



Teaching learning methodology in biochemistry in an institute of national importance-assessment by students

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Abstract

Introduction: Feedback assessment from students regarding the adopted teaching learning methodologies is a need of time as students are the recipients and it is meant for them.

Research Methods: The feedback was taken in a preliminary pilot validated questionnaire format with both close and open-ended questions. After voluntary written consent, 284 first year MBBS students participated. Results were statistically analysed with methods like percentage, mean and standard deviation.

Results: 87% students opined that their attention span was 30-45 mins in a theory class. Part Completion test after each topic was considered to be immensely useful by 80% of the participants. Performance based OSPE was the most difficult part in practical examination for 88% of the participants. 85% of the students preferred reasonings and case studies in theory paper over short notes with diagrams, MCQs, and long structured

questions. 81% participants considered problem solving ability and presentation skills as the most appealing qualities in a teacher.

Analysis: The notable outcomes were that students wanted more exams in the form of PCTs, teaching beyond 40 mins in average is fruitless and OSPEs needs more time and practice sessions. More thought-provoking questions are preferred and teacher should be sportive enough to take questions. Different presentation styles of same topic marks out the teacher.

Discussion: Regular feedbacks from students and assessment of our performance as teachers, doctors and planners of Teaching Methodologies is the definitive need of the hour as Medical education is a continuing process having always an arena for improvement.

Keywords: Teaching Learning Methodology, Biochemistry, Medical Education, Feedback, Questionnaire

Feedback assessment of teaching learning methodology –where are we?

We all need people who will give us feedback. That's how we improve.” – **Bill Gates**.

Background

Biochemistry is one of the three subjects included in the medical curriculum in the first year of the undergraduate course along with anatomy and physiology of the humans. Biochemistry primarily deals with understanding the functions of the human body at the cellular level i.e. metabolism and its derangements that results in diseases. It is usually considered as the most difficult and volatile subject. It also has a great pressure and challenge on the part of the teacher to introduce the concept of the subject in relation to its futuristic importance in diagnosis and management of diseases and patient care. Presently, there are various teaching methods that include the conventional didactic lectures, demonstrations, tutorials, student seminars, Objective structured practical examination (OSPE), Problem Based Learning Approaches etc and many new innovative approaches to make the learning process more effective for the students are in process.

Assessment by feedback is a healthy trend for improvising any ongoing strategy. Medical education is a continuing process with a scope for improvement with new advancement (1,2).

But what is the reality??? Is it exactly what we do, preaching and practising are two equal and opposite actions?

A feedback assessment of the Teaching Learning Methodologies adopted by Biochemistry department was done and 284 students participated and their feedback was taken in a questionnaire form. It was anonymous and voluntary participation.

It was a cohort study. Ethical clearance was obtained from Institute Ethical Committee. Voluntary written informed consent was obtained from the first year MBBS students. Confidentiality was maintained.

Inclusion criteria – First year (first and second semester) MBBS students of an INI (institute of National Importance) were enrolled. 284 students participated and preliminary pilot validated questionnaire format was used with both close and open-ended questions. It was anonymous and voluntary participation. Exclusion criteria was voluntary withdrawal from the study.

Responses of students to the question asked

| Questions Asked | Most common response | Percentage of students |
|--|---|------------------------|
| Preferred modality of teaching | Power point and Chalk n Talk both | 89% |
| Preferred pattern of questions | Case studies and Reasonings | 85% |
| Attention span in theory class | 30-45 minutes | 87% |
| Most difficult part in practical examination | OSPE | 88% |
| Most Difficult Topics in Biochemistry | Protein and Lipid Metabolism and Molecular Biology | 78% |
| “Not so useful” topics in Biochemistry | Metabolism, Molecular Biology and Chemistry of Biomolecules | 71% |

| | | |
|----------------------------------|---|-----|
| Part Completion Test | Is immensely useful | 80% |
| Appealing qualities in a teacher | Presentation skills and Problem-solving abilities | 81% |

Analysis of the existing teaching-learning methods adopted and perception of students towards it was the aim of the study. What are the existing practises and what the students really want and benefits they are getting from the current methodologies adopted by department of Biochemistry in an Institute of National Importance, has immense importance as at the end of the day it is the foundation laying of the first year medical students for their future career in medical sciences(3).

The preferred mode of teaching was a rational combination of the conventional face-to-face explanation using blackboard-teaching methods, along with power-point presentation showing difficult diagrams, charts or metabolic pathways. This was a very important observation made as sometimes the teacher gets biased towards one modality without knowing the impact of the adopted methods and the benefits of it to the students (4).

“I cannot teach anybody anything; I can only make them think.” (Socrates)

Reasoning and Case studies were found to be most interesting and stimulating for the students (85%) amongst various patterns of questions.” As said earlier, first year students see Medical career as a mode of serving sick people and “diagnosis treatment and cure” are the key end points for them. So, the responsibility lies with us to improve their understanding regarding Biochemistry and change their idea of it being a “preclinical “or “non-clinical “subject which they think

is only to pass 1st professional examination with no utility their after (5).

“The eye sees only what the mind is prepared to comprehend.” (Henri Bergson)

To the question about attention time span in a 1-hour theory (didactic) lecture, the 87% of the total participants’ response was 30 – 45 minutes. Now where do we stand? The pressure of completion of course within specified allotted classes forces us to go beyond 1 hour many a time. The million-dollar question is- do the students benefit from our efforts? (6,7)

Practical classes were preferred by 252 students as interesting and good learning experience. Isn’t it reinforcing our age old saying that “seeing is believing”? We all will agree that the amount of effort and attention we give to the preparation of our didactic lectures, we don’t to the practical classes and most often even prefer to hand it over to youngsters while the students feel that the practical classes help them understand and learn better. Where do we stand? (8)

“There is a great difference between knowing and understanding: you can know a lot about something and not really understand it.” (Charles F. Kettering)

OSPE (Objective Structured Practical Examination) is the call of the hour as per recent developments in Medical Education. 88% of the participating students found OSPE the most difficult part of the Practical examination particularly due to lack of exposure to OSPE questions. Hence, regular OSPE classes should be conducted to make them more acquainted with this pattern and exactly what it means and what they are expected to do. (9, 10)

“Everything should be made as simple as possible, but not simpler.” (Einstein)

Almost the unanimous response to the choice of “most difficult” topics in Biochemistry was Protein and Lipid

metabolism and Molecular Biology. This wants more effort from us to find out ways to “simplify” the topics and expect the students to know what is really beneficial for them to know. And this decision depends on our knowledge and expectations as well as the student’s power of understanding and retention and the future benefits. (11)

“The mediocre teacher tells. The good teacher explains. The superior teacher demonstrates. The great teacher inspires.” (William Ward)

The students found that Molecular biology, Metabolism and chemistry of biomolecules as “not so important” topics in Biochemistry. Here again the decision and solution lie with the teachers that we make them understand the importance of the topics with relevant clinical correlation and their future application in patient care as in first year, students usually can’t perceive the concept of Research as a career in Medicine. But the question is if we can’t explain the importance of a topic in respect to Clinical medicine and patient care, then are we on the right track? (12,13)

“I’m not sayin’ I’m gonna change the world, but I guarantee that I will spark the brain that will.” (Tupac Shakur)

Contrary to usual beliefs, students preferred “examination” and 80% of them agreed to the question that a regular PCT (part completion test) will be “immensely useful”. (14)

“I like a teacher who gives you something to take home to think about besides homework.” (Lily Tomlin)

The most appealing qualities in a teacher as opined by students (81%) are presentation skills and problem-solving ability.

“If we teach today’s students as we taught yesterday’s, we rob them of tomorrow.” (John Dewey)

It was comforting and satisfying to know that the participants collectively felt and understood that Biochemistry is and will be immensely helpful in their clinical years – breaking the myth of it being a “non-clinical/pre-clinical” subject. It is disappointing that even after equally giving dedicated patient services in Clinical laboratory, Biochemistry is still pre-clinical where the other laboratory service subjects are in para clinical category. Aren’t we losing post graduate students for this? Isn’t it time to act? (15)

Biochemistry is one of the most difficult and volatile subjects in medical curriculum that includes reactions mostly occurring at the cellular level need to be mentally visualised making it tough to remember. Guidance by experienced teachers is highly significant for the students to understand the subject. Though it is a basic science subject taught in first year of medical curriculum, it has wide applications in both diagnostics and therapeutics, making it even more challenging for the teachers to give a clearer concept about the subject.

Feedback assessment from students regarding the teaching learning methodologies is definitely a need of time as students are the recipients and it is meant for them. Unilateral formatting and execution of teaching methodologies without the “market survey” and feedback will definitely fail in yielding the right result. Regular feedbacks from students and assessment of our performance as teachers, doctors and planners of Teaching Methodologies is the definitive need of the hour.

“Mistakes should be examined, learned from, and discarded; not dwelled upon and stored.”

– **Tim Fargo**

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