

CREATING A CASE ACTIVITY: AN INNOVATIVE STRATEGY TO PROMOTE STUDENT CENTERED LEARNING

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ABSTRACT

OBJECTIVE: To innovate a classroom strategy which involves students actively and at the same time not resource intensive.

STUDY DESIGN: A Prospective observational single cohort study.

METHODOLOGY: We designed "CREATING A CASE" activity for our third year students during their respiratory module. Two sessions were arranged for this activity comprising of 42 students each. Students were divided into three groups of 14 and were asked to write a fictitious case detailing the history, physical examination and epidemiology of a patient with community acquired pneumonia using their basic science knowledge from previous years and present their cases to whole class. The facilitator noted salient features from each presentation and subsequently summed up the cases. At the end students completed a survey with 12 statements rated on a Likert scale and answered two open ended questions addressing their perceptions about CACA when compared with other learning strategies.

RESULTS: Majority of the students found this activity to be less stressful and helpful in integrating the basic and clinical science knowledge with clarification of concepts.

CONCLUSION: "Creating a Case" activity (CACA) was well received by students. It can be employed successfully for integrating knowledge and promoting small group learning without major logistic requirements.

KEY WORDS: Likert, Case, Integration, Self learning

INTRODUCTION

Adult learning theory principles are used as guidelines to determine how to teach a learner who are assumed to be independent and self directed, have resources of learning at their disposal, value the importance of contextual learning, are interested in problem centered approaches and are motivated to learn by internal derive⁽¹⁾. Adult learning incorporates the seven major principles described by Malcolm Knowles in his theory of androgogy⁽²⁾

Several teaching strategies incorporate these principles of adult learning theory; one main example is of problem based learning (PBL). PBL is student centered, encourages independence, stimulates reflection and self-direction, introduces critical thinking, supports effective teamwork and peer communication and supports ongoing Self-assessment^(3,4). There are certain logistic difficulties associated with PBL.

Facilitator training, number of faculty members required, adequate space provision, time allocation for multiple sessions and designing well-structured problems that meet explicit goals being the major ones⁽⁵⁾.

Medical education in Pakistan is evolving from traditional to integrated curricula thus requiring change in learning strategies. Shifa College of medicine is a private medical college of Pakistan. It has about 100 students per class and the overall faculty to student ratio is 1:5. The Shifa College of Medicine changed to a systems-based integrated spiral curriculum for undergraduate medical education in 2008.

Integrated learning requires modification in learning strategies to ensure that the objectives of the module are delivered optimally. Several innovations have been introduced in order to cope with limited resources. In line with our curricular philosophy, which is "think like a physician, learn like a physician", we developed a novel learning strategy 'CREATING A CASE ACTIVITY' using the adult learning theory as our conceptual frame work. This learning strategy incorporates the principles of adult learning and does not require extensive logistic requirements. Creating a case activity and Cased based learning have some aspects which are common, mainly that they are conducted in a single session. However, CACA is different from case based – learning in terms of degree of student active involvement and size of groups. In CACA, the students need to participate actively in the whole process, in our case there were 14 students per group, while in case based – learning, student groups can range from 12-100 and all students may not be required to take part in the discussion. Students in case based –learning critically analyze the case and give their suggestions while in CACA students create an ideal case themselves. Case based learning has been shown to be useful for clerkship years while CACA can be utilized for preclinical years as well⁽⁶⁾.

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METHODOLOGY

This prospective observational single cohort study was carried out in class room for third year medical students during their

respiratory module in sub-theme of lower respiratory tract infections which lasted for two days.

"Creating a case" activity was designed for our third year students during their respiratory module. The module was divided into clinical sub-themes like pulmonary infections, malignancies, chronic obstructive airway disease and restrictive lung diseases. We introduced our activity in the sub-theme of 'a patient with cough, fever and chest pain' addressing infections of the lower respiratory tract. The theme lasted for 5 days and covered aspects related to basic and clinical sciences. Other sessions regarding pharmacology, microbiology, and pathology of disease relating to the lower respiratory tract were being conducted simultaneously during the module.

In preparation for the activity the clinical faculty involved identified learning objectives for the session, and discussed the key concepts which students needed to learn in the session. The students were divided into groups of 14 students each. Students were provided with patient related prompts comprising of age, gender and social setting. They were asked to generate a case history and physical examination of a patient with community acquired pneumonia using their preexisting knowledge. Students from each group worked independently for 40 minutes to develop a case history and they were encouraged to use whatever reading material available to them (books, pocket computers, notes). Subsequently each group representative presented the developed case history and physical examination of a patient with community acquired pneumonia within the provided social context to the whole class in a large group session.

Two facilitators from clinical faculty members during the large group session noted the salient features of history and physical examination on the black board from each group. There was no additional training required for these facilitators but they came prepared to the related themes. After the case presentations, clinical findings were discussed in the light of basic science knowledge and its clinical application and hence a complete account of clinical presentation including history, epidemiology, psychosocial context and physical findings was generated. Students were asked to correlate the history and physical examination with their structural, physiological, biochemical, microbiological and pathological concepts in an interactive manner. At the end of the session, the facilitator answered any questions the students had and summed up the important concepts.

On the final day of the sub- theme, a formative multiple choice questions quiz was held about the case presentation of community acquired pneumonia followed by immediate feedback on results to further reinforce concepts.

At the end of respiratory infection theme students completed a survey of 12 statements rated on Likert scale of 1-3 with 1

indicating disagree and 3 indicating agree. Students also answered three open ended questions, which asked them to compare CACA with PBL, inquired about their perceptions this activity's ability to promote integration of basic and clinical knowledge and invited suggestions for improvement. Open ended questions were analyzed by qualitative analysis for common themes by process of inductive analysis independently by two of the investigators. Final themes were developed by consensus and the students' responses were analyzed.

RESULTS

Out of 84 students, 62 filled in the questionnaire. The response rate was 73.8%. In response to the questionnaire (Figure 1), 65% (n=40) of students agreed that the prompts given for creating a case were adequate while 15% (n=9) did not agree with this statement. Majority of students (85%) thought that the activity engaged the group more efficiently when compared with other small group activities students had experienced PBL and case based discussions. A half of students (n=31) agreed that CAC activity improved the division of tasks amongst the students while 35% (n=21) were uncertain to this statement. 58% (n=36) of students felt that the group presentations filled in the gaps of knowledge and understanding. Most of students (93%, n=57) appreciated the role of facilitator during the debriefing session at the end. Majority of the students (80%, n=49) students agreed that creating a case activity integrated the basic and clinical science knowledge and 73% (n=45) thought that it promoted integrated learning. 38% (n=23) of students thought that pre-reading was not required for this activity while 38% (n=23) disagreed with the notion. Regarding requirement of pre-reading for the activity, 39 % (n=24) thought that CAC required less pre-reading but 34% (n=21) students' thought contrary to that.

The response of students to three opened ended question revealed that this activity was well received by the students. We evaluated intervention at Kirkpatrick level 1 which restricts to student satisfaction survey. The predominant themes identified related to comparison to PBL were; CACA was less stressful, more fun, more active participation by students. With relation to ability to integrate basic and clinical sciences knowledge, students perceived CACA as a good strategy for integration. Themes in suggestions for improvement focused mainly on improving facilitator's ability to engage students by providing open and trusting environment, provision of more focused pre-reading material and more organization for the activity.

Most of the students appreciated the utility of final quiz at the end of the theme as it not only reviewed the salient features of the disease but was interesting, interactive and further clarified the concepts.

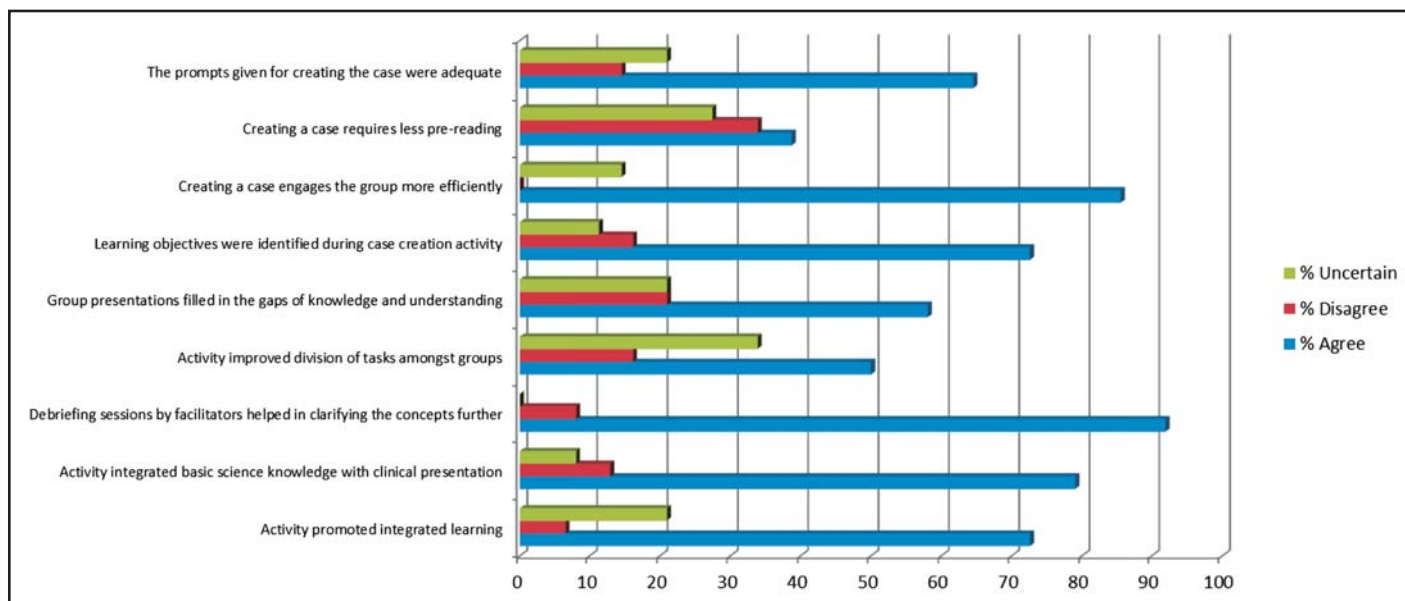


FIGURE-1: COMPOSITE RESULTS OF THE SURVEY

DISCUSSION

In adult learning, the learner defines what they already know about a topic and what they further want to know. The prerequisites of adult learning include effective learning environment, involvement of learner in planning teaching strategies and curriculum, helping learner to diagnose their own needs and learning objectives, encourage them to identify their learning resources and help them for self assessment and critical reflection.⁽¹¹⁾

In the past thirty years more interactive learning strategies incorporating the principles of adult learning theory have replaced the traditional learning and traditional curricula are moving towards integrated learning. Often more innovative strategies are required although fewer resources are available in order to meet the changing demands of medical education, particularly in developing countries⁽⁷⁾.

The described CAC activity is a learning strategy which helps integrate basic science knowledge with clinical using major principles of adult learning with minimum logistic requirement of number of rooms, number of facilitators and their time and training.

Problem based learning is one of the most frequently employed strategies incorporating the adult learning principle. It has been perceived by the students and teachers to be beneficial in helping the students relate theory to practice and encourage active and enquiring approach to evidence⁽⁸⁾. There is general student and faculty satisfaction with the problem based curriculum despite differences in geography, culture and implementation of PBL pedagogy^(9,10). Students perceived that a PBL approach adopted consistently across the curriculum contributed to the development of information management, critical reasoning, communication and team building skills⁽¹¹⁾. However a successful PBL requires a well-structured case that provides enough opportunities to learn. Poor selection of cases, if used as vehicles for teaching and learning may not provide the opportunities to achieve learning objectives^(12,13).

One of the key to the success of PBL lies with the challenging and well situated clinically relevant cases together with well trained and developed faculty. Faculty development is related to adequate training and previous experience with PBL rather than academic back ground. Therefore there is need for well-designed teacher development processes that are carefully implemented and evaluated in order to ensure a successful curricular change^(14, 15). In addition some problems regarding space and time management have also been identified by the students.

The results of our study showed that CAC activity was very well received by the students. Students considered CAC as a method which helped them in integrating their basic science knowledge with clinical medicine thus making the learning process more meaningful. Integrating basic and clinical science knowledge through the CAC activity, helped them to develop clinical reasoning skills on the basis of their basic science knowledge, hence they could understand clinical presentation of disease adequately. In addition, Students thought that this activity was interesting and kept them engaged. They considered CAC activity an interactive way of learning; better than the lectures where they perceived that they are passive learners absorbing the information without participating or reasoning. They found it less stressful as they could learn in an open and trusting environment by brainstorming, sharing ideas and active participation. The students emphasized on the requirement for facilitators who can make such activities more stimulating, interactive and enjoyable.

We think that CAC activity served as a useful strategy in our revised curriculum. In our setting the PBL strategy would have been more resource intensive, requiring additional preparation through faculty development for case write-up and facilitation. CAC activity is a hybrid method where student empowerment, self learning, small group task based learning and adult learning principles were combined to integrate basic science knowledge with clinical medicine.

In the CAC activity, the case was used in a unique manner,

tailored to the previous knowledge of students and built on their learning through the use of concepts learned in previous classes. The students built a clinical case scenario scaffolding their clinical concepts with previous basic science knowledge. Trigger for the case did not require extensive preparation.

Students mentioned that there is a need for enthusiastic facilitators and faculty development in conducting interactive sessions would be helpful but the requirement for formal training or previous experience with this activity is not as extensive as in PBL.

In our study, the assessment conducted in the form of MCQs was formative, however, we did not have a control group using any other learning strategy to compare the students' level of understanding of the topic. This is an important limitation of our study design. Nevertheless, the students did well in summative assessment of the module. The CAC activity did not require presence of facilitator in each group which is important when compared with the importance and role of facilitators in PBL. It was found to be engaging and fun for the students.

Subsequently CAC activity has been utilized at our institution in several other sessions for third and fourth year students where the objective was to learn clinical features with a strong emphasis on their pathophysiological basis. We also used this activity in a post graduate course for general practitioners (GPs). The response from the GPs was positive regarding the learning strategy. They agreed that the format was interactive, engaging and relevant to their routine clinical practice.

CONCLUSION

The CAC activity may be a useful learning strategy to promote active learning and clinical reasoning in students.

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