients and those going to have surgery under regional anesthesia scored significantly higher on the total APAIS and the subscales (p<0.05), as compared to the other groups in their respective categories.

There was a significant difference in the total APAIS (p=0.00), anxiety subscore (p=0.00), and the need for information sub score (p=0.00) between patients undergoing different types of surgery. The highest scores were observed for patients undergoing C section, followed by Intraocular Lens (IOL) implantation and septoplasty, while scores were lowest for patients undergoing stoma reversal (p=0.00). The previous history of anesthesia and the presence of comorbidities did not bring a significant difference in the scores of the patients in the different groups made based on these variables (p >0.05). These details are mentioned in Table 3.

Table 3: Total APAIS and subscale scores of patients based on different variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Groups</th>
<th>N (%)</th>
<th>Total APAIS score</th>
<th>Anxiety subscore</th>
<th>Need for information sub score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Mean (S.D)</td>
<td>p-value</td>
<td>Mean (S.D)</td>
</tr>
<tr>
<td>Age</td>
<td>15-39</td>
<td>188 (49.5)</td>
<td>14.47 (9.22)</td>
<td>0.00</td>
<td>9.32 (6.04)</td>
</tr>
<tr>
<td></td>
<td>40-64</td>
<td>153 (40.3)</td>
<td>11.65 (7.89)</td>
<td></td>
<td>7.61 (5.19)</td>
</tr>
<tr>
<td></td>
<td>65-90</td>
<td>39 (10.3)</td>
<td>8.56 (4.61)</td>
<td></td>
<td>5.59 (2.89)</td>
</tr>
<tr>
<td>Education</td>
<td>No formal education</td>
<td>72 (18.9)</td>
<td>13.53 (9.14)</td>
<td>0.023</td>
<td>9.06 (6.03)</td>
</tr>
<tr>
<td></td>
<td>Primary</td>
<td>86 (22.6)</td>
<td>10.24 (6.96)</td>
<td></td>
<td>6.79 (4.71)</td>
</tr>
<tr>
<td></td>
<td>Secondary</td>
<td>190 (50)</td>
<td>13.46 (8.71)</td>
<td></td>
<td>8.56 (5.63)</td>
</tr>
<tr>
<td></td>
<td>Higher</td>
<td>32 (8.4)</td>
<td>13.25 (8.96)</td>
<td></td>
<td>8.50 (5.97)</td>
</tr>
<tr>
<td>Gender</td>
<td>Male</td>
<td>134 (35.3)</td>
<td>10.20 (6.82)</td>
<td>0.00</td>
<td>6.46 (4.27)</td>
</tr>
</tbody>
</table>
Patients were also asked about their most important concern related to the administration of anesthesia and surgery by asking them closed questions, which were answered as 'yes' or 'no'. Postoperative pain was the most important concern of the patients which was found in 32% of the patients, followed by fear of needle and intervention (24.6%) and feeling pain during surgery (21.4%), while their least important concern was fear of death (2.1%) and becoming permanently disabled (2.7%), as shown in Figure 1.

![Figure 1: Anxiety factors due to anesthesia](image-url)
Discussion

Our study shows that the overall prevalence of preoperative anxiety and information requirement is 30.5% and 33.2% in our population. The mean total APAIS score of our population is 12.73 ± 8.56, the mean anxiety subscore is 8.25 ± 5.58, and the mean need for information subscore is 4.48 ± 3.16. Younger age group, female gender, having no formal education, surgery under regional anesthesia, are associated with significantly high levels of total APAIS and subscale scores, while the presence of comorbidities and previous history of anesthesia did not affect the scores significantly.

The 30.5% prevalence of preoperative anxiety in our population is comparable to the 31% prevalence in an Indian study using the same scale, and to the 32% prevalence in a Netherlands’ study using a different scale. However, it is very less than the 81% and 62% prevalence in studies carried out in Greece and Pakistan. Our information requirement prevalence was 33.2%, which is very less as compared to 80% in a Netherlands’ study.

The higher scores in female patients are in accordance with the studies done in Turkey, Nepal, Greece, and two studies conducted in Karachi. This result is well understood as females are generally found to have higher levels of anxiety and stress. Males are traditionally less expected to be anxious, which might be causing the lower scores in them.

Similarly, higher preoperative anxiety and desire for information was observed in the younger age group as in accordance with a Turkish, Swiss, and a Pakistani conducted in Agha Khan University Hospital, Karachi. A study also showed lower anxiety levels among the older group age group. When questioned about their anxieties related to the surgery, older people stated that everything is in God’s hand; therefore they were relaxed while this firm belief was less common among the younger patients thus leading to their higher anxiety scores and desire for information about the procedures.

In our study, total APAIS and anxiety subscores were higher in patients with no formal education, while the need for information was higher in secondary school graduates. This result is contradictory to a Turkish and a Brazilian study that showed higher anxiety in well-educated patients. However, the increasing desire for information with increasing education is relatable with Turkish study. When questioned, patients without formal education revealed that they were unaware of the procedures they were about to undergo, and this led to increased anxiety in them, while patients with some level of education knew about these procedures generally.

Surgery under regional anesthesia was associated with higher total APAIS and anxiety in patients, and a need for information score, which is contradictory to the results of two studies that found higher scores associated with general anesthesia. However, the patients from our research who were undergoing general anesthesia were more satisfied as there was little chance of experiencing pain; however, patients undergoing regional anesthesia were afraid to feel pain during the surgery.

C-section was the surgery most commonly associated with high anxiety and information requirements, followed by IOL implantation and septoplasty. The higher anxiety associated with C-section might be because the women are already anxious due to the possible complication that had led to or might follow it and the concerns of the pregnant women about the well-being of their baby during the operation. Also, pregnancy, in general, is a state that is associated with higher anxiety levels too. IOL implantation and septoplasty involve the sensitive face and eye areas, hence leading to anxiety in patients undergoing these procedures. The lower anxiety levels associated with stoma reversal might be because these patients had already undergone a major surgery in which the stoma was created.

Having a previous history of anesthesia and the presence of comorbid medical conditions did not significantly affect the anxiety levels of our patients, which is in contradiction to other studies. Another study also stated that the effect of previous anesthesia is minor.

Postoperative pain was the most important anesthesia-related concern among our population, followed by fear of needles and intervention and feeling pain during surgery. Fear of pain has been found to be the most important concern in other studies as well. Fear of death, becoming permanently disabled, and waking up in the middle of the surgery were the least important concerns in our population as many of the patients were unaware of their possibility.

In general, the anxiety levels and desire for information in preoperative patients of our population seem to be relatively less. Faith seemed to play a significant role in guiding their anxieties. The results of our study have highlighted the groups of patients...
having higher preoperative anxiety so they can be focused upon while dealing with preoperative anxiety.

**Conclusion**

Younger age group, female gender, having no formal education, surgery under regional anesthesia, and undergoing C-section, IOL implantation and septoplasty are associated with higher preoperative anxiety, while the presence of comorbidities and previous history of anesthesia are factors that do not significantly affect preoperative anxiety in our population.

**References**