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Faculty perception of practices and skills for undergraduate assessment in a medical college in Karnataka -a cross- sectional study

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ABSTRACT
Introduction: Assessment of students' proficiency is seen as a crucial duty of every teacher. A variety of assessment methods and instruments are necessary to evaluate diverse abilities, particularly complicated attributes such as ethics, professionalism, and lifelong learning. Yet, little is known about faculty attitudes regarding different aspects of assessment and self-perception about their skills required for assessment. These have wide-ranging implications for students, faculty and policy in institutions. This study was conducted to know the existing practices and self -perceived expertise of faculty in undergraduate assessments. This knowledge would serve a guide for recommendations and policy changes in the institute
Aim : To study perception of faculty about undergraduate assessments practices and self -perceived skills for the same.
Materials And Methods: A cross sectional study was conducted in Esic Medical College Gulbarga, Karnataka, India from July 23 to June 24. Using google form and a convenience sampling method, present study investigated the perceptions of 80 faculty of teaching experience more than 1 year, involved in assessment of undergraduate students. The questionnaire composed of sections as demographic data, perception of different aspects of formative assessment, practices regarding assessment tools and self-perception of mastery of skills of assessment. A 2 × 2 multivariate analysis of variance was used to analyze the data teaching experience as independent variables and self-perceived assessment skills and practices as dependent variables.
Results: Results. 90% faculty participated in CPD, but majority did not use new assessment tools in practice in 2 academic years.Though teachers with 5-10 years of experience showed higher mean in assessment practices in all domains.No significant difference was observed for skills practices [p=0.089 for cognitive ,p=0,029 for psychomotor and p=0.34 for affective domain assessment]. Teachers with over 15 years of experience reported higher mean on self-perceptions of mastery in assessment skills, which was statistically significant [p=0.000].
Conclusion: Medical instructor training has led to improved cooperation and a positive shift in faculty attitudes toward newer assessment tools, these changes have not been fully implemented. A comprehensive Faculty Development Program with monitoring is needed for sustained local impact.

Keywords: assessment, assessment literacy, faculty perceptions, tools

INTRODUCTION

In medical education, twelve roles divided into six categories are proposed for teachers, and assessment of students' proficiency is seen as a crucial duty.[1] The curriculum comprises pre-clinical courses centred on subjects, followed by a clinical segment that emphasizes patient care and management, culminating in supervised clinical practice through internships or residencies. The implementation of competency-based medical education is regarded as a pivotal advancement in transforming Indian medical education. [2,3]. The National Medical Commission's curriculum places a strong focus on competency acquisition and evaluation and it has developed various modules to guide the planning, execution, and assessment of skills [4].
Assessment is centred on specific subject competencies, which are aligned with the global competencies outlined in the regulations for graduate medical education. The Indian Medical Graduate (IMG) is anticipated to perform effectively in various roles, including that of a clinician, leader, communicator, lifelong learner, and professional. [5]. Since in CBME, achieving of competency is the end point of educational process, it needs

ongoing continuous, contextual assessments with the formative feedback for learners to know the progress and achievement of expected competencies [4, 6]

A variety of assessment methods and instruments are necessary to evaluate diverse abilities, particularly complicated characteristics such as ethics, professionalism, and lifelong learning. To conduct effective and meaningful assessments, faculty members must be trained as their perspectives and understanding of assessment influences their practices [6]. Assessment literacy (AL) is vital in assisting faculty to grasp the possible breadth and application of various assessment methods in the teaching and learning process [7-9]. Consequently, it is vital to evaluate instructors' perception of assessment procedures.

Efforts are made to formulate model assessment system for competency -based education, to improve lack of clarity around the assessment tools, settings, and modalities and timeframes of CBME assessments. Most of studies have considered the perception of students about CBME or perception of faculty on implementation of particular modality/tool of assessment.[10] Earlier studies have not reported on faculty perception on skills required for assessment.

In present study we aimed to know faculty perception on practices about assessment tools and self-perceived skills related to assessment.This type of research is useful for understanding what is done in departments and how it compares to standards and teachers' expectations. Consequent recommendations would be highly crucial for the institute's assessment policies.

MATERIAL AND METHODS

A cross sectional study design was adopted. A purposive sampling was carried out of all wiling faculty and the data was collected through google forms after obtaining Institutional Ethics Committee clearance [letter - ESICMC/GLB/IEC/25/2023 Dated 06/06/2023] The study duration was 12 months from July 2023 to June 2024. The questionnaire was pilot tested and it was revised based on teachers' feedback.Based on a study of faculty perceptions on OSCE [11]sample size considered was 60.All faculty [regular/ contractual, Phase 1,2,3 faculty] involved in assessment processes of medical students were invited in a web-based survey. Recently recruited faculty less than 1 year experience, unwilling faculty were excluded. Questionnaire was composed of sections as demographic data, practices regarding assessment tools and self-perception of mastery of skills of assessment. The final questionnaire consisted of parts with most of the elements in the form of multiple choice or Likert-type scales (with 5 options).

Statistical analysis- Data was entered and percentages, mean and standard deviation were calculated. A 2 × 2 between-subjects multivariate analysis of variance was conducted on the self-perceived perceptions on frequency of assessment tools used in last 2 academic sessions. The independent variables were teaching service. usingIBM SPSS software. [30.0.0.0]

RESULTS

80 out of 122 faculty responded to the questionnaire accounting for a response rate of 65%. The teaching experience of the faculty varied from less than 5 years to over 15 years with 50% having more than 10 years of teaching experience. 70 out of 80 faculty had attended various faculty development pedagogic programs [Table 1]. 53 out of 80 were trained in more than one workshops/courses. The mean and SD of faculty with varying teaching experiences for different assessment practices is shown in Table 2.The assessment tools practiced as per regulatory norms for cognitive [Table 3], psychomotor [Table 4] and affective domains [Table 5] are shown.

Table 1: The courses taken and % of faculty trained

FDP	Faculty taken training [%]
FCEM [RGUHS]	60
RBCW [MCI]	65
CISP [MCI]	55
ACME [MCI]	15
Fellowship[FAIMER/FHPE/PGDHE]	5
OTHER [SWAYAM/ONLINE SHORT COURSES]	10
NIL	10

Table 2: Mean and standard deviation for faculty as a function of teaching experience for assessment practices.

Teaching experience Numberof faculty [n] % Components of assessments	1-5 years		5-10 years		10-15 years		>15 years		P
	N=32[40%]		8 [10%]		20 [25%]		20 [25%]		
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
Cognitive assessment	1.18	0.55	1.23	0.53	0.8	0.39	1.05	0.68	0.089

Psychomotor Assessments	0.88	0.44	1.21	0.23	0.74	0.26	0.7	0.57	0.029
Affective domain assessment	3.06	0.91	3	0.49	2.8	0.64	2.69	0.69	0.34
Self-perception on - mastery of skills	3.17	0.69	3.71	0.2	3.51	0.38	4.03	0.34	0.000

Table 3: Assessment tools employed in last 2 academic years for cognitive domain n[%]

Tool And% Of Faculty	[True/False]	[Fill In Blanks]	[Short Answer Questions]	[Short Notes]	[Essay Questions]	[Match The Options]	[Extended Matching Questions	[Projects]	[Multiple Choice Questions	[Critical Reading Papers,]	[Portfolio]	[Presentations]	[Quizzes]
not aware	0	0	0	0	0	0	5 [6]	0	0	8[10]	0	0	0
not used	48[60]	53[66]	0	0	0	53[66]	56 [70]	45[56]	5[6]	51[64]	56 [70]	21 [26]	29[36]
Used<5 times	12[15]	11[14]	8 [10]	3[4]	5[6]	24[30]	11 [14]	27[34]	16 [20]	16[20]	24 [30]	29 [36]	43[54]
Used5-10 times	20 [25]	16 [20]	24 [30]	24 [30]	24 [30]	3 [4]	8 [10]	8 [10]	16 [20]	5 [6]	0	21 [26]	8[10]
used>10 times	0	0	48 [60]	53 [66]	51 [64]	0	0	0	43 [54]	0	0	9[12]	0

Table 4: Assessment tools employed in last 2 academic year for psychomotor domain n [%]

TOOL AND FREQUENCY OF USE BY % OF FACULTY	Objective Structured Clinical Examination	[Objective Structured Practical Examination	[Short case assessment]	[Rating scales]	[Video assessment]	[Simulators]	[Standardized patients.]	[Oral interviews]	[Long case assessment]	[Directly observed procedural skills (dops),.]	[Mini Clinical evaluation exercise (mini-cex),]	[Records maintenance]	[One-Minute Preceptor (OMP)]	[Simulations]
not aware	0	0	0	0	0	0	0	0	0	0	0	0	4 [5]	4 [5]
not used	37 [46]	16 [20]	24 [30]	48 [60]	68 [85]	60 [75]	60 [75]	20 [25]	36 [45]	28 [35]	56 [70]	20 [25]	64 [80]	56 [70]
Used<5 times	24 [30]	24 [30]	16 [20]	28 [35]	12 [15]	12 [15]	16 [20]	24 [30]	20 [25]	36 [45]	24 [30]	16 [20]	12 [15]	12 [15]
Used5-10 times	11 [14]	12 [15]	32 [40]	4 [5]	[0]	8 [10]	4 [5]	8 [10]	12 [15]	4 [5]	0	16 [20]	0	8 [10]
used>10 times	8 [10]	28 [35]	8 [10]	0	0	0	0	28 [35]	12 [15]	12 [15]	0	28 [35]	0	0

Table 5: Assessment tools practices in last 2 academic year for affective domainn[%]

Tool And Frequency Of Use By No Of Faculty	[Assessment of Logbook	[Written Tests As Short Notes And Creative Writing Experiences]	[Osce Based]	[Practical And Viva Voce]	[Rating Scales]	[Video Assessment]	[Simulations]	[Standardized Patients.]	[Directly Observed Procedural Skills (Dops)	[Attitudinal Assessment]	[Communication Assessment]
not aware	0	0	4 [5]	0	8 [10]	0	8 [10]	4 [5]	4 [5]	0	0
not used	4 [5]	8 [10]	36 [45]	0	52 [65]	64 [80]	56 [70]	60 [75]	48 [60]	60 [75]	40 [50]
used<5 times	24 [30]	32 [40]	16 [20]	4 [5]	12 [15]	12 [15]	16 [20]	12 [15]	12 [15]	8 [10]	20 [25]
used5-10 times	24 [30]	20 [25]	16 [20]	28 [35]	4 [5]	4 [5]	0	4 [5]	0	8 [10]	12 [15]
used>10times	28 [35]	20 [25]	8 [10]	48 [60]	4 [5]	0	0	0	16 [20]	4 [5]	8 [10]

Table 6: self-perception of faculty about mastery of skills required in assessments n[%]

SKILL AND EXPERTISE [% OF FACULTY]	Not aware	but cannot perform	guidance to do task	do correctly independently	train other faculties
Preparing table of specifications	8 [10]	0	48 [60]	16 [20]	8[10]
Preparing a blueprint	4 [5]	4 [5]	40 [50]	24 [30]	8 [10]
Developing criteria for assessment	4[5]	8 [10]	16 [20]	48 [60]	4 [5]
Linking assessment to learning outcomes	8[10]	0	20 [25]	52 [65]	[0]
constructing quizzes	4[5]	4 [5]	16 [20]	48 [60]	8 [10]
Frame MCQ as per guidelines	4[5]	0	8 [10]	56 [70]	12 [15]
Frame essay and structured essay questions as per standard guidelines	4 [5]	0	8 [10]	52 [65]	16 [20]
Developing structured viva cards	8[10]	0	16 [20]	52 [65]	4 [5]
Creating assignments for formative assessment	4[5]	4 [5]	12 [15]	48 [60]	12 [15]
Creating osce/ospe stations	4[5]	4[5]	16[20]	44 [55]	12 [15]
Creating clinical scenarios	4[5]	[0]	28 [35]	40 [50]	8 [10]
Developing checklist	4[5]	8 [10]	28 [35]	36 [45]	4 [5]
Developing rubrics	16 [20]	12 [15]	32 [40]	16 [20]	4 [5]
Evaluating essays and composition	8 [10]	0	20 [25]	44 [55]	8 [10]
Assessing interviews/viva voce	0	0	16 [20]	56 [70]	8 [10]
Assessing clinical skills	0	4 [5]	20 [25]	48 [60]	8[10]
Assessing oral presentations	0	0	20 [25]	52 [65]	8 [10]
Using and evaluating portfolios	12 [15]	8 [10]	32 [40]	20 [25]	8 [10]
Using and evaluating projects	8 [10]	8 [10]	32 [40]	28 [35]	4 [5]
Giving corrective feedback	0	4 [5]	28 [35]	44 [55]	4 [5]

Teachers perceived that framing essay questions, MCQs, conducting viva, assessing oral presentations are the skills which they can implement as per guidelines. While preparing rubrics, checklists , assessing projects and portfolios are the skills some teachers are not aware/have not used for assessments and need to be trained in these aspects.

Eighty percent of the faculty mentioned that continuous assessment marks should be added and count for the summative assessment; however, nearly fifty percent of the faculty expressed a desire to cap the weightage of formative assessment to 10-20 percent only

DISCUSSION

Faculty development programmes trend

To implement CBME effectively, medical teaching faculty need to be trained and adapted to become modern medical education facilitators. The National Faculty Development Program (FDP) by the Medical Council of India (MCI) is a significant step in this direction. 90 % of study participants had undergone some training as RBCW 65%, CISP 55% and ACME [MCI]15% and 5% undergone 1-year programs as (FHPE)/(FAIIMER)]. 53 [66%] out of 80 were trained in more than one workshops/courses.10 % of the faculty were not exposed to any kind of training in methodology in medical education. Earlier, 44.8% faculty had undergone Revised basic course workshop (RBCW), 39.7% attended curriculum implementation support program (CISP) in research by Rustagi et al[12] and 64.5% were Revised basic course workshop (RBCW) trained and 74.9% were trained in curriculum implementation support program CISP, 17 % ACME and 2% fellowship training reported by Gopalakrishnan, et al [13]. Rise in the number of trained faculty is striking as compared to earlier studies suggesting positive attitude to CBME reform

Practices in assessment and teaching experience

In this study, teachers with 5-10 years of experience reported higher average scores across all assessment domains. Whilethose with over 15 years of experience exhibited greater confidence in their mastery of assessment skills [Table 2] [p=0,000]. These findings align with existing literature highlighting the influence of teaching experience on assessment practices.

For instance, Mertler (2004) found that experienced teachers performed better than their pre-service counterparts in developing, administering, scoring, and interpreting assessments[14]. Suleiman's research further indicated that teachers with less than three years of experience were more likely to implement formative assessments effectively[15]. However, conflicting evidence exists; one study found no substantial differences in teachers' beliefs and practices regarding formative assessment based on teaching experience[16].

On the other hand, Volante and Fazio (2007) observed that assessment skills among teacher candidates remained underdeveloped throughout their training, underscoring the importance of continuous professional development to improve skills such as test construction, performance assessment implementation, and grading accuracy [17-19].

Additionally, research indicates that many teachers prioritize addressing immediate classroom challenges over understanding and applying technical assessment principles[20]. This reinforces the need to design pre-service training programs that bridge the gap between theoretical knowledge and practical classroom realities, ensuring relevance and applicability in teaching contexts.

Assessment practices

Assessment practices in medical education highlight both strengths and gaps in faculty familiarity and implementation of cognitive and workplace-based tools. Cognitive tools like multiple-choice questions (MCQs), structured essays, and short-answer questions are frequently used, with a preference for MCQs in both formative and summative evaluations due to their efficiency in testing recall and application. However, a notable proportion of educators are less familiar with tools like Extended Matching Questions (EMQs) and critical reading assessments, using them sparingly over time.

Similarly, workplace-based assessment (WPBA) methods such as Direct Observation of Procedural Skills (DOPS), Objective Structured Clinical Examinations (OSCE), and Objective Structured Practical Examinations (OSPE) dominate practical and affective domain assessments, other tools were used only for suboptimal times over the preceding two years.

These findings align with studies by Almahal et al. (2023), where MCQs and OSCEs emerged as the most frequently applied tools, and Brits et al. (2020),who identified the dominance of MCQs and long cases in assessments. [21, 22]

Cognitive assessment tools in medical education are designed to measure varying levels of knowledge, critical thinking, and practical application. Multiple-choice questions (MCQs) are frequently used to assess knowledge recall and understanding, particularly when crafted with well-designed distractors and context-rich scenarios to evaluate higher-order reasoning. Essay questions and oral examinations allow for deeper exploration of concepts, enabling the assessment of critical thinking and the ability to communicate effectively. Additionally, portfolio assessments and performance logs provide a longitudinal view of a student's development, emphasizing reflective practice and professional growth. Using a mix of these tools provides a comprehensive assessment across Bloom's taxonomy levels, from basic recall to application and evaluation, ensuring a well-rounded evaluation of students' cognitive abilities [23, 24]

Workplace-based assessment (WPBA) tools are integral for evaluating competencies in real-world clinical settings. These tools, such as mini-CEX, DOPS, and case-based discussions, assess technical and professional skills while providing structured feedback to facilitate improvement. WPBA methods align well with competency-based education, encouraging deep learning and critical clinical reasoning[24-26]
However, limited use of innovative and collaborative assessment approaches—like article critiques, team-based projects, and case studies—demonstrates gaps in fully leveraging assessment as a tool for learning [27]
The findings highlight the need for faculty development programs to address gaps in assessment literacy, focusing on both traditional and alternative methods. Enhanced training can help educators implement diverse assessment strategies that support deeper learning, better feedback, and improved student outcomes [26]

Assessment literacy
Although 90% of faculty members are trained, teachers reported confidence in implementing skills such as framing essay questions, constructing MCQs, conducting viva voce, and evaluating oral presentations in alignment with regulatory guidelines. However, gaps were identified, as some educators lacked awareness and training in preparing rubrics, creating checklists, and assessing projects and portfolios. Training in these areas is essential to ensure comprehensive assessment practices.
Brits et al. (2020) highlighted similar challenges, noting that 15-20% of faculty did not use tools like blueprinting, Bloom's taxonomy levels, or align assessments with module outcomes. Moreover, factors like availability of resources (e.g., patients, assessors, finances) and the feasibility of standardized assessment dates were often overlooked in planning assessments[22].
Skills listed in table 6 are important skill sets for assessors. The integration of these skills into medical education ensures that assessments are comprehensive, valid, and reliable, reflecting the multidimensional competencies required of future healthcare professionals.
Despite higher continuous professional development (CPD) participation correlating with stronger beliefs in formative assessment, these beliefs were not consistently translated into classroom practices. Widiastuti (2020) further noted that CPD participation alone did not significantly influence the effectiveness of formative assessment implementation [27]

Formative assessment
In our study, 80% of participants believed that formative assessments (FAs) should contribute to summative scores, though 50% suggested limiting their weightage to 10–20%. Such conflicting perceptions were revealed in another study, with 41% of respondents mistakenly identifying FAs as tools primarily for grading and certification, and 18% uncertain about this interpretation. Additionally, 43% believed that final course grades are derived from FA scores, while 18% were unsure. When questioned about whether FAs are criterion-referenced, 42% admitted they were unaware, and 22% disagreed.
The lack of understanding surrounding the concept of FAs was further highlighted in a Delphi study, indicating that many medical educators overestimate their grasp of this assessment approach. [28]. Moreover, a survey of 190 medical educators found that, while there was an apparent understanding of FA concepts, 41% still incorrectly associated FAs solely with grading and certification [29]. These findings underscore a persistent challenge in addressing misconceptions about the purpose and implementation of formative assessments.
There remains a significant gap in research regarding medical educators' self-perception of their assessment skills. This study highlights the need for further exploration into formative assessment practices across diverse educational contexts, such as classroom, clinical, and simulation settings. Additionally, the development of an assessment literacy framework tailored to medical educators could enhance training and implementation efforts

Limitations
A study can be conducted to evaluate specific components of assessments, such as skills certification processes within each department, assessments of professionalism, ethics, communication, teamwork, and assignments aimed at evaluating lifelong learning across various curriculum phases, as well as subject-specific modifications of formative assessments. This approach would yield a comprehensive understanding of the strengths and weaknesses present.

CONCLUSION
The medical instructors training is showing a desirable rising pattern of cooperation and positive change in the attitude of faculty towards acknowledgement of the role and utility of newer assessment tools. However, these are thoughts are not reflected in adequate numbers in the practices. The lack of understanding surrounding the concept of FAs demands developing a comprehensive Faculty Development Program and monitoring for sustaining local implementations

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