

Medical Education

Student-centred learning in Community Medicine: An experience from Jawaharlal Institute of Postgraduate Medical Education and Research, Puducherry

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ABSTRACT

Background. Student-centred learning (SCL) places the student at the centre of policies, practices and decision-making in the teaching–learning process. SCL methodology also advocates active involvement of students in the curriculum planning, selection of teaching–learning methods and assessment process. We planned an education innovation project to assess the perception of fifth semester undergraduate medical students towards implementation of an SCL methodology.

Methods. The study was done among 87 fifth semester undergraduate medical students (batch of 2010–11) in the non-communicable disease epidemiology section of Community Medicine at the Jawaharlal Institute of Postgraduate Medical Education and Research (JIPMER), Puducherry. The students divided themselves into seven groups and developed the learning objectives, selected teaching–learning methods and assessment process for each session. The facilitators had 3–5 rounds of interaction with each group before the session. Qualitative analysis of feedback collected from students and external faculty after each session was done. The effect of implementing the SCL methodology was assessed by the reaction level of Kirkpatrick's training evaluation model by using a rating scale.

Results. Of the 87 eligible students, 73 (83.9%) returned the forms for evaluation. All seven groups were able to formulate the learning objectives. Most of the groups had used PowerPoint slides and videos as a teaching–learning tool. Innovative assessment methods such as crosswords and 'chocopati' were used by some groups. In general, the perception of students was favourable towards SCL compared to conventional methods and they felt that this methodology should be adopted more often. Time management and organization of sessions were the main problems encountered by the students. The mean (SD) score for the items 'sessions were useful', 'sessions were enjoyable' and 'sessions improved my knowledge' were 6.2 (1.8), 7.1 (1.8) and 6.3 (1.9), respectively.

Conclusion. The majority of students found the sessions on innovative teaching–learning and assessment techniques enjoyable, useful and informative. The sessions showed that students took an active part in curriculum planning, execution and evaluation.

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INTRODUCTION

Student-centred learning (SCL) does not have a universally agreed definition. However, all proponents and researchers of SCL agree that students are at the heart of the learning process.¹ As opposed to viewing students as vessels for the transmission of information by instructors, SCL is premised on the notion that students are able to actively participate in the educational experience. In addition to active participation, it also facilitates independent enquiry among students and seeks to instil the joy of learning both inside and outside the classroom. Students take responsibility of activities such as planning, learning, researching and assessing what they have learnt.^{2,3} The SCL approach places the students at the centre of learning, with teachers playing only supporting roles.^{4–8} The SCL approach includes techniques, which substitute lectures with active learning experiences, problems requiring critical or creative thinking which cannot be solved by following text examples, involving students in simulations and role-plays and using self-paced and/or cooperative (team-based) learning.⁹

The benefits of SCL are many; it enables students to develop the necessary workplace skills and attributes expected of people in a knowledge society. These skills include problem-solving; working with others, team building, developing interpersonal skills, independence; reflection, refining and improving their work; recognition of interdisciplinary knowledge, values and attributes that promote lifelong learning; research skills; generating numerous ideas, looking for alternatives; encourage innovation and creativity; and finally taking responsibility of the whole learning process. The other benefits of implementing SCL are to develop characteristics of lifelong learners such as motivation, self-evaluation, time management and the skills to access information.¹⁰

Implementing SCL in medical education is of paramount importance. In medical and healthcare education, there is a need to produce independent, self-reliant doctors and professionals, who are capable of adapting to and meeting the changing healthcare needs of the communities they serve.

The undergraduate medical education programme in India is designed with a goal to create a doctor possessing requisite knowledge, skills, attitudes, values and responsiveness, so that he or she may function appropriately and effectively as a physician of first contact of the community while being globally relevant. One of the roles proposed by the Medical Council of India (MCI) is to be a lifelong learner who is committed to continuous improvement of skills and knowledge.¹¹ SCL is an approach that promotes lifelong learning skills and has been tried in various developed and developing countries with mixed results.

An education innovation project was planned to assess the

perception of fifth semester MBBS students towards implementation of SCL in one of the sections of Community Medicine in a teaching hospital of southern India.

METHODS

An education innovation project was carried out among 87 fifth semester MBBS students of Jawaharlal Institute of Postgraduate Medical Education and Research (JIPMER), Puducherry in the non-communicable disease (NCD) epidemiology section of Community Medicine. Clearance was obtained from the institute scientific society and ethical committee.

Formation and orientation of the team

A team of seven members was formed consisting of the faculty in-charge of undergraduate teaching (KCP), principal investigator (SSK), senior resident (SL) and three junior residents (AR, IS, SA). They were sensitized about the SCL methodology by SSK.

Formation of groups and selection of topics

After orientation of the students (one-hour session), written informed consent was obtained. Students divided themselves into seven groups. Seven topics on NCD epidemiology were allotted as per the curriculum and each group selected one topic. After allotment of topics, the students were asked to formulate specific learning objectives, select appropriate teaching–learning methods to achieve the objectives and assessment process for each session. The students were encouraged to work individually and then in groups to finalize the content.

Evaluation

Student and facilitator feedbacks were obtained at the end of each session using an open-ended questionnaire. The questions to the students sought information on how prepared they were for the sessions (time spent, resource/reference materials used), what they felt about the SCL method of learning compared to conventional classroom teaching, what problems they had faced in carrying out the session and suggestions to improve the methodology adopted. Students were also asked to rate whether the objective of each session was achieved on a scale of 1 to 10 (10 being objective achieved and 1 not achieved). The facilitator evaluation included open-ended questions on whether the objectives of the session were achieved, what they felt about the sessions conducted by the students and how the method of learning could be improved.

The overall evaluation of the programme was done by administering a questionnaire to assess the reaction level based on Kirkpatrick's training evaluation model (level 1).¹² Students were asked to rate on a scale of 1 to 10 (10 being the maximum and 1 the minimum) for items such as 'sessions were useful', 'sessions were enjoyable', 'sessions improved my knowledge', etc.

Role of facilitators

About 3–5 rounds of discussions (30–60 minutes) occurred between students and facilitators before each session. The facilitators briefed each group separately about the SCL method, formulation of objectives and expected content and outcome of each session. The students were also made aware of the possible sources of educational reference materials, the contents of the presentation were reviewed, doubts were clarified and they were encouraged to try innovative ways to engage students during the session and fine-tune the assessment methods for each session. Students were explained lesson planning (basics of setting objectives, use of teaching–

learning methodology and assessment) during the first round of discussion. They were also informed about the possible sources of educational materials (both print and online).

In the second round, students were familiarized with pedagogy skills such as how to carry out set induction, deciding appropriate teaching method/media as per the objective of the session and providing feedback on the content. The contents of the presentation were reviewed and doubts, if any, were clarified.

In the third round, the content of each session was finalized in consultation with the students keeping the objective in mind. The students were advised to present the content of the session to the facilitators and feedback was offered. They were encouraged to use innovative ways to engage students during the session and fine-tune the assessment methods for each session.

However, for some sessions such as risk factors of NCDs and health promotion, five rounds of discussions were held as these topics were new and limited information was available in standard textbooks of community medicine.

Facilitators also analysed the feedbacks received.

Basic demographic and background information including gender, presence of a doctor in the family, area of residence of parents (town or village), board of pre-university schooling, and language of instruction at school were collected.

Analysis

The qualitative content analysis of student feedback was done by categorization and interpretation of data in terms of common themes. Three facilitators from the department, who were well versed in qualitative research methods, did the analysis. SSK did the initial content analysis and the others reviewed it. Any disagreements between authors were discussed and a consensus arrived at.

The quantitative data were analysed using SPSS version 20. The achievement of learning objectives for each session as perceived by students is presented as median (range) of scores. Scores obtained on Kirkpatrick's evaluation are presented as mean (SD) and median (range). The reliability statistics for the questions in Kirkpatrick's evaluation were measured using Cronbach's alpha.

RESULTS

Of the 87 students, 73 (83.9%) returned completed forms. The mean (SD) age of the students was 20.3 (0.9) years. The majority of students were girls (48, 65.8%) and stayed in the hostel (49, 67.1%). All the seven groups were able to formulate the learning objectives. Most of the groups used PowerPoint slides and videos as teaching–learning tools. The videos used were either obtained from the internet or prepared by the students themselves. In a few instances the content was innovative, e.g. student surveys, case-based learning. Some groups used innovative assessment methods such as crosswords and '*chocopati*'. Groups used more than one teaching–learning method to conduct the session (Table I).

The qualitative analysis of the student and faculty feedback is described below:

Preparation for the SCL activity

Students were asked about preparation for the SCL activity in terms of level of preparedness, time spent and resources utilized. Students mentioned that they were well prepared for their sessions. One student observed that '... referred many sources and tried my level best'. Students spent on an average 4 hours per session (ranging from 2 to 10 hours). Some students started preparation the previous day, while most of them started their work a week in

TABLE I. Methods adopted for non-communicable disease (NCD) epidemiology sessions

Session (1 hour)	Objective formulation	Teaching-learning methods	Assessment methods
Orientation	Sensitization on SCL, Group formation, Topic selection		
Major NCD risk factors	Yes	<ul style="list-style-type: none"> • PowerPoint • Videos 	Quiz
Diabetes	Yes	<ul style="list-style-type: none"> • PowerPoint • Flipcharts • Videos 	Group task
Cardiovascular diseases	Yes	<ul style="list-style-type: none"> • PowerPoint • Videos 	Crossword Group task
Cancer	Yes	<ul style="list-style-type: none"> • PowerPoint 	Find the word Quiz
Blindness	Yes	<ul style="list-style-type: none"> • PowerPoint • Videos 	Quiz
Road traffic injuries	Yes	<ul style="list-style-type: none"> • PowerPoint • Videos • Survey 	Jumble 'chocopati'*
Health promotion	Yes	<ul style="list-style-type: none"> • PowerPoint • Videos • Case-based learning 	Crossword Short questions

* *Chocopati* is a quiz programme (adapted version of 'Who wants to be a millionaire') SCL student-centred learning

advance. The materials used for references were mostly textbooks of preventive and social medicine and relevant websites. The other sources of information were earlier presentations on the topics, publications by WHO, textbooks of other subjects, reference materials provided and expert opinion (facilitators).

Problems encountered during SCL

These were related to the content, time management and organizational issues. The students felt that they had difficulty in deciding the content of the session because they had referred extensively to understand the topic. As some of the topics were not dealt with in standard textbooks (risk factors, health promotion) they were at a loss to decide what information needed to be conveyed and what should be withheld. One student put it aptly saying 'deciding on the important points to be stressed' as one of the problems encountered. Most students felt that they did not find enough time to prepare for the session as they had tests during the same period. Also, some of the students felt that as the SCL sessions were conducted during an intercollegiate cultural event, it gave them less time to prepare for the SCL sessions. Many students felt that organizing an SCL session was not easy and that they had problems in bringing students together for group discussions: 'As both hostellers and day scholars were in the group some problems were faced in organizing discussions' and 'Skit was not practised as gathering people at the same time was a problem'. Some students felt that most of the work was done by a few students, and others were not actively involved.

Comparison of SCL with conventional classroom teaching

There was a mixed response when students were asked to compare SCL with conventional classroom teaching. SCL was perceived as an innovative method of teaching and more interesting compared to the conventional method. One student said the 'entire class was involved and attentive, as it was very interesting'. Students also felt that they were able to 'gain a better understanding of the topic as student involvement is more in SCL'. Another student said, 'It's a lot better and students can learn a lot more and remember more than conventional teaching.' With respect to the learning opportunity provided, one student remarked: 'SCL gives more

chances for recollecting points (during the session).' It was also perceived as a capacity building measure: 'SCL is good as it improves the capability of the students.'

Few students described it as '... better but conventional teaching has its own benefits'. Few students expressed concern with fellow students being given the responsibility of delivering the content as 'students lack certain teaching skills and experience. Students cannot be trusted with responsibility.'

A few students were ambiguous about the possible outcome of this method: 'Not sure about the students' responsiveness.' Some students felt that both the methods were similar except for the assessment methods (innovative in SCL). It was also felt that 'It can be done once a week in addition to regular classes'.

Suggestions and feedback on SCL

Though many students felt that the SCL sessions were good, some suggestions for improvement were offered. As the preparation for SCL is time-consuming, it was suggested that it should be done when there were no examinations or other commitments. One student stated that 'No time (for preparation) as exams were approaching. So, we couldn't put our full effort'. Students felt that SCL was a good method for certain topics (easy topics). One student observed that 'For new topics (health promotion) we need more time and materials for preparation and sensitization.' Some students felt that audience (students) interaction can be made better.

Students preferred different methods of assessment while implementing the student-centred approach. Innovative methods such as quiz, multiple-choice questions (MCQs), crosswords, etc. that were used by the students during the SCL process were appreciated by a majority of students. Traditional methods of assessment such as theory examinations, pre- and post-test and assessment by teachers (viva session) were also suggested. A few students felt that SCL should be assessed by 'how well the (teaching) plan was executed' and 'how well the students understood the topic'.

Students' perception of the SCL process in terms of achievement of learning objective (assessed on a scale of 1–10) was used as a measure to assess their satisfaction; the median score was 9 (range 4–10).

Feedback from the facilitators

As perceived by the facilitators, the median score on achievement of learning objective was 8 (range 7–9) and level of participation of students was 8 (range 7–10). The tasks for evaluation and innovative teaching methods were appreciated. Reinforcement of important learning points at the end of the session was appreciated. It was suggested that handouts covering important points be given as take-home message as this would also facilitate preparation for examinations. Few points on the content (improve information) and delivery of sessions (reduce pace and increase clarity) were also made by the faculty.

Students' evaluation of SCL by Kirkpatrick's reaction

To evaluate the reaction of the students to SCL we used a questionnaire based on Kirkpatrick's training evaluation model (Table II). All the items were well correlated and Cronbach's alpha was found to be 0.93. The mean (SD) score for the items 'sessions were useful', 'sessions were enjoyable' and 'sessions improved my knowledge' were 6.2 (1.8), 7.1 (1.8) and 6.3 (1.9), respectively.

DISCUSSION

We found that all groups of students were able to formulate the learning objectives and complete the task of delivering the sessions successfully. Most of the groups had used teaching–learning tools such as PowerPoint slides and lecture method, but this was combined with innovative methods such as the use of videos and skits in classroom teaching. Innovative assessment methods such as crosswords, quiz and 'chocopati' were used by some groups. This evoked a mixed response from students at the end of the study. Most students preferred these innovative methods of assessment during SCL, but traditional methods of assessment were also suggested by a few.

When compared to conventional teaching methods, the students perceived that SCL provided scope for innovation, team building, developing interpersonal skills and problem-solving skills. The facilitators felt that the SCL process helped develop skills of self-learning and encouraged innovation and creativity along with critical evaluation of peers.

Though the literature on SCL from India is sparse, a comparable medical education innovation that has been experimented on is problem-based learning (PBL). It is possibly one of the most innovative methods in medical training, and has in recent decades become an alternative to learning by the traditional lecture-based learning method. PBL is a student-centered, problem-based,

enquiry-based, integrated and collaborative learning.¹³ Various studies from India report PBL to be an effective method and preferred by students over the conventional curriculum. Studies from physiology have shown that implementation of PBL is feasible even in a traditional set-up despite limited resources and rigid time schedules.¹⁴ Studies have also shown that implementation of PBL promoted a deeper approach to learning among students rather than strategic and surface approaches compared with students who were not exposed to PBL.¹⁵ Case-based learning (CBL) is an educational paradigm closely related to PBL that uses a guided enquiry method and provides structure during small-group discussions. In a study at JIPMER, students viewed the constructs of CBL better than PBL, and it was reported to be an effective, superior and student-centered alternative to the traditional lecture format. The majority of students observed that there is better motivation and improvement of problem-solving skills using CBL and they noted that this method was a worthwhile progression from PBL.¹⁶

In general, the perception of students was favourable towards SCL. It was felt that SCL should be adopted more often. However, care must be taken to ensure that students are relatively less engaged during that time of the year, so that the entire class can participate actively.

Strengths

The enthusiasm generated by SCL among the students was evident from their innovative teaching–learning and assessment methods, and was the strength of the study. The fact that all seven groups completed the task and conducted successful sessions gives hope for scaling up SCL and including it as a regular feature in the curriculum.

Limitations

One of the limitations of the study was introducing SCL as an isolated method in one subject, as the students were busy with routine academic activities such as tests and a cultural activity. Also, the fact that the students will be assessed at the end of the year, only by conventional theory tests was a hindrance to its implementation.

Conclusion

Students enjoyed the sessions, and developed problem-solving and team-building skills as a result of SCL. They also felt that SCL should be included along with regular classes in the curriculum. The facilitators appreciated the innovative methods used by the students. More such studies in different disciplines (basic sciences, paraclinical and clinical) are needed to ascertain the benefits of SCL and its possible inclusion as a regular feature in the medical curriculum.

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Conflict of interest. None

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TABLE II. Programme evaluation by the students using Kirkpatrick's reaction (level 1) $n=73$

Response*	Mean (SD)	Median (range)
Sessions were useful	6.17 (1.8)	6 (1–10)
Sessions were enjoyable	7.13 (1.76)	7 (2–10)
Sessions improved my knowledge	6.27 (1.92)	7 (1–10)
I was satisfied with the sessions	6.22 (1.87)	7 (1–9)
I learnt better by SCL	5.92 (2.11)	7 (1–10)
It helped to improve my problem-solving skills	6.04 (2.13)	6 (1–9)
It motivated me to pay attention better	6.25 (2.08)	7 (1–10)
It stimulated my thinking process	6.08 (2.16)	7 (1–10)
I think it is feasible to incorporate SCL for the whole curriculum	5.47 (2.42)	6 (1–10)
I recommend these sessions for other classes	5.92 (2.67)	7 (1–10)

* rated on a scale of maximum 10 and minimum 1 SCL student-centred learning

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Sensitizing undergraduate medical students to consultation skills: A pilot study

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ABSTRACT

Background. Good consultation skills help physicians to diagnose the problems of the patient more accurately, and foster a therapeutic relationship. We describe a pilot study that used role-play with peers as a method to sensitize first clinical year medical students to consultation skills.

Methods. Students were divided into groups of three where one acted as a doctor, the second as a patient and the third as an observer. Students were asked to perform a role-play of a prepared clinical scenario where the patient had a hidden fear of malignancy. Observations were recorded in a simplified Calgary–Cambridge consultation checklist. Students' feedback and their emotions written after the role-play were analysed and discussed. Assessment of their learning was done with an objective structured clinical examination.

Results. Students' feedback revealed that they were sensitized to the importance of starting the consultation with an open question, listening to the opening statement, non-verbal

communication, exploring patient's perspectives and how to close the consultation. The learning happened in the first (reaction) level of Kirkpatrick's Evaluation Framework for all students and up to the second (learning) level for some students. The students actively participated in the learning process and felt they had a real-life experience of consultation.

Conclusion. This pilot study showed that role-play with peers is an effective method of sensitizing first clinical year students to consultation skills and giving them a real-life experience of a consultation. Repeated sessions are needed during each clinical year and internship to reinforce the learning.

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INTRODUCTION

Consultation is the most commonly performed procedure in medical practice. Each clinician performs between 160 000 to 300 000 consultations during her/his professional career. Health professionals use consultation skills to gather as well as to provide information to patients and to foster good doctor–patient relationship.¹ This in turn enables physicians to make better diagnoses. This also helps to improve patients' compliance with treatment. Physicians who are good communicators deal better with their patients' emotional difficulties that lead to improvement in clinical outcomes.^{2,3}

The Family Medicine Department of Christian Medical College, Vellore is involved in teaching consultation skills to undergraduate

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