

Pre-anaesthetic Clinic Teaching Programme: New Methods of Teaching Pre-anaesthetic Checkup for Undergraduate Students

Kallepalli Kurmanandh¹, Bh. Kesava Vamsi Krishna², Kota Chandrasekhar³, Bhargavi Sampathirao⁴, Neeharika Dandu⁵, Y Chandana Rekha⁶

¹Professor, Department of Anaesthesiology, Gayatri Vidya Parishad Institute of Health Care and Medical Technology, India.

²Assistant Professor, Department of Anaesthesiology, Gayatri Vidya Parishad Institute of Health Care and Medical Technology, Visakhapatnam, Andhra Pradesh

³Professor & HOD, Department of Anaesthesiology, Gayatri Vidya Parishad Institute of Health Care and Medical Technology, India.

⁴2nd Year Postgraduate, Department of Anaesthesiology, Gayatri Vidya Parishad Institute of Health Care and Medical Technology, India.

⁵1st Year Postgraduate, Department of Anaesthesiology, Gayatri Vidya Parishad Institute of Health Care and Medical Technology, India.

⁶1st Year Postgraduate, Department of Anaesthesiology, Gayatri Vidya Parishad Institute of Health Care and Medical Technology, India.

Received Date: 15/09/2023

Acceptance Date: 16/10/2023

Abstract

Background: In pre-anesthesia evaluation, many interdisciplinary fields are involved, including cardiology, pulmonology, gastroenterology, nephrology, neurology, and pediatrics.^[1] The main tasks of outpatient anaesthesia clinics are to obtain patients' health information via various methods, determine the necessary consultation of related disciplines, formulate the relevant treatment plan around the surgical period of anesthesia, and make patients understand anesthesia work and risk.^[2] Hence, study was initiated with objective to study effect of Pre anaesthetic clinic teaching programme among medical undergraduate students. **Material and Methods:** An educational intervention study done at Gayatri Vidya Parishad Hospital at Visakhapatnam. A total of 60 undergraduates were randomly divided into two groups: pre-anesthetic clinic new teaching group (n = 30) and traditional teaching group (n = 30). The knowledge in the pre-anesthetic evaluation on patients & subsequent plan of anesthesia were evaluated between the two groups of undergraduates. A student feedback form was used to follow up the feedback of the two groups on the satisfaction with the curriculum design. Data was entered in MS Excel and analyzed by using SPSS software version 21. **Results:** The mean scores in the theory and clinical case test in pre anesthesia teaching group (45.1±4.6) were higher than those in traditional teaching group (36.2±5.3). The difference observed between two group was found to be statistically significant. (p<0.05). **Conclusion:** Preanesthetic clinical teaching programme can improve the quality of preanesthetic check up teaching among undergraduate medical students.

Key Words: Preanesthesia clinical teaching programme, preanesthetic checkup, undergraduate, students.

Corresponding Author: Dr. Bh Kesava Vamsi Krishna, Assistant Professor, Department of Anaesthesiology, Gayatri Vidya Parishad Institute of Health Care and Medical Technology, Visakhapatnam, Andhra Pradesh, India.

Email: vamsikrishna884@gmail.com

Introduction

In pre-anesthesia evaluation, many interdisciplinary fields are involved, including cardiology, pulmonology, gastroenterology, nephrology, neurology, and pediatrics.^[1] The main tasks of outpatient anaesthesia clinics are to obtain patients' health information via various methods, determine the necessary consultation of related disciplines, formulate the relevant treatment plan around the surgical period of anesthesia, and make patients understand anesthesia work and risk.^[2] Clinically, not all patients are suitable for anesthesia, and it is common for patients to die owing to improper anesthesia treatment each year^[3,4]. For elderly patients, it not only improves the safety of anaesthesia but also optimizes the process and shortens the duration of hospitalization.^[5] Detailed pre-anesthesia assessments can minimize the risks associated with anaesthesia and surgery.^[6]

Aim and Objective: To study effect of Pre anaesthetic clinic teaching programme among medical undergraduate students.

Methodology

Study design: An educational intervention study

Study setting: Conducted at the Anesthesia department, Gayatri Vidya Parishad Hospital at Visakhapatnam.

Study period: 6 Months, March – August 2023

Study population: A total of 60 undergraduates were randomly divided into two groups: the pre-anesthetic clinic new teaching group (n = 30) and traditional teaching group (n = 30).

- Inclusion criteria:
 - i. Students who gave consent to participate.
 - ii. both male and female.
- Exclusion criteria:
 - i. Students who refused to participate.

Sample size

Calculated based on the following formula. Based on a previous study done by Shao Hua Zheng et al [7] considering the mean test scores between groups

$$n \geq \frac{\left(Z_{1-\frac{\alpha}{2}} + Z_{1-\beta} \right)^2 \left(\sigma_1^2 + \frac{\sigma_2^2}{r} \right)}{(\mu_1 - \mu_2)^2}$$

Alpha (α) = 0.05, Beta (β) = 0.2

Mean in group 1 (μ_1) = 43.39

Standard deviation in group 1 (σ_1) = 6.39

Mean in group 2 (μ_2) = 35.17

Standard deviation in group 2 (σ_2) = 4.56

Ratio (Group 2 / Group 1) = 1.0

The minimum sample size required for each group is 30,

Total sample size=60

Study Procedure

Pre-anesthetic clinical New teaching group:

- In new teaching group the class was of 3 hours.
- 1st hour - students received Powerpoint presentation.
- 2nd hour - consisted of live teaching of PAC clinic components.
- 3rd hour-consisted of demonstration of PAC by qualified Anesthesiologist.
- After the presentations students were divided into 3 groups for group discussions. After the group discussions students were arranged randomly to participate in PAC clinics on

volunteers, perform preoperative examination, evaluate patients before surgery and referring to related consultations.

- Later each student were issued evaluation sheets comprising of questionnaire related PAC case scenarios.

In Traditional teaching group:

- In Traditional teaching group the class was of 3 hours.
- 1st hour – students received PowerPoint.
- 2nd hour – consisted of Video teaching of PAC clinic components.
- 3rd hour – consisted of video demonstration of Pre anesthetic checkup.
- After the presentations students were divided into 3 groups for group discussions. After the group discussions, students were arranged randomly to participate in PAC clinics on volunteers, perform preoperative examination, evaluate patients before surgery and referring to related consultations.
- Later each student were issued evaluation sheets comprising of questionnaire related PAC case scenarios.

Ethical considerations: Written informed consent was obtained from all participants in their own language before starting study.

Study tool: Questionnaire on knowledge in the pre-anesthetic evaluation on patients & subsequent plan of anaesthesia were evaluated between the two groups of undergraduates. A student feedback form was used to follow up the feedback of the two groups on the satisfaction with the curriculum design.

Statistical Analysis: Data was entered in MS Excel and analyzed by using SPSS software version 21. Categorical data was represented as percentages and chi-square test was used to know statistical significance. Quantitative data was represented in means and standard deviation and unpaired t test was used to know statistical significance between two groups. P value <0.05 was considered as statistically significant.

Observations And Results

Table 1: Gender distribution of study population

GENDER	Preanesthesia new teaching group	Traditional teaching group	Total
MALE	18 (60%)	16 (53.3%)	34 (56.6%)
FEMALE	12 (40%)	14 (46.6%)	26 (43.3%)
TOTAL	30 (100%)	30 (100%)	60 (100%)
	p=0.60		

The male to female ratio was 17:13 in prenaesthesia new teaching group and 18: 12 in traditional teaching group.

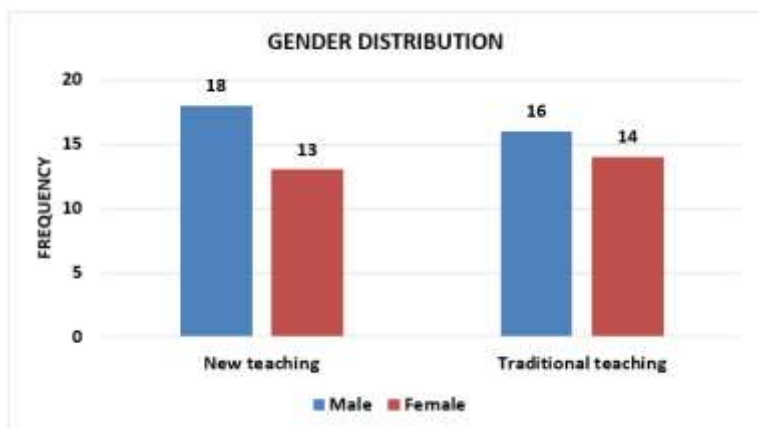


Figure 1: Gender distribution of study population

Table 2: Distribution of study population based on mean age

Age	Preanesthesia new teaching group	Traditional teaching group
Mean	21.53	22.16
Standard deviation	1.24	2.58
	p=0.23	

The mean age among pre anesthesia new teaching group was 21.53 1.24 and among the traditional teaching group was 22.16 2.58. the difference observed between groups was not statistically significant.

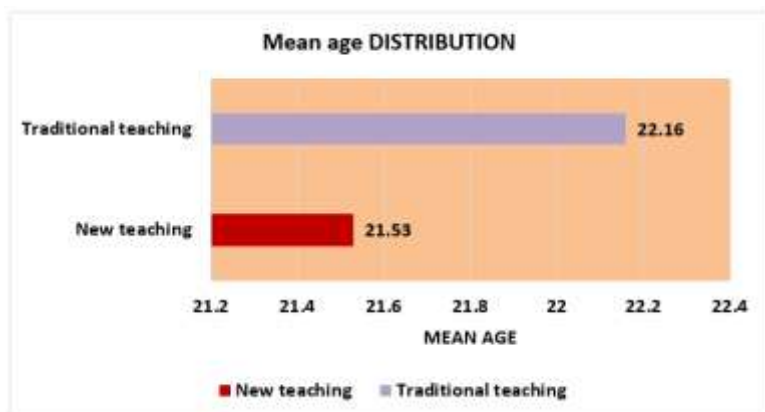


Figure 2: Mean agedistribution of study population

Table 3: Comparison of mean theory test scoresbetween two groups

Group	Mean Theory test score	Standard deviation	P value
Pre anaesthesia teaching group	45.1	4.6	0.001
Traditional teaching group	36.2	5.3	

The mean scores in the theory test in pre anesthesia teaching group (45.1±4.6) were higher than those in traditional teaching group (36.2±5.3). The difference observed between two group was found to be statistically significant.(p<0.05).

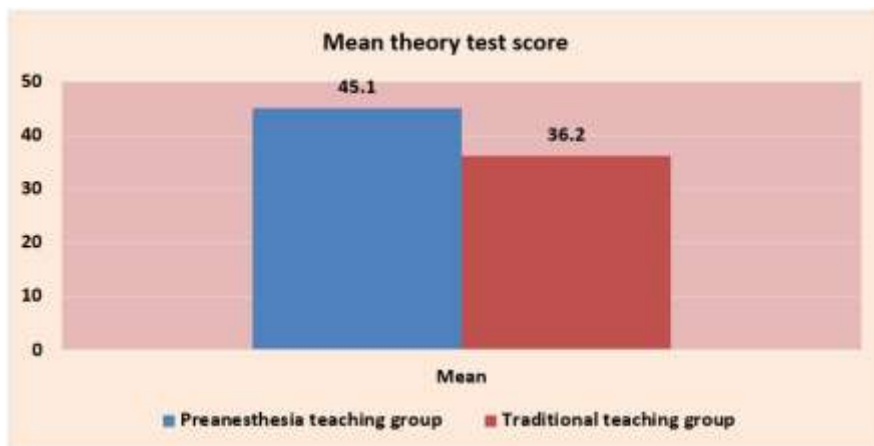


Figure 3: Comparison of mean theory test score between groups

Table 4: Comparison of Clinical case analysis scores between two groups

Group	Mean clinical case analysis score	Standard deviation	P value
Pre anaesthesia teaching group	46.21	3.82	0.001
Traditional teaching group	33.15	2.45	

The mean scores in the clinical case analysis test in pre anaesthesia teaching group (46.21±3.82) were higher than those in traditional teaching group (33.15±2.45). The difference observed between two group was found to be statistically significant.(p<0.05).

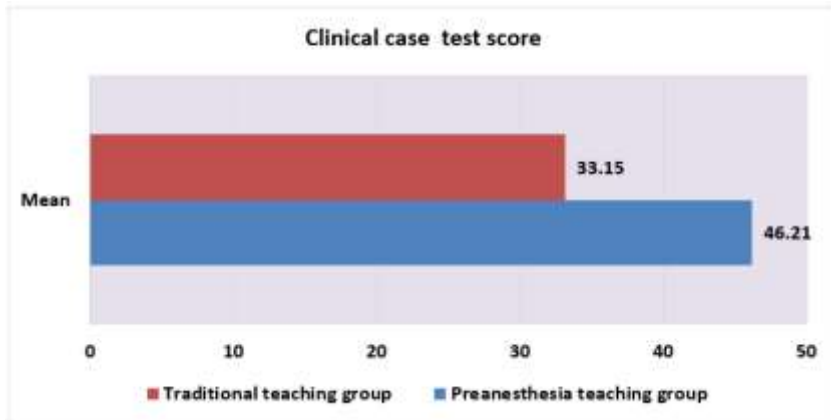


Figure 4: Comparison of mean clinical analysis test score between groups

Table 5: Teaching effect between two groups

Components	Preanaesthesia new teaching group	Traditional teaching group
Interest in learning	25 (83.3%)	14 (46.6%)
Active participation in learning	27 (90%)	15 (50%)
Ability to combine theory knowledge with practicals	26 (86.6%)	16 (53.3%)
Acquirement of core knowledge	28 (93.3%)	18 (60%)

About 83.3% of students in prenaesthesia new teaching group showed interest in learning activity where as 46.6% in traditional teaching group. About 93.3% of students in prenaesthesia new teaching group acquired core knowledge on preanesthesia assessment where as 60% in traditional teaching group.

Discussion

Pre-anesthetic clinics are a new type of outpatient clinics that have become increasingly popular in recent years. In addition to routine anesthesia evaluation for endoscopic diagnosis and contraception, pre-anesthetic clinics are mainly aimed at evaluating patients categorized under ASA levels 1 to 2 and patients whose conditions require elective surgery levels 1 to 2, including healthy young patients, patients needing hernia repair, patients with breast mass and thyroid nodules, and patients undergoing gynecological surgery or small head and neck surgery^[8].

Pre-anesthesia assessment is used to evaluate whether patients could afford the risk of surgery and anesthesia before surgery. It is the basis of anesthesia method selection, anesthesia planning, anesthesia risk management, and postoperative analgesia optimization. Detailed pre-anesthesia assessments can minimize the risks associated with anesthesia and surgery^[9].

For elderly patients, especially those with cardiovascular, cerebrovascular, and respiratory diseases, pre-anesthesia assessment is necessary, as it not only improves the safety of anesthesia but also optimizes the process and shortens the duration of hospitalization^[10].

The mean scores in the theory test in pre-anesthesia teaching group (45.1 ± 4.6) were higher than those in the traditional teaching group (36.2 ± 5.3). The difference observed between two groups was found to be statistically significant. Similar findings were found in a study done by Shao Hua Zheng et al.^[7] The mean scores in the clinical case analysis test in pre anesthesia teaching group were higher than those in traditional teaching group. The difference observed between two group was found to be statistically significant. Similar findings were observed in a study done by Shao Hua Zheng et al.^[7].

About 93.3% of students in prenaesthesia new teaching group acquired core knowledge on preanesthesia assessment where as 60% in traditional teaching group. About 83.3% of students in prenaesthesia new teaching group showed interest in learning activity where as 46.6% in traditional teaching group. These findings were concurrence with findings of study done by Shao Hua Zheng et al.^[7]

On comparison with traditional teaching method, pre anaesthetic clinic teaching method may improve the students interest in learning.

Conclusion

- The mean scores in the theory test and clinical analysis in pre anesthesia teaching group were higher than those in traditional teaching group. The difference observed between two group was found to be statistically significant. ($p < 0.05$).
- Majority (83.3%) of students in prenaesthesia new teaching group showed interest in learning activity where as 46.6% in traditional teaching group.
- Most of the students (93.3%) of students in prenaesthesia new teaching group acquired core knowledge on preanesthesia assessment where as 60% in traditional teaching group.
- Preanesthetic clinical teaching programme improved the quality of preanesthetic check up teaching among undergraduate medical students

References

1. James JP, Thampi SM. Time spent by patients in a pre-anaesthetic clinic and the factors affecting it: An audit from a tertiary care teaching hospital. *Indian J Anaesth* 2018; 62: 16-22.
2. Tobias JD. Preoperative anesthesia evaluation. *SeminPediatrSurg* 2018; 27: 67-74
3. Emanuel A, Macpherseon R. The anaesthetic pre-admission clinic is effective in minimising surgical cancellation rates. *Anaesth Intensive Care* 2013; 41: 90-4.
4. Cooke M, Cuddy MA, Farr B, Moore PA. Cerebrovascular accident under anesthesia during dental surgery. *AnesthProg* 2014; 61: 73-7.
5. Roberts S, Spain B, Hicks C, London J, Tay S. Telemedicine in the Northern Territory: an assessment of patient perceptions in the preoperative anaesthetic clinic. *Aust J Rural Health* 2015; 23: 136-41.
6. O'Connor DB, Cotter M, Treacy O, Owens T, McShane A, Mehigan D, et al. An anaesthetic pre-operative assessment clinic reduces pre-operative inpatient stay in patients requiring major vascular surgery. *Ir J Med Sci* 2011; 180: 649-53.
7. Shao-Hua Zheng, Xiao-Peng Me. Pre-anesthetic clinic internship: new teaching method of pre-anesthesia evaluation for undergraduates. *J Dent Anesth Pain Med* 2021;21(3):207-217.
8. Liebllich S. Preoperative evaluation and patient selection for office-based oral surgery anesthesia. *Oral Maxillofac Surg Clin North Am* 2018; 30: 137-44.
9. O'Connor DB, Cotter M, Treacy O, Owens T, McShane A, Mehigan D, et al. An anaesthetic pre-operative assessment clinic reduces pre-operative inpatient stay in patients requiring major vascular surgery. *Ir J Med Sci* 2011; 180: 649-53.
10. Roberts S, Spain B, Hicks C, London J, Tay S. Telemedicine in the Northern Territory: an assessment of patient perceptions in the preoperative anaesthetic clinic. *Aust J Rural Health* 2015; 23: 136-41.

Conflicts of Interest: No

Source of Funding: Nil