Section: Pediatrics

Original Research Article

EFFECTIVENESS OF FACULTY-GUIDED POSTGRADUATE-LED INSTRUCTION IN BEDSIDE CLINICAL SKILLS TRAINING FOR UNDERGRADUATE MEDICAL STUDENTS

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Received *: 05/07/2024*
Received in revised form *: 26/08/2024*
Accepted *: 12/09/2024*

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DOI: 10.70034/ijmedph.2024.3.173

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

Int J Med Pub Health
2024; 14 (3); 962-965

ABSTRACT

Introduction: Clinical skill training is crucial in medical education, especially within the framework of Competency-Based Medical Education (CBME). Traditional faculty-led methods face challenges due to a shortage of experienced instructors and increasing student numbers. This study evaluates the effectiveness of faculty-guided, postgraduate-led bedside clinical skills training for undergraduate medical students. **Material and Methods:** A quasi-experimental, one-group pretest-post-test design was employed at SVS Medical College, involving 60 undergraduate medical students. Participants underwent a pre-test and a post-test using Objective Structured Clinical Examination (OSCE) scores, with student satisfaction assessed via a five-point Likert scale survey. Data analysis was performed using SPSS version 23.

Results: Significant improvement in clinical skills was observed, with pretest mean scores rising from 2.87 ± 1.03 to 6.15 ± 0.55 ($p < 0.005$). Student perceptions indicated that 54.9% strongly agreed on the clarity of instruction, and 43.3% expressed satisfaction with the learning environment. **Discussion:** The findings demonstrate that faculty-guided, postgraduate-led instruction effectively enhances clinical competencies and fosters a supportive learning environment. This approach benefits both undergraduate students and postgraduate instructors, promoting collaborative learning.**Conclusion**: Faculty-guided, postgraduate-led bedside training significantly improves clinical skills among undergraduates, suggesting it as a viable model for medical education amidst resource constraints.

Keywords: Clinical skills training, Competency-Based Medical Education, postgraduate-led instruction, undergraduate medical education, student satisfaction, Objective Structured Clinical Examination.

INTRODUCTION

Clinical skill training plays a pivotal role in medical education, shaping the competence and preparedness of future healthcare professionals. Competency-Based Medical Education (CBME) is an outcome-based approach widely adopted by medical schools worldwide. It emphasizes competencies as the ultimate outcomes guiding curriculum development, encompassing the abilities physicians must possess to meet patient and societal needs.[1]

Teaching within clinical settings—such as at the bedside or in outpatient clinics—is crucial. These interactions expose students to the culture, social aspects, and professional values of the clinical environment. Traditional methods of bedside clinical skills training often rely heavily on faculty-led instruction. However, the scarcity of seasoned teaching faculty, coupled with the relentless

expansion of medical seats, threatens the preparedness of future healthcare professionals.

Amidst this delicate balance, faculty-guided postgraduate-led clinical training emerges as a promising solution. This approach represents a symbiotic relationship: undergraduates benefit from the expertise of those further along the journey, while postgraduates reinforce their own learning through teaching. Studies have shown that the integration of postgraduate-led instruction enhances the learning experience. Blended teaching methods, which combine traditional and innovative instructional techniques, have been reported to achieve good pedagogical effectiveness in clinical skills training.[2]

This study aims to evaluate the effectiveness of faculty-guided, postgraduate-led instruction in bedside clinical skills training for undergraduate medical students. By evaluating the effectiveness of this instructional method, educators and policymakers can make informed decisions to optimize medical training and improve patient care outcomes. Moreover, research indicates that student satisfaction is closely linked to the effectiveness of the instructional methods and the overall learning environment.[3]

Objectives

- **Primary Objective:** To compare undergraduate medical students' bedside clinical skills before and after the faculty-guided, postgraduate-led instruction. This objective aims to measure the tangible improvements in clinical skills, which are critical for patient care and medical proficiency.
- **Secondary Objective:** To evaluate the perceptions and satisfaction levels of undergraduate medical students regarding the clarity and organization of faculty-guided, postgraduate-led instruction and the learning environment. Understanding student feedback is essential for refining educational strategies and ensuring a supportive learning atmosphere.

MATERIAL AND METHODS

The study employed a quasi-experimental, one-group pretest-post-test design and was conducted in the Department of Pediatrics at SVS Medical College, Mahabubnagar, Telangana. Participants included pediatrics faculty, final-year pediatrics postgraduate students, and undergraduate medical students. Undergraduate students attending clinical rotations during the study period were included, while those with prior exposure to similar instruction on the same subject were excluded. The study spanned a period of five months, with a sample size of 60, calculated to achieve a 95% confidence interval and a 3% error margin. The study received approval from the Institutional Ethics Committee (IEC), and informed consent was obtained from all participants.

Implementation: The implementation phase began with a comprehensive project briefing for all participants. This was followed by specialized training sessions for all participating postgraduate instructors, conducted by faculty members. Subsequently, bedside clinical skill instruction sessions were led by postgraduate students under the supervision of faculty.

Outcome Measures: The primary outcome measure was the improvement in clinical skills, assessed using Objective Structured Clinical Examination (OSCE) scores. The secondary outcome measure focused on evaluating student perceptions and satisfaction with the instruction provided.

Data Collection: Data collection involved a pre-test (T0) to establish baseline clinical skills using standardized OSCE scenarios. A post-test (T1) was conducted at the end of the clinical posting to evaluate improvements. Additionally, participants' perceptions and satisfaction with the instruction were assessed using a five-point Likert scale survey questionnaire.

Data Analysis: Data analysis was conducted using SPSS version 23. The effectiveness of the instruction was assessed by comparing pre- and post-intervention OSCE scores using paired student t-tests, with a significance level set at $p<0.05$ (95% confidence interval). Quantitative analysis of student perceptions and satisfaction levels involved calculating frequency distributions and descriptive statistics, including mean scores and standard deviations.

RESULTS

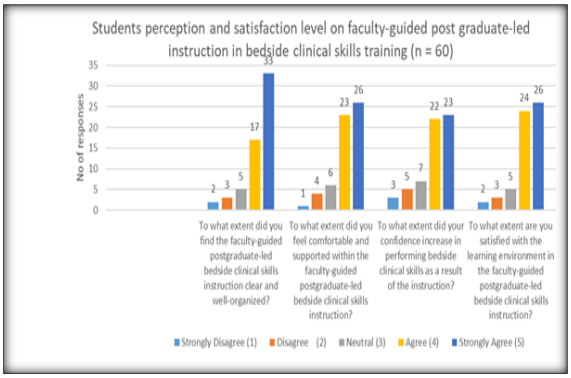

Figure 1: Perception and Satisfaction Levels in Faculty-Guided Post-Graduate-Led Clinical Skills Instruction using five-point Likert scale

Improvement in bedside clinical skills

The study observed a significant improvement in bedside clinical skills following the intervention. The pretest mean score was 2.87 ± 1.03, which increased substantially to a post-test mean score of 6.15 ± 0.55. This represents an approximate 115% increase in test scores. The paired t-test analysis confirmed the statistical significance of this improvement, yielding a highly significant result ($T = 31.61$, $P < 0.005$). (Table 1) These findings

underscore the effectiveness of the faculty-guided, postgraduate-led instruction in enhancing clinical competencies among undergraduate medical students.

Students' perception and satisfaction level on faculty-guided postgraduate-led instruction in bedside clinical skills training (**Figure 1**).

- **Clarity and Organization**: 17 students (28.3%) agreed, and 33 students (54.9%) strongly agreed that the instruction was clear and well-organized.
- **Comfort and Support**: 23 students (38.3%) agreed, and 26 students (43.3%) strongly agreed that they felt comfortable and supported during the instruction.
- **Confidence in Performing Skills**: 22 students (36.6%) agreed, and 23 students (38.3%) strongly agreed that their confidence in performing bedside clinical skills increased as a result of the instruction.

Learning Environment: 24 students (39.9%) agreed, and 26 students (43.3%) strongly agreed that they were satisfied with the learning environment provided.

Table 1: Comparison of Pre- and Post-OSCE Scores on a 10-Point Rating Scale Following Faculty-Guided, Postgraduate-Led Instruction in Clinical Skills Training at the Bedside

Metric	Pretest (Mean ±SD	Post-test (Mean ±SD)	Percentage increase	Paired t Test P value
Test score	2.87±1.03	6.15± 0.55	114.53%	T = 31.61 P <0.005

DISCUSSION

Medical education continually evolves to enhance the clinical competence of future physicians. Traditionally, faculty-led instruction has been the norm for teaching clinical skills to undergraduate medical students. However, with the increasing demand for doctors and limited teaching resources, innovative approaches are needed. This study investigates a novel approach where faculty members guide postgraduates in leading bedside clinical skills training for undergraduate medical students. By evaluating the effectiveness of this instructional method, educators and policymakers can make informed decisions to optimize medical training and improve patient care outcomes.

The role of faculty-guided postgraduate-led instruction in medical education has been increasingly recognized. According to a study by Burgess et al. (2014) in BMC Medical Education, postgraduate students can effectively contribute to the teaching process, offering near-peer learning opportunities that are highly valued by undergraduate students.[4] This approach not only benefits the learners but also enhances the teaching skills and professional development of the postgraduate instructors.

The observed improvement in bedside clinical skills, as evidenced by the significant increase in test scores from a pretest mean of 2.87 ± 1.03 to a post-test mean of 6.15 ± 0.55, underscores the effectiveness of faculty-guided, postgraduate-led instruction. This 115% increase in scores, confirmed by a highly significant paired t-test result ($T = 31.61$, $P < 0.005$), highlights the potential of this instructional approach to enhance clinical competencies among undergraduate medical students.

The findings of this study, which demonstrate a significant improvement in bedside clinical skills following faculty-guided, postgraduate-led instruction, align with several similar studies in the field of medical education. A recent study by Rafiq and Sethi (2024) in BMC Medical Education developed and validated Entrustable Professional Activities (EPAs) for bedside clinical teachers, emphasizing the need for structured training and assessment.[5] This aligns with our findings that structured, faculty-guided, postgraduate-led instruction can significantly enhance clinical competencies. A study by Burgess et al. (2014) in BMC Medical Education found that peer teaching models, including postgraduate-led instruction, significantly improve students' confidence and competence in clinical skills.[4]

In our study, 28.3% of students agreed, and 54.9% strongly agreed that the instruction was clear and well-organized. This is consistent with findings by Spencer (2003) in the BMJ, which emphasized the importance of structured and well-organized bedside teaching for effective learning. Spencer noted that clear and organized instruction enhances students' understanding and retention of clinical skills.[6]

The literature suggests that supportive clinical environments which provide opportunities for students to practice skills and activities are integral to continuous learning.[7,8] Our results showed that 38.3% of students agreed, and 43.3% strongly agreed that they felt comfortable and supported during the faculty-guided, postgraduate-led instruction. This aligns with the study by Burgess et al. which found that peer-led teaching models, including postgraduate-led instruction, create a supportive learning environment that enhances students' comfort and engagement.[4]

In our study, 36.6% of students agreed, and 38.3% strongly agreed that their confidence in performing bedside clinical skills increased. This finding is supported by Secomb (2008) in the Journal of Clinical Nursing, which reported that peer teaching models significantly improve students' confidence and competence in clinical skills.[9] The increase in confidence observed in our study underscores the effectiveness of postgraduate-led instruction in building students' clinical capabilities.

Our study found that 39.9% of students agreed, and 43.3% strongly agreed that they were satisfied with the learning environment. This is in line with the study by Blaschke et al. (2022) in BMC Medical Education, which highlighted the importance of a supportive and engaging learning environment in bedside teaching. Blaschke et al. emphasized that a positive learning environment is crucial for effective clinical education and student satisfaction.[10] Moreover, the high levels of student satisfaction with the learning environment highlight the importance of creating a supportive and engaging atmosphere for clinical education. This is consistent with the principles of adult learning theory, which emphasize the need for a positive and interactive learning environment (Knowles, 1980).[11]

The study on faculty-guided, postgraduate-led bedside clinical skills training in our institute provides valuable insights but has several limitations. The small sample size of 60 participants may limit the generalizability of the findings, as a larger cohort would enhance the robustness of the data. Additionally, the single-institution focus might not fully reflect the experiences of students at other medical schools; multi-center studies are needed to validate results across diverse settings. The reliance on self-reported data introduces potential bias related to students' perceptions and satisfaction, highlighting the need for long-term follow-up studies to assess the sustained impact. Furthermore, the absence of a control group complicates the isolation of effects specific to the postgraduate-led approach. Lastly, variability in instruction among different postgraduate instructors could impact consistency, suggesting that standardization would be beneficial.

CONCLUSION

The findings of our study provide robust evidence supporting the implementation of faculty-guided, postgraduate-led bedside clinical skills training. This instructional approach not only enhances clinical competencies but also fosters a positive and supportive learning environment, ultimately contributing to the overall development of medical students. Future research should continue to explore and refine these educational strategies to further optimize medical training.

Declaration

This was a part of research project for Advance Course in Medical Education, 2024 A Batch, Jawaharlal Medical College, KAHER, Belagavi, Karnataka.

Acknowledgement: Our sincere thanks to Dr. Shilpa M. Bhimalli, Professor of Anatomy, JNMC, KAHER for her guidance, faculty and postgraduate students of Pediatrics, and undergraduate students of SVS Medical College and Hospital, Mahabubnagar, Telangana.

Funding: Nil

Conflict of interest: Nil.

REFERENCES

1. Alharbi, N.S. Evaluating competency-based medical education: a systematized review of current practices. BMC Med Educ 24, 612 (2024). https://doi.org/10.1186/s12909-024-05609-6
2. He, Z., Li, H., Lu, L. et al. The application of blended teaching in medical practical course of clinical skills training. BMC Med Educ 24, 724 (2024). https://doi.org/10.1186/s12909-024-05730-6.
3. Stathas, S., et al. (2024). Teaching medical students' ultrasound-guided needle aspiration of synthetic cysts: effect of a formalin-embalmed cadaver simulation model. BMC Medical Education.
4. Burgess, A., McGregor, D., & Mellis, C. (2014). Medical students as peer tutors: A systematic review. BMC Medical Education, 14, 115.
5. Rafiq, A., & Sethi, A. (2024). Entrustable professional activities for bedside clinical teachers. BMC Medical Education, 24, Article number: 887.
6. Spencer, J. (2003). Learning and teaching in the clinical environment. BMJ, 326(7389), 591-594.
7. Pearcey P, Elliott B (2004). Student impressions of clinical nursing. Nurse Education Today 24: 382-387
8. Henderson A, Heel A, Twentyman M, Lloyd B (2006). Pre-test and post-test evaluation of students' perceptions of a collaborative clinical education model on the learning environment. Australian Journal of Advanced Nursing 23(4): 8-13
9. Secomb, J. (2008). A systematic review of peer teaching and learning in clinical education. Journal of Clinical Nursing, 17(6), 703-716.
10. Blaschke, A.-L., Rubisch, H. P. K., Schindler, A.-K., Berberat, P. O., & Gartmeier, M. (2022). How is modern bedside teaching structured? A video analysis of learning content, social and spatial structures. BMC Medical Education, 22, Article number: 790.
11. Knowles, Malcom. S. (1980). The Modern Practice of Adult Education: From Pedagogy to Andragogy. Englewood Cliffs, NJ: Cambridge Adult Education.