

Research Article

A questionnaire based study of prevailing teaching methods in pharmacology and its efficacy /evaluation by second professional M.B.B.S students

Muzaffar Ahmad Pukhta, Mohammad Younis Bhat*, Zorawar Singh

Department of Pharmacology, Government Medical College, Srinagar, Jammu and Kashmir, India

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***Correspondence:**

Dr. Mohammad Younis Bhat,
E-mail: mohammad.younis50@yahoo.com

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ABSTRACT

Background: Pharmacology is the subject which has got scientific obligation and feedback from the students facilitates a change in preconceived notion about teaching. The study was under taken to elicit the perception and feedback regarding the prevailing system of teaching methods in pharmacology and requirement of any consequent changes.

Methods: A questionnaire was designed and given to second years medical students on internationally accepted Likert scale which they were supposed to fill after giving due instructions. Analysis was done on percentage wise distribution of various parameters used in the questionnaire.

Results: Out of the total of 150 enrolled students, 130 filled and returned questionnaire with students vouching for various changes with 125 (96%) agreeing that black board teaching as best method of teaching in contrast to 31 (23.8%) for PPT and 87 (66.9%) for combination of both. 109 (83.8%) wanted distribution of handouts giving outline of topic before lecture classes.

Conclusions: There is a need of various reforms for improvement of prevailing teaching methods in pharmacology like microteaching and group discussions and involving MCQs in pattern of evaluation as opined by the students.

Key words: Pharmacology, Questionnaire, Likert scale, Perception, Feedback, Microteaching

INTRODUCTION

Pharmacology is an ever changing medical subject, being both a basic and applied science. The primary objective of teaching pharmacology is to enable undergraduate medical students to take rational therapeutic decisions in clinical medicine.¹

It is one of the most evolving branches in medical sciences and it is accepted that reviewing the teaching and evaluation methods by feedback from students and modification of methodologies accordingly is very important for the undergraduate medical teaching with few opining that teaching pharmacology course in medical schools has failed to keep pace with the rapid

changes in medical practice.²⁻⁵ and closely linked to this aspect is how prepared are we mentally, logistically and academically to take up the challenge.⁶ Many reforms have been made in undergraduate teaching of pharmacology in different institutions like clinical pharmacology, group discussions and practical classes on therapeutic problems are being introduced and didactic lectures have decreased.

Objective structured practical examination (OPSE) is being increasingly used in many institutions for reasons such as objectivity and reliability.^{7,8} Theory papers include more questions requiring short answers, which are practically more important than long essay type questions on a single group of drugs.⁹ There is very little

documentation of the effectiveness of various active learning strategies and often faculty are reluctant to incorporate such new strategies into the teaching curriculum.¹⁰ Of late several committees have recommended restructuring of the undergraduate curriculum but unfortunately significant changes are not taking place for various reasons.¹¹ The course assessment instruments like feedback may help to know about the pros and cons of teaching and assessment methods. Considering diversity in teaching, we planned of eliciting student's feedback to reveal:

- Utility of prevailing system of teaching.
- Identify the critical elements that define a good lecture.
- Whether the so called reforms are acceptable to them.
- Their opinion for the betterment of teaching/ learning the subject.

METHODS

This cross sectional study was undertaken in the Department of Pharmacology of Government Medical College, Srinagar, Jammu and Kashmir, India. An eight hundred bedded tertiary care teaching hospital among 2nd year M.B.B.S. undergraduate students who had completed 4 months of curriculum. Oral consent was taken from the students after explaining the purpose of the study and giving any clarification wherever needed. Data was collected through a structured, validated questionnaire adapted from the previous studies that assessed feedback of second year medical students on teaching learning methodology and evaluation methods in pharmacology.

The questionnaire consisted of two parts. First part included questions on the internationally accepted 'Likert' scale and participant's asked anonymously to indicate the degree to which they agreed with each statement on a Likert scale ranging from 1 to 5 (1=strongly disagree to 5=strongly agree). The second part included replying with 'Yes' or 'No' followed by an open ended question about satisfaction quotient with present teaching methods and any relevant suggestion for improvement or any reform required. The questionnaire is shown in the appendix.

RESULTS

Out of a total 150 enrolled students, 130 participated and successfully completed the questionnaire within stipulated time frame of 15 minutes. Analysis was done on median score and percentagewise distribution of the various parameters used in the questionnaire.

DISCUSSION

Various teaching methods have come into play for benefit of the students as involvement of students improves

learning and thereby their performance in university examinations.¹² Evaluation is a systematic process that consists of finding out the extent to which educational objectives have been achieved by the students which can provide the teachers with useful feedback information, obtained through informal mutual communication or preferably by a designed questionnaire.^{13,14} Therefore the present study has been designed in the form of a questionnaire with the objective to elicit the perception of the students regarding the utility of the prevailing system of teaching and to evaluate the extent to which students are benefited by their methodologies.

The student's opinion poll was in general as expected but at places revealed important information like introduction of group discussions and seminars. A large number i.e. 125 (96.1%) endorsed for hard core black board teaching and 87 (66.9%) for combination of black board / PPT in contrast to only 31 (23.8%) preferring audiovisual / PPT alone as a medium of teaching. which correlates partially with the study done by Bhowmick K et al in which participants suggested that teaching should be done by both black board and audiovisual aids.¹⁵ Audiovisual aids can be effectively used to show the photographs and the animated pictures related to the topics taught.

Reason behind reluctance to accept audiovisual aids as better mode of teaching may be due to that the faculties who are using the aids are not well versed with the rational and effective use of the tools but in one study by Bhavsar VH et al, the use of computer assisted learning (CAL) was preferred by large number of students and if properly introduced, CAL can go a long way in teaching undergraduate medical students in future.¹⁴ Similarly in one Indian study on the use of CAL, pointed out that a large number of student's expressed the advantages of CAL as reduction in animal use, clear estimation of drug effects, repeated observation of experiments and demonstration of different experiments.¹⁶

The lecture in many forms is the most commonly used method for transferring information in medical education and in our study 99 (76.1%) of participants opined about the effectiveness of this mode as preferred one. However there are serious questions regarding the effectiveness of the traditional lecture approach as pointed out by Arredondo et al that although lectures are extensively used in medical education, academic physicians often are not trained in giving effective lectures.¹⁷

Similarly McIntosh N et al observed that lecturing is frequently a one way process unaccompanied by discussion, questioning or immediate practice, which makes it a poor teaching method. In fact, lack of interaction is considered one of the major limitation of the traditional lecture.^{18,19} Furthermore, when students have copies of lecture notes or a text, a significant percentage would prefer reading them rather than attending classes that offer little or no interaction.²⁰ Because of above limitations, a good number of students

vouched for interactive teaching i.e. tutorial 58 (44.6%), group discussion 88 (67.6 %) seminars 75 (57.6%) and including more student seminars 76 (58.4%) and group discussion 102 (78.4%) as cited by Price DA et al that interactive learning is enhanced through effective use of key teaching skills including questioning, demonstrating, providing positive reinforcement and reviewing.²¹

Similar views in favour of group discussion have been made by other researches like Sharma R et al as group discussion helps to gauge whether the candidate has certain personality traits and skills like ability to work in a team, verbal communication skills, reasoning ability, leadership skill, initiative, assertiveness, flexibility, creativity, team work, decision making ability, that is desired in its members while I-Puto.^{22,23}

Favoured tutorial i.e. a class of twelve to sixteen students who meet regularly under the guidance of a tutor as one method of transferring knowledge, being more interactive and specific than a book or lecture, seeks to teach by example and supply the information to complete a certain task. In this context, Ananthkrishnan N et al has also stressed the importance of microteaching sessions for teachers as a preparatory vehicle for imparting quality education.²⁴ A similar finding has also been reported by Garg A et al where 34.92% of the respondents opted for introduction of group discussion in the teaching programme.⁹

A whooping number of students i.e. 124 (95.3%) wanted to stress on issues of clinical significance as suggested by a study by Advani UP et al that more than 50% want clinically oriented lecture and a large number 109 (83.8%) preferred distribution of handouts giving the outline of the topic before the lecture classes as also suggested by a study by McLennan MW et al which is very common in the western medical schools helping students get oriented to the topic in advance and come to the class with some important questions thereby converting the one sided lecture class into two sided lecture with active interaction between two.^{25,26}

Lastly a good number i.e. 87 (66.9%) wanted more stress on facts of importance in postgraduate exams and more inclusion of short essay questions i.e. 90 (69.2%), MCQs i.e. 110 (84.6%) or a combination i.e. 88 (87.6%) as it may due to trend that it helps them to prepare for postgraduate exams and may also help in reasoning out rather than memorizing long paragraphs. In open ended question most of the students opined that they were to a large extent satisfied with present teaching methods with some teachers but also wanted the above mentioned changes to happen.

CONCLUSION

It is accepted that reviewing the teaching and evaluation methods by feedback from students and modification of methodologies is very important for undergraduate

pharmacology medical teaching as it is an ever changing subject and such attempts have been made all over India. The students feedback serves as an array of effective methodologies in pharmacology teaching and studies like this may help in knowing the students preferences and a definite need for modification about preconceived notion about teaching learning principles on the part of the faculty which can be used in designing teacher-training programs as it is well known that students learn better when they are involved actively in learning than when they are passive recipients of instructions and helps in establishing what is preferred thereby helping in modifying undergraduate pharmacology teaching pattern and to make it more interesting and practicable.

Limitation

The study was conducted only in one batch of 150 students. Moreover few students might have been uncomfortable about frankly expressing their opinion and criticizing the teachers.

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Appendix

Likert Scale

SD = Strongly disagree; D = Disagree; U = Undecided / Neutral; A = Agree; SA = Strongly agree

- Q1 Regarding the medium of teaching, the method of teaching you feel better:
- (a) Black board teaching:
SD 0 (0%); D 3 (2.3%); U 2 (1.5%); A 20 (15.3%); SA 105 (80.7%)
 - (b) Audio visual / PPT
SD 31 (23.8%); D 36 (27.6%); U 32 (24.6%); A 26 (20.0%); SA 5 (3.8%)
 - (c) Combination of both
SD 5 (3.8%); D 17 (13.0%); U 21 (16.1%); A 45 (34.6%); SA 42 (32.3%)
- Q2 Regarding the method of teaching, the method of teaching you feel are more effective:
- (a) Normal lecture
SD 5 (3.8%); D 8 (6.1%); U 18 (13.8%); A 51 (39.2%); SA 48 (36.9%)
 - (b) Tutorial
SD 13 (10.0%); D 15 (11.5%); U 37 (28.4%); A 51 (39.2%); SA 7 (5.3%)
 - (c) Group discussion
SD 3 (2.3%); D 10 (7.6%); U 24 (18.4%); A 49 (37.6%); SA 39 (30.0%)
 - (d) Seminars
SD 8 (6.1%); D 24 (18.4%); U 20 (15.3%); A 60 (46.1%); SA 15 (1.5%)
- Q3 Regarding opinion about teachers, they have good communication skills and are making lectures interesting:
SD 8 (6.1%); D 30 (23.0%); U 40 (30.7%); A 37 (28.4%); SA 15 (11.5%)
- Q4 There should be distribution of handouts giving the outline of the topic before the lecture classes:
SD 2 (1.5%); D 4 (3.0%); U 15 (11.5%); A 60 (46.1%); SA 49 (37.6%)
- Q5 Would you like any of the following reforms to be made:
- (a) Decrease the number of lectures
SD 18 (13.8%); D 44 (33.8%); U 31 (23.8%); A 25 (19.2%); SA 10 (7.6%)
 - (b) Increase the number of lectures
SD 16 (12.3%); D 6 (20.0%); U 35 (26.9%); A 42 (32.3%); SA 11 (8.4%)
 - (c) Include more student seminars
SD 9 (6.9%); D 14 (10.7%); U 28 (21.5%); A 54 (41.5%); SA 22 (16.9%)
 - (d) Include group discussions
SD 4 (3.0%); D 6 (4.6%); U 16 (12.3%); A 59 (45.3%); SA 43 (33.0%)
- Q6 Which factors you think are most appropriate for evaluating a teachers teaching ability:
- (a) Content of the lecture
SD 6 (4.6%); D 10 (7.6%); U 15 (11.5%); A 65 (50.0%); SA 30 (23.0%)
 - (b) Hold students attention
SD 2 (1.5%); D 5 (3.8%); U 5 (3.8%); A 36 (27.6%); SA 80 (61.5%)
 - (c) Stress on issues of clinical significance
SD 2 (1.5%); D 0 (0.0%); U 2 (1.5%); A 54 (41.5%); SA 70 (53.8%)
 - (d) Stress on facts of importance in PG Exams
SD 5 (3.8%); D 7 (5.3%); U 31 (23.8%); A 44 (33.8%); SA 43 (33.0%)
- Q7 You think you will learn better if each section is:
- (a) Completely taught by single teacher
SD 4 (3.0%); D 12 (9.2%); U 12 (9.2%); A 41 (31.5%); SA 61 (46.9%)
 - (b) Divided into different topics taught by different teachers
SD 26 (20.0%); D 44 (33.8%); U 31 (23.8%); A 18 (13.8%); SA 11 (8.4%)
- Q8 Regarding pattern of evaluation, the method you feel better way of evaluation:
- (a) Long essay questions
SD 32 (24.6%); D 42 (32.3%); U 30 (23.0%); A 17 (13.0%); SA 4 (3.0%)
 - (b) Short essay questions
SD 10 (7.6%); D 7 (5.3%); U 23 (17.16%); A 60 (46.15%); SA 30 (23.0%)
 - (c) MCQs
SD 3 (2.3%); D 11 (8.4%); U 5 (3.8%); A 40 (30.7%); SA 70 (53.8%)
 - (d) Combination of the above
SD 7 (5.3%); D 7 (5.3%); U 26 (20.0%); A 48 (36.9%); SA 40 (30.7%)

REPLY WITH 'YES' OR 'NO'

Q1	Do your teachers give enough opportunity to clarify your doubts:	35 (Y) / 19 (N)
Q2	Are the topics of lectures arranged in logical sequences well suited to your understanding:	55 (Y) / 75 (N)
Q3	Do you think continuity between individual lectures is maintained adequately:	70 (Y) / 60 (N)
Q4	Are the most important points summarized at the end of presentation:	40 (Y) / 90 (N)

HOW SATISFIED ARE YOU WITH PRESENT TEACHING METHODS IN PHARMACOLOGY AND ANY RELEVANT SUGGESTIONS FOR IMPROVEMENT