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Physiology teaching methods: An evaluation by 150 medical students admitted in the first batch of Gadag Institute of Medical Sciences, GADAG

***Samata K. Padaki¹, Amrut A. Dambal²**

¹Associate Professor, Department of Physiology, Gadag Institute of Medical Sciences, Gadag, Karnataka.

²Associate Professor, Department of Biochemistry, MallaReddy Institute of Medical Sciences, Hyderabad, Andhra Pradesh.

Corresponding author*

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ABSTRACT

BACKGROUND: Medical Education which forms an entirely different phase of learning in the curriculum of students, need to be assessed at regular intervals in order to benefit the teaching learning process. An apprehension that is normally associated with medical profession, more clearly observed in the first year medical students, who were admitted in a new medical college with no senior student's batch to guide, needs to be tackled meticulously for better outcome.

OBJECTIVE: Evaluation of various teaching methods and skills by the first year medical students, adopted by the teacher in Physiology lectures.

METHODS: A pre-validated questionnaire consisting of 18 questions was given to 150 first year medical students towards the end of their academic year and feedback was taken in the form of circling the most appropriate code applicable (**CODE: A** = Always, **M** = Most Often, **S** = Sometimes, **N** = Never). Total number of A, M, S and N were calculated and given marks accordingly. 3 marks for every A circled, 2 marks for every M circled, 1 mark for every S circled and 0 mark for every N circled. Maximum possible score was 54. 45 to 54 marks – Exceptional teaching skills, 30 to 44 marks – Superior teaching skills, 15 to 29 marks – Average teaching skills, 0 to 14 marks – Room for improvement.

OBSERVATIONS: Maximum marks was awarded for explaining the concepts by giving examples, summarizing the concepts at the end of the lectures, having clarity with the concepts and being audible, using simple language and audio-visual aids, and explaining them how better they can perform. Minimum score was with making them practice skills and applying them to their lives, frequently asking them to answer questions and making them to learn at different speed.

CONCLUSION: Every lecture that is delivered should make teaching meaningful with clarity in the concepts and audibility, promoting active learning by the students, understanding the individual differences, giving feedback at regular intervals and ensuring mastery in the subject.

Keywords: Lectures, Physiology, Active Learning, Teaching-Learning methods, Medical Students.

INTRODUCTION

Medicine is a branch of Science that keeps ever-changing. Likewise knowledge and skills in this field are also constantly changing. Human Physiology is one such branch of medicine that deals with the mechanical, physical and biochemical functions of

human beings and lays a foundation for good clinical and medical practice. It also forms an important component of any medical curriculum. Medical Education, the art and science behind medical learning and teaching, has these days progressed remarkably. Problem Based and other forms of active

and self directed learning have become the mainstream. Teachers have progressed from the role of problem-identifier to that of the solution-provider. Since teachers traditionally have played a dominant and active role in education with students assigned only a passive role, it had become common to think in terms of what the teachers can do, framing the teaching objectives and the methods to achieve these objectives. In the light of the present day it has been realized that the educational process should focus on what the student (learner) receives, perceives and assimilates and the dominant role of learners in the education. Self-assessment or Evaluation is a valuable exercise in its own right. The benefits include increased morale and motivation as well as improvements in knowledge, communication and performance.¹ According to Antonelli² self-assessment of knowledge and accuracy of skill performance is essential to the practice of medicine and self-directed life-long learning. Boud³ defined self-assessment as the act of judging ourselves and making decisions about the next step. But one should remember that assessment must be followed by action. It is said that assessment drives learning process. The most expert teachers emerge from years of experience with a variety of teaching methods.^{4,5}

Today with the explosion of knowledge, new drugs being introduced, novel diagnostic and interventional techniques developed and a better understanding of how the genome alters functions, it is more and more critical for the present day medical students to understand the principles of both normal and abnormal Physiology.^{6,7} A lot of discussion has been generated on how much physiology to teach in the current scenario and how to make it more relevant to the students at the same time making sure that the basic physiological principles are adequately

covered.^{6,7,8,9} To make the lectures of Physiology more interesting and understanding one has to review the teaching programme at regular intervals. The best way to assess and improve the teaching methodology is through the student's feedback.¹⁰ Large efforts are required with the continuous interventional feedback studies in the highly revolutionizing field of medical teaching and learning. In view of all the above mentioned facts, we made an effort to evaluate the teaching methods and skills exhibited in Physiology lectures and how to modify this existing pattern which would further help students in improving learning.

MATERIAL AND METHODS

A total number of 150 MBBS students admitted in the first batch of Gadag Institute of Medical Sciences, Gadag attending Physiology lecture classes participated in this study. Ethical clearance from the Institutional Ethics Committee was obtained. A pre-validated questionnaire was given individually after taking informed consent, towards the end of their academic year. Students were briefed about the purpose of study and the questionnaire given and were asked not to reveal their identity on the form. They were also informed that the information given by them was for the research and evaluation purpose only and would be kept confidential. The students were encouraged to furnish their unbiased independent opinion to complete the questionnaires regarding the study. Any other suggestions related to changes needed in the existing system for better understanding and perception, were also requested for mention.

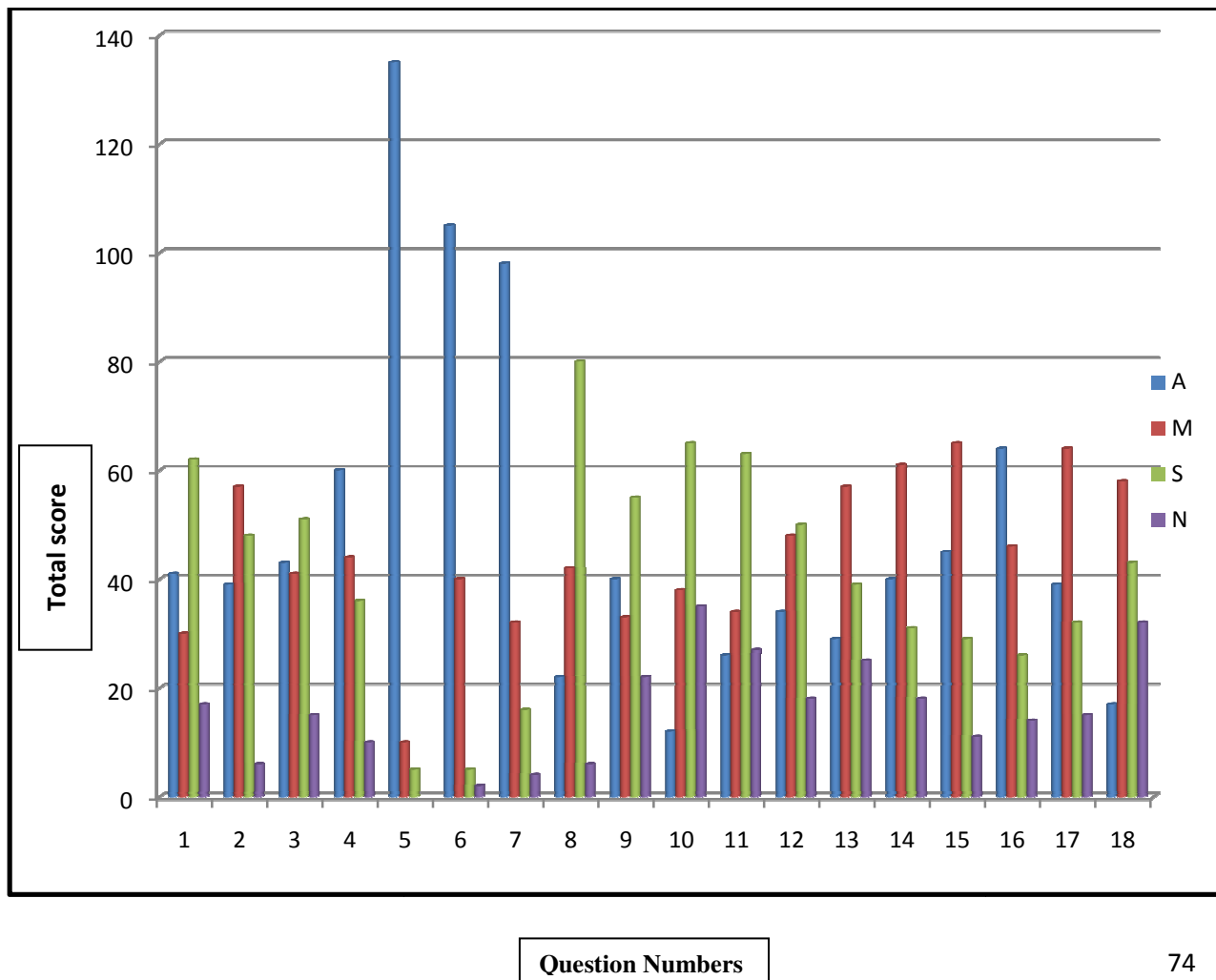
The questionnaire (**Annexure-1**) consisted of 18 questions with its multiple choice answers in the form of codes. **CODE: A** = Always, **M** = Most Often, **S** = Sometimes, **N** = Never. Questions were

related to 1) Making teaching Meaningful, 2) Clarity in expression and thoughts, 3) Active learning, 4) Individual Differences, 5) Giving Feedback and 6) Ensuring Mastery. Feedback was taken in the form of circling the most appropriate code applicable. Total number of A, M, S and N were calculated and given marks accordingly. 3 marks for every A circled, 2 marks for every M circled, 1 mark for every S circled and 0 mark for every N circled. Maximum possible score was 54. 45 to 54 marks – Exceptional teaching skills, 30 to 44 marks – Superior teaching skills, 15 to 29 marks – Average teaching skills, 0 to 14 marks – There is room for improvement. The data was collected and verified by hand and was analyzed.

RESULTS

In this questionnaire based self-assessment study including 150 first year MBBS students, on analyzing, maximum score was given for explaining the concepts by giving examples, summarizing the concepts at the end of the lectures, having clarity with the concepts and being audible, using simple language and audio-visual aids, and explaining them how better they can perform. Minimum score was with making them practice skills and applying them to their lives, frequently asking them to answer questions and making them to learn at different speed (**Fig1**). The total score obtained was 33.33, considered to be Superior teaching skills.

Figure 1. Question numbers and the Total Score



ANNEXURE-1

HOW WELL DO I TEACH?

(Please go through the checklist and circle the most appropriate letter applicable)

CODE: A=Always

M=Most Often

S=Sometimes

N=Never

	Circle any one			
Making teaching Meaningful				
1. Do I relate what I am talking about to the students' lives?	A	M	S	N
2. Do I give a lot of examples?	A	M	S	N
3. Do I relate what I am talking about to the work the students will be doing?	A	M	S	N
4. Do I give summaries?	A	M	S	N
Clarity				
5. Can the students hear and see me?	A	M	S	N
6. Do I use simple language?	A	M	S	N
7. Do I use visual aids?	A	M	S	N
Active learning				
8. Do I ask students to answer questions?	A	M	S	N
9. Do I ask students to apply information in solving problems?	A	M	S	N
10. Do I arrange for students to practice thinking and practical skills?	A	M	S	N
Individual Differences				
11. Do I allow students to work at different speeds?	A	M	S	N
12. Do I encourage students to learn in different way?	A	M	S	N
13. Do I listen to students' comments about my teaching?	A	M	S	N
Giving Feedback				
14. Do I tell students how well they are doing?	A	M	S	N
15. Do I explain the errors that they are making?	A	M	S	N
16. Do I explain how students could do better work?	A	M	S	N
Ensuring Mastery				
17. Do I check that all my students understand each point?	A	M	S	N
18. Do I frequently find out whether every student has learnt the skills?	A	M	S	N

FEED BACK: Total number of 'A' =

Total number of 'M' =

Total number of 'S' =

Total number of 'N' =

FEED BACK: Scoring: Give yourself 3 marks for every A circled
2 marks for every M circled
1 mark for every S circled
0 mark for every N circled

Total up your score:

Maximum possible score is $18 \times 3 = 54$

COMMENT:

- 45 to 54 marks – Exceptional teaching skills
- 30 to 44 marks – Superior teaching skills
- 15 to 29 marks – Average teaching skills
- 0 to 14 marks – There is room for improvement.

DISCUSSION

Medical Education forms an entirely different phase of learning in the curriculum of students. As soon as the students get admitted in the medical college, their views, ideas and perception of the teaching-learning methods and processes is entirely different. An apprehension is normally associated with medical profession. It can be more clearly observed in the first year medical students, who get admission in a freshly started medical college, more so if there are no senior batch students. This needs to be tackled meticulously for better outcome.

Teaching and learning methods have become more scientific and rigorous; Curriculum is based on sound Pedagogical principles. Learning is an active and continuous process that brings a change in behavior in the context of acquisition of knowledge, achievement of skills and development of attitudes in the learner. Evaluation or assessment is a systematic process which determines the extent to which the predetermined objectives have been attained by the student. It is also concerned with the effectiveness of teaching.

In this aspect, we conducted a self-assessment study and analyzed the views and opinions of 150 students regarding the Physiology lectures conducted for the whole academic year, thinking that towards the end, the students frame a vivid picture about the usefulness, importance and clinical application of the concepts taught and ensure mastery over them. Lot of importance was given to the teaching method which involved giving examples related to their lives and summarizing the whole concept at the end of the session. Frequent questioning and giving scope to answer was well appreciated. To accomplish all this, it is equally important for a teacher to be well audible and use simple easily understandable vocabulary and learning aids. At the same time, it is also needed to allow the students to think and work with more practical approach, at their own pace, frequently correcting them and appreciating them.

The medical students are the end users of any teaching learning activity and are perfectly placed to give us the relevant feedback. This feedback about the student perceptions could be valuable to guide us to a better designing of the curriculum, faculty

development and training in pedagogical approaches and a better teaching of physiology, which would then create a positive attitude among the students towards physiology, a lifelong love for the subject and perhaps an interest in pursuing it as a career.¹¹

CONCLUSION

Every lecture that is delivered should make teaching meaningful with clarity in the concepts and

audibility, promoting active learning by the students, understanding the individual differences, giving feedback at regular intervals and ensuring mastery in the subject. To attain all these objectives a regular self-assessment of teachers is very much necessary to keep pace with the changing medical education and understanding of the students in order to master exceptional teaching skills.

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