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Original Article

Preferences of the 1st year medical students on various teaching methods and their feedback on curriculum quality in Biochemistry

K. Maheswari[1], Binita Goswami[1], Kamna Singh[2], Elvia Jamatia[1], Smita Kaushik[1]

[1]Department of Biochemistry, Maulana Azad Medical College, New Delhi, [2]Department of Biochemistry, Sarojini Naidu Medical College, Agra, Uttar Pradesh, India.

***Corresponding author:**
Elvia Jamatia,
Department of Biochemistry,
Maulana Azad Medical College,
New Delhi, India.

ielvia.j@gmail.com

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ABSTRACT

Objectives: Medical teaching requires introduction of new teaching methods to cover the vast curriculum in stipulated time. Apart from conventional teaching, newer teaching learning methods such as video clippings, problem-based learning (PBL), seminars, early exposure to patients, hospital laboratory visits, debates, quiz, and group discussions need to be introduced. The study was conducted to gauge the student's perception regarding the teaching methodology adopted by the department of Biochemistry for the 1st year MBBS students. Along with this, feedback was also taken to assess the student's views on their present assessment system as well as on various aspects of the current MBBS curriculum and on their relationship with their teachers.

Materials and Methods: This was an observational study conducted in the department of Biochemistry and the data were collected using a pre-designed questionnaire from the 1st year MBBS students after completion of the 1st year Biochemistry course.

Results: The questionnaire evaluated different teaching methods for various topics in Biochemistry. Among 243 students included in the study, didactic lecture was preferred by 80 students for endocrinology and 82 for cancer biology topics. Debate was preferred for the topic of nutrition (n = 82). Ninety-one students chose case-based learning for learning clinical Biochemistry. Video-based learning was preferred for the topic of molecular biology by 80 students.

Conclusion: Students prefer different combinations of teaching learning method for better understanding of the subject. Early clinical exposure and effective tutorial sessions will definitely improve the learning gain among pre-clinical students.

Keywords: Case-based learning, Early clinical exposure, Problem-based learning

INTRODUCTION

Medicine is a vast subject and it is a great challenge for the medical students to finish the curriculum within the stipulated time. Medical teachers need to adopt new innovative measures to make the journey eventful. It should include newer technologies in addition to the conventional teaching methods for better understanding of the subject and its clinical application. Moreover, medical education in the past decade has witnessed a paradigm shift and is now becoming student centric from teacher-centered mode.[1] It becomes a responsibility of any medical teacher to meet the individual educational need of the student in all possible aspects. Every student differs in their level of knowledge, skill, attitude, preparedness, back ground, understanding, access to

newer technologies, and many other factors. Hence, it is becoming imperative to discuss with the students about their preferences for teaching methodology.[2] Furthermore, the quality of their education should be monitored and assessed regularly to improvise the methods used. Newer teaching-learning methods include video clippings, problem-based learning (PBL), seminars, early exposure to patients, hospital laboratory visits, debates, quiz, and group discussions.

Considering all these issues, the present study was conducted on first professional MBBS students to know their preferences about teaching-learning methods for different topics in subject of Biochemistry practiced by their teachers. The aims were to (a) ascertain student preferences about teaching methods for various topics in Biochemistry; (b) analyze the feedback of MBBS students on the present assessment system; and (c) assess the feedback of first professional MBBS student on various aspects of the present curriculum and on the student-teacher relationship.

MATERIALS AND METHODS

This was an observational study conducted in the Department of Biochemistry, Maulana Azad Medical College, New Delhi. As the work in the present study concerns an assessment of data collected from a questionnaire-based feedback from students, it was waived off from obtaining ethical approval as per the Institutional Ethical Committee. A student feedback questionnaire, validated by three senior faculty members, was administered to the 1st year MBBS students after completion of their syllabus. Informed consent was taken from all the students included (n = 250) in the study. Seven feedback forms were rejected due to incomplete filling. The gathered data were analyzed and mostly represented as percentage.

RESULTS

This study was conducted to determine the various teaching and learning preferences among the 1st year MBBS students. A total number of 243 students participated in this study.

For the topic of enzymes, among 243 participants, 74 preferred practical and 68 preferred video aids followed by 45 for lectures. For genetics, 82 preferred video aids for understanding. Lecture was found to be the preferred method of learning for topics such as metabolism (n = 68), immunology (n = 75), hormones (n = 80), and cancer (n = 82). Case-based study was preferred as the method of learning for clinical Biochemistry topics by 92 participants. Debate was the method marked as preferred for nutrition by 82 participants followed by team-based learning which was preferred by 60 students [Table 1].

The students were given a questionnaire with measurement scale consists of five options (scores 0–2 = extremely poor, 3–4 = poor, 5 = neutral, 6–7 = good, and 8–10 = excellent) for various particulars and instructed to select one. We, further, combined the groups into three categories depending on the scores (<5 as poor, 5 as neutral, and >5 as good). About 61% of students found that the learning value in terms of skills, concepts, knowledge, analytical abilities, or broadening perspectives was good. About 58% found that the syllabus was relevant to real-life situations. Depth of the course content was found to be good by 65%. Extent of course coverage was good according to 62%. Remaining 27% found it to be poor, for which feedback has been sought in detail and also was compared with the attendance of the student to the classes. About 82% of students found that the efforts made by their teachers in learning were good [Table 2].

The assessment method of the students included weekly tutorials, monthly formative assessment examinations, practical examinations, terminal examinations, and a pre-professional examination. About 78% of students found the current assessment methods to be good. About 81% of students gave a good feedback about their relationship with the teachers [Table 3].

DISCUSSION

The results of our present study are the perception from the students which may help the teachers to opt various effective, useful teaching methods in addition to conventional methods. Majority students chose didactic lecture to be the suitable way of learning for few topics such as metabolism, immunology, endocrinology, and cancer. Didactic lectures are definitely beneficial within a stipulated time.[3] A human brain is adapted to listen continuously for approximately 40 min. Hence, to utilize the allotted time efficiently and to make the learning experience enjoyable, we have to rely on a combination of teaching tools. For topics such as genetics and enzymes, audiovisual aids may help the students to understand the process better and faster because of the involved animations. Concept of telomerase, replication, translation, and enzyme inhibition can be easily taught through the video clippings in addition to conventional way of teaching.[4] Case-based learning (CBL) was preferred by many students for learning clinical Biochemistry. It may be interesting for the 1st year students who attend the clinical postings only from their 2nd year of curriculum. Case-based studies also relate Biochemistry with real-life situations which further fascinate students and provide active learning environment. Salgar concluded in his study that CBL is an innovative teaching method that helps to promote better understanding and self-directed learning and ultimately providing more effective learning of Biochemistry.[5,6]

Laboratory or hospital visits are also a part of the student's interest to learn Clinical Biochemistry after case studies. Early clinical exposure for the 1st year students will definitely

Table 1: Topic-wise preferences of different teaching methods (*n*=243).

Topics	Didactic lecture	Laboratory visit	Case-based learning	Video-based learning	Debate	Team-based learning	Practical training
Enzymology	45	10	14	68	3	29	74
Metabolism	68	15	45	19	12	34	50
Molecular biology	70	7	34	82	10	25	15
Immunology	75	25	35	50	18	34	6
Endocrinology	80	14	49	24	16	35	25
Clinical BC	35	46	91	8	17	16	30
Nutrition	43	3	35	3	82	60	17
Cancer	82	5	15	30	23	55	33

Table 2: Feedback on quality of the Biochemistry curriculum and other related variables (*n*=243).

Variables	Score<5 (Poor)	Score=5 (Neutral)	Score>5 (Good)
Learning value (in terms of skills, concepts, knowledge, analytical abilities, or broadening perspectives)	84 (35)	10 (4)	149 (61)
Applicability/relevance to real-life situations	90 (37)	12 (5)	141 (58)
Depth of the course content	65 (27)	20 (8)	158 (65)
Extent of coverage of course	86 (35)	7 (3)	150 (62)
Extent of effort by teachers of Biochemistry department	19 (8)	24 (10)	200 (82)

*Represented as % in the brackets.

Table 3: Feedback on the current assessment method and student-teacher rapport (*n*=243).

Variables	Good	Poor
Assessment methods	78%	22%
Student-teacher relationship	81%	19%

improve their interest and also their communication skills. This can be done for topics such as jaundice, porphyria, and inborn defects. Spencer *et al*. concluded that clinical exposure plays an important role in the development of clinical reasoning, communication skills, professional attitudes, and empathy.[7] Practical training was chosen as a mode of learning for enzymology. Hence, enzyme inhibitions and factors affecting enzyme activity can be easily demonstrated during practical sessions. We conducted a debate during tutorial for the nutrition topic and it garnered interest among students. Debates help to improve self-learning skills, update newer concepts, and communication skills. Frequent quiz programs during tutorials also benefit the students to cover the topic in a short time.

Evaluation is important to find out the extent to which objectives have been achieved. It also provides the teachers with useful feedback information.[8] The current assessment methods were found to be effective by 78% of the students.

Student-teacher rapport was good according to 81% of the students. Student interactions become more beneficial during tutorial sessions with small groups. Enthusiasm and innovative ideas of the instructor make tutorial more effective. Understanding student's perspective in learning is a vital component of an effective tutorial session.[9] This also helps to identify the hurdles of low achievers and measures can be taken for their improvement.

CONCLUSION

Students prefer different combinations of teaching learning methods for better understanding of the subject. Early clinical exposure and effective tutorial sessions using variety of teaching learning tools for different chapters will help students to understand the subject better with more interest and hence definitely improve the learning gain in the pre-clinical subjects among the students. The current assessment methods need to be continued with extra care given to the low achievers to improve.

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Declaration of patient consent

Patient's consent not required as there are no patients in this study.

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Conflicts of interest

There are no conflicts of interest.

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