

A STUDY OF PATIENT'S KNOWLEDGE AND PERCEPTION ABOUT ANAESTHESIA AND THE ANAESTHESIOLOGIST IN A TERTIARY CARE HOSPITAL IN KOLKATA.

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Received : 09/10/2024
Received in revised form : 22/11/2024
Accepted : 06/12/2024

Keywords:

Anaesthesia, anaesthesiologist, pre anaesthesia check up (PAC), questionnaire, educational status.

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DOI: 10.47009/jamp.2024.6.6.135

Source of Support : Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2024; 6 (6); 715-721



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Abstract

Background: A questionnaire-based study was conducted to assess the session patients' knowledge and perceptions of anaesthesia and the anaesthesiologist, which are considered grossly inadequate in our patients. The study was done at the pre-anaesthesia check-up clinics before surgery. The participants were followed up in the postoperative period to record any changes in their knowledge and perception after surgery. **Materials and Methods:** A total of 361 patients scheduled for various surgeries were evaluated based on a questionnaire at the time of the preoperative visit. Multiple questions to know patients' knowledge on different types of anaesthesia, various concerns, and the role of anaesthesiologist in the operative room and after surgery were included. Patient's perceptions and changes were studied postoperatively. The variables like age, sex, educational level, and past exposure to anaesthesia were considered. **Result:** The results of the study showed an overall, poor perception with only 25.7% of patients knowing what anaesthesia is, 52.4% knowing that an anaesthesiologist is the one who gives anaesthesia and 54.6% of patients agreed that he is a doctor. Patient awareness about types of anaesthesia was also poor. At the end of the interview, patients were given some information about anaesthesia. Amongst various factors, educational levels showed the most significant influence on responses. At postoperative follow-ups, a significant change in patient's perception of anaesthesia and anaesthesiologist was noted with 84% of patients responding correctly to the questionnaire. **Conclusion:** This study revealed that patients, in general, are ignorant of the knowledge and perception of anaesthesia and the role of anaesthesiologists as perioperative physicians. However, the knowledge was found to have a positive correlation with better formal education. It established the role of a detailed pre-anaesthesia checkup session for successful perioperative care.

INTRODUCTION

The ability to conquer pain is a momentous achievement of modern Medicine. The triumph over pain has potentially affected every human being in the world. It made many complex surgeries possible and improved the quality of life of the sufferers.^[1,2] The era of modern anaesthesiology began in 1846 with the successful demonstration of ether as a general anesthetic, followed by a staggering development in anaesthesiology and pain medicine over the next 175 years and more.^[3,4]

In the past few decades, there has been a boost in the general awareness of people on different health issues even in developing countries. However, the knowledge regarding some important branches of modern medicine is seriously lacking.^[5,6] Patients are not aware of the roles of different staff in the operating room. They are oblivious to the role of the anaesthesiologist, who is responsible for optimizing them before surgery, deciding the anaesthetic plans, monitoring the vitals and their awareness during surgery, ensuring a smooth recovery, and providing good postoperative analgesia, as a perioperative

physician.^[6,8] Many even do not consider the Anaesthesiologist as a doctor.^[5,7,9]

Such ignorance leads to fear from surgery and anaesthesia, and the patients fail to confide in the anaesthesia provider, often not giving enough information about their existing health conditions which may have harmful consequences.^[8,9] Fear from surgery and anaesthesia causes altered intra and postoperative haemodynamics, delayed awakening, delayed wound healing and prolonged hospital stay. Postoperative pain, awareness during surgery and not waking up are the common

Patients have limited knowledge regarding pre-anaesthetic assessment and its benefits.^[8,10] It provides an opportunity for the patient to discuss any queries or fears regarding anaesthesia. At the PAC clinic, it is important to judge the knowledge of patients about anaesthesia and the anaesthesiologists. This individualized approach definitely improves perioperative outcome.^[6,8]

This present study aimed to assess the knowledge and perception of patients about anaesthesiology and the anaesthesiologist before surgery and to follow up with the patients for any change in their knowledge and perception of anaesthesiology and the anaesthesiologist in the immediate postoperative period.

MATERIALS AND METHODS

The study was conducted as a prospective, cross-sectional study in the pre- anaesthesia check-up clinics and surgical wards of I.P.G.M.E.R and S.S.K.M. Hospital, Kolkata, a tertiary care teaching hospital. The study protocol conformed to the “Declaration of Helsinki.” 20 it was cleared by the Institutional Ethics Committee (IEC) of our institute and required written informed consent from all study participants. It was registered with the Clinical Trials Registry, India [CTRI/2024/03/064099].

The study period was of six months duration. Patients of both sexes, aged between 18 and 75 years who attended the PAC clinics and underwent elective surgical procedures under anaesthesia were included in the study. Paediatric patients, persons with intellectual disability or psychiatric illnesses, and those who did not give consent were excluded from the study. Based on the total number of surgeries done in our institute yearly and employing a 95% confidence interval and a power of 80%, the standard deviation applied was 0.45 as inferred from a previous study. We derived a sample size of 361 for the present study 9.

The participants were interviewed using a structured questionnaire prepared in Bengali, Hindi, and English as per their choice. It consisted of three parts. The first part included questions that were general socio-demographic information and part two included questions that assessed patient's knowledge regarding pre-anaesthesia check-up, anaesthesia and the anaesthesiologist. Part three assessed the patient's knowledge and perception of anaesthesia

after surgery. Each question was provided with four possible choices, out of which the patient had to choose the most appropriate answer.

The questionnaires for the illiterate patients were completed by reading out the questions with options clearly by a layperson, who is conversant with the languages and could mark their responses. The questionnaire is presented in Tables 1, 2, 3 and 4 with the distribution of responses. A total of 27 patients who could not respond to all the questions and 5 patients who were lost to follow-up after their surgery were excluded from the study. The 361 patients who completed the questionnaire pre and post-surgery were included in the investigation.

To ensure the quality of data, a pilot study was done to pre-test the data collection tool (the questionnaire) in 10 patients who were not included in the main study. Necessary corrections were made according to the feedback obtained and the final questionnaire was ready for the main study.

The data collectors (the postgraduate students) were closely supervised by the principal investigator and the co-investigators, comprising the faculties of the Department of Anaesthesiology throughout the study period. Study participants were provided with adequate information about the questionnaire. The collected data was checked for completeness, accuracy, and clarity.

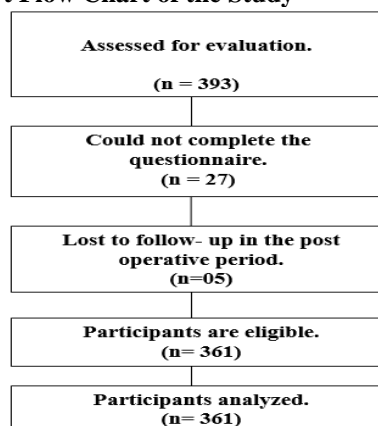
Statistics: All statistical analyses were conducted using Python Language, employing libraries such as Numpy and Scipy to carry out the tests.^[11,12] A sample size of 361 was analyzed, and a 95% confidence interval was selected with the significance level (p-value) set to 0.05.

All the tests were done between 2 groups of patients with different educational levels. The group that had the maximum percentage of correct answers and the group with the minimum percentage of correct answers for each question.

Test used

- The Chi-Square Test has been used in all the cases since we are trying to establish any relationship between group membership and the correctness of the answer.
- Even for demographic characteristics, the Chi-Square Test has been used.

Consort Flow Chart of the Study



RESULTS

Out of 361 patients included in the study, 168 were female (46.5%) and 193 male (53.5%), The participants were grouped into three age groups, namely 18 to 40 years, >40 to 65 years, and >65 to 75 years. Of these, the 18 to 40 years age group had 196 (54.3%) participants which was significantly higher than the other two groups ($p < 0.005$). When the educational status of the patients was evaluated, 17.7% were primary passed, 42.4 % were in secondary or senior secondary level, 13.3 % were graduates, 09.9% % were post graduates or more, and 16.6 % were illiterate.

Comparison was made on each question in the questionnaire between the group with the highest percentage and the group with the lowest percentage of correct answers and it was concluded that there was a significant difference of knowledge between the 2 groups on most answers.

To the question "Do you know what surgery is planned for you?" Only 161 (44.6%) patients gave the correct response. The graduates (58.3%) gave the most correct responses. The question, "Do you know what PAC is?" got 94 (26.1%) correct responses. The difference in percentage of correct

responses between the best, (postgraduates-63.8%) and lowest performing groups (illiterates-13.3%) for this question was statistically significant (< 0.01). When asked "Is anaesthesia necessary for surgery?" 174 (48.2%) said "Yes". There was a significant difference between the number of correct responses between the best and worst-performing groups. But overall, only 93(26.7%) knew what anaesthesia is. Similarly, only 197(54.6%) participants said that an anaesthesiologist is a doctor. Only 189 (52.4%) patients agreed that the anaesthesiologist gives the anaesthesia service in the operative room.

Out of the total participants, 134 (37.1%) patients had one or more previous surgeries. Of this cohort, only 42(31.3%) knew the role of anaesthesiologist as a perioperative physician as against 98(27.1%) of the total study population. The difference was not statistically significant ($p = 0.356$).

In the post-operative period, there were significant improvements in the percentages of correct responses in all the educational groups. Three forty-seven patients (96.1%) could name the type of anesthesia they received. Two eighty-nine (80.05%) could tell who gave them anaesthesia, which included 71.6% participants of in the lowest performing group who answered correctly.

Table 1: Demographic characteristics.

| Gender | | Numbers | % |
|------------------|----------------|---------|------|
| | Male | 193 | 53.5 |
| | Female | 168 | 46.5 |
| Age groups | 18 – 40 years | 196 | 54.3 |
| | >40 -65 years | 112 | 31.0 |
| | >65 – 75 years | 53 | 14.7 |
| Previous surgery | Yes | 134 | 37.1 |
| | No | 227 | 62.9 |

Table 2: Distribution of patient's perception about anesthesia according to the educational status.

| Questionnaire | options | primary (%) | Secondary and Senior Secondary (%) | Graduates (%) | Postgraduates or above (%) | illiterate (%) | Total (%) | p- value of the diff. in % of responses between the best and worst performing groups . |
|---|--------------------|-------------|------------------------------------|---------------|----------------------------|----------------|------------|--|
| Do you know what surgery is planned for you ? | a. Yes | 29(45.3%) | 65(42.5) | 28(58.3) | 24(66.6) | 15(36.6) | 161 (44.6) | <0.01 |
| | b. No | | | | | | 89 | |
| | c. Not sure | 13 | 38 | 11 | 05 | 22 | 94 | |
| | d. My doctor knows | 18 | 47 | 09 | 05 | 16 | 15 | |
| Do you know why you have come to the anaesthesia clinic ? | a. Yes | 06(09.2) | 18(11.7) | 22(45.8) | 22(61.1) | 07(11.6) | 75(20.7) | <0.01 |
| | b. No | 32 | 58 | 13 | 06 | 24 | 133 | |
| | c. Not sure | 21 | 64 | 11 | 08 | 29 | 133 | |
| | d. My doc knows | 05 | 13 | 02 | 0 | 0 | 20 | |
| Do you know what PAC is? | Yes | 11(17.2) | 27(17.6) | 25(52.1) | 23(63.8) | 08(13.3) | 94(26.1) | <0.0001 |
| | No | 27 | 78 | 12 | 06 | 23 | 146 | |
| | Not sure | 19 | 29 | 11 | 07 | 18 | 84 | |
| | My doc knows | 07 | 19 | 0 | 0 | 11 | 37 | |
| Do you think PAC is | Yes | 11(17.2) | 24(15.7) | 23(47.9) | 16(44.4) | 07 (11.6) | 81(22.4) | <0.01 |
| | No | 07 | 18 | 04 | 05 | 06 | 40 | |

| | | | | | | | | |
|--|-----------------------------|----------|----------|----------|----------|----------|-----------|-------|
| important ? | Not sure | 38 | 67 | 07 | 08 | 38 | 158 | |
| | Optional | 08 | 44 | 14 | 07 | 09 | 82 | |
| What is the role of PAC? | To optimize the patient | 07(10.9) | 30(19.6) | 15(31.3) | 14(38.8) | 06(10.0) | 72(19.9) | <0.01 |
| | To get operation date | 43 | 74 | 18 | 10 | 38 | 183 | |
| | No role | 06 | 13 | 01 | 00 | 04 | 24 | |
| | Don't know | 08 | 36 | 14 | 12 | 12 | 82 | |
| What is anaesthesia ? | Alleviate pain | 14 | 44 | 10 | 07 | 19 | 94 | <0.01 |
| | Put patient to sleep | 28 | 52 | 12 | 07 | 25 | 124 | |
| | Make operation smooth | 12 | 16 | 07 | 06 | 09 | 48 | |
| | All the above | 10(15.6) | 41(26.7) | 19(39.5) | 16(44.4) | 07(11.6) | 93(25.7) | |
| Is anesthesia necessary for surgery? May be needed | Yes | 26(40.6) | 65(42.4) | 35(72.9) | 27(75.0) | 21(35.0) | 174(48.2) | |
| | No | 09 | 03 | 03 | 00 | 09 | 24 | |
| | Don't know | 16 | 38 | 05 | 06 | 17 | 82 | |
| | May be needed | 13 | 47 | 05 | 03 | 13 | 82 | |
| How many types of anaesthesia do you know or heard of ? What are they? | Several types | 13(20.3) | 41(26.7) | 19(39.5) | 14(38.8) | 13(18.3) | 98(27.1) | 0.02 |
| | Don't know | 24 | 48 | 11 | 08 | 24 | 115 | |
| | Not sure | 21 | 45 | 14 | 12 | 12 | 104 | |
| | One type | 6 | 19 | 04 | 02 | 11 | 42 | |
| Do you have fear regarding anaesthesia about? | Feel pain during surgery | 25 | 56 | 23 | 15 | 32 | 151 | <0.01 |
| | Awareness during surgery | 17 | 44 | 16 | 07 | 13 | 97 | |
| | Not waking up after surgery | 06 | 19 | 02 | 04 | 08 | 39 | |
| | Nil | 16 | 34 | 07 | 10 | 07 | 74 | |

Table 3: Distribution of patient's perception about anesthesiologist according to the educational status.

| Questionnaire | Options | Primary (%) | Secondary and Senior Secondary (%) | Graduates (%) | Postgraduates or above (%) | illiterate (%) | Total (%) | p- value of the diff. in % of responses between the best and worst performing groups . |
|--|---------------------|-------------|------------------------------------|---------------|----------------------------|----------------|-----------|--|
| Who does anaesthesia in the OT? | a.Surgeon | 23 | 31 | 07 | 06 | 29 | 189(52.4) | <0.001 |
| | b.Anaesthesiologist | 24(37.5) | 95(62.1) | 33(68.7) | 25(69.4) | 12(20.0) | | |
| | c. Nursing staff | 05 | 11 | 02 | 01 | 07 | | |
| | d. Don't know | 12 | 16 | 06 | 04 | 12 | | |
| Who does PAC? | a.Surgeon | 24 | 31 | 09 | 08 | 17 | 82 | 0.041 |
| | b.Ward doctor | 20 | 37 | 14 | 10 | 20 | | |
| | c.Anaesthesiologist | 18(28.1) | 76(49.6) | 24(47.9) | 18(50.0) | 13(21.6) | | |
| | d.Nursing staff | 02 | 08 | 01 | 00 | 10 | | |
| Is anaesthesiologist a doctor? | Yes | 29(45.3) | 95(62.5) | 31(64.5) | 25(69.4) | 15(25.0) | 197(54.6) | 0.22 |
| | No | 04 | 16 | 01 | 03 | 11 | | |
| | Don't know | 18 | 23 | 10 | 02 | 21 | | |
| | May be | 13 | 19 | 06 | 06 | 13 | | |
| Who takes care of vital functions of the | Surgeon | 09 | 25 | 05 | 07 | 11 | 57 | <0.05 |
| | Anaesthesiologist | 13(20.3) | 52(33.9) | 22(45.8) | 16(44.4) | 09(15.0) | | |
| | Nursing staff | 28 | 64 | 19 | 10 | 12 | | |

| | | | | | | | | |
|--|------------------------------|----------|----------|----------|----------|-----------|-----------|--------|
| body (Bp/ heart rate) ? | Don't know | 14 | 12 | 02 | 03 | 28 | 133 59 | |
| What does the anaesthesiologist do in the OT? | Only admn drugs and go away | 14 | 46 | 12 | 10 | 26 | 108 | 0.055 |
| | Adm drugs and monitor vitals | 13(20.3) | 44(28.7) | 19(39.6) | 14(38.8) | 08(20.07) | 98(27.1) | |
| | assist the surgeon | 28 | 28 | 06 | 08 | 12 | 82 | |
| | Don't know | 09 | 35 | 11 | 04 | 14 | 73 | |
| Who manages pain and immediate post operative complications? | Anaesthesiologist | 12(18.7) | 35(22.8) | 22(45.8) | 15(41.6) | 10 (6.6) | 94(26.0) | <0.001 |
| | Surgeon | | | | | | | |
| | Nursing staff | 38 | 85 | 19 | 16 | 39 | 197 | |
| | Don't know | 08 | 09 | 05 | 05 | 04 | 31 | |
| | | 06 | 24 | 02 | 00 | 07 | 39 | |

Table 4: Change in the perception about anaesthesia and the anaesthesiologist in the post operative period.

| | | primary (%) | Madhyamik or Higher Secondary (%) | Graduates (%) | Postgraduates or above (%) | illiterate (%) | Total (%) | p- value of the diff. in % of responses between the best and worst performing groups . |
|--|----------------------|-------------|-----------------------------------|---------------|----------------------------|----------------|------------|--|
| What type of anaesthesia did you receive? | a.General | 24 | 62 | 19 | 12 | 21 | 138 | |
| | b. Spinal | 23 | 54 | 16 | 14 | 21 | 128 | |
| | c.Nerve block | 13 | 35 | 13 | 10 | 10 | 81 | |
| | d. Don't know | 04 | 02 | 00 | 00 | 08 | 14 | |
| Who gave you anaesthesia ? | a.Surgeon | 11 | 22 | 07 | 04 | 14 | 58 | 0.0499 |
| | b.Anaesthesiologist | 48(75.0) | 125(81.7) | 41(83.3) | 32(88.8) | 43(71.6) | 289(80.05) | |
| | c.Nursing staff | 04 | 03 | 00 | 00 | 01 | 08 | |
| | d.Don't know | 01 | 03 | 00 | 00 | 02 | 06 | |
| When you woke up who was with you ? | Surgeon | 08 | 27 | 03 | 04 | 14 | 56 | < 0.004 |
| | Anaesthesiologist | 44(68.7) | 121(79.1) | 38(79.2) | 30(83.3) | 38(63.3) | 271(75.06) | |
| | Nursing staff | 05 | 01 | 06 | 02 | 03 | 16 | |
| | Don't know | 07 | 04 | 01 | 00 | 05 | 16 | |
| How important you think is the role played by the anaesthesiologist in the OT? | Very important | 46(71.8) | 121(79.1) | 41(85.4) | 31(86.1) | 43(71.6) | 282(78.1) | 0.088 |
| | Moderately important | 15 | 25 | 07 | 05 | 10 | 62 | |
| | May be | 02 | 02 | 00 | 00 | 02 | 05 | |
| | don't know | 03 | 05 | 00 | 00 | 05 | 11 | |
| Who took care of your immediate post operative complications if any? | Surgeon | 04 | 06 | 02 | 01 | 08 | 21 | 0.023 |
| | Anaesthesiologist | 44(68.7) | 122(79.7) | 42(87.5) | 31(86.1) | 40(66.60) | 279(77.3) | |
| | Nursing staff | 14 | 17 | 04 | 04 | 05 | 44 | |
| | Don't know | 02 | 08 | 00 | 00 | 07 | 17 | |

DISCUSSION

The present study aimed to determine the knowledge and perception of the study participants about anaesthesia and the anaesthesiologist as a perioperative physician. Analyzing the data we found that only 25.7 % of all study subjects knew what anaesthesia is. About 19.9% could appreciate the importance of pre anaesthesia check up for a successful operative outcome. One ninety-seven (54.6%) patients identified the anaesthesiologists as doctors, but only 98 patients (27.1%) were aware of their role in the operating room and beyond. The study population was divided into five different groups based on their formal educational level, namely primary passed, secondary, and senior secondary corresponding to classes X and XII, graduates, postgraduates and beyond, and the illiterates.

A similar questionnaire-based Indian study done by Jathar DV et al,^[5](2002) revealed that only 42 % of patients knew that the anaesthesiologist gives anaesthesia in the operative room, while 38 % confirmed that the anaesthesiologist is a doctor. Another Indian study by Mathur et al,^[16] (2009) had 81.2% of the postgraduate patients but none in the illiterate group who could identify the role of anaesthesiologist in perioperative service. Similarly, Khara BN et al,^[6] undertook a study in 2013 where only 12.3% of participants were confident of the role of anaesthesiologist as against 27.1 % in our study. The present study reiterates the results of previous, Indian studies that confirm that the knowledge and perception of anaesthesia is still deficient among our patients seeking surgical care.^[16,17] It is inconsistent with the current developments in perioperative health care.

A study by Almutairi NG et al,^[17] (2023) showed that 83.5%, 43.1%, and 30.3% of study subjects were aware that the anaesthesiologist was responsible for putting the patient to sleep, waking him up, and monitoring vital signs before, after and throughout the surgery, respectively. However, a basic knowledge of anesthesia could be elicited only in 12.3% of subjects.

Bataineh et al,^[13] (2020) assessing the intraoperative roles of the anaesthesiologist, emphasized that the most obvious answers were to put the patients to sleep (75%), to monitor them throughout the operation (73%), to wake the patients (72%) after surgery.

In their studies, Yoldaş et al,^[14] (2016) reported that 54.6% of their patients knew that vital sign monitoring was performed by an anaesthesiologist. Ferlenges AG and D Duygu,^[18] (2023) reported that 67.2% of the patients had information about the intraoperative tasks of the anaesthesiologist, and the highest proportion of appropriate responses came from university graduates.

About Eighty-five percent of our patients reported fear from surgery, of these 41.8% feared that they would feel pain during and after surgery. Fear of not waking up from anaesthesia was reported by 17.7% of participants. Likewise, Ruhaiyem et al,^[15] reported that 88 % of their patients expressed fear of surgery, the commonest being postoperative pain (77.3%), followed by an awareness of surgery (73.7%)

The current study states that the knowledge and perception of anaesthesia and anaesthesiologist are seriously lacking in our surgical patients. But when the patients were judged as groups based on their formal education level we found that to most questions there were significant differences in responses between the groups that had the maximum percentage of correct answers and the groups that had the minimum percentage, thus expressing that education plays a very important role. It was also observed that either the graduate or the postgraduate group was the one with the maximum percentage of correct answers for the questionnaire in most cases. Yet the knowledge levels as judged by the percentage of correct answers did not exhibit a linear relationship with increasingly higher educational groups. Though the illiterate group exhibited the lowest percentage of correct responses, the highest accuracy was not observed exclusively in the postgraduate group. The maximum percentage of correct responses was altered between the graduate and post-graduate groups which showed that beyond a certain educational threshold the influence of formal education on "knowledge" plateaus.

During postoperative follow-up, to the question 'Who gave you anaesthesia in the OT?' - For all the groups there was a significant (<0.01) increase in the knowledge, with the maximum impact observed in the illiterate group. Similar findings were seen in the study by Jathar DV et al,^[5] where 84% of

patients gave correct responses to the role of anaesthesiologist in the postoperative period as against only 42% before surgery. Two seventy-nine (77.3%) patients in our study could recall that, it was the anaesthesiologist who took care of their well-being and complications in the immediate postoperative period.

Limitations of the study

It was a single institution-based study. We included participants at the PAC clinics, who matched our inclusion criteria and gave their informed consent. Each patient was briefed about the study and what it aimed to achieve. However, randomization could not be done. Therefore the distribution of the number of participants in each study group was not too close to each other. Therefore to further consolidate our results newer, prospective, randomized studies are needed with the number of patients in different groups within close match for better comparison.

CONCLUSION

The present study revealed that the study population was in general, ignorant of knowledge and perception of anaesthesia and the anaesthesiologist as a perioperative caregiver. The knowledge was found to improve with higher formal, educational achievements, but there was no linear relationship between the two. The effect of knowledge plateaued after a certain educational attainment. The graduates performed better than the postgraduates in some responses to the questionnaire. The study showed that the pre anaesthesia check-up is the mainstay of perioperative anaesthesia care. When the anaesthesiologist introduces himself at the pre-anaesthesia clinic and informs the patient about anaesthesia, the patients get more confident reveal their health conditions and fears and discuss the possible complications of surgery. The PAC reduces anxiety, better planning, and ensures improved patient compliance and outcomes. The marked improvement in responses during the postoperative follow-up might be due to the comprehensive pre-anesthetic care that we could provide to the participants.

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