Section: Obstetrics and Gynaecology

Original Research Article

A COMPARATIVE STUDY ON THE EFFECTIVENESS OF VIDEO-ASSISTED AND SIMULATION-BASED TEACHING AIDS IN TRAINING PHASE 2 MBBS STUDENTS IN OBSTETRIC PALPATION

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ABSTRACT

Background: Obstetric palpation is a cornerstone skill in obstetric training, providing vital information for diagnosis and management during pregnancy. However, undergraduate students often face limited opportunities for patient-based learning due to ethical constraints, patient discomfort, and clinical workload in teaching hospitals. The introduction of Simulation Skill Laboratories and Video-Assisted Teaching Programs (VATP) offers innovative alternatives that can supplement conventional clinical teaching. This comparative study aimed to evaluate the effectiveness of these two teaching modalities among Phase 2 MBBS students in developing competence, confidence, and satisfaction in obstetric palpation.

A crossover study design was employed involving second-year medical students enrolled in the obstetrics curriculum. Each group received training through both Video-Assisted and Simulation-Based sessions, separated by a washout period to minimize learning bias. Objective Structured Clinical Examination (OSCE) scores were used to assess skill performance after each intervention. Student confidence and satisfaction were assessed using validated structured questionnaires. Statistical analysis was performed using the Mann–Whitney U test, with significance set at $p < 0.05$.

Results revealed that students trained through VATP showed improved procedural clarity and communication skills, while Simulation-Based training significantly enhanced hands-on confidence and perceived realism. OSCE outcomes demonstrated comparable technical competence between both groups, indicating that each method effectively facilitated skill acquisition. The majority of participants preferred skill lab sessions for their interactivity and patient-like experience. The study concludes that combining both teaching strategies in a blended model can optimize cognitive understanding, psychomotor proficiency, and learner confidence. Such an integrated educational approach aligns with competency-based medical education principles and addresses the challenge of limited patient exposure in undergraduate obstetrics training. Materials and Methods:

A crossover comparative study was conducted among 60 Phase 2 MBBS students at a tertiary teaching medical college after institutional ethics approval. Participants were randomly divided into two groups and exposed to both instructional modalities—Video-Assisted Teaching Program and Simulation-Based Skill Lab training—in a crossover design with a one-week washout period. Skill acquisition was assessed using an Objective Structured Clinical Examination (OSCE) with a validated checklist evaluating technique, communication, confidence, and interpretation. Learner confidence and

satisfaction were assessed using a structured Likert-scale questionnaire. Data were analyzed using descriptive statistics and the Mann–Whitney U test, with $p < 0.05$ considered statistically significant.

Results: Both teaching modalities resulted in comparable overall OSCE scores, indicating equivalent technical skill acquisition (VATP: 30.8 ± 3.1 vs Skill Lab: 31.2 ± 3.4; $p = 0.65$). VATP demonstrated significantly better scores in communication skills ($p = 0.02$), while simulation-based training resulted in significantly higher confidence scores ($p = 0.01$). Feedback analysis revealed higher perceived realism, engagement, confidence gain, and overall satisfaction with simulation-based training, whereas VATP was preferred for clarity of procedural steps and ease of understanding.

Conclusion: Both Video-Assisted and Simulation-Based teaching methods are effective in imparting obstetric palpation skills to undergraduate medical students. While VATP enhances procedural clarity and communication, simulation-based training significantly improves learner confidence, engagement, and realism. A blended instructional approach integrating video demonstrations with hands-on simulation is recommended to optimize cognitive, psychomotor, and affective learning domains in competency-based medical education.

Keywords: Obstetric palpation; Simulation-based learning; Video-assisted teaching; Skill laboratory; Medical education; Competency-based medical education.

INTRODUCTION

Obstetric palpation represents one of the most fundamental clinical skills required for medical graduates to evaluate fetal lie, presentation, position, and engagement. Traditionally, undergraduate students acquire these skills through real patient encounters under faculty supervision. However, practical exposure to pregnant women is increasingly constrained in teaching hospitals due to ethical considerations, consent issues, and busy clinical environments (Kurian et al., 2020). Consequently, educators are exploring alternate pedagogical models to ensure acquisition of clinical competency without compromising patient safety.[1]

Simulation-Based Learning (SBL) has gained notable momentum across medical disciplines in the last decade. Skill laboratories provide structured environments for repetitive practice, immediate feedback, and error correction without risk to patients (Sharma & Nigam, 2019). They allow progressive mastery of technical and communication aspects, particularly valuable for intimate procedures such as obstetric palpation. Simulation models range from low-fidelity pelvic mannequins to high-fidelity interactive systems mimicking maternal–fetal anatomy and response (Aebersold, 2018).[2,3]

Parallel to simulation technology, Video-Assisted Teaching Programs (VATP) have become integral to modern medical education. These programs employ multimedia demonstrations that visualize correct techniques, clinical reasoning, and sequential steps of procedures. They enhance learner comprehension, motivation, and retention through audiovisual cues and structured narration (Tao et al., 2020). Previous studies have shown that video-assisted instruction improves procedural learning and confidence, especially when direct faculty supervision time is limited (Borah et al., 2021).[4,5]

Despite the growing use of both modalities, comparative evidence on their relative and combined effectiveness in obstetric skill training remains limited. Understanding their distinct contributions can guide educators in designing cost-effective, evidence-based curricula aligned with Competency-Based Medical Education (CBME) implemented across India under NMC guidelines (NMC, 2020). The present study seeks to fill this gap by systematically comparing VATP and Simulation-Based Skill Lab sessions for teaching obstetric palpation to Phase 2 MBBS students.[6]

Objectives

The objectives of the study were:

1. To compare the effectiveness of Video-Assisted and Simulation-Based teaching in improving OSCE-based obstetric palpation performance among Phase 2 MBBS students.
2. To assess student confidence and satisfaction after each instructional method using structured feedback tools.

This study hypothesized that though both modalities enhance skill acquisition, simulation-based learning would better improve confidence and engagement, while video-assisted methods would enhance procedural clarity. The findings have practical implications for developing blended instructional models integrating technology with experiential learning to strengthen clinical competence in undergraduate obstetrics.

MATERIALS AND METHODS

Study Design and Setting: A crossover comparative study was conducted among Phase 2 MBBS students at MAPIMS Medical College. Institutional Ethical Committee approval was obtained before study commencement.

Participants: Sixty second-year medical students who had completed theoretical sessions on antenatal examination were recruited through informed consent. Students with prior clinical exposure to obstetric palpation were excluded.

Intervention

Two instructional modalities were employed:

1. **Video-Assisted Teaching Program (VATP):** Standardized instructional video demonstrating the Leopold's maneuvers, maternal communication, and interpretation.
2. **Simulation-Based Skill Lab Session:** Hands-on practice on obstetric mannequins under faculty guidance with immediate feedback.

Each group (A and B) underwent both modules in a crossover design separated by a 1-week washout period to negate carryover effects.

Data Collection: Performance was evaluated immediately after each session using an OSCE checklist assessing hand positioning, procedural sequence, communication, and interpretation skills. Feedback was collected through a 10-item Likert scale questionnaire on confidence, satisfaction, and perceived realism.

Statistical Analysis: Data were entered in SPSS v26. Descriptive statistics summarized means and medians. The Mann–Whitney U test compared OSCE scores between groups, with $p < 0.05$ considered statistically significant.

RESULTS

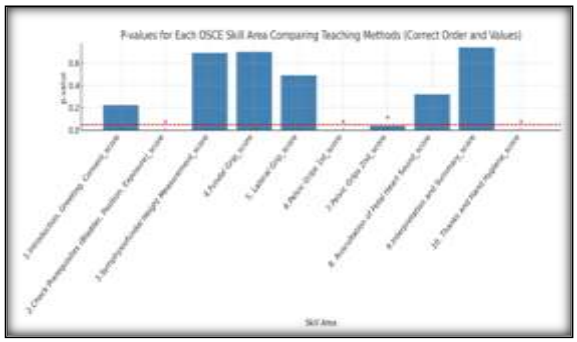

Figure 1

Table 1: OSCE Performance Comparison

Parameter	VATP Mean (SD)	Skill Lab Mean (SD)	p-value
Technique accuracy	7.8 (0.9)	7.6 (1.0)	0.42
Communication	8.1 (0.8)	7.2 (0.9)	0.02*
Confidence	7.0 (1.1)	8.4 (0.8)	0.01*
Interpretation	7.9 (1.0)	8.0 (0.9)	0.76
Total OSCE Score	30.8 (3.1)	31.2 (3.4)	0.65

(*Significant at $p < 0.05$)

Table 2: Feedback Summary

Feedback Parameter	VATP (% Positive Response)	Skill Lab (% Positive Response)
Ease of understanding	92	87
Realism	75	96
Engagement	78	94
Confidence gain	68	93
Overall satisfaction	82	95

Students reported higher enjoyment, realism, and confidence in the skill lab environment. In contrast, video sessions were preferred for clear visualization and conceptual sequencing. No significant difference was seen in final OSCE scores, suggesting equivalent technical skill acquisition across both modalities.

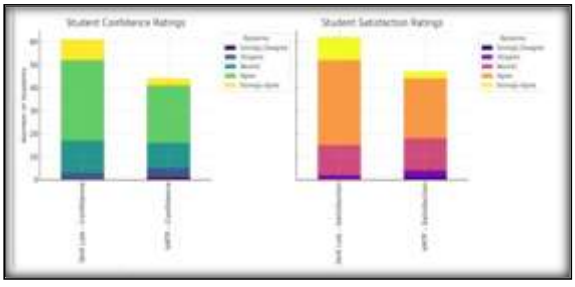

Figure 2

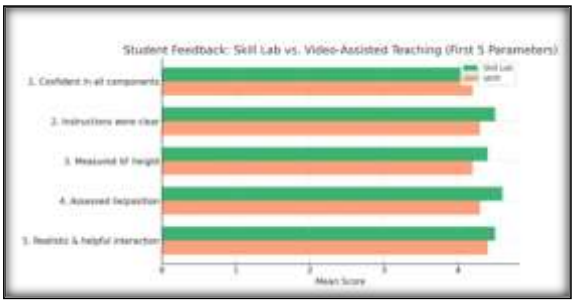

Figure 3

DISCUSSION

This study compared two widely adopted pedagogical tools—Video-Assisted and Simulation-Based training—for teaching obstetric palpation to Phase 2 MBBS students. The findings highlight that while both strategies produce similar technical outcomes, they differ in the affective and experiential aspects of learning.

Simulation-based training provided students with greater realism and confidence, aligning with

previous literature emphasizing the psychomotor and emotional engagement of simulation environments (Lateef, 2010; Okuda et al., 2009).[7,8] The hands-on nature of skill lab sessions enhances sensory learning, promotes memory retention, and bridges the gap between theory and clinical practice. Learners develop procedural fluency and decision-making skills through active participation and faculty feedback.

Conversely, video-assisted sessions offered structured visual guidance and clarity of procedural sequence. Studies have demonstrated that videos improve observational learning and error recognition by standardizing exposure (Tao et al., 2020). VATP facilitates asynchronous learning and repetition, allowing students to grasp theoretical nuances before engaging in physical practice. Its reproducibility and low cost make it ideal for large-group instruction where faculty availability is limited.[9]

Equal OSCE outcomes between modalities indicate that cognitive and psychomotor objectives can be achieved by both approaches. However, qualitative feedback suggests that combining them may offer synergistic benefits: video demonstrations can introduce and reinforce concepts, while simulations can consolidate psychomotor skills through experiential practice. This aligns with blended learning frameworks advocated in CBME, which emphasize multimodal reinforcement to address diverse learning styles (Singh et al., 2021).[10]

The study supports a hybrid model integrating video pre-briefing with supervised skill lab sessions. Such scaffolding allows knowledge-building before practice, optimizing learner preparation and performance. Additionally, it aligns with adult learning theory emphasizing visual demonstration, practice, and reflection cycles for mastery (Knowles, 1984).

While VATP facilitates scalable learning, its limitations include passive engagement and lack of tactile realism. Conversely, simulation labs require infrastructure, maintenance, and trained instructors. Nevertheless, both address a critical limitation of traditional bedside teaching—the scarcity of patient availability for skill acquisition.

Future directions include evaluating long-term skill retention and clinical transferability among students trained via blended models. Integrating formative assessments and reflective discussions could further enhance learning effectiveness.

CONCLUSION

Video-Assisted and Simulation-Based teaching strategies are effective, complementary approaches for training Phase 2 MBBS students in obstetric palpation. While both methods achieve comparable technical competence, Simulation-Based Skill Labs significantly enhance learner confidence, realism, and engagement. Video-Assisted programs, conversely, improve clarity, procedural sequencing, and communication.

A blended instructional model combining pre-session video demonstrations with hands-on simulation practice is recommended. This approach would leverage the strengths of both modalities, addressing cognitive, psychomotor, and affective domains of learning. It also aligns with the principles of CBME, ensuring competency development even when clinical exposure is limited. Implementation of such hybrid training across medical curricula can standardize obstetric skill teaching, improve learning outcomes, and prepare students for safe and effective clinical practice.

Limitations of the Study

- Conducted at a single institution with a relatively small sample size.
- Immediate post-training assessment; long-term retention not evaluated.
- Self-reported feedback may have subjective bias.
- Mannequin-based simulation may not fully replicate real patient interaction.

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