Original Article

The Effect of Student Working Group Establishment on Teaching General Embryology Course to Medical Students

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Abstract

Introduction: Quantitative and qualitative enhancement of educational activities is an essential issue. Learners' cooperation in the teaching process in order to increase teaching effectiveness and promotion is considered significant. The aim of the present study was to determine the effect of establishment of student working group on the teaching general embryology course to medical students.

Methods: Ten students (1%) of medical embryology course were selected to analyze the topics to be taught before each session according to lesson plan, and observe the whole teaching process during lesson presentation. Then, having asked the other students' viewpoints and discussing with one another, they provided the teacher with a written report on the strengths and weaknesses of the teaching and its problems. The teacher analyzed the problems proposed by the working group to improve teaching process in the next session. At the end of the semester, a questionnaire was administered to all the participants. Data were analyzed using descriptive statistics.

Results: The mean of students' scores was 74.26%. The most important findings obtained in this study included positive role of film projection in teaching the materials (95.34%), significance of presentation of various pictures from different books (88.4%), changing students' attitude toward application of embryology in different diseases (86%), and repetition of previous session's pictures (83.75%). The weak points mentioned, however, were physical problems of the classroom and deficiency of audio visual equipment.

Conclusion: Student working group has a positive impact on the teaching medical general embryology.

Keywords: Teaching, Embryology, Medical students

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Introduction

Teaching means changes in learners' behavior and involves a series of processes including teacher and learner interaction (1), medical education and training efficient workforce have always been considered important for educational authorities. Medical education experiences in the world and in Iran are indicative of significance of application of appropriate methods to promote educational activities qualitatively and quantitatively (2). Applying active teaching methods is recommended to strengthen stu-

dents' creativity and accountability (3). Nowadays, diverse methods are proposed to promote the quality of medical education, including combination of basic and clinical courses or early clinical exposure during basic sciences course (4).

Different factors affect the quality of teaching such as teachers' experience, regular teaching programs, supplementary teaching facilities, including audio-visual equipment, job security, and meeting students' financial needs (5). Students' performance at university depends on such factors as familial and scientific background, and individual performance during schooling (6). Application of workshop methods, seminar, and team teaching which provide appropriate interaction between teachers and students are advised to enhance teaching quality (4).

One of the influential factors in teaching is teachers' teaching method. Traditional teaching methods are unable to create motivation and positive attitude in students, so introduction of new, innovative, and even exciting methods seems necessary. While in recent years, application of methods such as problem-based learning (PBL) has been emphasized (5), it seems that, methods such as PBL and group discussion aren't efficient in some instances due to the large amount of information and necessity of teaching various subjects during one session (7).

Embryology course is one of the major courses of medical basic sciences possessing characteristics such as necessity of three-dimensional picture of embryo evolution and close relationship with clinical courses. In new scientific articles, different methods have been introduced for teaching this course like problem solving techniques, group discussion, and electronic education (8, 9). In Iran's medical universities, embryology is usually presented from second to fourth semesters through traditional lecture method which is a teacher-centered method with little participation from students and little retention of abundant information presented in this course.

Scientific revision in lesson planning, teaching activities and interaction in teaching in order to improve the learning process and its effectiveness is essential (10). One of the important suggestions offered by educational authorities is students' participation in all levels of education such as specifying syllabus objectives and evaluation (11). Students are the best source for identification of teaching problems, because they have a direct and constant relation with teaching process (12). Students' viewpoints about one course are usually taken into consideration after the course and the results are presented to the teacher later that eliminates the possibility of intervention in the teaching process and solving problems and possible obscurities.

Thus, student working group to supervise, cooperate, and offer advice to improve teaching process and increase its effectiveness was anticipated. To the best of our knowledge, no study has been done on this topic. The aim of the present study was to determine the effect of student working group on the teaching general embryology to medical students.

Methods

In this descriptive cross-sectional study, we announced our objectives of setting up a working group by introducing the topic, formal resources, and weekly lesson plan to students. After selection of students, a tutorial session was held and participants were required to work in three stages: before, during, and after class. In the first stage, they were asked to analyze the topics and main subjects before each session and review the basics of the course according to the presented lesson plan. During each session, the group considered the whole teaching process, including teaching method and conveying concepts, positive and negative points, and possible problems. At the end of teaching, asking the other students opinions a day prior to the next session, they were required to hold a student meeting with the presence of the members of the group. During this session they had to, in addition to analyzing the teaching method, discuss all the relevant issues and provide the teacher with a list of strengths and weaknesses of the teaching, inconveniences, and essential points to be mentioned. Teacher investigated the proposed issues by the students and eliminated available problems and weaknesses.

This process of "forming working group" after each session and presenting the written report of students' views to the teacher prior to next session repeated up to the end of teaching general embryology. Before the end of the semester a questionnaire was designed and administered to the participants before the final exam. The questionnaire was prepared based on the working group's comments and educational experts and faculty members confirmed its validity. For each question in the questionnaire, three responses of: agree, disagree, and no ideas were provided. Data were analyzed by descriptive statistics using SPSS software (version 16).

Results

Primary results were obtained through questionnaire data. After administering the exam and correcting papers, all students had passed general embryology with

the mean of 74.26%. We observed the lowest number of absentees in this course compared to similar courses and other courses students had taken in previous semesters. Students agreed upon the following items as the most important points and positive changes: showing film in conveying materials (95.34%), significance of presenting variety of pictures from different books (88.4%), changing students' attitude toward application of embryology in different ailments (86%), repeating previous session's pictures (83.75%). Students had the lowest agreement on items such as the amount of time allocated to this course (two hours per week), current physical condition of the classroom, and available audio-visual facilities (Table 1). It should be pointed out that female students showed higher agreement and appreciation of changes implemented in the teaching process. Meanwhile, some students made models for some subjects of embryology with teacher's supervision which were used in the classroom. Further, some of them prepared appropriate educational clips that were shown after being approved by the teacher.

Table 1: Results of questionnaires completed by medical students for general embryology course

Question	Agree	Disagree	No idea
Film projection was important in understanding the materials.	95.34%	--	4.66%
Displaying various pictures from different books made embryology teaching more understandable.	88.4%	3.4%	8.2%
During teaching, my attitude toward different diseases and application of embryology in them changed.	86.05%	4.6%	9.35%
My attitude changed toward the position of embryology in medicine.	85.83%	7.4%	6.77%
Repeating previous lesson's pictures during the following sessions improved my retention of information.	83.75%	--	16.25%
The processes employed in teaching medical general embryology possessed a good quality.	79.07%	11.6%	9.33%
I suggest using more clinical pictures from different books.	78.21%	3.39%	18.4%
Using formulated teaching models by students facilitated the process of understanding embryology.	77.9%	16.4%	5.7%
The number and diversity of presented slides were appropriate.	76.74%	11.63%	11.63%
Design and presentation pattern of slides were appropriately done.	75.6%	14.2%	10.2%
The time of the class in the early morning and middle of the week (Tuesday) was appropriate.	70.91	9.15%	19.94%
General embryology course was interesting enough to increase motivation for learning.	67.44%	20.36%	12.2%
Asking some questions at the beginning of each session seems appropriate.	62.77%	17.1%	20.13%
Attracting students' cooperation in the teaching process via participation in working group, making models, and gathering new data increased students' interest toward teaching.	61.63%	16.2%	22.17%
The amount of time (one unit) allocated to general embryology is sufficient.	34.88%	36.04%	29.08%
Physical conditions of the class (light, temperature, chairs …) had desirable quality.	26.74%	55.81%	17.45%
Audio visual facilities (microphone, video projector, cooperation of responsible staff) were sufficient.	32.56%	46.51%	20.93%

Discussion

The analysis of the questionnaire and oral feedback from the students indicated that quality and teaching style of embryology, in comparison with the teaching style in previous semesters as well as other courses in the same semester, improved desirably and students responded positively to most of the questions posed. It seems that student working group being considered as teacher's colleague can promote teaching dramatically.

Regular analysis of quality and efficiency of university teaching methods and their revision is necessary to identify and improve teaching weaknesses and reinforce strengths to enhance teaching quality. Application of new and innovative teaching methods that are more advantageous are recommended. Teaching quality depends on different factors, including content, teachers' capability, educational facilities, classroom physical conditions, and teaching methods (13). Also, using appropriate, efficient, and effective teaching method is considered significant for all teachers of medical sciences.

Teaching process may have deficiencies that are disregarded by the teacher. The questionnaires are usually administered at the end of the semester and results are presented to the teacher next semester that makes it impossible to improve weak points and eliminate problems in the same semester. In the present

study, the students in the working group observed the entire teaching process and having acquired other learners' opinion, and forming meeting, presented their written ideas to the teacher. Examining the presented issues, the teacher tried to eliminate mentioned problems for the following session. The suggestions of the working group were influential and noticeable in improving the teaching quality.

The increasing numbers of faculties as well as number of students have had a negative impact on the quality of education services, while improvement and development of learners' performance is one of the major objectives of educational organizations. Moreover, students are also one of the influential factors in the process of education. Their educational behaviors and motivation during one course has a fundamental role in understanding subjects of the course. Lack of motivation, and inappropriate and inadequate attempt in learning the materials are serious problems on the part of some students (14). Probably, one reason is the use of lecture method by the teachers. In the present survey, regular follow-ups of the working group members in obtaining students' views and discussion with one another as well as implementation of most of the suggestions offered by the students in the process of teaching have increased students' motivation toward the course. Most of the students regarded application of this method as the reason for creating students' motivation and active cooperation in the course which are, in turn, associated with improvement and success.

Moreover, one of the vital elements in learning is teaching method. Traditional teaching methods are unable of creating motivation and positive attitude in learners; therefore, identification of new, innovative, and even exciting methods seems necessary. While application of methods like PBL in education has been highlighted in recent years, it seems, however, that because of the abundance of information and necessity of teaching various materials of one subject in medical sciences, this method and group discussion are not efficient enough. Thus, it is suggested that well-known methods be used with appropriate changes.

The problems discussed about classroom physical condition and lack of audio visual facilities have previously been proposed by students in other studies (15). Thus, it seems essential that educational authorities pay attention to these issues and attempt to improve the weaknesses.

Conclusion

In present study we found establishment of student working group is an appropriate tool for promoting the quality of teaching medical embryology. The findings of this study are significant, on the one hand, because the teacher is informed about all the strengths and weaknesses of teaching in advance and is able to eliminate the possible problems and reinforce the positive points, and, on the other hand, because student's motivation and cooperation for learning have increased . Further research is needed for other courses, using similar working group, to confirm the results of this study.

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