

Short Communication

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Students teaching students: Can medical students play a part in undergraduate physiology teaching?

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Abstract

Over the past decade active and self-directed learning has been given precedence in medical curricula. At the Faculty of Medical Sciences, University of Sri Jayewardenepura, Sri Lanka, a novel approach was trialed to teach applied physiology using a student-seminar, where the teaching content was developed by the medical students. Clinically relevant physiology topics were randomly allocated to ten student-groups. Each group had to deliver their findings to peers and academic tutors during a seminar, using audiovisual aids. This study aimed to explore student perceptions regarding this novel learning experiment. Student perceptions of the seminar were explored using self-administered surveys and were rated. Analysis of subject-related knowledge showed that marks of the participants (n=125) had increased significantly, on average by 13% (t110= -8.878 p<0.001). Majority of students didn't perceive the student seminar as satisfactory for teaching Applied Physiology. However, student seminars seem to be a useful way to enhance group learning and active self-directed learning.

Key words: Medical Undergraduates, Physiology teaching, Student Seminar

Introduction

Over the past decade, undergraduate medical teaching has experienced a rapid transformation in its delivery approaches¹. Active and self-directed learning is given precedence in medical curricula, as traditional didactic lectures are steadily abridged. At the Faculty of Medical Science in the University of Sri Jayewardenepura (SJP), Sri Lanka, a novel student-centered approach was trialed to teach Applied Medical Physiology to medical undergraduates, using a student-seminar where the teaching content was solely developed by the students themselves.

This novel approach assumed that students would be willing to learn Applied Medical Physiology by themselves. Furthermore, this exercise assumed that it would lead to a better uptake of the subject-related knowledge, and increased interest in Physiology consequent to a better understanding of the concepts. Previous evidence^{2,3} has shown student seminars to be a possible option in instigating self-directed active learning amongst medical undergraduates, even though outcomes had sometimes been inconclusive.

Student seminar

Applied Medical Physiology topics, not addressed during any previous physiology teaching sessions of the curriculum, were allocated to ten student-groups (ten students in each group) who had just completed their first year in preclinical basic sciences stream. The topics were randomly allocated. Three weeks were permitted for each group to search for relevant content from print (library) or online sources. Each group had to deliver their findings to their peers who were from the same year with the presence of the academic tutors during a seminar, using audiovisual aids. An academic tutor was available for guidance during this period, if needed.

Aim

This study aimed to explore student perceptions regarding this novel learning experiment, and to assess an improvement in knowledge (of related Physiological concepts), subsequent to the learning experience.

Methods

A descriptive study was conducted in 2014, among medical undergraduates from the 1st year of education at the Faculty of Medicine, University of Sri Jayewardenepura. Student perceptions of the seminar and subject-related knowledge improvement were explored using self-administered surveys, both delivered in English. Student perceptions were rated using dichotomous options - “Agree” or “Disagree”, for nine mutually exclusive questions exploring their learning and teaching experience. The subject-related knowledge survey consisted of ten questions (for 100 marks). Face validity, clarity and the appropriateness of questions for ensuing clinical rotations were pre-evaluated with ten final year medical undergraduates of the University; necessary modifications to questions were made subsequently.

Convenient sampling was used to recruit participants for the study. Students were informed of the knowledge-survey only when they were assembled for the seminar. Consent forms for the perception survey and the knowledge survey (pre-post) were all delivered at the seminar. The subject-related knowledge survey was conducted twice, prior-to and after the seminar. Student responses for the knowledge survey were matched using their registration numbers. Ethical clearance for this study was obtained from the ethics review committee of the Sri Jayewardenepura University (ERC 65/14).

Results

Out of the 125 students who completed the surveys, 14 had not completed both components, hence excluded.

Table 1: Student perceptions regarding the student presented physiology seminar (n=111)

Survey question	Percentage Agreed/ Agreement (percent)
Learning objectives were accomplished	40%
Seminar facilitated to advance interest in learning clinical physiology	46%
Increased understanding of the importance clinical physiology	30%
Helped understand the types of resources available for learning clinical physiology	33%
Promoted self-directed active learning	49%
Fostered team-work	54%
Helped improve presentation and communication skills	49%
Time-management skills were enhanced	38%
Seminar was well-organized	51%

Analysis of subject-related knowledge via a self-administered questionnaire with closed and open-ended questions pre-and post-seminar (n=111) showed that marks of the participants had increased, on average by 13% (Pre- 54%; post – 67%). There was a statistically significant improvement of subject-related knowledge, post-seminar ($t_{111} = -8.878$ $p < 0.001$).

Discussion

The study showed that participants (medical undergraduates) were equivocal in their preference regarding the seminar as learning and teaching tool for applied medical physiology. Furthermore, students perceived that the seminar was poor at accomplishing learning objectives or in increasing the understanding of important concepts. However, perceptions regarding team-work, student communication skills and self-directed active learning skills were positive.

Previous research^{4,5} show that students underestimate the relevance of learning basic clinical sciences to application in clinical practice, later-on. However, when complex concepts are learnt through student-centered teaching approaches, retention could be higher. Assessment of student perceptions, as conducted in this study, may result in erroneous conclusions

as students may extrapolate their general (difficult) experiences of learning complex concepts into this learning experience. As each group consisted of ten students each, a large group of students would have been focusing on a narrow content only (for the upcoming presentation) whilst at the seminar, with less emphasis on what was been taught by others. This may be another reason for the lower perception scores.

The school curriculum of all these participants had been that of didactic traditional teaching. Therefore, the improvement shown pre and post seminar may not be acknowledged by the students as the process of attending the seminar which is a change from the traditional learning method may have been uncomfortable for them. Also, the students may have been worried that they would not be able to cover all learning issues both breadth and depths as their knowledge may not be as good as their tutors.

Conclusion

The students' subject knowledge has improved at the end of the seminar. This study shows students were unsure (indeterminate) of the student seminar as a teaching method for physiology at undergraduate level. However, this

contradiction may be likely due to student perception that peers may not be able to deliver full targeted knowledge like their tutors. It may be also that the student groups may have been more focused on doing their presentation well rather than listening to their peers. Also, complex concepts in clinical physiology could not be accurately grasped by the students whilst the audio-visual presentations were going on (or they did not wish to learn from other students who had no prior learning themselves). However, student seminars seem to be a useful way to enhance group learning and self-directed active learning. For the delivery of complex concepts in undergraduate medical physiology, a composite of student-centered active and passive teaching methods seems to be suited, dependent on the complexity of the content.

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Conflict of interests - The authors declare no conflict of interests.

References

1. Khalid BA. The current status of medical education in the Gulf Cooperation Council countries. *Ann Saudi Med.* 2008; 28: 83-8.
2. Kaji AH, Coates WC and Fung CC. Medical student participation in a disaster seminar and drill: brief description of activity and report of student experiences. *Teach Learn Med.* 2010; 22: 28-32.
3. Iqbal SP, Rafi S and Rahman M. Student seminar on smoking: A novel way to introduce different perspectives on smoking to medical students. *J Res Med Sci.* 2013; 18: 245-51.
4. Schaubert SK, Hecht M, Nouns ZM and Dettmer S. On the role of biomedical knowledge in the acquisition of clinical knowledge. *Med Educ.* 2013; 47: 1223-35.
5. Gowda VB, Nagaiah BH and Sengodan B. A study of the competency of third year medical students to interpret biochemically based clinical scenarios using knowledge and skills gained in year 1 and 2. *Biochem Mol Biol Educ.* 2016; 44: 202-7.