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Awareness And Practices of Pre-Anaesthetic Checkup amongst Surgical Residents in a Tertiary Care Centre: A Cross-Sectional Questionnaire based Survey

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Abstract

Background: A Pre-Anaesthetic Checkup (PAC) is a critical assessment conducted before administering anaesthesia to ensure patient safety during surgical procedures. It helps identify potential risks and optimize the patient's condition for anaesthesia. It involves a comprehensive assessment of the patient's medical history, physical examination, and necessary laboratory investigations.

Methods: A structured questionnaire consisting of 21 questions was circulated amongst surgical residents of a tertiary care institute via an electronic mode of communication.

Results: Among the surgical residents that we surveyed, 96.2% of them feel that there is a requirement of PAC as a routine practice. The surgeons are well aware (86.5%) of the Enhanced Recovery After Surgery (ERAS) protocols, while only 41.2% always follow it. The surgical plan was discussed with the anaesthesiologists by 39.2% of the surgical residents.

Conclusion: Despite being well versed with the knowledge of PAC, there exists a lack of practices. There is a requirement of increased collaboration between the surgeon and anaesthesiologists for better perioperative care.

Keywords: Pre-Anaesthetic Checkup; Anaesthesia; Questionnaire; Surgeons; Enhanced Recovery after Surgery

Abbreviations

PAC: Pre-Anaesthetic Checkup; AIIMS: All India Institute of Medical Sciences; CVI: Content Validity Index; ERAS: Enhanced Recovery After Surgery.

Introduction

Anaesthesia plays an important role during surgery. It is associated with various physiological changes that may increase morbidity and mortality, depending on the preoperative health status of the patient [1]. An accurate understanding of the clinical characteristics of the patient is essential in the perioperative management in order to ensure the quality and safety of anaesthesia and surgery.

Pre-anaesthetic checkup (PAC) is the clinical assessment preceding the administration of anaesthesia for surgical and non-surgical procedures. Its principal aim is to evaluate known comorbidities and identify and diagnose unknown

comorbidities that may have an impact on the patients' perioperative management [2]. The need for unnecessary investigations and consultations are eliminated, while case cancellation and delays may be reduced with the help of PAC [3]. Special attention is required for the elderly, paediatrics and patients with multiple comorbidities, as it may help influencing the choice of anaesthesia [4].

For surgical residents, a thorough understanding of PAC is indispensable, as it fosters multidisciplinary collaboration, improves risk assessment skills, and enhances overall surgical proficiency. Integrating PAC principles into daily practice strengthens their ability to deliver safe and effective patient care. This study was done to assess the awareness and practices of PAC amongst surgical residents in a tertiary care institute in India.

Materials and Methods

- **Participants:** Surgical residents across different specialties.
- **Inclusion Criteria:** Residents currently enrolled in surgical training willing to participate and submit their responses, and both junior residents and senior residents of AIIMS, Raipur.
- **Exclusion Criteria:** Surgical residents not willing to participate and residents in administrative roles rather than clinical residency roles, incomplete responses.
- **Operational definitions:** Often defined as more frequently applied but not always. Sometimes: defined as less frequently applied.

A cross-sectional questionnaire-based study was conducted amongst the surgical residents belonging to All India Institute of Medical Sciences (AIIMS), Raipur. The survey was conducted via Google Forms that was circulated online. The responses of those residents willing to fill out the forms were included.

A structured questionnaire (Table 1) that included socio demographic parameters (1 question), awareness (11 questions) and practices (9 questions) related questions was developed. The questionnaire contained twenty-one questions in English with all the questions requiring a mandatory response. The survey was conducted after obtaining informed consent from the participants. Only one response was allowed from each participant, and the confidentiality of the records was maintained. The study followed guidelines as per declaration of Helsinki 2013 and good clinical practice. The questionnaire was designed by the authors based on a previous study by Singla D, et al [5].

Sl No	Question	Response
Socio Demographic Factors		
Department		
1	Year of residency	First year
		Second year
		Third year
		Senior resident
Awareness		
2	Do you think there is a requirement for pre-anaesthetic (PAC) checkup?	Must
		Yes (as a routine practice)
		Not sure
3	Why do you think PAC is required?	For documentation purpose
		For patient optimisation
		To prevent complications
		It is not required, it delays surgery
4	Are you aware of the ASA PS guidelines?	Yes
		No
		Not sure
5	Are you aware of the ERAS protocol?	Yes
		No
		Not sure

6	Are you aware of the pre-operative fasting guidelines?	Yes
		No
		Not sure
7	Do you think maintenance intravenous fluid is required/ beneficial during fasting period?	Yes
		No
		Not sure
8	If yes,what is the fluid given?	0.9% normal saline
		0.45% normal saline
		DNS
		RL
9	Out of the below options, which all are the medications that are to be continued on the day of surgery?	Thyroxine
		Oral hypoglycemic agents
		Anti-hypertensive medication
		Anti coagulants
		Not sure
10	Which of the following patients do you think requires a pre-operative ECHO?	Age>60 yrs
		patient with unknown exercise tolerance
		Patient posted for major surgery
		ECG with borderline changes
11	Do you think pre-operative blood transfusion is required/ recommended?	Yes
		No
		Maybe
12	What is the value of blood glucose that is considered optimum before taking a patient up for elective surgery?	140-180 mg/dl
		180-200 mg/dl
		200-250 mg/dl
		>250 mg/dl
Practices		
13	How often do you discuss the plan of the surgery with the anaesthesiologists?	Always
		Often
		Sometimes
		Never
14	How often do you follow pac advice?	Always
		Often
		Sometimes
		Never
15	Do you follow the ERAS protocol?	Always
		Often
		Sometimes
		Never
16	What is normally practiced for attenuation of preoperative patient anxiety for surgery?	Non-pharmacological methods like counselling
		Pharmacological methods
17	How often do you discuss the pain management strategies with the anaesthesiologists?	Always
		Often
		Sometimes
		Never

18	How often is the risk stratification of the patient done before surgery?	Always
		Often
		Sometimes
		Never
19	When is the antibiotic prophylaxis given?	At the time of skin incision
		30 min before the skin incision
		1 hr before the skin incision
		Night before surgery
20	What anti aspiration prophylaxis is given before surgery?	Inj. Pantoprazole
		Inj. Ranitidine
		Inj. Metoclopramide
		Combination of above drugs
		No prophylaxis given
21	Is thromboprophylaxis routinely practiced?	Yes
		No

Table 1: Questionnaire of the survey.

This survey questionnaire was validated among five experts for content validity with Content Validity Index (CVI) > 0.75, ensuring expert agreement on item relevance and clarity [6]. The experts had considerable teaching experience across various sectors of the profession.

Sample size: No prior sample size calculation was performed as this was an exploratory study. This survey was open for four weeks and all responses received during this period were included in the study. A response rate of more than or equal to 80% was anticipated based on previous similar studies.

Data Analysis

The data was entered into Microsoft Excel and analysed using Python (Pandas, SciPy). Descriptive Statistics were described in terms of percentage and mean ± SD. To assess the internal consistency of the questionnaire, Cronbach's alpha was calculated and found to be 0.7. The analysis focused on evaluating associations between awareness and practice-related variables using the Chi-square test of independence for certain variables.

Results

A total of 110 forms were distributed and 104 responses were recorded, having a response rate of 94%. The maximum number of responses received were from the department of general surgery (21%). The department of neurosurgery, cardiac surgery, urology, paediatric surgery, ophthalmology, otorhinolaryngology, plastic surgery, orthopaedics and obstetrics contributed to the rest of the response. Among the residents that we surveyed, 13.5% (n=14) of them were first-year residents, 38.4% (n=40) were second-year residents, 25% (n=26) were third-year residents and 23.1% (n=24) were senior residents.

Ninety-six percent of them (96.2%, n=100) responded that there is a requirement for PAC as a routine practice, while four percent felt that there was no requirement for PAC. None of them chose the option 'must' as a requirement for PAC. Sixty-seven (67.3%, n= 70) feel that PAC is required for patient optimisation and 30.8% feel that it is required to prevent complications. The remaining 1.9% (n=2) feel that PAC causes a delay in the surgery and so it is not required (Figure 1).

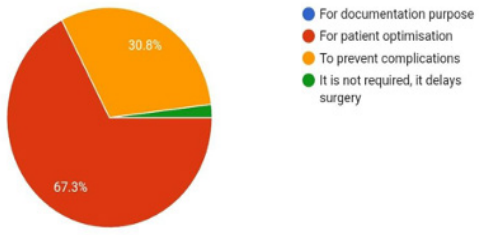

Figure 1: Pie-chart showing responses for requirement of PAC.

Seventy-eight percent (78.8%, n=82) of the residents are aware of the American Society of Anaesthesiologists Physical Status (ASA-PS) classification. Thirteen percent (13.5%, n=14) are not aware of the ASA-PS guidelines. For the question regarding awareness of Enhanced Recovery After

Surgery (ERAS), 86.5% (n=90) are aware of it while 13.5% (n=14) are not aware of ERAS (Figure 2).

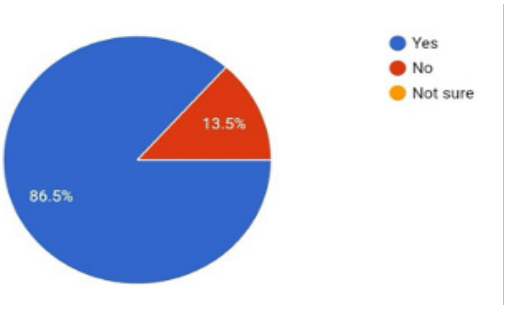

Figure 2: Pie-chart showing responses for awareness regarding ERAS protocol.

Ninety-eight percent (98.1%, n=102) are aware of the preoperative fasting guidelines but 94.2% (n=98) of them still feel that maintenance intravenous fluid is required or beneficial during the fasting period. The most common intravenous fluid administered is Dextrose normal saline (38%, n=39) followed by 0.9% Normal saline (36%, n=37) and Ringer's lactate (24%, n=25).

For the question regarding what medications must be continued on the day of the surgery, thyroxine and anti-hypertensive medication were chosen by most of them, 9.6% and 1.9% of the residents felt that oral hypoglycemic agents and anticoagulants must be continued perioperatively. Forty three percent (43.1%, n=45) of the residents feel that a patient with borderline ECG changes requires preoperative echocardiography, 33.3% (n=35) feel that age more than 60 years require echocardiography, while only 11.8% (n=12) feel that patients posted for major surgery require echocardiography preoperatively (Figure 3).

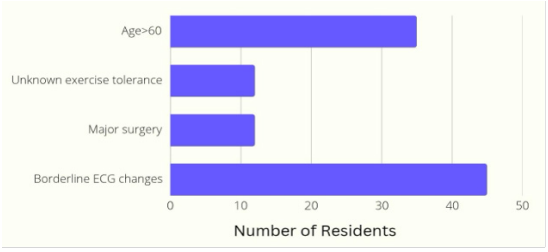

Figure 3: Bar graph showing responses for requirement of preoperative ECHO.

For the question regarding whether preoperative blood transfusion is required or recommended 44% (n=45) of the residents feel that it is not required while 44% (n=45) of the residents are in a dilemma and chose 'maybe' as the response. Twelve percent of the residents feel that there is a requirement for preoperative blood transfusion.

Ninety-eight percent (n=102) of the residents feel that 140-180 milligrams per decilitre is the optimum blood glucose value before taking up the patient for elective surgery.

In the questions related to practices, the plan of the surgery was 'always' discussed with the anaesthesiologists by 39.2% (n=41) of the residents, 33.3% (n=35) often discussed the surgical plan and 27.5% (n=29) only sometimes discussed the surgical plan. Ninety-eight percent (98.1%, n=102) of the residents claim to 'always' follow the PAC advice with a Mean ± SD of 3.98 ± 0.14. Forty-one percent (41.2%, n=43) of the residents 'always' follow ERAS protocol, while 43.1% (n=43) 'often' follow ERAS protocol with a Mean ± SD of 3.14 ± 1.02. Around 6% (n=6) of the residents 'never' follow the ERAS protocol (Figure 4).

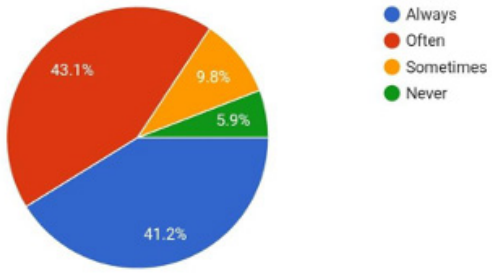

Figure 4: Pie-chart showing responses to practice of ERAS protocol

Pharmacological methods are most commonly (71.2%, n=74) followed by the residents for the attenuation of preoperative anxiety. Pain management strategies are 'always' discussed with the anaesthesiologist by only 29.4% (n=31) of the residents with a Mean ± SD of 2.86 ± 0.92 and 31.4% (n=33) only 'sometimes' discuss pain management strategies. Risk stratification of the patient is done by 54.9% (n=56) of the residents (Mean ± SD of 3.39 ± 0.90) before taking up the patient for surgery and 'often' done by 37.3% (n=39) of the residents while 3.9% (n=4) of the residents 'never' risk stratify patients before surgery (Figure 5).

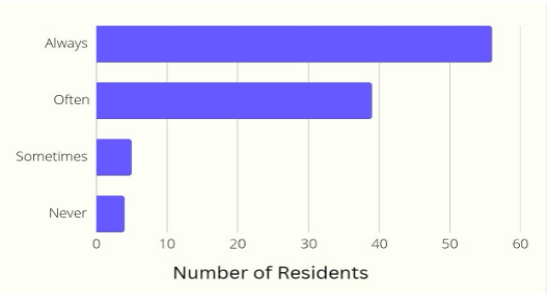

Figure 5: Bar graph depicting practices related to risk stratification.

Majority (51.9%) of the residents administer antibiotics one hour before the skin incision while 40.4% administer antibiotics thirty minutes before skin incision. A combination of drugs is used for anti-aspiration prophylaxis by most (34%) surgical residents and Injection Pantoprazole is most common (32%) amongst the anti-aspiration drugs. Thromboprophylaxis is routinely practiced only by 49% of the residents.

Our study analysed the relationship between awareness and practices related to pre-anaesthetic check-ups among surgical residents using the Chi-square test. Awareness of ASA PS guidelines did not significantly impact adherence to PAC advice (χ^2=0.27, p=0.87). A significant association was found between awareness of the ERAS protocol and its implementation (χ^2=14.65, p=0.002). Awareness of preoperative fasting guidelines was not significantly associated with the perception of IV fluid necessity during fasting (χ^2=0.06, p=0.97). The frequency of discussing surgical plans with anaesthesiologists was not significantly associated with discussions on pain management strategies (χ^2=10.55, p=0.10).

Discussion

Pre-anaesthetic checkup (PAC) is an important aspect in the perioperative management of patients. It forms a basis for identification of various comorbidities, its evaluation and optimisation prior to surgery. It is crucial for optimizing anaesthesia management and ensuring patient safety. Additionally, factors like difficult intubation, aspiration, or adverse drug reactions can be identified. PAC also helps in risk stratification and reduction in morbidity by allowing preoperative optimisation [7]. Perioperative care must involve both the anaesthesiologist and the surgeon. The requirement and importance of PAC is not just as a routine practice but must be done for each and every patient to individualize the case and reduce the overall morbidity.

Knowledge and importance of PAC amongst surgeons, allows for early recognition of comorbidities and appropriate decision making in the surgical management of the patient. It helps to determine high risk patients and surgical feasibility of them.

Although PAC is primarily performed by the anaesthesiologist, the surgeons must also be well versed regarding its importance in optimizing the patient's condition preoperatively. In our study, 96.2% of the surgeons feel that PAC is required. Adequate preoperative optimization prevents intraoperative and postoperative complications.

American Society of Anaesthesiologists Physical Status is a system to assess a patient's preoperative health and predict surgical risk. It categorizes patients into six classes, risk increasing with each class. Awareness of the ASA-PS classification among surgeons would allow risk stratification, predict operative risk and guide clinical decision making [8].

Enhanced Recovery After Surgery (ERAS) Protocol is a multimodal, evidence-based approach to improving surgical outcomes by reducing complications, shortening hospital stays, and promoting faster recovery. It involves preoperative, intraoperative, and postoperative strategies designed to optimize patient health, minimize stress responses, and enhance recovery. Patient Education and counselling, minimising fasting times by carbohydrate drinks up to 2 hours prior to surgery, use of multimodal analgesia, early removal of drains and early mobilization are the components of ERAS [9]. In our institute, the surgeons are well aware of the ERAS protocol, though a lesser number of them are following it. This gap between awareness and practice must be reduced and a better communication with the anaesthesiologists may help reduce this gap.

Apart from ASA-PS classification, surgeons must also be aware of preoperative fasting guidelines. As clear fluids are encouraged up to 2 hours prior to surgery, routine administration of intravenous fluids in the fasting period is not recommended [10]. In our study, surgeons are aware of the fasting guidelines, but the majority of them still practice administration of intravenous fluids in the fasting period.

American Heart Association/American College of Cardiology (AHA/ACC) recommends preoperative echocardiogram in patients with previous or current history of cardiac failure, known or suspected valvular heart disease, unexplained dyspnoea and pulmonary hypertension [11]. In our study, age >60 years as a criteria for ECHO was chosen by 33% of the surgical residents who may not require an ECHO without any valid reason. The dilemma regarding preoperative blood transfusion may be overcome by awareness about transfusion triggers in patients with and without comorbidities. Blood glucose values of 140-180 mg/dl are usually recommended [12], which the surgeons are well aware of and perioperative fluctuations are accordingly managed in consultation with the endocrinologist and the anaesthesiologist.

Communication with the anaesthesiologists and discussion regarding the plan of the surgery is a crucial step for better patient management. As per ERAS, pain management begins preoperatively by counselling and informing the patient about the invasiveness of the procedure and the techniques that would be employed for pain management [13]. Referral to the Pain Clinic may alleviate the anxiety and concerns regarding pain [14]. Risk stratification is an important aspect of PAC that helps to categorize patients into low, intermediate and high risk. At our institute, the residents

often risk stratify the patients and appropriate measures are taken for optimisation and perioperative management. Antibiotics have to be administered within 1 hour of skin incision, which is followed by most residents [15]. Thromboprophylaxis may be started in patients with high risk of deep venous thrombosis either pre or postoperatively [16], and communicated with the anaesthesiologists for appropriate planning of neuraxial procedures.

Limitations

The limitations of this study are that it is a single centre survey and limits generalizability to other hospitals, regions or health care systems.

Conclusion

In this study, we assessed the awareness and practices of surgical residents regarding PAC to evaluate their knowledge, adherence to guidelines, and understanding of its significance in perioperative safety. While most residents recognize the importance of PAC in reducing perioperative risks, there are gaps in knowledge and inconsistencies in practice. These gaps may be abolished by strengthening the interdisciplinary collaboration, conducting regular workshops and simulation-based training on PAC.

A well conducted PAC is essential for enhancing patient safety, minimising risks and avoiding complications, which can be achieved when the surgeons and the anaesthesiologists work as a team. Our findings highlight the importance of reinforcing not just awareness but also the practical application of pre-anaesthetic checkup guidelines among surgical residents.

IRB/IEC Approval

Since it is a questionnaire based observational study, IEC/IRB approval is not required as per our institution.

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