Original Article

Introducing Multiple Assessment in Skill Training Modules on the Skill "Anterior Nasal Packing"

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Abstract

Background : Introducing multiple assessment methods in anterior nasal packing training enhances proficiency and ensures comprehensive competency. This critical procedure for managing epistaxis requires precise technique and anatomical understanding. Traditional single-format assessments may not fully capture skill development.

Aims and Objectives : A multi-method approach – using formative assessments, peer reviews, self-assessments, and OSCEs at various learning stages – offers a more robust evaluation.

Materials and Methods : Formative assessments provide continuous feedback for skill refinement. Peer reviews encourage collaborative learning and critical evaluation. Self-assessments promote reflection, helping learners identify strengths and areas for improvement. OSCEs offer standardized, objective competency measures.

Conclusions : This diverse assessment strategy supports different learning styles, deepens understanding and ensures learners are prepared for real-world clinical scenarios. By combining theory, technical skill and adaptability, it produces confident, competent practitioners. Ultimately, this holistic approach improves training outcomes and fosters excellence in clinical practice.

Key words : Anterior Nasal Packing, Skill Training, Multiple Assessment Method, Reflective Practice, OSCEs evaluation, Clinical Skills Development, Multi-Faceted Evaluation.

The National Medical Commission (NMC) introduced Competency-Based Medical Education (CBME) in 2019, requiring Indian medical graduates to demonstrate practical competencies based on Miller's Pyramid. To support this, skill labs were mandated in all medical colleges, offering structured, supervised training with feedback. This study aims to develop a validated skill-specific module for anterior nasal packing using low-stakes, multiple assessments with timely, constructive feedback. This approach promotes self-reflection, gradual skill acquisition, and better retention. It aligns with CBME's goal of producing confident, practice-ready graduates capable of applying skills effectively in real-world clinical settings.

Review of Literature :

Simulation is a key learning strategy in medical education, allowing students to engage in real-life

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Editor's Comment :
■ Integrating multiple assessments in skill lab training enriches student learning by offering a comprehensive, engaging, and real-world-oriented evaluation process. When guided by clear objectives, balanced methods, and continuous feedback, this approach not only strengthens practical competencies but also elevates the overall quality of education

clinical scenarios within a controlled, supervised environment[1,2]. It supports the development of critical skills such as communication, ethical reasoning, and crisis management[3,4]. The National Medical Commission (NMC) mandates skill lab training using structured modules to ensure standardized, competency-based education[6]. With Competency-Based Medical Education (CBME), assessment and feedback have become central, leading to the adoption of Programmatic Assessment (PA) – a method involving multiple, low-stakes assessments over time with constructive feedback, enhancing deeper learning[7].

AIMS AND OBJECTIVES

To introduce multiple assessment strategies (including WPBA components) in teaching anterior nasal packing in the skill lab.

(1) Develop a content-validated skill module for

anterior nasal packing.

(2) Assess learners after didactic sessions.

(3) Assess learners post-practice sessions.

(4) Analyze feedback from faculty and students post-certification.

MATERIALS AND METHODS

The Methodology flow is as below :

Assessment Method	Group A (NMC Module)	Group B (Present Study)
Making of the Checklist for the module	No Validation	Validation by faculty members
Pre-test	Both Groups subjected to the same Pre-test	
Briefing of the students with the Checklist	Yes	Yes
PPT presentation about the Theoretical component of the module	No assessment	MCQ's based assessment
Demonstration of the Video component of the Module	No assessment	MCQ's based assessment
Practical training sessions of the students on the model for Anterior nasal packing	No assessment	Formative Assessment of the students after training sessions using DOPS
OSCE based summative assessment after adequate practice sessions - Certification.	Both Groups subjected to similar OSCE based summative assessment	
Post-test	Both Groups subjected to the same Post-test	
Both the groups will subsequently be trained in both the methods		
Feedback given	Yes	Yes

Data Analysis : Both qualitative and quantitative data analysis was done. Feedback analysis qualitative and assessment comparison 'T' test and ANOVA.

OBSERVATIONS

Faculty members (n=3) expressed positive feedback on the new skill module, agreeing that the objectives and checklist were adequate with no changes needed. They praised its practical approach, interactive elements, and real-world relevance, noting it effectively enhances student engagement, critical thinking and readiness for professional skill application.

In the present study we had taken a total of 50 students divided equally in two groups – Group – A and Group B (Table 1).

Students of both the groups were made to give a Pre-

test and students of both the groups scored 75% in an MCQ based test consisting of 20 questions (Table 2).

Students of Group B were made to give a Post-test following PPT presentation (MCQ Based), Video demonstration (MCQ Based) and after Practice sessions which was Mini-Cex based. Students of Group B scored 65%, 70% and 75% respectively (Table 3).

Since students of Group B was not subjected to Post test after PPT presentation, Video demonstration and after Practice sessions the average number of attempts taken by them to complete the skill as per OSCE checklist was 4.5 as compared to Group B who were subjected to Post test after each stage who took on an average of 2.5 attempts to complete the skill as per OSCE checklist, which is a significant difference (Table 4).

After the summative assessment students of both the groups were then subjected to a post test and average score of all the students in group A was 80% and that of Group B was 95% in an MCQ based evaluation (Table 5).

Statistical Analysis :

Average scores after Post-test of group A is 80 out of 100 in an MCQ based examination, the standard deviation is 16.67, and the p value is 0.003 while average

Table 1 — Details of the students participated in the study (MBBS 2021-22 batch)			
Group A (n=25)		Group B (n=25)	
Male	11	Male	11
Female	14	Female	14

Table 2 — Average Pre-test scores of the two groups	
Group A (n=25) Max Marks: 100	Group B (n=25) Max Marks: 100
75 (75 %)	75 (75%)

Table 3 — Average scores after PPT presentation and Video demonstration and Practice sessions (Only Group B)	
Group B (n=25) Max Marks: 100	
PPT presentation (MCQ Based)	65%
Video demonstration (MCQ Based)	70%
Practice sessions (DOPS/ Mini-Cex)	75%

Table 4 — Number of attempts taken by the students for completing the skill as per OSCE checklist (Practice sessions)	
Group A (n=25)	Group B (n=25)
4.5	2.5

Table 5 — Average scores after Post-test of both groups	
Group A (n=25) Max Marks: 100	Group B (n=25) Max Marks: 100
80 (80%)	95 (95%)

scores after Post-test of group B is 95 out of 100 in the MCQ based examination the standard deviation is 14.25 and the p value is 0.0015. The p-value for the test comparing the average scores of Group A and Group B, given the provided standard deviations and sample sizes, is approximately 0.0015. This indicates a significant difference between the two groups' scores at a common significance level (eg, 0.05).

DISCUSSION

In skill training, particularly within skill labs, the implementation of multiple assessment strategies is pivotal. These assessments evaluate student progress, proficiency and preparedness while also offering insights into the effectiveness of training modules and highlighting areas for improvement. This discussion explores various assessment types used in skill training, their benefits, challenges, and best practices for implementation.

Multiple faculty feedback enhances skill acquisition by providing diverse perspectives and nuanced guidance (Hattie & Timperley, 2007)[8]. Faculty with different expertise can identify varied strengths and weaknesses, enriching the learning experience (Sadler, 1989). Such varied input fosters a well-rounded skill set and encourages critical thinking and adaptability (Nicol & Macfarlane-Dick, 2006; Boud & Molloy, 2013). Consistent feedback from multiple sources also aids retention through repetition and reinforcement (Shute, 2008).

Theoretical training using PowerPoint (PPT) presentations improves skill acquisition by presenting information in a clear, organized manner (Mayer, 2009). Visual aids such as diagrams and images cater to visual learners and help simplify complex concepts (Gagné, *et al* 2005)[10]. Bullet points and concise text highlight key concepts and improve focus and retention (Sweller, *et al* 2011)[11]. Interactive PPT elements like embedded quizzes further enhance engagement and promote active learning (Clark & Mayer, 2016)[12]. PPTs are also flexible, easily updated, and tailored to specific learner needs.

Video demonstrations enrich skill training by delivering dynamic, visual, and auditory content that caters to diverse learning styles (Mayer, 2009). Watching skilled performers allows learners to observe critical techniques and replicate them more accurately (Bandura, 1986)[13]. Features like pausing, replaying, slow motion, and close-ups help students grasp difficult steps (Sweller, *et al* 2011)[11]. Videos also reduce learning anxiety by allowing learners to review at their own pace (Clark & Mayer, 2016)[12], which is especially helpful in self-directed learning environments.

A variety of assessments enhance skill training by offering comprehensive evaluation and promoting continuous learning:

Formative Assessments (eg, DOPS, Mini-CEX) monitor progress and provide real-time feedback, helping identify learning gaps and improve outcomes (Black & Wiliam, 1998)[14]. Structured feedback methods like the Sandwich technique or Pendleton's Rules enhance effectiveness (Hattie & Timperley, 2007)[8].

Summative Assessments evaluate competence at training completion. Harlen and James (1997)[16] stressed combining them with formative assessments for best results. Brookhart (2010)[17] recommended scenario-based tasks to assess higher-order thinking.

Performance-Based Assessments evaluate real-world skill application, fostering deeper learning and professional readiness (Wiggins, 1993)[18]; Gulikers, *et al* 2004)[19].

Portfolio Assessments offer a holistic view of long-term learning and development.

Together, these assessment types ensure thorough, practical and reflective evaluation of student competencies.

Benefits of Multiple Assessments :

Multiple assessments offer several advantages —

Holistic Evaluation across cognitive, psychomotor, and affective domains (Black & Wiliam, 1998)[14].

Enhanced Learning through ongoing feedback and adaptive teaching (Hattie & Timperley, 2007)[8].

Adaptability and Personalization in instructional methods (Tomlinson, 2001)

Increased Engagement from varied and interactive assessments (Fredricks, *et al* 2004)[15].

Challenges in Implementing Multiple Assessments :

Despite their benefits, multiple assessments pose several challenges —

Resource Intensiveness in terms of time, faculty, and infrastructure (Brookhart, 2010)[17].

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Consistency and Standardization difficulties in subjective assessments (Sadler, 2005).

Student Anxiety due to frequent evaluations (Cassady & Johnson, 2002)[20].

Technical and Logistical Issues in scheduling, assessment execution, and result tracking (McMillan, 2013).

Best Practices for Implementation :

To overcome these challenges, several best practices are recommended —

Clear Objectives and Criteria : Marzano (2006) emphasized defining clear learning targets and assessment criteria.

Balanced Assessment Plans : Guskey (2003)[21] recommended integrating formative and summative assessments to support both learning and accountability.

Continuous Feedback : Shute (2008) stressed the value of timely, specific feedback in enhancing student outcomes.

Training and Support for Instructors : Darling-Hammond & Richardson (2009)[22] highlighted the need for faculty development to ensure quality assessment.

Student Involvement : Boud & Falchikov (2007) advocated involving students in their assessment process to enhance autonomy and engagement.

CONCLUSION

The use of multiple assessments in skill labs provides a robust framework for evaluating and enhancing student learning. Despite implementation challenges, their benefits – holistic evaluation, improved engagement, adaptability, and deeper learning – are substantial. By following best practices such as setting clear objectives, using balanced assessment plans, providing continuous feedback, training instructors, and involving students, educators can optimize learning outcomes. This comprehensive approach better prepares students for real-world clinical practice while fostering meaningful, engaged learning. Skill labs that adopt these strategies can significantly enhance the effectiveness and impact of skill training modules.

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