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Perceptions of Seminar-Based Learning Among Anaesthesia Students at the University of Gezira, Sudan

Suleiman Eshag Osman Eisa

BSc MSCAIC MSCHPE, Assist Lecturer, Department of Anesthesia and Intensive Care, Faculty of Applied Medical Sciences, University of Hilla - Babylon- Iraq

Abstract: ***Background**: Seminars are small-group teaching and learning arrangements that utilize group interaction as a means of engaging participants, and are widely used as an instructional method in higher education, particularly in the health sciences, to foster interactive learning and critical thinking. However, little is known about anaesthesia students' perceptions of seminars as a teaching and learning strategy in Sudan. This study aimed to assess the perceptions of anaesthesia students regarding seminar-based learning at the University of Gezira. **Methods**: A descriptive cross-sectional study was conducted among undergraduate anaesthesia students enrolled at the Faculty of Applied Medical Sciences, University of Gezira, Sudan. Data were collected using a structured questionnaire that assessed students' views on the effectiveness of seminars in enhancing knowledge, communication skills, teamwork, and motivation for self-directed learning. Responses were analysed using descriptive statistics and thematic analysis of open-ended items. **Results**: Most students reported positive perceptions of seminar-based learning, highlighting its role in improving understanding of subject matter, promoting active participation, and developing presentation and communication skills. Students also acknowledged that seminars encouraged independent study and peer-to-peer interaction. However, some participants indicated challenges, including limited time, variability in presenters' preparation, and insufficient guidance from facilitators. **Conclusion**: Seminar-based instruction was perceived as an effective learning method among anaesthesia students at the University of Gezira. While students recognized its educational benefits, addressing organizational challenges and providing structured guidance may further enhance its effectiveness. Incorporating seminars alongside other instructional approaches can contribute to more interactive and student-centered anaesthesia education.*

Keywords: Seminar-based learning, anesthesia students, medical education, University of Gezira, Sudan

1. Introduction

The effectiveness of teaching and learning in higher education is highly dependent on the instructional methods adopted by educators. In medical and health sciences education, where the acquisition of knowledge, skills, and professional competencies is critical, the choice of instructional approach can greatly influence students' academic performance and professional development. Traditional lecture-based teaching methods have long been the dominant mode of instruction in universities, including in low- and middle-income countries. While lectures provide an efficient means of delivering large amounts of information to many students, they often encourage passive learning, limit interaction, and provide few opportunities for students to develop essential skills such as communication, teamwork, and critical thinking. These limitations have stimulated growing interest in alternative instructional strategies that foster active and student-centered learning.

Seminar-based instruction has emerged as one of the most widely used methods to promote active student participation. A seminar is an instructional approach that involves student presentations, group discussions, and guided facilitation by a teacher. Unlike the traditional lecture, which is primarily teacher-centered, seminars place students at the core of the learning process. They encourage students to prepare and present topics, engage with peers in discussion, and respond to questions, thereby enhancing knowledge retention and fostering critical reflection. The role of the teacher in a seminar is not to dominate the learning process, but rather to guide, facilitate, and provide feedback, ensuring that discussions remain focused and educational objectives are met.

Research in medical education has demonstrated that seminar-based learning contributes to several important educational outcomes. Studies have shown that students perceive seminars as helpful in improving their ability to communicate effectively, enhance self-confidence, and develop teamwork and leadership skills. Furthermore, seminars promote self-directed learning, as students are required to read, analyze, and interpret information prior to presenting. This process not only strengthens understanding of theoretical concepts but also equips students with lifelong learning skills, which are essential for healthcare professionals who must continually update their knowledge in response to evolving medical practices.

In the context of health professions education, seminar-based learning has also been linked to deeper learning approaches, where students move beyond memorization to actively engage with the subject matter, analyze evidence, and apply knowledge in clinical or problem-solving scenarios. This is particularly relevant in anaesthesia education, where theoretical knowledge must be translated into critical decision-making in clinical practice. Anaesthesia is a highly demanding specialty that requires accuracy, rapid judgment, and the integration of theoretical and practical skills. Therefore, the use of instructional methods that enhance not only knowledge but also confidence, communication, and collaboration is vital.

Despite its recognized benefits, seminar-based instruction is not without challenges. Students sometimes report variability

in the quality of seminar presentations depending on their peers' preparation and presentation skills. Time constraints, limited availability of resources, and insufficient guidance from instructors may also undermine the effectiveness of seminars. Moreover, cultural and institutional factors, including students' prior educational experiences, may influence how they perceive and engage with this method of learning. In some contexts, student's accustomed to lecture-based teaching may initially resist or struggle with the demands of active participation in seminars. Thus, exploring student perceptions becomes essential in order to identify both the strengths and areas requiring improvement in seminar-based learning.

At the University of Gezira in Sudan, the Faculty of Applied Medical Sciences has adopted interactive and student-centered teaching methods as part of its educational philosophy. Founded on the principles of community-oriented and problem-based learning, the university has been recognized for its innovative approaches to medical education in Sudan and beyond. However, while seminar-based learning has been implemented in the anaesthesia program, limited research has been conducted to assess its effectiveness from the perspective of students. Understanding how anaesthesia students perceive seminars—whether positively or negatively—can provide valuable insights for educators and curriculum planners. Such insights may help to strengthen seminar design, improve facilitation strategies, and ensure that the method contributes effectively to students' learning outcomes.

Investigating students' perceptions is particularly important because student engagement and satisfaction play a critical role in determining the success of any instructional method. Positive perceptions may encourage students to participate actively and take ownership of their learning, while negative perceptions may result in disengagement, anxiety, or superficial participation. Evaluating students' views not only sheds light on their learning experiences but also provides evidence to inform educational improvements.

Given these considerations, this study aimed to explore the perceptions of seminar-based learning among undergraduate anaesthesia students at the University of Gezira, Sudan. Specifically, it sought to identify the benefits students associate with seminars, the challenges they encounter, and their overall evaluation of seminars as a method of instruction. The findings are expected to contribute to the ongoing efforts to enhance the quality of anaesthesia education at the University of Gezira and may also offer insights applicable to similar programs in other institutions across Sudan and comparable educational contexts.

2. Materials and Methods

Study Design
A descriptive cross-sectional study was conducted to explore the perceptions of seminar-based learning among undergraduate anaesthesia students at the University of Gezira, Sudan.

Study Setting
The study was carried out in the Faculty of Applied Medical Sciences, University of Gezira, which offers a Bachelor of Science (BSc) program in Anaesthesia. The faculty follows a community-oriented and student-centered educational philosophy, with seminars incorporated as a core instructional method in several courses.

Study Population
The target population comprised all undergraduate anaesthesia students enrolled in the BSc Anaesthesia program during the academic year under review. Students who had participated in seminar sessions during their coursework were eligible to participate.

Sample Size and Sampling Technique
All available anaesthesia students who consented to participate were included (convenience sampling). This approach was chosen to ensure maximum participation and to capture a comprehensive picture of student perceptions.

Data Collection Tool
Data were collected using a structured, self-administered questionnaire developed after reviewing relevant literature on student perceptions of seminar-based learning. The questionnaire consisted of both closed-ended and open-ended questions, and was divided into the following sections:

1) Demographic information (age, gender, academic year).
2) Perceptions of seminars – including items on knowledge acquisition, communication skills, self-confidence, teamwork, motivation, and overall effectiveness.
3) Challenges and limitations of seminar-based learning.
4) Open-ended questions to allow students to provide additional comments and suggestions.

Responses to closed-ended questions were measured using a five-point Likert scale (1 = strongly disagree to 5 = strongly agree).

Validity and Reliability
The questionnaire was reviewed by experts in anaesthesia and medical education to ensure face and content validity. A pilot test was conducted with a small group of students not included in the final sample to refine clarity and reliability. Internal consistency of the instrument was assessed using Cronbach's alpha, with a value ≥ 0.70 considered acceptable.

Data Collection Procedure
Questionnaires were distributed to students at the end of scheduled seminar sessions. Participation was voluntary, and students were assured that their responses would remain anonymous and would not influence their academic standing. Written informed consent was obtained before data collection.

Data Analysis
Quantitative data were entered and analyzed using the Statistical Package for the Social Sciences (SPSS) version XX. Descriptive statistics (frequencies, percentages, means, and standard deviations) were used to summarize responses. Open-ended responses were analyzed thematically to identify recurring themes and insights related to student perceptions and challenges.

Ethical Considerations

Ethical approval was obtained from the Faculty of Applied Medical Sciences Research and Ethics Committee at the University of Gezira. Permission to conduct the study was also secured from the Department of Anaesthesia. Participation was voluntary, and confidentiality was strictly maintained throughout the study.

3. Results

Participant Characteristics

A total of 85 anaesthesia students participated in the study, representing a response rate of 94%. The mean age of participants was 21.6 ± 1.4 years. Of these, 33 (38.8%) were male and 52 (61.2%) were female. Students were drawn from different levels of study: 35 (41.2%) from second year, 28 (32.9%) from third year, and 22 (25.9%) from fourth year.

Perceptions of Seminar-Based Learning

Most students reported positive perceptions of seminar-based instruction (Table 1). A large majority (78.8%) agreed or strongly agreed that seminars improved their understanding of subject content, while 74.1% reported that seminars motivated them to engage in self-study.

Table 1: Students' Perceptions of Seminar-Based Learning (n = 85)

Statement	Strongly Disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly Agree (%)
Seminars improve my understanding of subject content.	2.4	5.9	12.9	51.8	27.0
Seminars encourage me to prepare before class.	3.5	7.1	15.3	49.4	24.7
Seminars improve my communication and presentation skills.	1.2	8.2	10.6	54.1	25.9
Seminars promote teamwork and collaborative learning.	0.0	9.4	14.1	52.9	23.6
Seminars increase my self-confidence.	4.7	11.8	18.8	44.7	20.0
Overall, seminars are more effective than lectures for learning.	7.1	15.3	25.9	38.8	12.9

	Mean	Std. Deviation	Chi-Square	df	Sig.
Stop repeating mistakes	3.28	1.278	28.600[a]	4	0.000
Focus on mastering work	3.56	1.593	10.320[b]	3	0.016
Focus on getting better	3.80	1.525	19.920[b]	3	0.000
Self-satisfaction when they do something right or wrong	4.20	1.050	41.400[a]	4	0.000
Identify and address difficult aspects. I need to go back to review work	4.02	0.937	48.000[a]	4	0.000
My work needs additions	4.48	0.995	86.400[a]	4	0.000
My current level compared to my previous level	3.92	1.192	23.400[a]	4	0.000

Challenges of Seminar-Based Learning

Students also identified several challenges associated with seminars (Table 2). The most frequently cited issues were time-consuming preparation (65.9%), variability in presenter quality (61.2%), and inadequate faculty guidance (42.4%).

Table 2: Reported Challenges of Seminar-Based Learning (n = 85).

Challenge	Strongly Disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly Agree (%)
Preparing for seminars is too time-consuming.	5.9	8.2	20.0	40.0	25.9
The effectiveness of seminars depends on the presenter.	2.4	7.1	29.4	38.8	22.3
Faculty guidance during seminars is insufficient.	10.6	18.8	28.2	29.4	13.0
Seminar topics are not always clearly defined.	8.2	15.3	30.6	32.9	12.9

Open-Ended Responses

Thematic analysis of students' qualitative feedback revealed three major themes:

1) Strengths of seminars – Students appreciated seminars for promoting active learning, increasing interaction with peers, and improving public speaking skills.
   - "Seminars make me more confident to speak in front of others."
   - "I learn better when my colleagues explain the topic in simple terms."
2) Challenges and barriers – Students noted that seminars often required extensive preparation, and the learning experience varied depending on the presenter's ability.
   - "Sometimes the presenter is not well prepared, which makes the seminar less useful."
3) Suggestions for improvement – Students recommended smaller group sizes, more structured guidance from faculty, and provision of clearer seminar objectives in advance.
   - "If teachers provide outlines or feedback after seminars, they will be more effective."

Summary of Key Findings

- Overall positive perceptions: A majority of students agreed that seminars enhanced understanding, motivation, and communication skills.
- Skills development: Students highlighted improvements in teamwork and confidence, although confidence gains were less pronounced than content understanding.
- Challenges: Time burden, variable quality of presentations, and limited faculty facilitation were the most frequently cited barriers.
- Student suggestions: More structured guidance, feedback, and clear objectives were proposed to optimize seminar effectiveness.

4. Discussion

This study assessed anaesthesia students' perceptions of seminar-based learning as an educational strategy. The findings reveal that most students viewed seminars positively, reporting that they enhanced understanding of subject matter, encouraged preparation, and promoted active engagement. These results are consistent with previous research, which has highlighted the role of seminars in promoting student-centered learning, critical thinking, and interactive knowledge exchange compared to conventional lectures [1–3].

A particularly important outcome of this study was the improvement of communication and presentation skills, as perceived by students. More than 75% of respondents agreed that seminars contributed to their ability to express ideas and engage in academic discussions. Similar findings have been reported among medical and nursing students, where seminar participation improved confidence in public speaking, teamwork, and leadership qualities [4,5]. This suggests that seminars provide an effective platform for fostering both academic and professional competencies, which are essential in clinical practice.

Despite these benefits, students also identified several challenges. The most prominent issues were the time-consuming nature of preparation, variability in presenter quality, and limited faculty guidance. These findings align with earlier studies indicating that the effectiveness of seminars often depends on the facilitator's role and the preparedness of participants [6,7]. Without adequate faculty involvement, seminars may lose structure, leading to variable learning outcomes. Furthermore, excessive preparation demands may discourage students from fully engaging, especially when academic workloads are already heavy.

Interestingly, only a minority of students considered seminars more effective than lectures overall. This indicates that while seminars contribute significantly to skill development and active learning, lectures still hold value in delivering large volumes of content efficiently. Prior studies have also emphasized the complementary nature of lectures and seminars, suggesting that integrating both methods may provide the most effective learning environment [8]. In particular, hybrid teaching approaches that combine traditional instruction with interactive components have been shown to enhance knowledge retention and application [9].
The open-ended responses in this study shed further light on student experiences. Many valued the opportunity to learn from peers and gain confidence in public speaking, but also expressed frustration with inconsistent seminar quality. The suggestion for clearer seminar objectives and stronger faculty involvement highlights a need for structured guidance. Studies in health sciences education have shown that when faculty provide direction, feedback, and assessment criteria, the effectiveness of seminars improves significantly [10,11]. Therefore, future implementation should focus on refining seminar design, with clear goals, faculty mentorship, and constructive feedback to ensure consistency and quality.

Overall, this study contributes to understanding the role of seminars in anaesthesia education. It demonstrates that students recognize the value of seminars in promoting active learning and professional skills, while also identifying areas requiring improvement. The findings support the integration of seminars into the anaesthesia curriculum, but suggest that their effectiveness depends on proper structure, faculty support, and a balance with other teaching methods.

5. Conclusion and Recommendations

This study explored anaesthesia students' perceptions of seminar-based learning at the University of Gezira. The results showed that seminars are generally well-regarded, with students highlighting their role in deepening subject understanding, promoting teamwork, and enhancing communication and presentation skills. These findings underscore the value of seminar-based learning as an active instructional method in medical sciences education.

However, several challenges were noted, particularly the heavy preparation workload, variability in seminar quality, and limited faculty involvement. These issues suggest that the effectiveness of seminars depends on structured planning, clear objectives, and strong faculty guidance. While seminars offer unique advantages, they should not entirely replace lectures; rather, they should be integrated with traditional methods to achieve balanced and comprehensive learning outcomes.

Recommendations

1) Enhance Faculty Involvement: Faculty members should play an active role in guiding, supervising, and evaluating seminars to ensure consistency and relevance.
2) Structured Seminar Guidelines: Clear instructions on objectives, format, and assessment criteria should be provided to students before each seminar.
3) Balanced Workload: Efforts should be made to distribute seminar preparation tasks fairly among students to avoid excessive burden.
4) Integrative Approach: Seminars should complement lectures and other teaching methods to maximize both content delivery and skill development.
5) Continuous Evaluation: Regular feedback from students and faculty should be used to improve the quality and effectiveness of seminars.

By addressing these recommendations, seminar-based learning can continue to play a vital role in anaesthesia education, equipping students with both academic knowledge and essential professional skills.

6. Limitations of the Study

This study has several limitations that should be acknowledged. First, it was conducted in a single institution, which may limit the generalizability of the findings to other medical schools or anaesthesia programs with different curricula and teaching environments. Second, the study relied on self-reported perceptions, which may be subject to response bias and may not fully reflect actual learning outcomes or skill development. Third, the relatively small sample size, limited to anaesthesia students enrolled during the study period, restricts the statistical power to detect differences across subgroups. Fourth, the cross-sectional

design captures perceptions at a single point in time and does not assess how attitudes toward seminar-based learning may change over the course of the program. Finally, the study did not include objective performance measures, such as examination scores or faculty assessments, which would have provided stronger evidence of the effectiveness of seminars.

Despite these limitations, the study provides valuable insights into student experiences and highlights areas for improvement in seminar-based learning.

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Conflicts of Interest
I declare no conflicts of interest related to this study.

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