Original research paper

Student feedback on teaching and evaluation methodology in physiology

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Abstract

Introduction: The success of any teaching programme lies in planning a curriculum which allows the students to gain maximum meaningful knowledge in the short span of time available. To achieve this goal, it is very important to have adequate communication between teachers and students. The students undoubtedly are in the best position to comment on the effectiveness of any teaching system and they may be regarded as the best judges to assess the teaching and evaluation methods.

Objectives: This study was designed to obtain feedback on teaching and evaluation methods in the subject of physiology from the students of two successive batches, after passing their first professional undergraduate medical examination.

Method: A written questionnaire covering topics on various teaching and evaluation methods was used to get feedback from students.

Conclusion: Students were satisfied with all teaching methods except vertical integrated seminars. Majority of the students showed preference for grand stage, short answer questions and revision cum self study. Practical demonstrations were found to be useful. All students felt that there should be more time for revision and self study.

Introduction

Physiology, like any other branch of medicine, is progressing by leaps and bounds.

It is generally agreed that reviewing the teaching and evaluation methods at regular intervals and modifications of methodologies is a must for improvement in undergraduate medical teaching. Course assessment instruments such as feedback help the faculty identify the strengths and weaknesses of their teaching and evaluation methods (Ruth, 2000; Richardson, 2004). Hence, in developing teaching and evaluation strategies, it is important for the teachers to obtain feedback that allows them to modify their methods to meet the needs of their students. One important form of feedback comes from evaluation of various teaching/learning methods followed by students. Currently, student's feedback represents the primary means used by most programmes to assess their methodology (Victoroff & Hogan, 2006).

Feedback from students about adopted teaching and evaluation methodology is considered to be the best method to bridge the communication gap between teachers and students (Sehgal et al., 1998). It is an inexpensive and invaluable tool to improve the quality of teaching. Though a lot of verbal and non-verbal feedback is conveyed to the teachers, but much of the work is not published. This inspired us to undertake this study and improve student and teacher awareness of this and make the teaching and evaluation more effective.

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To achieve this goal, feedback on teaching and evaluation methods in the subject of physiology was obtained from the students of two successive batches after their first professional undergraduate medical examination in our institution.

Methods

The present study was conducted in department of physiology at Dayanand Medical College and Hospital, Ludhiana. A structured questionnaire (Table1, 2) was developed from interviews and discussions with medical students and staff members from the basic medical science departments. The questionnaire preserved anonymity. The questionnaire was given to students of two successive batches just after completing the first professional undergraduate medical examination (n=133). First professional undergraduate medical examination i.e. Bachelor of Medicine and Bachelor of Surgery (MBBS) includes three subjects; anatomy, physiology and biochemistry as per regulations for Graduate Medical Education by the Medical Council of India, (1997). The study was done in the subject of physiology. Students were asked to use an alphabetical scoring method (A,B,C,D,E) against the methods or tick the option which they considered was the best.

Table 1. Questionnaire for evaluation of teaching and evaluation methods

1. Grade the following teaching & learning methods.
   (Place the alphabet against each method).

	A	*B*	*C*	*D*	*E*
	Very good	*Good*	*Average*	*Not useful*	*Useless*
i	Revision cum self study				
ii	Lecture				
iii	Tutorial				
iv	Demonstration				
v	Vertical integrated seminar				

2. Rate the usefulness of each of the following evaluation methods in preparing you for your university professional examination. (Place the alphabet against each method).

	A	*B*	*C*	*D*	*E*
	Very good	*Good*	*Average*	*Not useful*	*Useless*
1	Tutorial				
2	Grand stage				
3	MCQ				
4	Terminal exam				
5	Send up exam				

3. How much time, according to you, would be adequate for first professional M.B.B.S. teaching? (Please encircle one)

   9 Months One Year 18 Months

Students were also allowed to offer their own suggestions/remarks. They were given 30 minutes to complete the comment form and were not allowed to discuss it amongst themselves during this time. They were not asked to write down their personal particulars so that they could give their frank opinions. Evaluation was done after they passed examination; hence there was no pressure on the students. The data collected was analysed. Members of the research group individually analyzed the frequency of different statements made by students who commented in the suggestions /comments section of the questionnaire. Subsequently, the research group agreed on a common, collective consensus on the analysis of these comments.

Table 2. Questionnaire for evaluation of teaching and evaluation methods

4. What is the best order to study systems in Physiology? (Write the numbers 1,2,3……. in order of your preference against each system)

   - Blood
   - Nerve & Muscle
   - GIT
   - Respiratory system
   - Cardiovascular system
   - Excretory system
   - Central nervous system
   - Special senses
   - Endocrinology
   - Reproductive system

5. Should practicals be-------? (Encircle one)

   a. Demonstration by teachers only
   b. Demonstration followed by practical work by students
   c. Practical by students followed by assessment

6. How were practical demonstrations? (Please encircle one)

   Very helpful Helpful Somewhat Helpful Not Helpful Useless

7. Were your queries clarified during practical demonstrations?(Please encircle one)

   Yes No

8. Which according to you are better timings? (Encircle one)

   a. 8.00 a.m. to 2.30 p.m. with 10 min tea break in between
   b. 8.30 a.m. to 4.30 p.m. with 1 hour lunch break

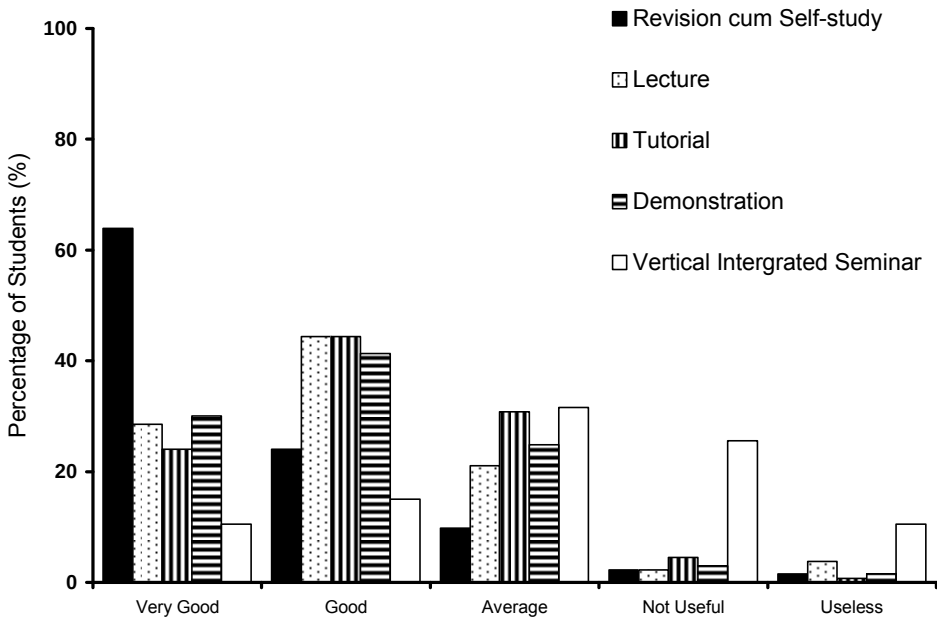
9. Any suggestions/comments:

Observations and results

Of all the questionnaires distributed, 100% were completed sufficiently for data analysis. It was observed that a few students did not attempt some of the questions, whilst in some cases, as expected, more than one option was ticked.

In the present study, lectures, tutorials and demonstrations were accepted as good or very good by most of the students (Figure 1). Students found revision cum self study to be the best form of learning (64%) as compared to other methods. There was less preference for vertical integrated seminars. These were accepted as average or not useful.

Figure 1: Student feedback on usefulness of various teaching methods



In evaluation methodology, grand stages held at the end of each system was found to be the most useful method (77%) in preparing for their final university examination followed by send up examinations (69%), MCQs (40%), terminal examinations (28%) and tutorials (22%) as shown in figure 2.

The best sequence to study systems in physiology as demanded by the students is nerve & muscle physiology, blood, CVS, respiratory system, GIT, excretory system, CNS, special senses, endocrinology and reproductive system.

Majority of students (64%) felt that one year was enough to cover the first professional MBBS syllabus. A time schedule of 7:30 a.m. to 2:30 p.m. with 10 minutes tea break got an overwhelming response (100%) in our feedback. Practical demonstrations given by teachers followed by practical work done by the students themselves was found to be the best form (83%) of learning practical skills. Most of the students (96%) found demonstrations very helpful or helpful and also felt that most of their queries (96%) were resolved during practical demonstrations.

Certain suggestions/comments were also made by students which were related to various aspects of teaching and evaluation methods. The common suggestions for improving teaching and evaluation are given in table 3.

Figure 2: Student feedback on usefulness of various evaluation methods

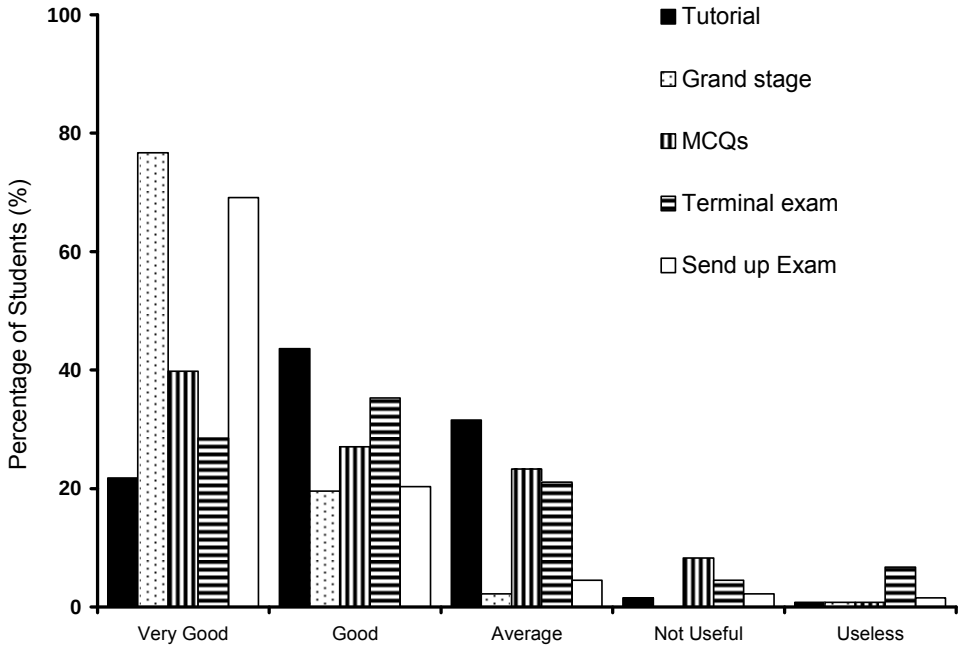


Table 3. Common suggestions/comments of students

S. No.	Suggestions/Comments
1.	Make lectures more interesting and enjoyable
2.	Help understanding the concepts rather than giving merely notes in lectures
3.	Have good deal of horizontal integration with anatomy and biochemistry
4.	Include more tutorials and decrease number of lectures
5.	Syllabus should be covered at least one month before university examinations

Discussion

Student's perceptions about the educational methodology are a useful basis for modifying and improving the quality of the educational environment. Continuous quality improvement and innovation are very essential in medical education. It helps in making the subject more interesting for the students and students understand and memorize the subject in a better way. The ultimate aim is to identify areas of strength and/or weakness of the methodology used.

The results of the present study reveal that students are satisfied with the present teaching methodology consisting of revision cum self-study, lectures, tutorials and demonstrations, but 64% of the students demanded more time for revision cum self-study. Self study is considered to be very effective method in earlier studies as well. As indicated by students, a good quality lecture does have a positive influence on students and encourages them for self-study and thus increases intrinsic interest in the subject.

Applied aspects of physiology are taught along with every system and also covered in vertical integrated seminars in our institution. Contrary to other studies (Abu-Hijleh et al., 2004; Hudson & Bristow,

2006), students did not favour vertical integrated seminars in the present study. This may be because the same topic is not being taught by all the departments at the same time. Hence they need to put in more effort to prepare for these seminars. The other reason may be that teachers helped students extensively to make their part of the presentation better and students kept reusing that material. Hence they do not learn much from these seminars. The majority of the students remarked that more emphasis should also be laid on horizontal integrated teaching of anatomy and physiology as it is more helpful in learning. This is in agreement with earlier studies (Sinha, 1998).
With regards to evaluation methods, the students found that the grand stage test taken at the end of each system is the most useful method in preparing for the final university examination. The grand stage of each system in physiology in our college includes MCQs, short notes as well as a viva voce examination. Earlier feedback taken from medical students also showed that evaluation tools preferred by the students were MCQs and short answer questions rather than long questions (Rademakers et al., 2005; Singh et al., 1999.

Regarding the sequence to study systems, the present pattern being followed in our college is nerve & muscle physiology, blood, respiratory system, GIT, CVS, CNS, special senses, excretory system, endocrinology and reproductive system. The best sequence to study systems felt by the students was nerve & muscle physiology, blood, CVS, respiratory system, GIT, excretory system, CNS, special senses, endocrinology and reproductive system. They felt that this order helps them understand the systems better e.g. if cardiovascular system is done earlier then it is easier to understand excretory and endocrinology system later.

In our study, majority of the students (64%) felt that one year is enough to cover the physiology course but they do not get enough time for revision cum self-study. In India the MBBS course consists of three professionals. First professional (basic) is of one year duration, second professional (para-clinical) is of 18 months duration and final professional (clinical) is of two years duration(Medical Council of India, 1997). Earlier the first professional was of 18 months duration and then it was reduced to one year. There was apprehension that reduction in the duration of the first professional will adversely affect teaching and evaluation in physiology. However the results of this study indicate that the duration of one year is sufficient to cover the course in first professional. It is a great challenge for the teachers to plan such a curriculum that helps the students to gain maximum useful knowledge about the subject in a one year course. The preferred method to learn practical skills reported by students was demonstrations of practicals by teachers followed by practical work done by the students themselves. Students were satisfied with the way practical demonstrations were conducted.

Regarding timings in the college, students found 8.00 a.m. to 2.30 p.m. with 10 minutes tea break in between is much better than 8.30 a.m. to 4.30 p.m. with a hours lunch break because the former timings allow them to have ample of time for revision cum self-study and thus encourages meaningful student teaching and learning. The timings as suggested by Medical Council of India (1997) and being followed at present in our college are 8:30 a.m. to 4:30 p.m. with an one hour lunch break.

In conclusion, it is important to know what our students need and whether they feel comfortable with the ever-expanding course with limited duration of time. The students undoubtedly are in the best position to comment on the effectiveness of any teaching and evaluation system. Feedback has been called the life blood of learning and is thought to be particularly beneficial if provided under conditions that are stress free. Frequent feedback may help the teachers to plan the curriculum and improve upon the teaching and evaluation methodologies adopted in their institutions. For this reason, it is important to determine the feedback provided from these evaluations to improve teaching and evaluation methods. It is very essential to synchronize teaching and evaluation methods with special requirements of medical students. The suggestions based on this study will be implemented on the next batch of students.

References

Abu-Hijleh, M.F., Kassab, S., Al-Shboul, Q. & Ganguly, P.K. (2004) Evaluation of the teaching strategy of cardiovascular system in a problem-based curriculum: student perception. *Advances in Physiology Education,* 28, 59-63.

Hudson, J.N. & Bristow, D. R., (2006). Formative assessment can be fun as well as educational. *Advances in Physiology Education*30, 33-37.

Medical Council of India, (1997) [Online] Regulations on Graduate Medical Education. Available at: http://mciindia.org/know/rules/rules_mbbs.htm. [Accessed January 7, 2007].

Rademakers, J., Cate, T. & Bar, P.R. (2005) Progress testing with short answer questions. *Medical Teacher,* 27, 578-582.

Richardson, B.K. (2004) Feedback. *Academic Emergency Medicine,* 11, 1-5.

Ruth, N. (2000) Communicating student evaluation of teaching results: rating interpretation guides (RIGs). *Assessment & Evaluation in Higher Education,* 25, 121-134.

Sehgal, R., Dhir, V. & Sawhney, A. (1998) Teaching technologies in Gross Anatomy (Abstract). *Journal of the Anatomical Society of India,* 48, 36.

Singh, B., Jai, S.K. & Jethani, S.L. (1999) Evaluation system in Anatomy: Students view. *Journal of the Anatomical Society of India,* 49, 99.

Sinha, B.N. (1998) One year course in anatomy for undergraduate MBBS students - A challenge (Abstract). *Journal of the Anatomical Society of India,* 48, 36.

Victoroff,, K.Z. & Hogan, S. (2006) Students' perceptions of effective learning experiences in dental school: a qualitative study using a critical incident technique. *Journal of Dental Education,* 70, 124-132.