



## Original Article

# Fourth year MBBS Students Feedback on Teaching and Evaluation Methods in Pharmacology in a Medical College of Bangladesh

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### Abstract

**Objective:** The objective of the current study was to obtain an opinion from 4th year medical students regarding teaching and evaluation methodology used and their perception about Pharmacology and to identify the area of improvement. **Materials and Methods:** This study has been designed for 4th year MBBS medical students of Shaheed Monsur Ali Medical College, Dhaka. Eighty students were approached with the questionnaire which contained 25 questions, each question has 3-9 options. Descriptive statistics were used for analysis of data. Frequency was expressed as percentage. **Results:** Out of 80 students, around 67.5% of students were somewhat aware about Pharmacology before coming to 4th year MBBS. Regarding the question about the opinion of their seniors 55% of students felt that Pharmacology is very useful, interesting and practically important. Among all the 4th year subjects 26.3% of students rated Pharmacology above all subjects. 71.2% of them replied Pharmacology is as same as other subjects. Regarding teaching methodology in Pharmacology, 37.5% of students found interactive classes based on strict bilateral communication as most interesting method of teaching Pharmacology. Majority (42.5%) of the students felt drugs used in emergency medicine will be most useful in future, whereas 40.0% students thought prescription writing will be more needed. **Conclusion:** There is need of more clinical orientation to the Pharmacology teaching at undergraduate level to make the subject more understandable and interesting.

**Key words:** Teaching methods, Evaluation methods, pharmacology

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### Introduction

Pharmacology is one of the most progressive and constantly changing basic medical science subject. It is taught to fourth year MBBS students under the medical curriculum by BMDC and it is the backbone of rational therapeutics. Sound knowledge of this subject plays a very important role in developing a rational approach toward treating patients. It needs to be taught and learnt effectively so that the benefit of the rational use of drug and cost-effective treatment reach the grass root levels of the community with the help of graduate doctor<sup>1</sup>.

Didactic lectures, tutorials and practical classes are the common methods of teaching in most of the medical colleges of Bangladesh. The scientific curriculum of the pharmacology subject and the innovative teaching methods would produce the vision and roadmap which can fulfill the academic objectives<sup>2</sup>. It is believed that reviewing the teaching and evaluation methods on getting feedback from the students and the modification of methodologies

accordingly is very important for the undergraduate medical teaching<sup>3</sup>. It is felt that undergraduate pharmacology practical has been no more than demonstrations and none of them actually involve the students in the learning process. One always wished to have a module that could take care of all the requirements<sup>4</sup>. With a view to improvise this study was conducted to get the student feedback of the pharmacology teaching methodology and evaluation pattern.

### Materials & Methods

This study has been designed to get feedback regarding teaching and evaluation methods in pharmacology subject from fourth year MBBS medical students of Shaheed Monsur Ali Medical College, Dhaka. Eighty students were approached with the questionnaire which contained 25 questions, each question has 3-9 options. Suggestions were asked about the qualities of a good pharmacology teacher, modification in the pharmacology teaching methodology and scope of

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pharmacology. The questionnaire used in this study was based on previous study undertaken for undergraduate medical students. Sufficient time was given to fill the questionnaire. Students were asked not to reveal their identities in order to make them express freely. The completed questionnaires were then collected and compiled for statistical analysis.

**Statistical analysis:** Statistical analysis was carried out by using the Statistical Package for Social Sciences version 16.0 for Windows (SPSS Inc., Chicago, Illinois, USA). Descriptive statistics were used for analysis of data. Frequency was expressed as percentage.

### Results

Out of 80 students, around 67.5% of students were somewhat aware and 12.5% were having no knowledge about Pharmacology before coming to fourth year MBBS. Regarding the question about the opinion of their seniors, 55% of students felt that Pharmacology is very useful, interesting and practically important, whereas 17.5% of students felt it useful but boring. When asked about their own opinion with respect to their interest in Pharmacology it is noted that 58.7% of students found the subject very useful, interesting and practically important. Only 10% of students felt it was useful but boring. Among all the fourth-year subjects we were happy to note that 26.3% of students rated Pharmacology above all subjects in comparison to other MBBS subjects. 71.2% of them replied Pharmacology is as same as other subjects. The students were asked to choose which topics they found interesting in pharmacology, majority of the students found General Pharmacology (42.5%) and Autonomic Nervous System (ANS) (15%) most interesting. Other students mentioned GIT (12.5%), Respiratory System (10%), Cardiovascular system (6.3%), CNS (3.7%), Endocrine system (3.7%), Chemotherapy (2.5%), Autacoids (2.5%) and other topics (1.3%) as most interesting topic in Pharmacology. As much as 70% (three fourth) of students mentioned that they preferred studying Pharmacology from teacher's class notes, 21.2% by combination of class notes, text books and self-prepared notes. As much as 40% of students mentioned that they study Pharmacology regularly because of items/viva and interactive classes. 36.3% mentioned that they study Pharmacology regularly for gaining more knowledge and 16.2% are regular for their own interest in the subject. Only 7.5% study during term exams. As a reply to the question regarding their interesting classes during practical hours, prescription writing (60%), emergency medicine (31.2%) was preferred by the students than other topics. It was quite interesting to note that 72.5% of students thought that Pharmacologists were respected as clinicians and 7.5% did not agree to that fact (Table-I).

**Table-I: Response of students regarding teaching methodology in Pharmacology (n=80)**

Questionnaire regarding teaching methods & evaluation pattern	No. of Students	%
<b>Did you know about pharmacology before 2nd &amp; 3rd Phase of MBBS study?</b>		
Somewhat	54	67.5
Yes, many things	16	20.0
No	10	12.5
<b>What was the opinion of your seniors regarding pharmacology?</b>		
Very useful, practically important and interesting	44	55.0
Useful and interesting	20	25.0
Useful but boring	14	17.5
Boring and useless	2	2.5
<b>What is your opinion regarding Pharmacology now?</b>		
Very useful, practically important and interesting	47	58.7
Useful and interesting	23	28.8
Useful but boring	8	10.0
Other (specify)	2	2.5
<b>Which topic/topics did you find interesting?</b>		
General Pharmacology	34	42.5
ANS	12	15.0
GIT	10	12.5
Respiratory system	8	10.0
CVS	5	6.3
CNS	3	3.7
Endocrinology	3	3.7
Chemotherapy	2	2.5
Autacoids	2	2.5
Other	1	1.3
<b>Which of the following method did you find most interesting in 4th year?</b>		
Interactive lecture	30	37.5
Student seminars	12	15.0
Lecture in batches	10	12.5
Demonstration/ tutorial	10	12.5
Audiovisual aided lecture	10	12.5
Interactive demonstration	8	10.0
Clinical Pharmacology	0	0.0
MCQ	0	0.0
Other (specify)	0	0.0
<b>From where did you prefer studying pharmacology?</b>		
Teacher's class notes	56	70.0
Combination	17	21.2
Self-prepared notes	4	5.0
Keys/handy books only	2	2.5

Text books only	1	1.3
Other notes	0	0.0
Other (specify)	0	0.0
<b>What is your pattern of study pharmacology?</b>		
Regular because of item/ viva & interactive classes	32	40.0
Regular for gaining more knowledge	29	36.3
Regular due to interest	13	16.2
Only during term exam	6	7.5
Study only for final exam	0	0.0
<b>How do you rate pharmacology in comparison to other MBBS subjects?</b>		
Average, same as other	57	71.2
Above all subjects	21	26.3
Other (specify)	2	2.5
Useless not important	0	0.0
<b>Do you think that the subject should taught in or after 3rd year MBBS?</b>		
Yes, regular lecture on during 3rd year MBBS	52	65.0
Orientation course of few days during internships	16	20.0
No, enough pharmacology	6	7.5
Few lectures on newer drugs/ and recent advancement on therapy	6	7.5
<b>Do you think pharmacology are respected as expert therapeutics?</b>		
Yes	58	72.5
No	6	7.5
Better status	2	2.5
Not known	14	17.5
<b>What is the best order to study in pharmacology?</b>		
General Pharmacology	41	51.3
CVS	12	15.0
ANS	10	12.5
CNS	7	8.7
GIT	6	7.5
Endocrinology	4	5
Clinical Pharmacology	0	0.0
Respiratory system	0	0.0
MCQ	0	0.0
Other (specify)	0	0.0
<b>Which part of practical did you find most interesting?</b>		
Prescription writing	48	60.0
Emergency medicine	25	31.2
Drip setting/inj. filling	5	6.3
Experimental graphs	2	2.5
Criticism of prescription	0	0.0

**Table-II: Response of the Students regarding further Pharmacology study (n=80)**

Questionnaire regarding perception and interest of students about Pharmacology	No. of Students	%
<b>Which topic do you think will be useful during internship?</b>		
General Pharmacology	34	42.5
ANS	21	26.3
CVS	14	17.5
Endocrinology	6	7.5
Respiratory system	3	3.7
CNS	1	1.3
GIT	1	1.2
Clinical (patient related) Pharmacology	0	0.0
MCQ	0	0.0
Other (specify)	0	0.0
<b>Would you like the following topics to be added as a part of regular?</b>		
Group discussion	41	51.3
Case study and treatment discussion	23	28.7
Student seminar	8	10.0
Quiz	8	10.0
Other (specify)	0	0.0
<b>How did you learn pharmacology?</b>		
By understanding	46	57.5
By combination	31	38.7
By cramming/mugging	3	3.8
By grasping thing	0	0.0
Can never learn	0	0.0
<b>Do you think following special topics should be discussed in teaching of pharmacology?</b>		
Dose schedule and calculation	24	30.0
Pediatric Pharmacology	18	22.5
Drug administration procedure	19	23.7
Drugs used in special condition like kidney dysfunction, sexual dysfunction, emergency	9	11.3
Geriatric Pharmacology	6	7.5
Rationality	2	2.5
Other (specify)	2	2.5
<b>How do you regard pharmacology teacher as compared to other?</b>		
All good, knowledgeable	57	71.2
All average	13	16.3
Most good few average	6	7.5
All below average	2	2.5
Other (specify)	2	2.5
Most average few good	0	0.0

Rate the usefulness of each of the following evaluation methods in preparing you for your university professional examination?		
Problem based learning	44	42.5
Class test	33	41.2
MCQ	15	18.8
Terminal exam	12	15.0
Prelim exam	0	0.0
Which part do you think most useful in future?		
Emergency medicine	34	42.5
Prescription writing	32	40.0
Experimental graphs	8	10.0
Drip setting/ inj. filling	6	7.5
Criticism of prescription	0	0.0
How much time, according to you, would be adequate for Pharmacology MBBS teaching?		
1 year	36	45.0
2 years	18	22.5
1 and half year	26	32.5

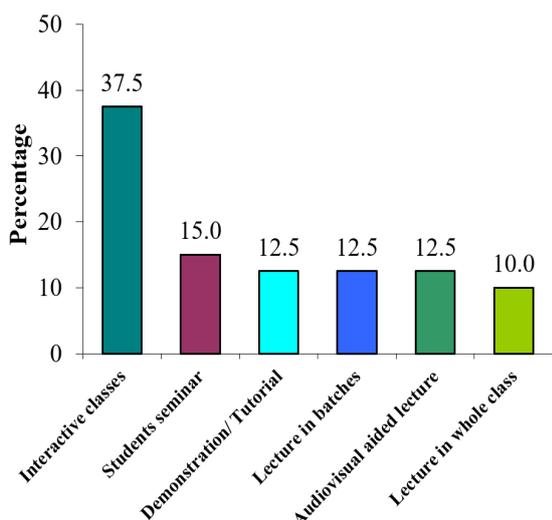


Figure-1: Response of students regarding the teaching methods found interesting or not; expressed as percentages

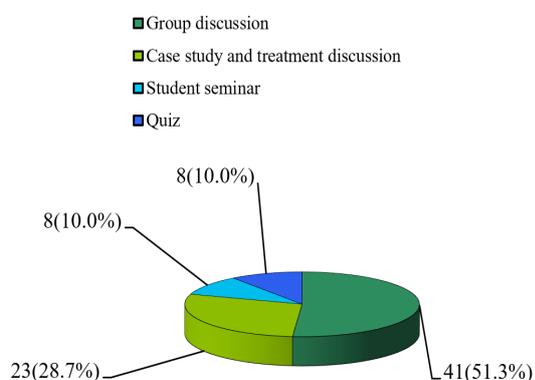


Figure-2: Response of the students regarding teaching methods needed to be incorporated into curriculum; expressed as percentages

Regarding teaching methodology, 37.5% of students found interactive classes based on strict bilateral communication as most interesting teaching method of Pharmacology. Fifteen percent of students found student’s seminar, 12.5% mentioned audio-visual aided lectures, lectures in batches and demonstrations/ tutorials and only 10% found lecture in whole class as most interesting teaching method (Figure-1).

Regarding teaching methodology, majority (51.3%) felt that incorporating group discussion, case study and treatment discussion (28.7%), student seminar (10%) and quiz (10%) as a part of regular teaching will make Pharmacology subject more interesting (Figure-2).

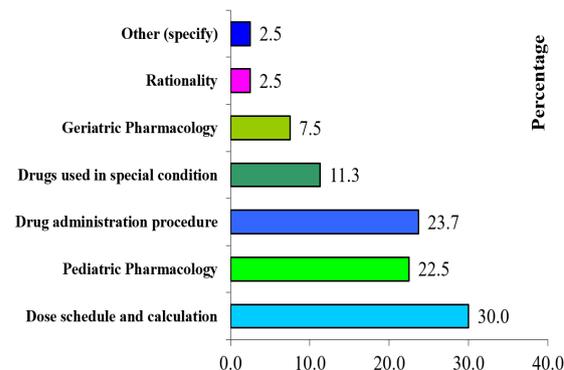


Figure-3: Response of students regarding special topics needed to be discussed in pharmacology teaching; expressed as percentages

Figure-3 showing almost one third (30.0%) of the students thought dose schedule and calculation, 23.7% students wanted to learn drug administration procedure, 22.5% students wanted to learn pediatric doses and other special topics should be discussed in lecture or practical of pharmacology.

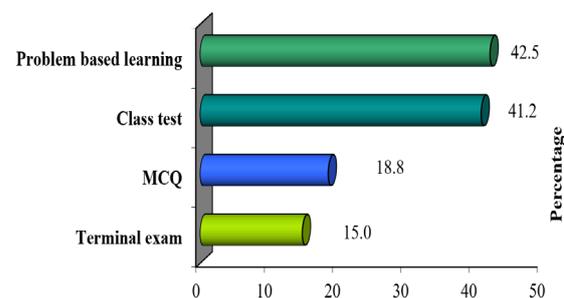


Figure-4: Response of students regarding evaluation methods preferred in preparation for their university exams; expressed as percentages

Figure-4 shows problem-based learning (42.5%), class test (41.2%), Multiple Choice Questions (MCQ) (18.8%) and terminal exam (15%) were the most favored evaluation methods among the students for preparing towards university examinations.

When asked about their way of studying the subject, about 57.5% of students clearly told that they learnt Pharmacology only by understanding and 3.8% by cramming or mugging. Regarding their opinion about the faculty members in the department of Pharmacology, 71.2% gave the opinion that they are good and knowledgeable and only few 2.5% felt they are below average.

Majority (42.5%) of the students felt drugs used in emergency medicine will be most useful in future, whereas 40.0% students thought prescription writing will be more needed. 45% of students gave the opinion that one year is adequate for third professional MBBS teaching, while 32.5% of students felt one and half year is required for the same and the rest 22.5% of students mentioned for two years. Important suggestions came out regarding the curriculums and the teaching methods that can make the subject more clinically oriented, to have more interactive classes, more group discussions and more problem-based learning.

### Discussion

Pharmacology being a very important subject for future prescribers needs to be regularly updated with regard to content and methods of teaching in order to make students more knowledgeable. It has been felt by the students that a change in the course of undergraduate medical students during the practical sessions in the subject of Pharmacology is needed. Undergraduate pharmacology in the MBBS curriculum is incorporated with the prime intention of sensitizing the students to the wide world of drugs and to equip them to utilize this knowledge in a rational way during their clinical practice<sup>5,6</sup>. The concepts of teaching methodologies and evaluation methods need to be kept under continuous review<sup>7</sup>. It is accepted that the feedback from the students serves as an effective tool in developing teaching and evaluation methodology<sup>8,9</sup>.

Students' perception comprises an assortment of effective methodologies for improvement on teaching basic sciences related to clinical professions, such as pharmacology in health education<sup>10</sup>. Educational research has been conducted regarding students' perceptions toward teaching and learning as well as factors that affect their learning in undergraduate programs as far back as the 19th century<sup>11,12</sup>.

Most of the studies on students' feedback mostly focused on areas such as learning outcomes, teaching and assessment methodologies, academic staff and educational environment<sup>13</sup>. Student perception is an accepted means of reviewing teaching and evaluation methods and developing teaching methodologies in undergraduate programs around the world<sup>10,14,15,16</sup>.

Furthermore, student perception is used to identify which teaching strategies students perceive to be the most effective means to facilitate the learning of pharmacology material<sup>17</sup>.

In this study we found that General Pharmacology (42.5%) and Autonomic Nervous System (ANS) Pharmacology (15%) are the most interesting topics among the various other topics in pharmacology. Least interested topics like Chemotherapy (2.5%) and Autacoids (2.5%) can be made more interesting and understandable by taking special efforts. It was noticed that drugs used in emergency medicine and prescription writing are the most useful and needed practical in Pharmacology. There are some studies that point out that teaching and learning to prescribe rationally should be an important part of clinical pharmacology training<sup>17,18</sup>.

Majority of the students favored incorporation of group discussion (51.3%), case study and treatment discussion (28.7%) in regular teaching. A proper guideline on part of the teachers is the need of the hour to make student's seminars more interesting. A study conducted in New Delhi, India showed that 80.46% students and 87.50% teachers were in favor of bedside teaching of clinical pharmacology<sup>18</sup>. The authors recommended that bed-side teaching should be started after six months of teaching basic pharmacology and should be continued till the completion of the final year<sup>18</sup>.

Considering the demand, we also feel that during practical classes, fourth year students should be taken to wards for discussion of treatment protocols of various admitted cases. An alternative approach could be the use of short therapeutic problems and patient-oriented & problem-solving strategies. Students interest can be understood from the poll as they demanded the introduction of some special topics like pediatric pharmacology, geriatric pharmacology and recent updates of new drugs which are available in the market. Their preference for Pharmacology as a subject in post-graduation was less probably because of inadequate knowledge of the booming career in clinical research in pharmaceutical industries<sup>19</sup>.

It is necessary to enlighten students about various carriers' options in Pharmacology like Clinical research, Pharmacovigilance. To impart knowledge of clinical pharmacology, the teachers themselves should be well versed with the current trends in theory and the new drugs in the market. The students in the poll agreed to this fact and thought that most of the teachers do have this quality. It is just a matter of time before we all put our heads together and set the ball rolling for a revised pattern of teaching pharmacology which is learner-centered and more clinically oriented<sup>20</sup>.

### Conclusion

The teaching methods should include more of small group teaching methods with judicious use of the modern teaching aids. The pharmacology curriculum should be made more need based, integrated with clinical subjects, focusing towards the objectives to be achieved by national health programme. There is an urgent need to reform the curriculum and practical teaching methods for fulfilling the objective of reading pharmacology.

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