



## Evaluation of Foundation Course for Medical Students: Student and Faculty Perspectives

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Dr. Bushra Fiza<sup>1</sup>, Dr. Shipra Jain<sup>2</sup>

Dr Bushra Fiza\*, Professor, Biochemistry, Mahatma Gandhi Medical College & Hospital, Jaipur

Dr Shipra Jain, Professor, Pharmacology, Mahatma Gandhi Medical College & Hospital, Jaipur

\*Corresponding Author

Dr Bushra Fiza

Professor, Biochemistry

Mahatma Gandhi Medical College & Hospital

Jaipur, Raj. (INDIA)

bushrafiza786@gmail.com

### Abstract

Introduction of Competency Based Medical Education in 2019 has transformed undergraduate medical education with its constellation of new components. This study was conducted to evaluate the perception of students and faculties as well as the knowledge gained by students through Foundation course, one of the newer components of CBME. This was a program evaluation study at Kirkpatrick level 1 (Reaction) and level 2 (Learning). The study was conducted on 177 first year MBBS students and 15 resource faculties involved in delivering various sessions of Foundation course. A statistically significant difference was obtained in the mean scores of pre-test and post-test questionnaire ( $p$  value  $< 0.0001$ ). Most of the students (84.18%) and faculties (86.66%) considered the course to be relevant. Skills module was regarded as the most relevant by majority of students while module on Professionalism and Ethics was agreed as the most relevant by majority of faculties. Both students and faculties perceived the module on use of online learning resources and computer skills as least relevant. The short-term outcomes of Foundation course are apparent in terms of gain in knowledge and positive feedback of the major stakeholders. With slight modifications in the program as suggested by students and faculties, the course would be more beneficial such that intermediate and long-term outcomes would also be achieved.

**Keywords:** Competency based curriculum, orientation, program evaluation, questionnaire, modules, feedback

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### Introduction

Medical education has been revamped with the introduction of Competency Based Medical Education (CBME) for undergraduate students across the country from 2019 onwards.<sup>[1]</sup> CBME is an outcome-based strategy which is characterized by learner-centric, gender-sensitive, patient-centric and environment appropriate learning.<sup>[2]</sup> In this regard, an attempt has been made to allow students from diverse social background to adapt themselves to the medical environment through a one-month Foundation Course at the beginning of MBBS program. The objective of the Foundation Course is to orient and sensitize fresh medical students

with the requisite knowledge and skills that will help them in acclimatizing to the new professional environment.<sup>[3]</sup>

Foundation Course serves to provide insight into an assortment of fundamental topics like Graduate Medical Regulations, Goals and Roles of the Learner, Rules and Regulations of the University regarding attendance and examination, Patient safety and Biohazard safety, Universal precautions and Immunization, Role of the physician, Learning strategies and use of various online resources, Basic Life Support, Principles of Bioethics and its application, Professionalism and Ethics, Functioning as a part of health



care team, Time and stress management, Biomedical waste management in addition to sports and extra-curricular activities. These topics would then be reinforced further across various phases of the undergraduate curriculum from time to time. It is evident that the components of Foundation Course are multifaceted and would require a team of expert faculty from preclinical, paraclinical and clinical disciplines apart from the faculty of Medical Education Unit (MEU).<sup>[4]</sup>

Since Foundation Course is still in its infancy stage, there is a need to evaluate the level of satisfaction of the medical students as well as the faculties towards this program. Although Foundation course was introduced in 2019, the evaluation of this course was delayed owing to the COVID-19 pandemic. In view of the fact that the medical institutions have designed and planned the Foundation course as per the available resources in terms of infrastructure and trained faculties, evaluation of this course among such institutes would help the regulatory bodies and the medical institutions in obtaining the much-needed feedback from the stakeholders so that necessary interventions could be done in a timely manner.

A handful of studies have been conducted earlier to assess the perception of the students and the faculty for different modules of this program.<sup>[5,6]</sup> Few studies have been conducted recently to evaluate this program at Kirkpatrick level 1 by assessing the reaction of the students.<sup>[3]</sup> However, no such study has been able to evaluate the reaction of the students (Kirkpatrick level 1) as well as the learning (Kirkpatrick level 2) which occurred through the Foundation course. Thus, the present study has been planned with the aim to evaluate the Foundation Course in terms of perception of students and faculties and the knowledge gained by students through this newly introduced program.

## Aim and objectives

### Aim:

To evaluate the effectiveness of recently introduced Foundation Course.

### Objectives:

1. To assess the knowledge gained by students by comparing pre-test and post-test scores
2. To evaluate the perception of students towards Foundation course
3. To evaluate the perception of faculties towards Foundation course

## Materials and Methods

**Study design** - This is a program evaluation study at Kirkpatrick level 1 (Reaction) and level 2 (Learning). The study was commenced after seeking approval from Institutional Ethics Committee.

**Study duration** – 3 months

**Inclusion criteria** -All students of MBBS batch 2021 admitted prior to the onset of Foundation Course were enrolled in the study. The participants were explained about the entire study procedure and an informed consent was obtained.

**Exclusion criteria** - Students admitted after the initiation of Foundation course were excluded. Students not willing to participate were excluded from the study.

Hence, a total of 177 students were included in the study.

Various modules included in the foundation course were:

1. Orientation module
2. Community orientation module



3. Skills module
4. Module on professional development and ethics
5. Module on English language
6. Module on use of online learning resources and basic computer skills
7. Module on yoga sessions

A pre-validated questionnaire comprising of 20 multiple choice questions related to the various components of FC was provided to all the students before the commencement of the Foundation Course through Google forms to assess their preliminary knowledge regarding various modules of the program. At the end of Foundation course, the students were asked to fill the post-test questionnaire through Google forms to assess the knowledge gained through various sessions of the program. The perception of all the undergraduate students and faculty (n=15) involved in conducting various sessions of the program was then obtained through pre-validated feedback questionnaires by using a 5-point Likert scale ranging from 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree. The items included in the questionnaire were aligned with the

research question to ensure internal consistency of the questionnaire.

### Statistical analysis

The collected data was entered in Microsoft excel 2010 worksheet and statistical analysis was performed using IBM SPSS Statistics version 23. The pre-test and post-test scores obtained in the questionnaire were compared using paired t test. A P value  $\leq 0.05$  was considered as statistically significant. Descriptive statistics was applied to analyse the perception of students and faculties towards Foundation Course. The data was expressed in n (%).

### Results

Out of total 177 study participants, 89 (50.3%) were male while 88 (49.7%) were female students.

The mean scores of the students were calculated by pre-test and post-test questionnaire to assess the knowledge gained by the students through the program. The difference in the mean scores of pre and post-test questionnaires related to various modules of Foundation course was found to be extremely significant statistically (p value < 0.0001) as depicted in Table 1.

**Table 1: Comparison of pre-test and post-test scores (n = 177)**

	Mean $\pm$ SD	P value
<b>Pre-test score</b>	11.89 $\pm$ 2.42	< 0.0001
<b>Post-test score</b>	15.60 $\pm$ 2.38	

At the end of the program, the students responded to the questionnaire related to their perception towards Foundation course. The questionnaire was based on a 5-point Likert scale ranging from strongly agree to strongly disagree. 152 (85.87%) students agreed that Foundation course clarified the concepts of professionalism and ethics while 149 (84.18%) students considered the course

to be relevant. 143 (80.79%) students agreed that the resource faculties were well trained for conducting various sessions of Foundation course, students were able to ask questions during and after the sessions and that their queries were resolved by the resource faculties appropriately. 142 (80.22%) students agreed the course was helpful in learning basic skills as depicted in Table 2.



**Table 2: Student’s perspectives for Foundation course (n = 177)**

S.no	Item	Strongly Agree n (%)	Agree n (%)	Neutral n (%)	Disagree n (%)	Strongly Disagree n (%)
1.	Did you find the Foundation course (FC) introduced in CBME relevant for medical students	59 (33.3)	90 (50.8)	21 (11.9)	6 (3.2)	1 (0.6)
2.	Did you find FC an enjoyable learning experience	42 (23.7)	93 (52.5)	32 (18.1)	6 (3.4)	4 (2.3)
3.	Was this course helpful in acclimatization to professional environment?	43 (24.3)	97 (54.8)	30 (16.9)	5 (2.8)	2 (1.1)
4.	Will FC be helpful in boosting your confidence?	40 (22.6)	90 (50.8)	35 (19.8)	7 (4.0)	5 (2.8)
5.	Were the faculties well trained for conducting the FC sessions?	50 (28.2)	93 (52.5)	26 (14.7)	5 (2.8)	3 (1.7)
6.	Were you given chance to ask questions during and after the FC sessions?	55 (31.1)	88 (49.7)	22 (12.4)	6 (3.4)	6 (3.4)
7.	Were your queries resolved appropriately?	42 (23.7)	101 (57.1)	28 (15.8)	3 (1.7)	3 (1.7)
8.	Was reflective writing helpful in understanding the basic concepts of FC sessions?	45 (25.4)	88 (49.7)	38 (21.5)	3 (1.7)	3 (1.7)
9.	Was FC helpful in understanding proper time management?	36 (20.3)	89 (50.3)	32 (18.1)	12 (6.8)	8 (4.5)
10.	Was FC helpful in understanding management of stress?	31 (17.5)	87 (49.2)	42 (23.7)	9 (5.1)	8 (4.5)
11.	Was FC helpful in understanding the concepts of professionalism & ethics?	53 (29.9)	99 (55.9)	22 (12.4)	1 (0.6)	2 (1.1)
12.	Was FC helpful in learning basic skills?	48 (27.1)	94 (53.1)	29 (16.4)	4 (2.3)	2 (1.1)

In addition, the perception of 15 resource faculties was also assessed using a pre-validated feedback questionnaire based on 5-point Likert scale ranging from strongly agree to strongly disagree. Out of total 15 faculties, 13 (86.7%) faculties constituted the resource faculties of Medical Education Unit of the institute. 14 (93.33%) faculties agreed that the course would be helpful for students in

acclimatization to professional environment while 13 (86.66%) faculties strongly agreed that Foundation course is relevant for medical students. Majority [13 (86.66%)] of the faculties agreed that interactive methods were used to conduct the session of Foundation course. (Table 3)



**Table 3: Faculty’s perspectives for Foundation course (n = 15)**

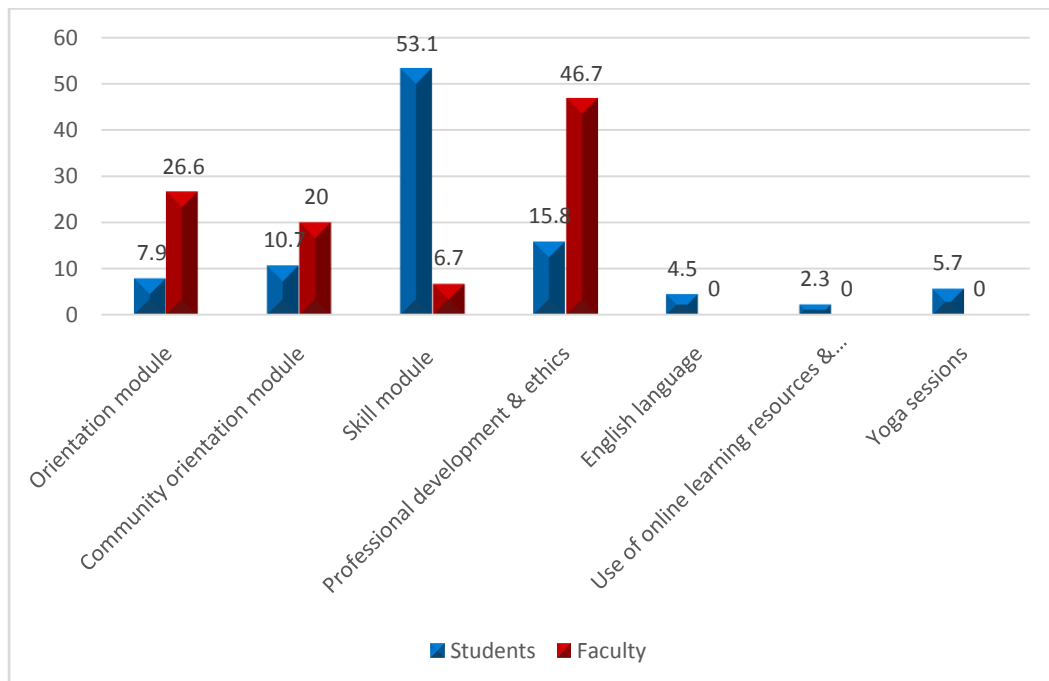
S.no	Item	Strongly Agree n (%)	Agree n (%)	Neutral n (%)	Disagree n (%)	Strongly Disagree n (%)
1.	Did you find the Foundation course (FC) introduced in CBME relevant for medical students	8 (53.3)	5 (33.3)	1 (6.7)	1 (6.7)	0
2.	Was this course helpful for students in acclimatization to professional environment?	5 (33.3)	9 (60.0)	1 (6.7)	0	0
3.	Will FC be helpful in improving the academic performance of students?	5 (33.3)	6 (40)	2 (13.3)	2 (13.3)	0
4.	Will FC be helpful in boosting confidence of students?	6 (40.0)	5 (33.3)	3 (20)	1 (6.7)	0
5.	Do you think that duration of FC should be modified?	3 (20)	7 (46.7)	2 (13.3)	2 (13.3)	1 (6.7)

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The perception of students and faculties for various modules of Foundation course was compared and evaluated. Majority of students agreed that Skills module was the most relevant while most of the resource faculties perceived the module on Professionalism and

Ethics as the most relevant. The module on use of online learning resources and computer skills was considered as least relevant by both students as well as the resource faculties as depicted in Figure 1.

**Figure 1: Perception of students and faculties regarding relevance of various modules of Foundation course**



## DISCUSSION

Implementation of Competency-Based Medical Education (CBME) has been regarded as one of the significant milestones in the field of medical education. An array of new components has been introduced under CBME including the Foundation Course for fresh medical students. This is because medicine as a profession, requires not only acquisition of sound knowledge and clinical skills, but it also requires appropriate attitude and behaviour of the medical student.<sup>[7]</sup> The sole purpose of the Foundation course is to facilitate in the smooth transition and adaptation of the school going students to the medical profession. The present study is a program evaluation study at Kirkpatrick level 1 (reaction) and level 2 (learning) which aims to analyse the perception of the major stakeholders involved in the program viz. students and faculties, and to assess the knowledge gained by the students through this program.

In the present study, a statistically significant difference ( $p$  value  $< 0.0001$ ) was observed in the mean scores of the students in the pre-test and post-test questionnaire pertaining to various modules of the Foundation course.<sup>[4]</sup> This highlights the importance of the program in terms of acquisition of knowledge and basic clinical skills and the results of this study are comparable to a recent study conducted by Yograj et al.<sup>[6]</sup> Similar studies conducted earlier by Dixit et al and Das et al concluded improved scores in terms of student's perception of knowledge at the end of Foundation course.<sup>[8,9]</sup>

Besides, improvement in the mean scores of pre and post-test questionnaires, any new program needs to be evaluated regarding the perception of the stakeholders involved. Though Foundation course has been implemented since 2019, the evaluation of the program was delayed due to the COVID-19 pandemic. In this study, Foundation course

was perceived as a welcome step, as majority of students (84.18%) considered the program to be relevant as observed in similar study conducted earlier by Vyas et al.<sup>[10]</sup> Another study conducted by Das et al concluded that 95% of students found the contents of the course useful and relevant.<sup>[9]</sup> Skills module comprising of Basic Life Support, Handwashing techniques and Biomedical Waste Management was considered as the most relevant module since 94 (53.1%) students considered it as the most relevant module. These findings are congruent with similar studies conducted earlier.<sup>[5,10]</sup> Most of the students (85.87%) agreed that the program was useful in clearing their concepts about Professionalism and ethics. The findings of this study are coherent with another similar study done by Francis et al in which most of the students reported benefits from topics related to spirituality and ethics.<sup>[11]</sup> However, this is in contrast with another study conducted in Gujarat by Vyas et al in which the module on professional development and ethics got a less favourable response.<sup>[10]</sup>

Apart from students' perspective, the perception of the resource faculties was also evaluated, and 14 (93.33%) faculties opined that Foundation course was helpful in adaptation of students to professional environment as evidenced by similar study conducted by Yograj et al in which majority of stakeholders found the course satisfying and a memorable experience.<sup>[6]</sup> In this study, most [10 (66.7%)] of the faculties were in favour of the fact that the duration of the course was not appropriate and needs modification. Most of the resource faculties (46.7%) perceived the module on Professionalism and Ethics as the most relevant. It was interesting to note that both students as well as the resource faculties considered the module on use of online learning resources and computer skills as the least relevant. This may be as most of the students are well versed in basic computer skills and hence do not find it relevant as compared to other modules of this



program. Probably, orientation towards use of online resources would be more helpful at a later stage when they are introduced to the concept of self-directed learning.

## CONCLUSION

Foundation course has served its purpose as evident through gain in knowledge by the students and positive feedback of both students and faculties. With slight modifications in the program as suggested by students and faculties, the course would be more beneficial such that intermediate and long-term outcomes would also be achieved. The long-term outcomes of this program can be studied by evaluating students' perception at a later stage of curriculum.

## LIMITATIONS

Students admitted in the later rounds of counselling could not be included in the study as they missed the pre-test questionnaire as well as the initial sessions of FC. Hence, the sample size was accordingly reduced.

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