Original Articles/นิพนธ์ต้นฉบับ

Student's Attitude toward New Case Based Learning for Medical Students in Family Medicine Elective Course Faculty of Medicine, Ramathibodi Hospital, Mahidol University.

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Abstract

Background: Emerging literature identifies a shift towards student centered learning in a variety formats. In Family Medicine Elective Clerkship, Faculty of Medicine, Ramathibodi Hospital, the new case based learning strategy was implemented as a new session. The new case base learning reverses the traditional case based learning by 1) using the real case of patients those students saw in OPD and 2) shifting the role of students to take greater responsibility for the learning in the classroom.

Work done: Before the session, the 4th and 5th -year-medical student selected the real case that he saw in the practice during the elective period and then created a problem scenario from the case. In the session, the problem was progressively disclosed to his peers and the peers discussed the problem. At the end, the students summarized the learning points as take home messages.

Summary of results: The activity was evaluated by using information from students' feedback and questionnaires. The 23 medical students participated in this new teaching session. The students appreciated it as a good activity and felt comfortable with it. Most of them developed greater understanding of the cases and approached the variety of cases under the collaborative environment.

Conclusion: We had success in establishing Case Based learning in elective course. Although the sample size is small, most of students in the course suggested the new session should be used as a teaching method for medical students in the regular course.

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Background

The shift to specifying medical education in terms of outcomes and competencies expected of the graduate has led to a wider use of case based learning (CBL) in medical education. The CBL reverses the traditional approach to teaching and learning by starting with the individual problem scenarios which stimulate learning of student. From the literature review, the case based learning has received increased attention in recent years. Several studies have documented the effectiveness on this strategy. The use of problem or case as a focus of learning encourages a deeper approach to the learning that students arrive at general principles and concepts which they can transfer to another situation.[1,2] This strategy also aids improvement in student's retention, involved with the deeper learning experience and developed the generic skills such as critical thinking and analysis.[3,4]

In the new 2011 academic year, the new case based learning session was implemented in the Family Medicine Elective Course at Faculty of Medicine, Ramathibodi Hospital, Mahidol University. The new session, is called as "the Reported Case Based Learning", lasts for 2-3 hours/session. The students are expected to take greater responsibility for both their own learning and other fellow students while teacher's role is only a facilitator.

Context of study

The Family Medicine elective course is offered for the 4th and 5th year medical students and follows the compulsory Family Medicine clerkship in Medical Curriculum of Faculty of Medicine. This course has been designed to provide to the students to practice holistic approach and communication skill in primary care setting.

The Process of the "Reported Cased Based Learning"

Orientation session

At the beginning of clerkship, an orientation for the new teaching method was set up for students. The orientation session was associated with the rationale for the new teaching strategy, role of students and teachers for participating in the activity. In 2011 academic year, the students were divided to 3 groups. The 10-12 students and 1 tutor were assigned in a group.

Before the session

The student selected the real case that she/he saw in the practice during the elective period and then created a problem scenario from the case. The student prepared the case for presentation in the CBL session by reviewing his/her record about the history and physical examination, laboratory findings of the case. The student also reflected what did he/she learnt form the case and summarized it as his/her own take home message(s) (or learning issue(s)) that meet compatibly with the objectives of the course. Students could use all the resources library and Internet to form a concise knowledge about the topic.

In the CBL session

Each student presented the case to the group. The problem of the case was progressively disclosed to his peers and the peers discussed the problem. The presenter acted as a moderator and facilitated the discussion of other fellow students. The group of students developed the hypothesis, finalized for the case and summarized learning issues.

At the end, time was set aside for the students to summarize the learning points as his/her take home messages and for tutors to provide the conclusions for the case. The activity was evaluated from the feedback from students (verbal and questionnaires) at the end of course. The process of CBL was also illustrated in Table 1.

Table 1 The New Reported Case Based Learning Process in Family Medicine Elective Clerkship

Introduction session
The orientation session was associated with the rationale for the new teaching strategies, role of students and teachers for participating in the activity.
Intersession period
1. Students took actual clinical cases from Family Medicine OPD. 2. Students reviewed the cases and summarized for his/her take home messages or learning issue that meets compatibly with the objectives of the course. 3. Students used all the resources library and Internet to form a concise knowledge about the topic. 4. Student prepared case for presentation.
CBL session
1. Each student presented the case to the group. The other fellow students were given the history of the patient with progressive disclosure. 2. Fellow students develop the hypothesis. 3. The students who presented the case finalized for the case. 4. Fellow students decided about learning issue. 5. Student who reported case refined the knowledge in case required and summarized his/her learning point. 6. Teacher consolidated the knowledge of the topic. 7. The group developed a concept map of protocol for the disease or additional learning plan.
Evaluation of the new method
The students were received questionnaire to evaluate the effectiveness of the method at the end of course. The students also were encouraged to give their views along with reasoning about the usefulness and applicability of the new teaching method by using the focus group interview technique.

Objectives

The objectives of this study are to explore the effectiveness of using the reported case based learning that use the collaborative and case based learning strategy for undergraduate medical students in Family Medicine elective clerkship and to ascertain the values students place on this teaching and learning method.

Method

Evaluation the session

At the end of the clerkship, all students participating in the session, answered a self administered questionnaire with Likert scale, about how this new teaching method is useful, is acceptable and whether it has improved their clinical reasoning skills, self-learning skills, and overall whether it has increased their competence and has motivated them to learn. The form used for evaluation was adapted from Jamker's work[5] that is the form that evaluated "case based learning" for training undergraduate medical students in surgery curriculum. Following a pilot study with 4 female and 3 male of 5th year medical students and after consultation with 2 tutors, a minor

modification were made. There are 18 items in the form representing the student's attitude toward the new CBL teaching methods. Ratings were distributed on a scale 1-5 form "disagree" to "agree". The over-all rating was asked for at the end of the form, which was asked "we should accept the reported cased based learning as a new teaching method in routine medical curriculum. Each form also had a space for comments. The students also were encouraged to give their views along with reasoning about the usefulness and applicability of the new teaching method by using the focus group interview technique. Focus group interviews are also used to gather data on the perceptions, feelings and opinions of a defined participants group. The use of multiples focus groups increases the validity and reliability of the resulting data by countering and diluting any extreme views. The information from teachers about cases and important learning aspects were also used for analysis.

Ethical consideration

The study was approved by the ethics committee of Faculty. All students eligible for the study were informed about the research in the introduction session at the beginning of the clerkship.

Result

The study included 23 of 4th and 5th year medical students who joined the Family Medicine elective clerkship in 2011 academic year, 15 of which (65%) were male and 8 (35%) were female. In 3 CBL sessions, the total 24 CBL cases were completed by students and total 78 learning issues were raised. The students presented a variety of symptoms that they found in Family Medicine OPD. The list of cases presented by students is listed in Table 2 and the examples of their important learning issues are listed in Table 3.

- Shaking of both legs and feet for 2 months in 52 year-old female
- Dyuria for 2 days in 48 year-old Chinese female
- Chronic cough for 5 years in 38 year-old male
- Right arm and shoulder pain for 4 months in 52 year-old female
- Frequent contraction of right eye and mouth for 2 months in 24 year-old female
- Numbness in left part of back for 10 years in 54 year-old female
- Left ear itching and left neck mass for 2 months in 26 year-old female
- Abnormal discharge form penis for 1 month in 18 year-old male
- Fever with weight loss for 3 months in 46 year-old male
- Trichomomas is alive for 45 minutes in the toilet!

Table 2 The Cases Presented by Students

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Table 3 The Examples of the Students' Important Learning Issue

- Trichomomas is alive for 45 minutes in the toilet!
- In frozen shoulder - Regular activities, work, and sports should be avoided until the shoulder can move in all directions and muscle strength has improved by at least 75%.
- Hemifacial spasm is typically found in patient with 5th or 6th decade of age if we see a younger patient with this condition, we will rule out brainstem disease, multiple sclerosis.
- We have just recognized that emotion or fatigue could be an aggravating factor to hemifacial spasm
- Myofascial Pain Syndrome is regional pain and can cause autonomic nervous disturbance. Therefore, the patent may come with a weird complaint!
- Spurling test is a test for cervical radiculopathy is very specific (93%) but not sensitive (30%).
- Do not forget to do ear examination or taking history about ear abnormality in case of posterior cevical lymph node enlargement
- HIV infection could be a cause of weight loss. Patient may come with only "weight loss" with out other significant signs and symptoms.
- Most common site of erythema nodusum is "pretibial" area and it represents a "delayed hypersensitivity reaction" to antigens associated with the various infectious agents (TB/Hepatitis/Streptococcal).
- I have just known that hyperthyroid could induce atrial fibrillation.
- The complaint of patients may reflect "one" or "multiple" problems.

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• The complaint of patients may reflect "one" or "multiple" problems.

Results form the Questionnaire

A total of 23 student's evaluation form was completed by the students. We found that the students have a positive attitude toward the new case based learning strategy. The students accepted this teaching method as an interesting learning activity and it was acceptable. This activity has improved the student's

clinical reasoning skills, increased their competences and motivated them to learn. The results of a self administered questionnaire are demonstrated in Table 4.

Results from the Focus Group

We found that the students appreciated the CBL process. They were comfortable with this new session. Although all of them agreed that they took greater responsibility for both their own learning and other fellow students, they accepted this new session as a valuable learning session. The students gave feedback that the new activity has improved their clinical reasoning skills, increased their competences (facilitation/presentation skills) and motivated them to learn. They enjoyed activity because of its interactive manner. They said the group process had a significant impact on stress reduction in their learning environment. The

Table 4 Student Feedback of Perception on Case Based Learning (CBL) in Likert Scale

Topic	Mean	S.D.
1. CBL method has improved my clinical reasoning skills.	4.74	0.449
2. CBL method requires too much of time and is not worth all efforts.	2.00	1.195
3. The concept of CBL method of education is interesting.	4.13	0.626
4. CBL method has developed positive attitudes towards this course resulting in increased satisfaction with the course.	4.17	0.717
5. CBL method has trained me in self-learning skills.	4.43	0.590
6. I find I collected more learning points form the group compared with a lecture from a staff.	4.30	0.876
7. I have better skills of gathering information, organizing them and store in usable form for future use.	4.13	0.757
8. After CBL method I have better presentation skills.	3.96	0.767
9. CBL method has motivated me to learn.	4.13	0.694
10. CBL process enabled you to access a greater variety of resources.	4.00	0.739
11. I find that the CBL process has changed the way I study.	4.04	0.767
12. CBL process enabled you to develop a good interaction with a teacher.	4.13	0.815
13. Overall during our discussion was very helpful and the discussion has helped me get better understanding in the case.	4.17	0.984
14. CBL method is useless for our routine examination.	1.95	1.290
15. I find myself sharing knowledge with my colleagues by inculcating positive competitive spirit	4.52	0.593
16. I have better interpersonal skills in terms of listening, giving, and receiving criticism.	4.35	0.647
17. I have more abilities to accept and work with students of different background.	4.43	0.662
18. A teacher consolidated the knowledge at the end of session is a good idea.	4.65	0.487
19. I learn accepting CBL method as teaching method and should be utilized for Regular Family Medicine course.	4.52	0.511

students learned a variety of cases in the community of learning that composed of the students' dialogues and interactions. The students also said this new session was "a compulsory activity" that helped them complete the experiential learning cycle. They had to do "homework"-the further studying and review after completing the OPD session. Therefore they developed greater understanding of the case so that future encounters with the case are informed from their previous learning. They gave feedback that the preparing process was not time consuming. However, we found 2 important and useful aspects of feedback for developing the next CBL session. The first is the orientation session before actual CBL process and about is very important and useful. The details of orientation should provide more details for small group dynamics and how to run small group effectively. The second is most of students complained about the limited time for discussing the case because of the large number of students in the group (10-12 students). The 1-2 cases in one tutorial session (3 hours) and the 10 students in the group may be appropriate for this tutorial session.

Discussion

This study investigated the perceptions and attitudes of medical students about the new case based learning session. The results show that this new session is accepted by students and it is a valuable learning activity. The results of students' perceptions and attitudes on new learning activity were favorable in every item of Questionnaire and most students wanted to have case based learning in the routine course. The results form focus groups were consistent with the results from Questionnaire and showed that students became more positive towards several aspects of activity as well as toward group work in general. The results from focus group suggested that our students got a lot of learning benefits by using the new case based learning. Evidently all traits of new case based learning strategy mentioned above would foster active learning and motivate students to develop a part of self directed learning skills. The students are not only encouraged to use a variety of learning skills to analyze the given clinical problems, to identify the problems, to formulate key learning issues but this also takes place within a group of students that they can learn to develop competencies such as communication and facilitation. The students felt that group members were really learning from each other. They reported highly valuable collaborative learning processes, which they explicitly linked to learning and understanding benefits.

The results of our study are consistent with the results from literature review. From the literature review, we found that the case based learning approach also satisfies assumptions underlying the adult learning theory. 1-3 Research also suggested that the case based learning strategy improves retention and recall of information. The reason for this is that the students learn best when they are able to integrate their theoretical knowledge with clinical examples grounded in their own experience, and stimulated by an interactive learning process. Additionally, by using this strategy, the learning of students occurs around a realistic problem. The focus of student learning is shifted beyond the facts. They have to utilize knowledge to frame questions to ask other fellow students and to answer the questions of fellow students. Therefore, the retaining of learned material will be better, if the learning is occurred. Another advantage of using this strategy is the students are able to get the benefits from learning by using the "real" case of patients. This format also returns the student to the patient emphasizes clinical assessment skills and considers treatment in the real world context of them under the supervision from teachers. The students can interact with individuals involved in the scenario or to request clarification to better understand the context of the problems. If we use the traditional case studies,

students can only rely on the information from the text book that may not adequately depict the problem in a way that a student can ultimately relate it to a real world situation. A student, for example, who has learnt management skills through a text based scenario, may be at loss when confronted with a real world situation. A discussion about possible evidence-based treatments for the patient will then be broadened by teachers. The students must consider a comprehensive management plan for the patient, taking into account factors such as availability of and access to resources. This discussion brings in all of the students and makes use of the expert knowledge of the teachers. This allows for a discussion of the gap between the clinical reality and the theoretical provision of care.

The approach of case based learning can also undoubtedly foster students' dialogue and interaction, and the formation of learning community (students, other fellow student and teacher), the prior researches, however, described an important problem that always occurs in collaborative learning environment. The problem is medical students often learn as individual learners, only a third of students spontaneously mentioned learning from each other as one of their most effective strategies[6]. By using this learning strategy, role of students and teachers are also changed. All students are expected to contribute to the discussion about the patients. They are encouraged to articulate their thinking processes, discuss the clinical features of the case and how various pieces of information are interpreted and used in the diagnostic process. The students learn to locate and manage information, develop reasonable answers to the questions and provide support for their conclusions in the process. As in a part of the presentation, students are also asked to summarize their findings, to develop skills in the discrimination and to prioritize of information, and the clear description of problems. These are important skills for promoting clinical reasoning. While other students are asked to contribute, to suggest clinical aspects of the case that require further exploration, to identify learning areas that need answers and challenging the diagnostic process. This approach definitely would help medical students improve their problem solving skills, analytical skills, decision making abilities and their communication skills that are essential competences of graduate medical students.

Conclusion

The results from our study show that the students learn from a range of patients, apply assessment and management skills helps to expand their knowledge base of cases, and provide a framework upon which they develop their diagnostic and clinical skills, while appreciating the complexity of patient cases. The new case based leaning model also returns the student to the patients. This approach emphasizes clinical assessment skills and considers treatment in the real-world context of the patient. Students practice a more sophisticated reasoning process with real patients among the collaborative environment. We had success in establishing new case based learning model in Family Medicine elective clerkship. This approach emphasizes self learning, where students are expected to take responsibility, be able to process and critically analyze information that the students developed the greater understanding of the case and improved knowledge transfer. This improves student motivation and fosters better interaction amongst them.

Limitation

We recognize our roles an academic facilitator in the setting may have tempered the response of the participants. The use of focus group as a mean of data collection may also have influenced the findings, with dominant characters being more likely to express their views. The second limitation of our

study is the small group of our students and limited time of exposure to this learning strategy. The third is the lack of control groups in our study. These resulted in limiting the significance which could be applied to our results.

Implication and suggestion

1. In this study, students were very receptive to the new tutorial hour. An active role in their learning process seems to be more pleasant and productive. These findings provide strong support for the educational value of collaborative and case based learning. The findings suggest that the reported CBL can be a constructive educational opportunity to further course development for the faculty. The size of our sample is small, hence further studies are required.

2. Our study showed that CBL used as an adjunct to lectures in a traditional curriculum, can promote active learning among medical students. The lessons learnt will help us plan and implement strategies that provide learner more self direction, corresponding with an inquiry driven, student centered approach to instruction.

3. The implementation of the new model of case based learning is challenging. The orientation should be conducted for students, stressing the need for implementing new teaching and learning approaches that would stimulate the class. Student's apprehensions are common when one deviates from the routine.

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Appendix 1: orientation for students about "how to prepare Report Case Based Learning

Report Case Based Learning

Length of each presentation must not exceed 10 minutes.

Please present 1-3 learning objectives at the beginning. These can be clinical pearls that you want the group to take away from your presentation (e.g. the mono-spot test takes 10 days to be positive).

Present a case you have seen with the history and physical exam. You may have the group work through the differential diagnosis and management plan with you during case discussion. You will lead this discussion and present your clinical pearls.