

Stages of Concern of Medical Faculty toward Adoption of Competency-based Medical Education in India: A Multicentric Survey

Abstract

Context: Currently, a major curricular reform in the form of competency-based medical education (CBME) curriculum is being rolled out across all medical colleges in India. However, it is important to find out and address the concerns of faculty regarding various aspects of this new curriculum. **Aim:** To analyze the concerns of the faculty members of medical colleges in India in response to the changes emerging from the adoption and implementation of the new curriculum through the concerns-based adoption model by applying the stages of concern (SoC) questionnaire. **Methodology:** A multicentric, cross-sectional quantitative study involving faculty members currently working in medical colleges and with more than 2 years of teaching experience was conducted using SoC questionnaire (SoCQ). The questionnaire was delivered as Google Form. **Results:** Of the 744 faculty participants, 41.1% (306) of faculty belonged to the 31–40 years age group followed by the 41–50 years age group (267, 35.9%). Respondents rated their level of concern differently among the seven SoC - percentile scores were highest in Stage 0—awareness (94) and least in Stage 4—consequences (59). An appreciably higher percentile scores were seen at the consequences stage (63 vs. 54), collaboration stage (80 vs. 68), and refocusing stage (77 vs. 69) in those faculty members who were trained in curriculum implementation support program (CISP) compared to the untrained group. However; the SoCQ profiles of CISP trained and untrained faculty were very much similar. SoCQ profiles of holders of advanced training in medical education and non-holders were also the same. **Conclusion:** Almost after 2 years of well-planned introduction of the CBME curriculum in India, the generalized faculty profile is still suggestive of interested but non-user type for the adoption of CBME. However; compared to untrained faculty, CISP trained faculty is more concerned about the impact of CBME on students, collaborating with colleagues for its proper implementation and exploring more benefits from the implementation of CBME, indicating that more hand-holding is required for faculty development beyond CISP.

Keywords: Competency-based medical education, concerns-based adoption model, curriculum implementation support program, curriculum, faculty survey

Introduction

The regulatory body for medical education in India introduced competency-based medical education (CBME) in the undergraduate medical curriculum in 2019 to comply with the needs of society, healthcare, and training of the medical students.^[1] This curricular revision was necessitated to address the existing lacunae in Indian medical education with emphasis on desired and observable outcomes relevant to the daily practice of medicine.

This is the first major revision of the medical curriculum after a hiatus of two decades, with which the regulatory body has introduced subject-wise competencies with clearly defined teaching-learning strategies and assessment methods. These reforms have

defined an Indian Medical Graduate (IMG) for the first time and strive to ensure that the IMG meets the global benchmarks in knowledge, attitude, skills, and communication through the well-defined competencies with additional components such as foundation course, electives, integrated learning, and early clinical exposure.

The revised curriculum was implemented in all medical colleges across India from August 2019 and is planned to be progressively rolled out for the MBBS course. Even though curriculum revision was the need of the hour, these reforms are not devoid of emergent challenges. Various issues regarding the readiness of faculty in accepting the change, personal thoughts, and comfort level in implementing the

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said curricular change need to be addressed adequately for increasing the likelihood for effective change to occur in the direction of the desired outcome.

For any change to have a desirable impact, it is imperative to have a longitudinal, continuous evaluation that involves all the stakeholders.^[2] Hence, it is important to find out and address the concerns of faculty regarding various aspects of the new curriculum. Addressing the faculty concerns and mentoring them would help in creating an appropriate educational environment and the subsequent smooth transition. Not heeding to the faculty concerns can overwhelm them and present various hurdles to this curricular change.

So far, there has been scant research that has analyzed the concerns that faculty members have in response to the changes emerging from the adoption and implementation of CBME. To address such concerns with regard to adopting CBME, it is important to explore faculty members' perceptions of the need for a curricular change and their present concerns regarding its implementation. Accordingly, this study was planned to assess the stages of concerns (SoCs) of medical faculty, early in the implementation of CBME using the concerns-based adoption model (CBAM) by applying the SoC questionnaire (SoCQ) to examine their readiness to this curricular transformation.

This study is based on CBAM, described by Hall and Hord.^[3] CBAM describes, in stages, how people adapt to changes due to any innovation. Any innovative change will lead to the intended outcome only if the change is facilitated by involving all stakeholders. CBAM addresses the involved individual's concern about delivery, implementation, and adaptation of the innovation.^[4] The CBAM consists of three diagnostic dimensions: the Innovation Configuration, the Levels of Use, and the SoC.^[5] In this study, the implementation of the CBAM specifically focussed on the SoCQ. The SoC part of the CBAM model can be used for needs assessment and/or program evaluation. It can also be used to plan faculty development, mentoring, growth, and implementation of change/innovation. The SoCQ measures the seven levels of concern that people might experience while undergoing change. All stakeholders involved in change have different concerns at different times with varying degrees of intensity.^[6,7] Moreover, any stakeholder can concurrently go through several SoC with different degrees of intensity.^[8] SoC has been prodded as a model to look at the readiness to adapt to new change; hence, we considered using it for our study.

Methodology

Study-design

A multicentric, cross-sectional quantitative study design.

Study population

Faculty members working in 12 medical colleges across India as lecturer or above and currently involved in teaching

MBBS students and having at least two completed years of post-PG teaching experience were recruited in the study. Retired faculty members and faculty members working in medical colleges but not involved in teaching MBBS students from August 2019 onwards were excluded from the study.

Sample size

The sample size was calculated using the assumptions - P (proportion of faculty with concerns related to the adoption of CBME assumed to be 0.5 since this would provide the maximum sample size), d (the permissible margin of error/the required precision = 5%) and $Z_{\alpha/2}$ (the value of the standard normal curve score corresponding to the given confidence interval = 2.58) corresponding to 99% confidence level, the minimum sample size (n) has been estimated as: $n = (z_{\alpha/2})^2 p(1 - p)/d^2 = 665.64$. Faculty from participating colleges across the country was included in the study using nonprobabilistic convenience sampling.

Data collection

Data were collected online using Google forms for ease of dispersion and analysis.

Study tool

The SoCQ was used to evaluate the participants' concerns regarding the new curriculum. The present study tool included two components: Participants' demographic data, including their age, gender, qualifications, institutional affiliation, department, designation, and duration of teaching experience; and 35 questions relating to the SoC. This questionnaire consists of 35 questions, rated on a seven-point Likert scale where high numbers indicate high concern and low numbers indicate low concern; 0 indicates very low concern or completely irrelevant items; 1, 2 means-not true of me now; 3, 4, 5 means-somewhat true of me now; and 6, 7 means-very true of me now. The questions evaluate the experience of the study participants and determine the stage in which they are. There are seven stages: Stage 0-Awareness, Stage 1-Informational, Stage 2-Personal, Stage 3-Management, Stage 4-Consequence, Stage 5-Collaboration, and Stage 6-Refocussing [Table 1]. Marking each of the 35 items was made mandatory in Google Form.

The questionnaire has a good reliability with a Cronbach's alpha of 0.64–0.83 and good test-retest reliability with a Pearson-r of 0.65–0.86.^[9] In the present study, the reliability of the study tool was also checked. It was found to be 0.607 for Stage 0, 0.690 for Stage 1, 0.726 for Stage 2, 0.740 for Stage 3, 0.744 for Stage 4, 0.821 for Stage 5 and 0.702 for Stage 6 and confirmed to be satisfactory.

Ethical approval

Ethical approval was obtained before commencement of the study in accordance with the guidelines of the Indian Council of Medical Research, from Institutional Research

Committee/Review Board and/or Ethics Committee, as per the policy of involved Institutes. Study participants were provided with information in the opening section of the survey to inform them about the purpose of the study and how long their participation in the study would be required. To protect anonymity, all identifying information was kept confidential and the participation of faculty was voluntary. Participation in the study was considered as implied consent.

Data analysis

As study tool was administered through Google Forms where participants have to mandatory score each of the 35 items before submission, so there was “no missing item response.” Data were analyzed manually to calculate raw scores for each of the seven stages and locate the percentile score for each scale. Peak stage score and relative intensity (percentile), both were calculated for better interpretation. Instead of averaging the percentile, the average for raw scores for each stage of concern was calculated and was referred to the percentile score table, as per manual description.^[10]

Results

Of the 744 faculty participants; 52.8% (393) were males and 47.2% (351) were females. 41.1% (306) of faculty belonged to 31–40 years age group followed by the 41–50 years age group which comprised 35.9% (267) 75.1% of faculty participants were employed in private medical colleges while 24.9% were from Government medical colleges. Of these, 41.5% of faculty held the post of assistant professors/lecturer, 24.5% were Associate professors, 20.6% were professors, 12.6% were head of departments and 0.9% were dean/principal in their colleges. About 67.1% of faculty participants were trained in revised/basic courses in medical education, whereas

12.0% of faculty had not received any training in medical education. The Curriculum Implementation Support Programme (CISP) training had been attended by 51.3% of all faculty participants. About 77.8% of faculty were not associated with the Medical Education Unit/Curriculum Committee of their colleges [Table 2]. Study participants were recruited from 12 Medical colleges across India covering Northern, Eastern, Western, Southern, and Central India. The state-wise representation of these participants is depicted in Figure 1.

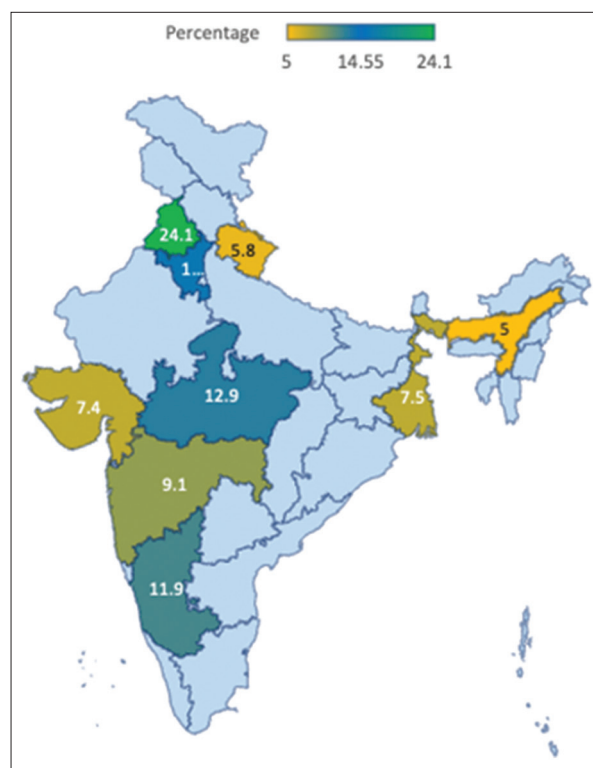


Figure 1: State wise representation of participating faculty

Table 1: Description of stages of concern

Patterns	Stages of concern	Definition	Expression
Impact	Refocusing	The focus is on the exploration of more universal benefits from the innovation	I have some ideas about something that works even better
	Collaboration	Focuses on coordination and cooperation with others regarding the use of innovation	I am concerned about relating what I am doing with what my co-workers are doing
	Consequences	Focuses on the impact of the innovation in the immediate sphere of influence	How is my use affecting my students
Task	Management	Attention is focused on the processes and tasks of using the innovation and the best use of information and resources	I seem to be spending all of my time getting materials ready
Self	Personal	Individual is uncertain about the demands of the innovation, his/her inadequacy to meet those demands, and his/her role with the innovation	How will using it affect me?
	Informational	A general unconcerned of the innovation and interest in learning more detail about it is indicated. The person seems to be unworried about him/her in relation to the innovation	I would like to know more about it
Unrelated	Unconcerned/awareness	Little concern about the innovation	I am concerned about some other things

Table 2: Baseline data of faculty participants (n=744)

Faculty characteristics	n (%)
Gender	
Male	393 (52.8)
Female	351 (47.2)
Age (years)	
Upto 30	28 (3.8)
31-40	306 (41.1)
41-50	267 (35.9)
51-60	97 (13.0)
>60	46 (6.2)
Type of medical college	
Government	185 (24.9)
Private	559 (75.1)
Designation	
Assistant Professor/Lecturer	308 (41.4)
Associate Professor	182 (24.5)
Professor/Add Professor	153 (20.6)
Head of departments	94 (12.6)
Dean/Principal	7 (0.9)
Department/specialty	
Preclinical	160 (21.5)
Para-clinical	180 (24.2)
Medicine and allied	201 (27.0)
Surgery and allied	203 (27.3)
Training in MET	
Basic Course/rBCW	499 (67.1)
CISP	382 (51.3)
ACME	102 (13.7)
FAIMER fellow	33 (4.4)
No training in MET	139 (12.0)
Member MEU/CC	
MEU member	96 (12.9)
CC member	52 (7.0)
Member MEU and CC	17 (2.3)
None	579 (77.8)

MET: Medical education technology; rBCW: Revise Basic Course Workshop; CISP: Curriculum Implementation Support Program; ACME: Advance Course in Medical Education; FAIMER: Foundation for Advancement in International Medical Education and Research; MEU: Medical Education Unit; CC: Curriculum Committee

Table 3: Stage-wise distribution of peak scores

Stages of concern	Number of faculty (percentage of faculty)
Stage 0: Awareness	34 (4.6)
Stage 1: Informational	101 (13.6)
Stage 2: Personal	143 (19.2)
Stage 3: Management	28 (3.8)
Stage 4: Consequences	197 (26.5)
Stage 5: Collaboration	222 (29.8)
Stage 6: Refocusing	19 (2.6)
Total	744 (100.0)

Table 4: Faculty stages of concern about competency-based medical education implementation

Stages of concern (n=744)	Raw scores	Percentile scores
Stage 0: Awareness	16.5	94
Stage 1: Informational	23.5	88
Stage 2: Personal	24.4	83
Stage 3: Management	18.4	69
Stage 4: Consequences	25.9	59
Stage 5: Collaboration	26.3	72
Stage 6: Refocusing	22.02	73

CBME: Competency-based medical education

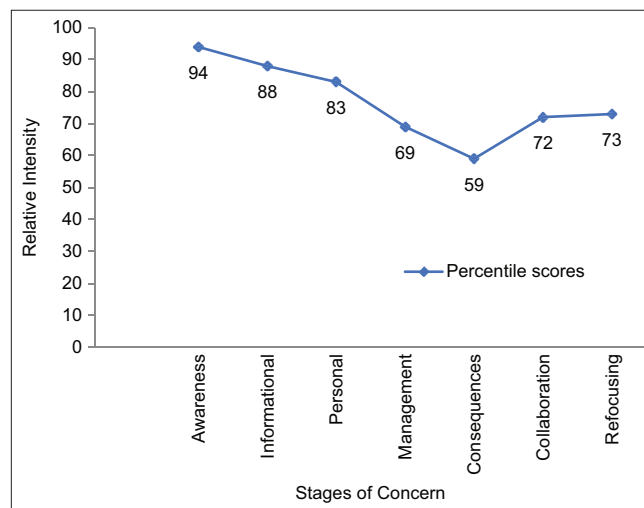


Figure 2: Stages of concern questionnaire profile of Faculty respondents

The highest percentage of faculty participants (29.8%) has the peak scores for Stage 5– collaboration. The next highest percentage of faculty participants’ peak score was seen for the consequences stage (26.5%). The lowest percentage (2.6%) for peak score was seen for Stage 6– refocusing [Table 3]. Raw scores and percentile scores of the study participants for different SoCs for the implementation of CBME are shown in Table 4. Percentile scores were highest in Stage 0– awareness (94) and least in Stage 4– consequences (59). This means that relative intensity was highest for Stage 0, while it was least for Stage 4 [Table 4].

The relative intensity (percentile scores) for each stage were plotted against the concerned stage to draw a line graph [Figure 2]. The SoCQ profile of the faculty participants as per the percentile scores/relative intensity was suggestive of a typical non-user profile when compared with various user profiles depicted in the scoring manual.^[10]

Comparison of raw and percentile scores of SoC in faculty participants who have attended the CISP training and those who have not attended the CISP training is shown

in Table 5. A slightly higher percentile scores were seen at the consequences stage, collaboration stage, and refocusing stage in those faculty members who had attended the CISP compared to the untrained faculty group [Table 5]. However; the SoCQ profiles of CISP trained and untrained faculty were very much similar [Figure 3].

Comparison of raw and percentile scores of SoC in faculty participants who have attended advance training in medical education like Foundation for Advancement in International

Medical Education and Research (FAIMER) fellowship and Advance Course in Medical Education (ACME) and those who have not attended such courses are shown in Table 6. A slightly higher percentile scores was seen at management stage, collaboration stage and refocusing stage in those faculty members who had attended the advance training. However; the SoCQ profiles of faculty having attended advance training and nontrained faculty was very much similar [Figure 4].

Table 5: Faculty stages of concern and Curriculum Implementation Support Program training

Stages of concern (n=744)	CISP attended (n=382)		CISP not attended (n=362)	
	Raw scores	Percentile scores	Raw scores	Percentile scores
Stage 0: Awareness	16.01	91	17.03	94
Stage 1: Informational	23.10	84	23.91	88
Stage 2: Personal	24.57	85	24.34	83
Stage 3: Management	18.42	69	18.36	69
Stage 4: Consequences	26.97	63	24.89	54
Stage 5: Collaboration	28.0	80	24.58	68
Stage 6: Refocusing	22.87	77	21.12	69

CISP: Curriculum Implementation Support Program

Table 6: Faculty stages of concern and Foundation for Advancement in International Medical Education and Research/Advance Course in Medical Education training

Stages of concern (n=744)	FAIMER and/or ACME done (n=124)		FAIMER/ACME not done (n=620)	
	Raw scores	Percentile scores	Raw scores	Percentile scores
Stage 0: Awareness	16.12	91	16.58	94
Stage 1: Informational	22.94	84	23.7	88
Stage 2: Personal	23.96	83	24.58	85
Stage 3: Management	19.32	73	18.22	69
Stage 4: Consequences	26.39	59	25.92	59
Stage 5: Collaboration	27.99	80	26.04	72
Stage 6: Refocusing	23.10	77	21.80	73

FAIMER: Foundation for Advancement in International Medical Education and Research; ACME: Advance Course in Medical Education

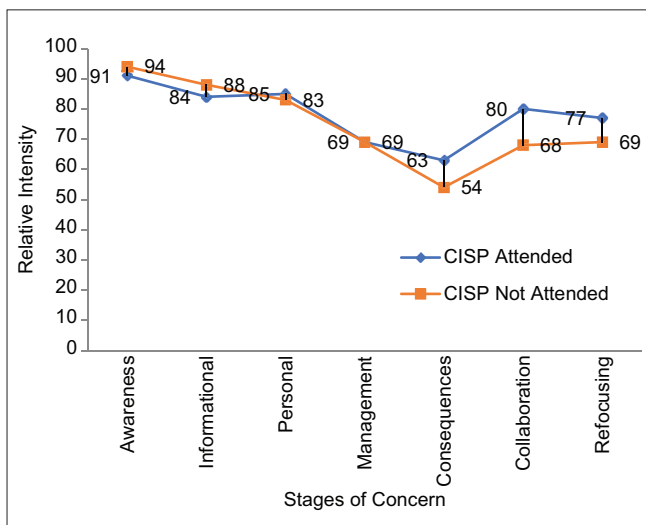


Figure 3: Stages of concern questionnaire profile of curriculum implementation support program trained and untrained faculty

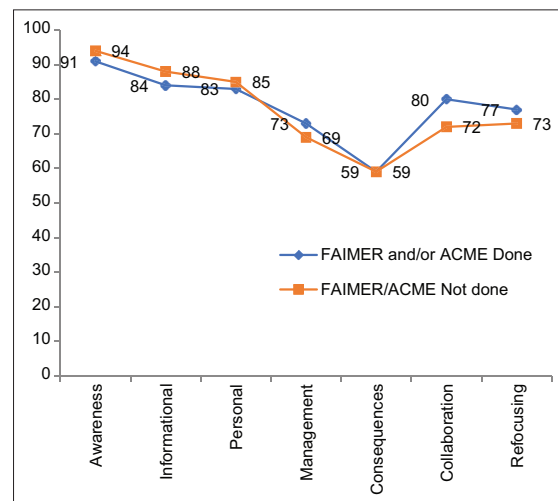


Figure 4: Stages of concern questionnaire profile of faculty based on Foundation for Advancement in International Medical Education and Research/Advance Course in Medical Education training

Discussion

According to the six-step approach to medical curriculum development by Kern, the sixth step-evaluation and feedback helps curriculum improvement and provide evidence of the efficacy of a curriculum.^[11] Our study involves the evaluation of SoC of medical faculty toward the adoption of the new CBME curriculum in different medical colleges. Data was collected from 744 faculty members of various medical colleges across India via 35 questions relating to the SoC. Though change is considered to be the only constant thing, change can be difficult and uncomfortable for many people. Perceptions, reactions, and emotions of all stakeholders vary a lot during the implementation of change. Hence, evaluation of perceptions of people is considered to be important during the implementation of the change process.

In our study, the respondents rated their level of concern differently amongst the seven SoC. Maximum faculty participants have the peak scores for Stage 5– collaboration, followed by consequences stage (Stage 4). The least number of faculty participants have Peak score for Stage 6– refocusing. Interpretation of the peak score is based directly on the SoC, which in our study means that as “stand-alone concerns for independent stages,” more faculty participants have concerns for these two stages which are considered stages of “impact.” For a change or innovation to be successfully implemented, faculty need to be more concerned about consequence, collaboration, and refocusing stage.^[12] Teachers in these stages are concerned about the impact of change on students and its benefits for the students. These teachers are concerned about how to coordinate and cooperate with their colleagues in implementing the curriculum. They are interested in change and have already started networking and collaborating about the change with their colleagues for implementation of the change.

However, for interpreting group data generated from administrating SoCQ, the more interpretable and effective method is calculating raw scores for each stage of concern and then locate percentile scores which depict the relative intensity of concern at each stage. The percentile scores are not absolute; instead, they are relative to the scores (or concerns) for other stages. The higher the score, the more intense the concerns are at that stage; the lower the score, the less intense the concerns at that stage.^[10] In our study, faculty participants have the highest relative concerns for Stage 0– awareness, then for Stage 1– informational, Stage 2– personal, Stage 3– management, and Stage 4– consequences. After this continuous fall till Stage 4, relative intensity improved slightly for Stage 5– collaboration and Stage 6– refocusing.

The user profile was suggestive of typical non-user profile [Figure 2] when compared with the scoring

manual.^[10] This profile suggests that as faculty, participants are not fully aware about the innovation (implementation of CBME curriculum in this case) and are somewhat more concerned about other things (high Stage 0 scores). Because Stages 1 and 2 are also high, it means that though the faculty members are not fully aware, they are interested in learning more about CBME and its implementation. Group does not have significant management concerns (signified by medium intensity on Stage 3) and is not intensely concerned about the innovation’s consequences for students (low intensity on Stage 4); however, faculty members have medium to high concerns about collaborating with others and exploration of more universal benefits from the innovation (medium intensity on Stages 5 and 6). The overall group profile suggests and reflects the interested, ready to learn and collaborate, positively disposed nonuser group of faculty.

Many faculty members are resistant to change and are rigid in their conceptions of their roles and responsibilities.^[13] Change facilitators and policymakers have substantial influences on bringing out positive change outcomes.^[14] For people who are more concerned, interventions in the form of faculty development programs (FDPs) have to be introduced for a smooth transition to desired change. CISP is one such FDP which was introduced for making faculty aware of new proposed interventions in the new curriculum.

In our study, CISP training has been attended by 51.3% of all faculty participants. An appreciably higher percentile scores were seen at the consequences stage (63 vs. 54), collaboration stage (80 vs. 68), and refocusing stage (77 vs. 69) in those faculty members who have already attended CISP compared to those who have not. The SoCQ profile of both groups– those who have already attended CISP and those who have not– was suggestive of typical non-user when compared with user profiles depicted in the scoring manual, and both ran almost superimposed [Figure 3]. However, the sizeable difference of concern as seen for Stage 4– consequences, Stage 5– collaboration and Stage 6– refocusing in CISP trained group compared to untrained reflects that compared to untrained faculty, CISP trained faculty is more concerned about the impact of CBME on students, collaborating with colleagues for its proper implementation and exploring more benefits from the implementation of CBME.

In our study, 124 (16.67%) faculty members have undergone advanced training in medical education, like ACME and/or FAIMER fellowship. A slightly higher percentile scores were seen at the management stage (73 vs. 69), collaboration stage (80 vs. 72), and refocusing stage (77 vs. 73) in those faculty members who have attended advanced training in medical education compared to those who have not. The SoCQ profile of both

groups was typical non-user and superimposed [Figure 4]. However, compared to the nontrained, the advance-trainee group has relatively high concerns about the best use of information and resources for the implementation of CBME, collaborating with colleagues for its proper implementation, and exploring more benefits from the implementation of CBME.

The overall group profile, comparable non-user profile in both CISP trained and untrained groups as well as advance trainee and nontrainee groups, and sizeable difference of concern in CISP trained group compared to the untrained group and advance trainee group compared to the nontrainee group for higher SoC indicates that though FDPs seems to achieve its objectives to a good extent, more hand-holding is required beyond such training for faculty development for successful implementation of CBME.

Limitations

This study captures the current concerns of the faculty. As SoC in particular individual changes with time and is a developmental phenomenon, the participants' concern down the line may change to higher stages. This calls for future studies after few years of experience with the CBME.

Recommendations

Earlier studies have shown that in terms of the theory of planned behavior, positive attitudes toward behavior (viewing CBME as beneficial for the country) and control over behavior (sound knowledge of CBME) are more likely to make an impact compared to subjective norms (regulatory approaches).^[15] We have primarily relied on providing the knowledge and skills, and regulatory approaches for this innovation. We need to think about working on the attitudinal aspect as well and provide the opportunity for the teachers to bring their apprehensions and related issues out in the open. This may hold the key for future.

Conclusion

Because faculty concerns and needs are an important aspect of the successful implementation of any innovation, this study is significant in the context of medical education reforms in India towards adopting CBME in the undergraduate medical curriculum. A typical non-user profile indicates that faculty members are still unaware, though they are concerned about getting more information about CBME and ready to learn.

However, compared to untrained faculty, CISP trained faculty has more intense concerns for higher SoC such as consequences, collaboration, and refocusing. Slightly more intense concerns for higher stages were also seen among advance-trainee. This indicates that though we are not able to reap the full benefits of FDPs as group profile is the same in both comparative groups, relatively high intensity

of concerns for collaboration and networking is certainly seen among the trained group. Maybe there is a need to have increased hand-holding and change the focus of the training, rather than the training itself! Policymakers and administrators responsible for change/innovations must focus on individuals, innovation, and the context in which interaction is taking place.^[16]

Ethical clearance

Ethical approval was obtained before commencement of the study in accordance with the guidelines of the Indian Council of Medical Research, from Institutional Research Committee/Review Board and/or Ethics Committee, as per the policy of involved Institutes.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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