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**ORIGINAL ARTICLE****Developing and implementing a skill-based competency module for Indian medical graduates: A community-based education approach for community diagnosis***Praveen Ganganahalli<sup>1\*</sup>, Rekha Udgiri<sup>1</sup>**<sup>1</sup>Department of Community Medicine, BLDE (Deemed to be University) Shri B. M. Patil Medical College, Vijayapura-586103 (Karnataka) India*

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**Abstract**

*Background:* Effective communication between doctors and patients plays a pivotal role in achieving positive health outcomes and patient satisfaction. The integration of a standardized communication skills module into the medical undergraduate curriculum offers numerous advantages, such as improved treatment adherence, reduced malpractice claims, and notable advancements in both psychological and physical well-being across a range of health conditions. *Aim and Objectives:* This study aimed to design, validate and implement skill-based competency module and to take feedback from medical undergraduate students. *Material and Methods:* An educational observational study was conducted by preparing the draft of the selected skill-based competencies of the community medicine subject named as community diagnosis module and validated with the help of subject experts and health education professionals by using Content Validity Index (CVI). *Results:* The CVI, based on assessments from ten field experts, yielded a score of 0.86, indicating good validity. Feedback analysis from medical students post-implementation revealed that transitioning from classroom teaching to community experiences was the most valued aspect of the program. *Conclusion:* The implementation of the community diagnosis module demonstrated positive outcomes based on feedback from 152 trained students and validation by ten faculty members. Student feedback indicated a favourable consensus on various aspects of the module, including its objectives, teaching methods, materials, assessments, and active participation in activities.

**Keywords:** Validation, Module, Communication skills, Faculty, Students

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**Introduction**

Improving dialogue between healthcare professionals and patients greatly influences the doctor-patient dynamic, resulting in favourable effects on patient well-being and contentment. Proficient communication encourages better adherence to treatment, diminishes malpractice allegations, and enriches psychological and physical well-being across various health concerns. Yet, mastering effective clinical communication presents a formidable endeavour, requiring clinicians to develop a repertoire of nuanced and specialized abilities that, though not inherent, are attainable through

education. Various studies highlight that structured educational interventions consistently elevate communication proficiency among trainees, emphasizing the importance of deliberate learning in this realm [1].

Active patient involvement as collaborative partners in both the diagnostic journey and treatment are pivotal in promoting individual responsibility for health outcomes. Encouraging patients to actively participate fosters better compliance and engagement in a patient-centric healthcare model. Physicians bear the responsibility of

nurturing this 'shared decision-making' ethos through effective Communication Skills (CS) [2]. Medical education has shifted towards competency-based and outcome-based education that needs integration of knowledge, skill, attitude, and communication [3]. The integration of CS into academic instruction reveals notable deficiencies and challenges. Insufficient attention is given to the impact of such programs on their recipients during the design and implementation phases, particularly concerning medical students and their actual experience with this form of teaching [1].

Content validity is defined as the degree to which elements of an assessment instrument are relevant to and representative of the targeted construct for a particular assessment purpose. An assessment instrument refers to the particular method of acquiring data such as questionnaires. The elements of an assessment instrument refer to all aspects of the measurement process that can affect the data obtained such as questionnaire items, response formats and instructions. The construct refers to the concept, attribute, domain, or variable that is the target of measurement. The relevance of an assessment tool refers to the appropriateness of its elements for the targeted constructs and functions of assessment, while the representativeness of an assessment tool refers to the degree to which its elements are proportional to the facets of the targeted construct [4-5].

With this context, this study was planned to design, validate and implement the skill-based competency module for Indian medical graduates through community-based education approach.

### **Material and Methods**

An educational observational study was undertaken among the second professional year medical

students for the selected skill-based competencies of community medicine subject through Community Based Medical Education (CBME) approach on community diagnosis during block postings for a period of 10 days in small groups spread over three months in 2023.

The initial draft of the module was organized into sections including background, aims and objectives, educational content, teaching-learning-assessment methods, implementation plan, timetable, evaluation methods, and feedback. Subsequently, it underwent validation by ten subject and health education professionals from various institutes. These experts were tasked with rating the module's components for relevance, utilizing a scale ranging from "not relevant" to "highly relevant". Criteria for assessment included the module's suitability for the target audience, alignment with specified learning objectives, congruence of teaching methods with defined competencies, efficacy in evaluating relevant skills, and community-centeredness of the teaching-learning and assessment approaches outlined in the module.

**Content Validity Index (CVI) = (Number of Experts Who Rated the Item as Relevant or Highly Relevant)/(Total Number of Experts) [4]**

To get an overall CVI for a set of items, average CVI across all items was calculated by adding the CVIs for all items and dividing by the total number of items. This gave an overall CVI score for the assessment. Typically, CVI of 0.80 or higher is considered good, but the specific threshold may vary depending on the context and standards of the field of study.

The module was implemented for medical students during their morning block postings in the urban

field practice area of the community medicine department. It followed a structured schedule, comprising orientation sessions and allocation of one family to each student. The students conducted a thorough survey of their assigned families, gathering socio-demographic information, assessing the health status of family members, and evaluating environmental sanitation and behaviours. Throughout the module, students were acquainted with essential topics, including principles of health education, communication techniques, and fundamental biostatistics such as data compilation, analysis, and presentation. Using a Google Form, students recorded a summary of each family, which was subsequently analysed and presented as a community diagnosis in a prescribed format.

Student evaluation involved problem-based case scenarios using Objective Structured Clinical Examination (OSCE), with students providing valuable feedback upon completing the exercise. Additionally, to foster collaborative learning, small student groups participated in creating health education posters addressing community assessment findings. This method provided a comprehensive and interactive learning opportunity for medical undergraduates. Ethical clearance from the Institutional Ethics Committee, department head permission, and informed consent from participating students were obtained prior to the study's commencement.

### Results

The module was reviewed by a panel of five internal and external experts each, and scoring was given to the item questions given to them. The analysis of scores were as follows: Score of zero

was given to the “not relevant” and “somewhat relevant” ranking while score of one was given to the “relevant” and “highly relevant” ranking given by the experts to the community diagnosis module for each item questions (Table 1). There were two forms of CVI – CVI for item (I-CVI) and CVI for scale (S-CVI). For S-CVI, average of the I-CVI scores for all items on the scale (S-CVI/Ave) was calculated. Acceptable CVI value of 0.80 and above was considered good as shown in Table 1 [4]. Total 152 students were trained by using the module and five internal and five external faculty contributed for the validation process of the module and analysis of various information yields following observations. Feedback from majority of the students regarding the module-based training was favourable towards the objectives, teaching-learning experience, and material provided, assessment and assignment, active participation in activities (Table 2). Overall rating of learning experience of the students was good to excellent and mean rating of organization and structure of the posting was  $8.27 \pm 1.15$ .

Students appreciated the application of classroom teaching into the community setup (82%) followed by group activity of health education poster preparation (90%). Other aspects were identification of community problems, planning action and health education given to the families etc. (Figure 1) whereas the aspects that needed improvement, as suggested by the students, were more field visits, time spent in community and presentation in community (Figure 2), which were not feasible due to time constraints and resource limitation.

Table 1: Calculation process of Content Validity Index (CVI)

| Items  | Internal experts |     |   |   |     | External experts |     |   |     |     | Experts in agreement    | I-CVI*      |
|--|------------------|-----|---|---|-----|------------------|-----|---|-----|-----|-------------------------|-------------|
|  | 1                | 2   | 3 | 4 | 5   | 6                | 7   | 8 | 9   | 10  |                         |             |
| Item – 1   | 1                | 1   | 1 | 1 | 1   | 1                | 0   | 1 | 1   | 1   | 9                       | 0.9         |
| Item – 2   | 0                | 1   | 1 | 1 | 1   | 1                | 1   | 1 | 1   | 1   | 9                       | 0.9         |
| Item – 3   | 1                | 1   | 1 | 1 | 1   | 1                | 1   | 1 | 0   | 1   | 9                       | 0.9         |
| Item – 4   | 1                | 0   | 1 | 1 | 0   | 1                | 1   | 1 | 1   | 1   | 8                       | 0.8         |
| Item – 5   | 1                | 1   | 1 | 1 | 1   | 0                | 1   | 1 | 1   | 0   | 8                       | 0.8         |
| <b>Total</b>   | 4                | 4   | 5 | 5 | 4   | 4                | 4   | 5 | 4   | 4   | <b>S-CVI#/<br/>Avg.</b> | 4.3         |
| <b>Proportion judged relevant<sup>3</sup></b>  | 0.8              | 0.8 | 1 | 1 | 0.8 | 0.8              | 0.8 | 1 | 0.8 | 0.8 | 8.6                     | <b>0.86</b> |
| <i>Average proportion of items judged as relevant across the ten experts<sup>3</sup></i> |                  |     |   |   |     |                  |     |   |     |     |                         |             |

\*I-CVI = Item - Content Validity Index, #S-CVI = Scale - Content Validity Index

**Table 2: Feedback analysis of students regarding the module-based training**

| Feedback questions   | Strongly agree  | Agree          | Neutral       | Disagree     | Strongly disagree |
|--|---|----------------|---------------|--------------|-------------------|
| Community diagnosis posting met your learning objectives?  | 31<br>(20.4%)   | 110<br>(72.4%) | 10<br>(6.6%)  | 01<br>(0.7%) | 00                |
| The learning materials were presented clearly and effectively  | 26<br>(17.1%)   | 112<br>(73.7%) | 13<br>(8.6%)  | 01<br>(0.7%) | 00                |
| The posting engaged your interest and maintained your attention?   | 30<br>(19.7%)   | 105<br>(69.1%) | 16<br>(10.5%) | 01<br>(0.7%) | 00                |
| The assessments and assignments were appropriate for your understanding of the content?                          | 26<br>(17.1%)   | 117<br>(77%)   | 08<br>(5.3%)  | 01<br>(0.7%) | 00                |
| The instructor provided sufficient support and guidance throughout the posting?                                  | 59<br>(38.8%)   | 87<br>(57.2%)  | 05<br>(3.3%)  | 01<br>(0.7%) | 00                |
| The learning outcomes were clearly communicated at the beginning of the posting?                                 | 38<br>(25%)   | 104<br>(68.4%) | 09<br>(5.9%)  | 01<br>(0.7%) | 00                |
| The posting encouraged active participation and interaction with peers?  | 46<br>(30.3%)   | 98<br>(64.5%)  | 07<br>(4.6%)  | 01<br>(0.7%) | 00                |
| The posting adequately addressed your questions and concerns?  | 29<br>(19.1%)   | 112<br>(73.7%) | 10<br>(6.6%)  | 01<br>(0.7%) | 00                |
| Overall, how would you rate your learning experience in this posting?  | Excellent – 38 (25%)<br>Good – 101 (66.4%)<br>Fair – 13 (8.6%)  |                |               |              |                   |
| How would you rate the organization and structure of the posting?<br>(On a scale of minimum '0' to maximum '10') | Mean score ± Standard deviation – 08.27 ± 1.152<br>Median score – 08<br>Minimum score – 05 (2%)<br>Maximum score – 10 (17%) |                |               |              |                   |

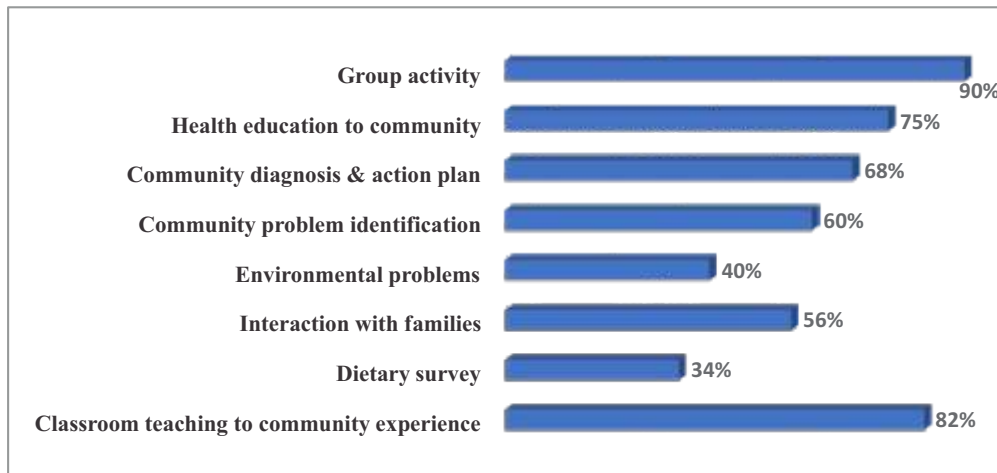


Figure 1: Students' perception on aspects of the posting found most valuable

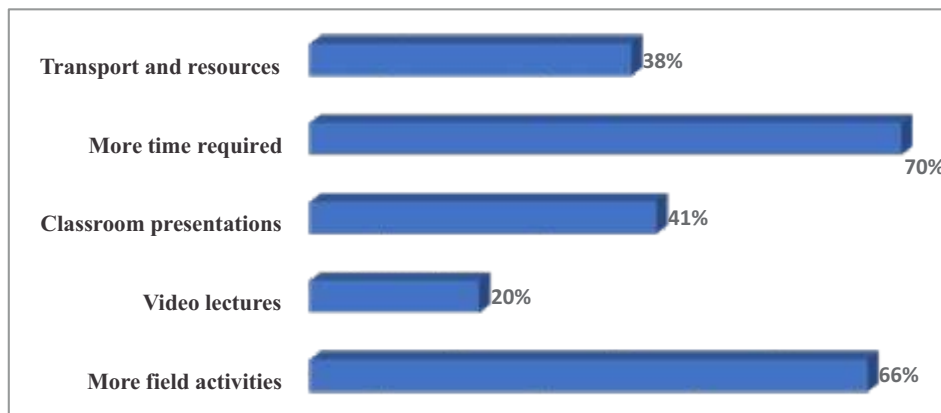


Figure 2: Students' perception on aspects of the posting that could be improved

**Discussion:**

The present research studied the experience and feedback of medical undergraduates who underwent training. The students appreciated the significance of community-based (community diagnosis module) teaching learning method to acquire CS and understand the community problems.

Ruiz-Moral and colleagues investigated the perceptions of fourth-year medical students regarding a CS training course featuring experiential learning components. While the students found this approach beneficial, they also experienced

significant stress, particularly during small-group sessions where they interacted with standardized patients and during summative assessments [1].

Sinjita Dutta and colleagues conducted a study with the aim of creating, implementing, and evaluating a meticulously designed module focused on enhancing CS among interns. Their findings revealed a significant improvement in post-training knowledge scores ( $16.68 \pm 2.5$ ), which were notably higher than the pre-training scores ( $15.45 \pm 2.9$ ). Additionally, the study demonstrated a substantial increase in interns' self-

assessed knowledge, with scores rising from  $11.08 \pm 3.7$  before the training to  $17.23 \pm 3.3$  after. Similarly, there was a significant enhancement in self-assessed skills, increasing from  $9.60 \pm 4.6$  to  $16.0 \pm 2.9$  post-training. Evaluation of interns' attitudes using the Communication Skills Assessment Scale (CSAS) showed a universally positive perspective. Interns performed particularly well (mean score of  $16.60 \pm 3.59$ ) when assessed through the SEGUE framework. Regarding satisfaction, feedback from interns on the survey indicated high levels of contentment, with item scores ranging from 82.5% to 93%. Furthermore, unanimous agreement among faculty members regarding the module's relevance, usefulness, and potential applicability across various departments for CS training further emphasized its success and broad applicability [6].

Aggarwal *et al.*, (2023) conducted a study examining the impact of training on CS among Phase I MBBS students at a Government Medical College. Participants responded positively to the participant-centric, assessment-based teaching and learning approach. They found the training engaging and enjoyable, gaining valuable insights into effective communication in a lively manner.

Moreover, students demonstrated a strong commitment to applying their acquired knowledge in real-world scenarios, indicating a determination to implement the CS they had learned [7].

Shewade *et al.*, (2017) undertook the task of developing a comprehensive assessment instrument employing a competency-based framework for Cognitive Behavioural Therapy (CBT). This tool consisted of seven domains incorporating a total of 74 items. These domains, along with their respective item counts, included: epidemiology and research methodology in public health (13),

biostatistics in public health (6), primary health center-level public health administration (17), family medicine (24), cultural competencies (3), community development and advocacy (2), and generic competence (9). Each item within this intricately designed tool was scored on a scale ranging from 1 to 5, enabling a thorough and nuanced evaluation of competency across the diverse range of domains addressed by the tool [8]. Narapureddy *et al.*, (2021) investigated the transformative possibilities of an inventive Community Orientation Program (COP) within the framework of CBME. Their main aim was to introduce students to community involvement at an early stage in their medical education. The focus was on developing CS, refining observational capabilities, and nurturing a passion for learning through collaborative experiences. This progressive approach sought to reshape the conventional educational model by imbuing students with essential skills and enthusiasm right from the start [9].

Ganapathy *et al.*, (2018) devised, implemented, and assessed a context-specific CBME initiative at SMVMCH in Puducherry, India. The program development and evaluation involved gathering feedback from students, conducting group interviews with small group tutors, and holding Focus Group Discussions (FGD) with community members. Over a five-year period, five cohorts comprising 629 medical students participated in the CBME program. Students reported enhanced skills in identifying health issues and understanding their connections to social, economic, and environmental factors. They also developed the ability to engage with local communities on prevalent health concerns. Feedback from community members indicated that students effectively raised awareness about environmental issues such as mosquito

breeding grounds, stagnant water, and waste disposal [10].

### Conclusion

In summary, the community diagnosis module's implementation yielded positive results, as evidenced by feedback and evaluations from 152 trained students and ten faculty members involved in the validation process. Students expressed overall satisfaction with various aspects of the training, including objectives, teaching methods, materials, assessments, and active participation in activities.

Particularly, they praised the integration of classroom teachings into community settings and group activities such as health education poster creation. While the module was well-received, there is room for improvement, especially in addressing student suggestions. The combination of positive feedback and constructive criticism offers valuable insights for enhancing the module in future iterations, ensuring a more comprehensive and impactful learning experience.

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#### How to cite this article:

Ganganahalli P, Udgiri R. Developing and implementing a skill-based competency module for Indian medical graduates: A community-based education approach for community diagnosis. *J Krishna Inst Med Sci Univ* 2024; 13(1):93-100.

Submitted: 05-Oct-2023 Accepted: 07-Dec-2023 Published: 01-Jan-2024