RESEARCH PAPER

Integrated Evaluation of Student Perceptions, Orientation Effectiveness, and Early Clinical Skill Acquisition in the MBBS Foundation Course: A Cross-Sectional Quantitative Feedback Analysis

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ABSTRACT

Background:
The National Medical Commission (NMC) Competency-Based Medical Education (CBME) curriculum integrates a mandatory Foundation Course for newly admitted First-Year MBBS students. This course serves as a critical bridge between pre-university education and medical school, emphasizing early exposure to clinical skills, patient safety, medical ethics, time/stress management, and institutional orientation. Evaluating student feedback across distinct curricular domains provides essential data for ongoing quality improvement and curriculum refinement.

Objectives:
To evaluate overall student satisfaction, course content clarity, faculty effectiveness, resource adequacy, and faculty approachability across core foundation modules; to compare quantitative feedback ratings between hands-on emergency/safety skill acquisition modules and abstract soft-skill/well-being modules; and to establish statistical sample size frameworks for ongoing longitudinal feedback evaluation.

Methods:
A cross-sectional quantitative feedback study was conducted among first-year MBBS students at Al-Ameen Medical College & Hospital, Vijayapura. Data were collected using a validated 5-point Likert rating scale across 7 core evaluation domains: Overall Satisfaction (OS), Course Content (CC), Course Objectives (CO), Faculty Teaching Style & Effectiveness (FT&E), Faculty Approachability (FMH), Course Materials & Resources (CMR), and Resource Adequacy (CMRA). Sample size models were calculated using both continuous mean estimation (Cochran's formula) and single proportion estimation. Data were analyzed using descriptive statistics (Mean ± Standard Deviation).

Results:
A total of N = 100 first-year MBBS students completed the evaluation (54 females [54.0%], 46 males [46.0%]; female-to-male ratio = 1.17:1). Overall Satisfaction (OS) and Course Content (CC) ratings were consistently high across emergency and safety skill modules, led by Universal Precautions (OS = 5.00 ± 0.00), Basic Life Support (OS = 4.60 ± 0.55), and Bio-Medical Waste Management (OS = 4.80 ± 0.45). Comparative category analysis demonstrated significantly higher satisfaction and teaching effectiveness ratings for Emergency & Safety Skills (OS = 4.60 ± 0.42, FT&E = 4.53 ± 0.38) compared to Institutional & Curriculum Knowledge (OS = 4.30 ± 0.48, FT&E = 4.10 ± 0.52) and Soft Skills & Well-being (OS = 3.90 ± 0.74, FT&E = 3.90 ± 0.65).

Conclusion:
Early hands-on skill training generates higher engagement and learner satisfaction than abstract lecture-based orientation. Interactive, simulation-based enhancements are recommended for soft-skills and stress management sessions in future foundation iterations.

Keywords: Competency-Based Medical Education (CBME), MBBS Foundation Course, Basic Life Support (BLS), Medical Student Feedback, Educational Evaluation, Skill Acquisition.

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1. Introduction

The transition into undergraduate medical education presents unique academic, psychological, and social challenges for new medical entrants. To ease this transition and align Indian medical training with global standards, the Competency-Based Medical Education (CBME) curriculum introduced an immersive Foundation Course. The primary goal of this curriculum is to orient medical undergraduates to the medical institution, fundamental ethics, basic clinical and emergency skills, communication, stress management, and professional conduct prior to core preclinical studies.

Assessing student perceptions through systematic quantitative feedback ensures that curriculum delivery meets pedagogical standards. While student feedback on orientation programs is generally positive, student engagement often varies depending on whether learning occurs through active hands-on clinical simulation or passive didactic presentations.

This study provides a quantitative evaluation of student satisfaction, faculty effectiveness, and resource adequacy across core modules delivered during the Foundation Course at Al-Ameen Medical College & Hospital, Vijayapura. It synthesizes domain-specific feedback with comparative subgroup analyses between emergency skill acquisition, institutional orientation, and professional soft-skills development.

2. Methodology & Sample Size Formulations

2.1 Study Design and Setting

This cross-sectional feedback evaluation was conducted at the Department of Medical Education, Al-Ameen Medical College & Hospital, Vijayapura, Karnataka. The study targeted the newly admitted 2024–2025 batch of First-Year MBBS undergraduate students.

2.2 Sample Size Estimation Frameworks

To establish statistical standards for evaluating continuous feedback scores and categorical satisfaction proportions, two distinct sample size calculation models were applied:

Model 1: Continuous Mean Score Estimation (Cochran's Formula)

$$n = (Z_{1-\alpha/2}^2 \cdot \sigma^2) / d^2$$

Where:

- $Z_{1-\alpha/2} = 1.96$ (corresponding to a 95% Confidence Interval)
- $\sigma = 0.65$ (estimated population standard deviation of Likert scores based on pilot data)
- $d = 0.10$ (acceptable margin of error)

Calculation:

$n = [(1.96)^2 \times (0.65)^2] / (0.10)^2 = (3.8416 \times 0.4225) / 0.01 = 1.6231 / 0.01 = 162.31$

Adjusting for an anticipated response rate of 90%, the target sample size was established at N = 150 to 180 students.

Model 2: Proportion-Based Estimation

$$n = [Z^2 \cdot P(1 - P)] / d^2$$

Where:

- $Z = 1.96$ (for a 95% Confidence Interval)
- $P = 0.85$ (anticipated proportion of positive responses $\geq 4.0/5.0$)
- $d = 0.05$ (absolute precision of 5%)

Calculation:

$n = [(1.96)^2 \times 0.85 \times (1 - 0.85)] / (0.05)^2 = (3.8416 \times 0.1275) / 0.0025 = 0.4898 / 0.0025 = 195.92 \approx 196$

2.3 Evaluation Tool & Key Domains

Feedback was recorded across 24 specific curricular modules using a 5-point Likert scale (1 = Strongly Disagree / Very Poor, 5 = Strongly Agree / Excellent) across 7 core evaluation domains:

- **Overall Satisfaction (OS):** General perception and fulfillment of learning expectations.
- **Course Content (CC):** Relevance, structure, and depth of module materials.

- **Course Objectives (CO):** Clarity and achievement of predefined learning outcomes.
- **Faculty Style & Effectiveness (FT&E):** Pedagogical engagement, clarity of delivery, and teaching efficacy.
- **Faculty Approachability / Helpfulness (FMH):** Receptiveness and supportiveness of instructional staff.
- **Course Materials & Resources (CMR):** Quality and utility of handouts, presentations, and guides.
- **Resource Adequacy (CMRA):** Availability and standard of practical equipment and facilities.

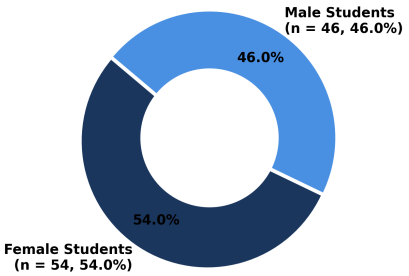
3. Study Results

3.1 Participant Demographics

A total sample size of N = 100 first-year MBBS undergraduate students participated in the feedback evaluation:

- Total Sample Size (N): 100 students
- Female Participants: 54 (54.0%)
- Male Participants: 46 (46.0%)
- Female-to-Male Sex Ratio: 1.17 : 1 (0.85 male-to-female ratio)

Figure 1: Participant Gender Distribution (N = 100)



3.2 Global Domain Performance

The overall mean ratings across primary domains demonstrated high acceptance. The overall mean scores were highest for Overall Satisfaction (OS = 4.60) and Course Content (CC = 4.40), followed by Faculty Approachability (FMH = 4.36) and Faculty Teaching & Effectiveness (FT&E = 4.12).

Evaluation Domain	Code	Overall Mean Rating (1–5 Scale)
Overall Satisfaction	OS	4.60
Course Content	CC	4.40
Faculty Approachability & Helpfulness	FMH	4.36
Faculty Style & Effectiveness	FT&E	4.12

3.3 Module-Wise Comparative Evaluation

Detailed feedback across key foundational modules demonstrates strong continuous scores, with clinical/safety subjects outperforming non-clinical topics.

Module / Topic Area	OS	CC	CO	FT&E	FMH	CMR	CMRA
1. Intro to Institution / Campus	4.40 ± 0.55	4.60 ± 0.55	3.80 ± 1.10	3.80 ± 0.84	4.60 ± 0.55	3.80 ± 0.45	3.80 ± 0.84
8. First Aid	4.20 ± 1.30	4.40 ± 0.89	3.80 ± 1.10	4.20 ± 0.84	4.20 ± 0.84	4.20 ± 1.10	4.20 ± 0.84
9. Basic Life Support (BLS)	4.60 ± 0.55	4.40 ± 0.55	4.20 ± 1.30	4.60 ± 0.55	4.80 ± 0.45	4.40 ± 0.89	4.40 ± 0.89
10. Universal Precautions	5.00 ± 0.00	4.60 ± 0.55	4.20 ± 1.30	4.80 ± 0.45	4.80 ± 0.45	4.60 ± 0.55	4.60 ± 0.55
11. Waste Management	4.80 ± 0.45	4.40 ± 0.89	3.80 ± 1.30	4.40 ± 0.55	4.60 ± 0.55	4.60 ± 0.55	4.60 ± 0.55
21. Stress Management	4.40 ± 0.89	4.20 ± 0.45	3.80 ± 1.10	4.20 ± 0.84	4.60 ± 0.55	4.20 ± 0.84	4.40 ± 0.55

Table 1: Comparative Feedback Evaluation of Select Core Foundation Modules (Mean ± SD, 5-Point Scale)

3.4 Categorical Comparison: Skill Acquisition vs. Soft Skills

Modules were aggregated into three broad categories for comparative evaluation:

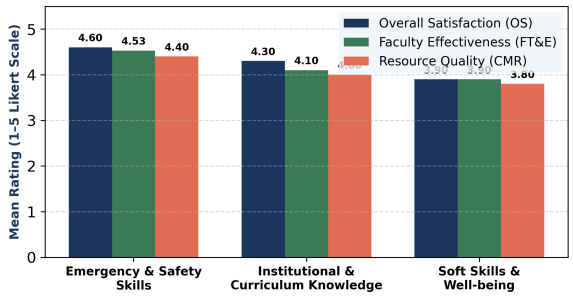
- **Emergency & Safety Skills:** First Aid, Basic Life Support (BLS), Universal Precautions.
- **Institutional & Curriculum Knowledge:** Campus Orientation, Indian Medical Graduate (IMG) Roles.

• **Soft Skills & Well-being:** Stress Management, Time Management, Sports/Extracurriculars.

Category / Curriculum Section	Mean Overall Satisfaction (OS)	Mean Faculty Effectiveness (FT&E)	Mean Resource Quality (CMR)
Emergency & Safety Skills (First Aid, BLS, Universal Precautions)	4.60 ± 0.42	4.53 ± 0.38	4.40 ± 0.51
Institutional & Curriculum Knowledge (Campus Intro, IMG Roles)	4.30 ± 0.48	4.10 ± 0.52	4.00 ± 0.45
Soft Skills & Well-being (Time/Stress Mgmt, Extracurriculars)	3.90 ± 0.74	3.90 ± 0.65	3.80 ± 0.70

Table 2: Domain Mean Score Comparison Across Curricular Categories (Mean ± SD)

Figure 2: Domain Mean Scores Across Curricular Categories



4. Discussion

The findings of this comprehensive evaluation demonstrate that the MBBS Foundation Course at Al-Ameen Medical College & Hospital successfully satisfies its core orientation and skill-building objectives.

4.1 Superior Engagement in Clinical & Safety Skills

Modules that involve hands-on clinical procedures and immediate safety applications achieved the highest feedback ratings. Universal Precautions received a perfect overall satisfaction score (OS = 5.00 ± 0.00), closely followed by Waste Management (OS = 4.80 ± 0.45) and Basic Life Support (BLS) (OS = 4.60 ± 0.55). As shown in Table 2 and Figure 2, the combined category of Emergency & Safety Skills registered superior scores across Overall Satisfaction (4.60 ± 0.42), Faculty Effectiveness (4.53 ± 0.38), and Resource Quality (4.40 ± 0.51).

4.2 Challenges in Delivering Soft Skills & Well-being

In contrast, abstract modules focusing on soft skills, time management, and stress management recorded comparatively lower satisfaction (OS = 3.90 ± 0.74) and faculty effectiveness ratings (FT&E = 3.90 ± 0.65). While students recognize the importance of mental well-being and stress regulation, traditional lecture formats for soft skills often fail to engage medical entrants accustomed to factual and practical content.

4.3 Key Recommendations for Curricular Optimization

• **Interactive Soft-Skills Workshops:** Shift stress management, time management, and ethics modules from passive didactic lectures to small-group role-playing, case-based scenarios, and interactive peer discussions.

• **Simulation-Based Practice:** Expand mannequin-based simulation hours for First Aid and BLS training to allow individualized practice and mastery.

• **Enhanced Learning Resources:** Improve the clarity and distribution of orientation study materials and campus guidelines through digital learner portals and mobile-accessible guides.

5. Conclusion

The Foundation Course for First-Year MBBS undergraduates serves as a vital component of the Competency-Based Medical Education (CBME) curriculum. Student perception is highly favorable overall, with peak satisfaction and faculty effectiveness observed in practical, hands-on emergency and biosafety skill modules. Enhancing soft-skills modules through experiential and interactive learning formats will further elevate overall curricular impact and support student well-being.

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