

TO OBSERVE AND ASSESS RELATION BETWEEN PRE-OPERATIVE ANXIETY AND POST-OPERATIVE PAIN IN LAPAROSCOPIC BARIATRIC SURGERY PATIENTS

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ABSTRACT

Objectives: Pre-operative anxiety in obese patients is expected to be more due to psychological reasons, body habitus, comorbidities, and fear of not waking up from anesthesia. It is associated with emotional and physical problems. Predictive factors are complexity of surgery, the anesthesia, post-operative pain, not being appropriately informed, and psychosocial characteristics of the patient. Not many such studies have been conducted in morbidly obese patients.

The objective of this study was to determine the correlation between pre-operative anxiety and post-operative pain in obese patients undergoing elective laparoscopic bariatric surgery.

Methods: Total 200 patients of the American Society of Anesthesiologists Grade I-III were taken, with BMI >30 kg/m², who were undergoing elective laparoscopic bariatric surgeries. The amsterdam preoperative anxiety and information scale (APAIS) score was recorded a day prior to surgery. Heart rate, blood pressure, respiratory rate, and SpO₂ were recorded pre- and postoperatively. Patients were assessed for pain on the visual analog scale (VAS) in post-operative period at 0-, 1-, 2-, 6-, 12-, and 24-h intervals. All the data were entered in master chart and statistically analyzed (Pearson coefficient of correlation test).

Results: There is a positive, weak, statistically significant correlation ($r=0.157$, $p=0.026$) between anxiety score (APAIS) and post-operative pain (the highest VAS across all hours).

Conclusion: Pre-operative anxiety is directly linked to post-operative pain in obese patients undergoing elective laparoscopic bariatric surgery.

Keywords: Amsterdam preoperative anxiety and information scale score, Pre-operative anxiety, Visual analog scale score, Post-operative pain, Obesity.

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INTRODUCTION

Anxiety is defined as an unpleasant feeling that is felt as fear of a threatening danger, and often, the threat is unknown and includes a variety of emotional and hemodynamic responses that the organism undergoes before said stimulation of emotions. Among the most important risk factors documented for the presence of anxiety is the family history of anxiety and being of female gender. Previous studies have described pre-surgical anxiety as an entity that can occur up to a week prior to the surgical act, being referred to as physical and emotional discomfort that has as its origin a sense of imminent danger, which can range from restlessness to anxiety. Panic varies according to the type of surgery, time of hospitalization, and expected medical attention. Surgery is a stressful event that is frequently associated with anxiety in most patients. Pre-operative anxiety is a response that is expected and is associated with emotional and physical problems. Moreover, it can negatively influence both the intraoperative moment (for example, with a rise in blood pressure which can affect the surgery and increase complications) and the post-operative moment, such as pain [1]. Studies have been conducted where it was found that the more anxiety the patient experiences before the operation, the longer his time for recovering from illness, as well as the pain he experiences during his stay in recovery, being this the moment that makes the patient more anxious [2]. Elective surgery is a procedure that carries with it a series of fears: Fear of not waking up from anesthesia, feeling pain during the operation, pain that can be caused by invasive procedures prior to the intervention, revealing personal information due to the effects of anesthesia or the results of surgery [3]. Various methods are used

to assess the anxiety levels of patients. These methods include pre-operative interviews with an anesthesiologist and nurses, as well as information briefing [4,5]. One of the most commonly used instruments for measuring anxiety is the Spielberger State-Trait Anxiety Inventory (STAI). However, the need for clinically practical and rapid assessment tools for anxiety levels arose. Moerman *et al.* developed the amsterdam preoperative anxiety and information scale (APAIS) to assess the pre-operative anxiety and information requirements of patients [6]. The APAIS was originally developed in The Netherlands but has since been translated into valid and reliable English, Japanese, Italian, German, Spanish, and French versions.

Rationale of the study

- Obese patients are expected to have pre-operative anxiety more than other patients due to psychosocial reasons and their body habitus and comorbidities.
- Very few studies assessing the relation between pre-operative anxiety and post-operative pain have been conducted in obese patients.
- This study was carried out in our tertiary care center where laparoscopic bariatric surgeries are conducted on a regular basis.
- Pre-operative anxiety score assessment can give an idea about post-operative pain and thus help in planning for post-operative pain management accordingly in such patients.

Aim

The aim of this study was to observe and assess the relation between pre-operative anxiety and post-operative pain in obese patients undergoing elective laparoscopic bariatric surgery.

Objectives

- The APAIS was used to assess pre-operative anxiety.
- To assess APAIS score preoperatively.
- To observe pre-operative and post-operative hemodynamics.
- To observe the visual analog scale (VAS) score postoperatively at 0, 1, 2, 6, 12, and 24 h in patients.
- To assess the relation between APAIS score and post-operative pain.

Inclusion criteria

- All the American Society of Anesthesiologists (ASA) Grade I, II, III patients planned for elective laparoscopic bariatric surgery under general anesthesia.
- Age group of 18–65 years.
- BMI >30 kg/m².
- Male and female.

Exclusion criteria

- Patients not included in the inclusion criteria
- Patients with BMI <30 kg/m²
- Pregnant and lactating mothers
- ASA Grade IV patients
- Patient coming for emergency/open surgery
- Patient <18 years old and >65 years old

Type of study

This was an observational study.

Duration of study

The study duration was 1 year after approval from the ethics committee.

Source of data

The data were collected from Sri Aurobindo Medical College and Post Graduate Institute and Mohak Superspeciality Hospital.

METHODS

- Pre-anesthetic checkup of patients posted for elective laparoscopic bariatric surgery was done a day prior to surgery.
- Anxiety score was recorded using the APAIS questionnaire in PAC 1 day before surgery.
- The APAIS was chosen as the tool for assessment of pre-operative anxiety because of its easier assessment. It is not time taking and does not include any complicated questionnaire.
- AP AIS has been suggested by both Mitchell [7] and Pritchard [8] as a quick-to-complete tool that could be used to bring together the assessment of anxiety and the need for information. APAIS is a six-item questionnaire developed by Moerman *et al.* [6].
- Divided into two sections, the tool addresses anxiety and the need for information in an easy manner.
- The reliability of a tool can be assessed by conducting Cronbach's alpha (α), which measures the internal consistency of an instrument. APAIS has six items that either measure anxiety or the need for information. All the studies used α to determine the internal consistency of APAIS (above 0.70 is acceptable to conclude good internal consistency).
- Evidence indicates that APAIS is a valid and reliable tool that can be used to assess pre-operative anxiety and the need for information. It also has the potential to guide the management of pre-operative anxiety. APAIS may therefore serve as a useful tool in facilitating individualized care and appropriate interventions, evidenced by Maurice-Szamburski *et al.* [9], Berth *et al.* [10], and Boker *et al.* [11].
- Informed written consent was taken from all the patients.
- Patients were kept nil by mouth for 8 h prior to the procedure.
- Immediate pre-operative vitals, heart rate, blood pressure, SpO₂, and RR were recorded in the OT.
- A patient was induced with general anesthesia as per the fixed protocols of the institute.
- Induction was done with opioid-free multimodal anesthesia regimen using dexmedetomidine, lignocaine, and MgSO₄ and cisatracurium as the muscle relaxant, maintained with O₂, N₂O, and sevoflurane. BIS-guided sedation was done.

Questions	The Amsterdam preoperative anxiety and information scale				
	1	2	3	4	5
1. I am worried about the anesthetic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. The anesthetic is on my mind continually	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. I would like to know as much as possible about the anesthetic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. I am worried about the procedure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. The procedure is on my mind continually	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. I would like to know as much as possible about the procedure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1: Not at all, 2: Somewhat, 3: Moderate, 4: Moderately high, 5: Extremely

Fig. 1: Amsterdam preoperative anxiety and information scale
Score range: 6 (least anxiety)-30 (maximum anxiety)

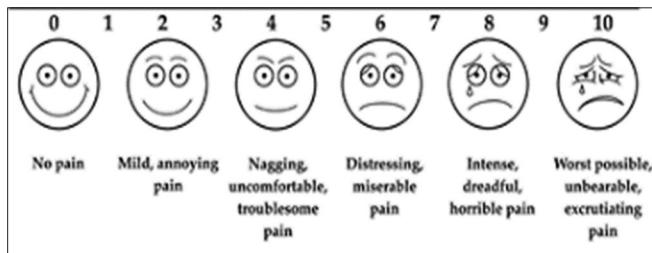


Fig. 2: Visual analog scale score

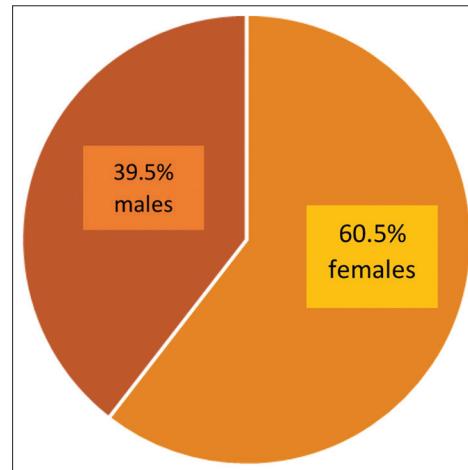


Fig. 3: Distribution of participants according to gender

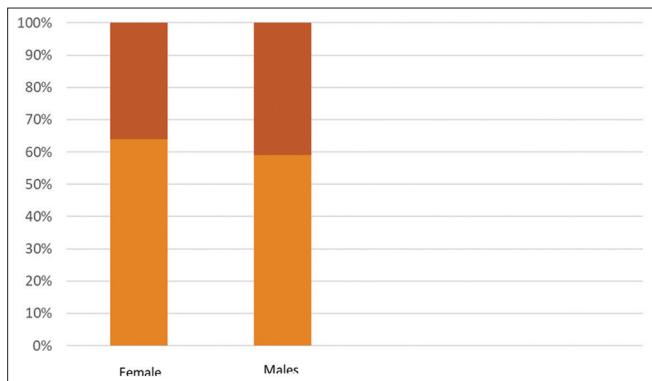


Fig. 4: Correlation between pre-operative amsterdam preoperative anxiety and information scale score and gender

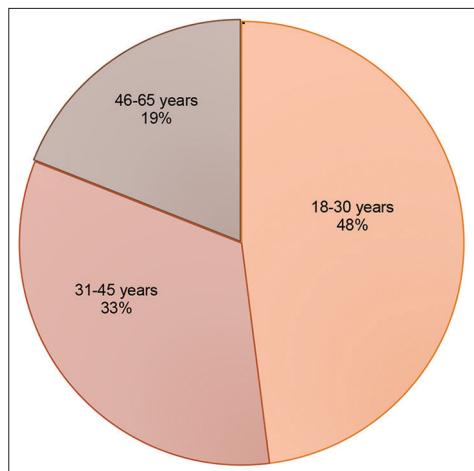


Fig. 5: Correlation between pre-operative amsterdam preoperative anxiety and information scale score and age

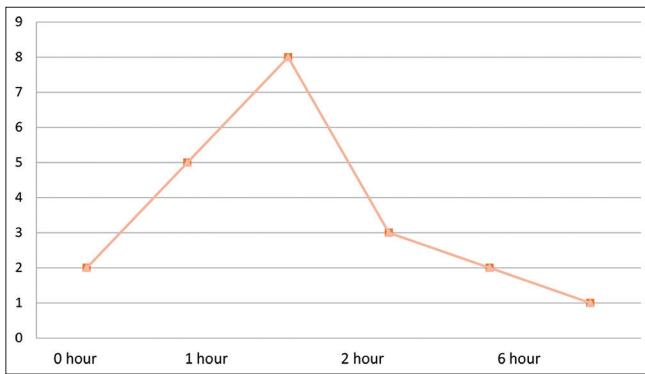


Fig. 6: Visual analog scale score

Table 1: Correlation between APAIS and the highest VAS score

Pair	"r" value	p value
AP AIS and the highest VAS score	0.157	0.026*

Pearson coefficient of correlation test applied. *p=0.026, significant.
AP AIS: Amsterdam preoperative anxiety and information scale, VAS: Visual analog scale

- After the surgery, a patient was shifted into the recovery room where vitals of the patient were recorded as HR, BP, SpO₂, and RR.
- Post-operative pain was recorded using VAS score immediately after surgery (0 h), 1, 2, 6, 12, and 24 h.
- Pre-operative APAIS score was recorded by one person in all patients and post-operative VAS score was recorded by another person in all patients to enable double blinding in the study.

Statistical analysis

- Descriptive statistics was used to show the characteristic of the collected sample.
- The association between qualitative parameters was shown using the Chi-square test.
- p<0.05 was considered statistically significant.
- Pearson coefficient of correlation test was also used.

OBSERVATION AND RESULTS

Total 200 patients were selected for this study. Patients who were induced by a single anesthesiologist throughout the study duration were selected for the study to prevent bias. Out of the total 200 patients, 121 (60.5%) were female patients and 79 (39.5%) were male patients.

Pre-operative APAIS score was found to be moderate to high in 64% of the total number of female patients. Pre-operative APAIS score was found to be moderate to high in 59% of total male patients.

Pre-operative APAIS score was found to be moderate to high in the age group of 18–30 years, followed by in the age group of 30–45 years.

Eighty-three percent of the total patients had the highest score in question no. 3 (would like to know as much as possible about the anesthetic) followed by 71% for question no. 1 (worried about the anesthetic). Hemodynamic parameters were comparable in both pre-operative and post-operative periods. The mean VAS score at 1 h slightly increased in comparison to 0 h and then reached its peak by 2 h and then started reducing, and by post-operative 24 h, the mean VAS score was lowest.

The highest VAS score was calculated as the maximum VAS reached during the total study duration. It was calculated for each patient, and the test of correlation was done between APAIS and the highest VAS.

DISCUSSION

Female patients as compared to male patients were found to have higher pre-operative anxiety scores as compared to males. Robleda *et al.* in their study on influence of pre-surgical emotional state on post-operative pain after orthopedic and traumatological surgery [12] found similar results where females were found to be more anxious than males in pre-operative period and hence had a higher pain score in post-operative period. Alvarez-Bastidas *et al.* contraindicated the correlation between degree of pre-operative anxiety and post-operative pain in patients under elective surgery. Developments in anaesthetics and pain management [13] contraindicated the correlation between gender and the presence of anxiety post-operative pain; in their study, they could not discern any statistical significance and similar percentages of anxiety were observed in both sexes as opposed to that obtained by other researchers where the female sex had higher levels of anxiety in comparison to the male gender. Patients in the age group of 18–45 years have slightly more pre-operative anxiety than older age groups. Bradshaw *et al.* [14] suggest that this could be due to the elderly having an easier acceptance of reality and probably having been exposed to the health system before. Patients were found to have more anxiety about the method of anesthesia and the anesthetic. Hernández *et al.* [15] reported similar results with 40% of 100 patients for general surgery. Laufenberg *et al.* [16] noted this in 64% of 217 patients undergoing elective surgery. Post-operative VAS score in both the groups was comparable and found to be higher at approximately 2 h after the surgery. Pre-operative APAIS score of the total patients of the study was compared with maximum VAS reached during the total study duration. There is a positive, weak, statistically significant correlation ($r=0.157$, $p=0.026$) between anxiety score (AP AIS) and post-operative pain (highest VAS across all hours). Kaydu and Gokcek [17] with patients undergoing extracorporeal lithiasis by shockwaves and Laufenberg *et al.* [16] in elective surgery or in urological surgery showed similar results. Mandy and Feeney [18] highlighted the importance of evaluating pre-operative anxiety in foot surgery and showed similar results. However, they mentioned that these results could be due to the use of other scales, the type of anesthesia, the sample size, or the place in which it was done. The surgical complexity is also noted as a risk factor of pre-operative anxiety.

CONCLUSION

From our study, we observed that obese patients having higher pre-operative anxiety scores also had higher post-operative VAS scores. Female patients have significantly more anxiety preoperatively than male patients. Younger patients have significantly more anxiety preoperatively than older patients. Patients are mostly found to be anxious about the type of anesthesia and about getting general anesthesia as a whole. Patients were found to be less anxious about the surgery as compared to the anesthesia. Pain was found to be

highest at 2 h postoperatively. In conclusion, it was observed that the prevalence of anxiety was high in participants of this study. There was a relationship between pre-operative anxiety and post-operative pain in obese patients undergoing laparoscopic bariatric surgery. Therefore, it is important to assess and detect the level of anxiety with appropriate instruments to treat it and improve the process of patient care in morbidly obese patients.

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AUTHORS' CONTRIBUTION

CONFLICT OF INTEREST

None declared.

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