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An analysis of students' feedback about different teaching learning methods in Pharmacology

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Abstract
Pharmacology traditionally, has focused more on factual information, with little or no emphasis on clinical and applied aspects. Use of modern educational technology to teach the undergraduate students are also encouraged by the MCI guidelines. Traditionally, chalk and board method was used for lecture delivery but with innovation in information technology, teachers are now equipped with modern methods such as power point presentations for teaching.[4] It is accepted that the feedback from students serves as an effective tool in developing teaching methodology and evaluation methods in undergraduate teaching.[6] The present study is a step towards achieving this tool by assessing the student's attitude, perception and feedback on teaching-learning methodology and evaluation methods in pharmacology. In this study 64.98 % students opined that lectures were most interesting. The remaining students 23.61 % and 13.26 % opined that Clinical (patient related) pharmacology and audio-visual (computer/projector) aided lecture were more interesting. Bilateral communication is to be encouraged between students and teacher where students tend to learn or understand in a relaxed environment, even lectures can be useful method of teaching. Use of LCD projection was preferred by students as it provides many elaborative diagrams, figures or certain topics can be illustrated by screening small videos like demonstrating action of drugs on receptor. Pharmacology teaching has to focus on various approaches of teaching, alliance of different teaching methods like lectures, tutorials, and PBL sessions should be embraced for teaching different topics.
Keywords: *lectures, LCD projection, PBL sessions.*

Introduction

Pharmacology forms the mainstay of rational therapeutics, being both a basic and applied science. Though traditionally, it has focused more on factual information, with little or no emphasis on clinical and applied aspects.[1] The aim of undergraduate medical teaching is to impart knowledge, attitude and skills to the student. Hence, choice of teaching strategy plays a major role on these parameters. Various methods for teaching undergraduate Medical students include lectures, tutorials, demonstrations, experimental exercises, case discussions, etc.[2] The Medical Council of India (MCI) has made it clear in its

regulations that teaching methods should be student centric and should comprise of small group discussions, case based studies and lectures. Use of modern educational technology while teaching the undergraduate students is also encouraged by the guidelines.[3] However, lecture delivery remains one of the Major methods for undergraduate teaching. It is important for a teacher to ensure effective teaching strategy and Incorporation of innovative approach to teach medical Graduates. Traditionally, chalk and board method was used for lecture delivery but with innovation in information technology, teachers are now equipped with modern methods such as power point presentations for teaching.[4] Lecture delivery has impact on students understanding and retention of concept.[5]

It is accepted that the feedback from students serves as an effective tool in developing teaching methodology and evaluation methods in undergraduate teaching.[6] The present study is a step towards achieving this tool by assessing the student's attitude, perception and feedback on teaching-learning methodology and evaluation methods in pharmacology. So the Objectives was to review student's preferences regarding various teaching learning methods used in pharmacology subject.

Material and Methods

The study was conducted among 125 MBBS students of second year in the department of pharmacology of a teaching care hospital. A detailed, standardized questionnaire consisting of 20 questions with 2-4 options was being given to each of the students. It was a pre validated questionnaire.

Students were asked to tick the options whichever they felt most appropriate. At the end of each questionnaire, Students were instructed not to reveal their identity in the questionnaire. The completed questionnaires was collected and analyzed for the data.

Statistical Analysis: Descriptive statistics was used for analysis of data. Frequency was

expressed as percentage. Un paired t test was used to compare the responses to various questions. $P < 0.05$ will be considered as significant.

Results

The questionnaire was adapted from the previous studies that assessed feedback of second year medical students on teaching–learning methodology and evaluation methods in pharmacology. A few modifications were done in the questionnaire to best fit with reference to university syllabus. The questionnaire included questions on three main categories, i.e., teaching–learning methodology, evaluation methods and general questions.

Out of the 125 students who were administered questionnaires, 118 completed questionnaires were returned giving a response rate of 94.17%. Majority of the students, i.e., 86(72.08%) were females. Mean age of the students was 19.6 ± 0.87 years.

Regarding the knowledge in pharmacology subject before entering the second academic year, most had 76(72.08%) no idea and those having fair amount of knowledge in the subject were 41(34.65%).

Majority of the students found the subject to be useful and really interesting 95(80.60%). Only 19%students reported the subject to be boring ($P < 0.05$)

Majority 80(67.79%) admitted that they only knew teaching by blackboard ($P < 0.001$). When asked about their previous exposure to the method of teaching during senior secondary education approximately 30% reported having being introduced to the concept of smart class.

The preference of studying pharmacology is as shown in the following table no 1.

Table no 1: Study material preference

Study material preference	N(118)(%)
Textbooks only (a)	16 (13.5%)
Class notes only (b)	2 (1.6%)
Both texts + Class notes (c)	46 (38.9%)
Textbook+ self-prep notes (d)	50 (42.3%)
Textbook+ self-prep +class (b +d)	2(1.6%)
Textbook+ self-prep +class (c +d)	2(1.6%)

Though 51(43.22%) students agreed not studying the subject regularly, 43(36.44%) read pharmacology because of interest in the subject.

When questioned about their method of learning, as much as 109(92.37) % agreed that they understand and have good grasping of the subject whereas only 6(5.08)% reported that they cram the subject ($P < 0.05$).

71(60.1) % of the students mentioned that revision classes should be conducted frequently and not only at the end of the course ($P < 0.05$). 71(60.16) % students opined that regular class tests should be conducted ($P < 0.05$).

Though 55(46.18%) of the students liked performing pharmacy practical's in the laboratory. However, 66(55.93%) preferred a combination of pharmacy practical's and clinically oriented exercises as the part of pharmacology practical's. A whopping 106(89.83) % of the students agreed that pharmacology should be integrated with the medicine ($P < 0.001$). A114 (96.61) % of the students considered pharmacology to be an important priority in the curriculum ($P < 0.001$) 61(51.69) % of the students felt that time scheduled is not adequate in completing the syllabus.

There was a lot of disparity in how the students wanted to prepare for exams. This is demonstrated in the table no 2.

Table no 2: Method of preparing for exams

Method for preparing for exams	N(%)
Class tests	44(37.25)
Tutorial	17(14.40)
Midterm exams	43(36.44)
Tutorials &midterm	7 (5.93)
Class tests +tutorials	2 (1.69)
No response	5 (4.23)

Central nervous system (CNS) was mentioned as the most difficult to learn by 56% of students followed by autonomic nervous system (ANS) (49%), cardiovascular system (CVS), chemotherapy, and endocrine. Study of drugs acting on CVS was rated as the most interesting topic by 46% of the students closely followed by chemotherapy (40%) and endocrine (40%). At the end of questionnaire, in which participants were asked to offer their suggestions, 45 students commented. Some of the recommendations given by students included more of personal student teacher interaction, more of table teaching in practical sessions, and reduction of syllabus.

Responses to the question that which of the following method they found interesting, 76 (64.98) % students opined that Lectures in the whole class were most interesting. The remaining students 23.61 % and 13.26 % opined that Clinical (patient related) pharmacology and Audiovisual (computer/projector) aided lecture were most interesting. 8.82% were interested in museum study, 10.58% liked demonstration/tutorials, and only 14.5 % found MCQ based study interesting.

Most 45(38%) didn't want tutorials, with another 47(39.83%) not responding to the question and 34(28.8%) replied in affirmative including 5 to 10 students at a time.

Discussion

As per the MCI guidelines, pharmacology is taught during the second year of the medical course before the beginning of the clinical subjects. Graduate medical curriculum is oriented towards training students to undertake the responsibilities of a physician of first contact who is capable of looking after the preventive, curative and rehabilitative aspect of medicine[7].

Most students stated about not having any knowledge of pharmacology before entering the 2nd year. An overview of all subjects at the beginning of the session may be the solution. Majority of the students found the subject to be useful and interesting 95(80.60%). Only 19% students reported the subject to be boring ($P < 0.05$). It was reconfirming that at least maximum students felt pharmacology to be an important subject required not only for second and subsequent years but also very important when they practice.

It was shocking that almost students 67% were not aware about smart teaching which is a common method of teaching right from school days. Pharmacology though is interesting is factorial

tough to memorize and understand. Use of smart teaching to understand especially mechanism of action of drugs will help learn pharmacology better.

Quite a few answered that a combination of textbook+ self-preparatory notes + attending class notes was mode of learning for many. Maximum students around 92% affirmed that they understand and have good grasping of the subject. It was little surprising that in era of computer technology using text books is still a common method of learning.

60% of the students stated that revision classes should be conducted frequently and not only at the end of the course. Examination is usually the major drive to learn which was also demonstrated in the present study where most of the students found tests to be the motivating factor behind regular studies. These findings suggest that other events like visiting clinics or doing problem based learning (PBL) should be arranged to enhance intrinsic interest in the subject matter. It has been confirmed in various studies that PBL strengthens students' approach to self directed learning and motivates them toward lifelong learning process.[8,9]

Approximately 55.93% of the students preferred a combination of pharmacy practical's and clinically oriented exercises as the part of pharmacology practical's. In the past in pharmacology Pharmacy practical involved making of various mixtures to prepare various dosage forms, but they have become extinct in most colleges. Pharmacy was the only area where students would really be doing any activity. Since pharmacy is not practised, emphasis should be more on doing problem based learning (PBL) and tutorials where there will be active participation.A whopping 106(89.83) % of the students agreed that pharmacology should be integrated with the medicine which can be done through case studies PBL.

64.98 % students opined that lectures in the whole class were most interesting. The remaining students 23.61 % and 13.26 % opined that Clinical (patient related) pharmacology and audio-visual (computer/projector) aided lecture were most interesting. 8.82% were interested in museum study, 10.58% liked demonstration/tutorials, and only 14.5 % found MCQ based study interesting.

In another study by Kavitha et al study, 47% students liked being taught by lectures whereas studies by other authors had revealed only 3.77% and 11% popularity of lectures among students. [10,11,12] The popularity of lecture has diminished over time as in this setting didactic whole class lectures can be monotonous and boring. However if bilateral communication is encouraged between students and teacher where students tend to learn or understand in a relaxed environment, even lectures can be useful method of teaching. Use of LCD projection was preferred by students as it provides many elaborative diagrams, figures or certain topics can be illustrated by screening small videos like demonstrating action of drugs on receptor. The fact that many students did not support active learning reflected their uneasiness with the responsibility of defining learning objectives themselves. This response suggests that the students' desire to have proper guidance from the instructor at every step as was also shown by their willingness to learn in small tutorial groups in this study.[10]

In this era where newer techniques of teaching are rapidly incorporated, a study conducted in New York conversely mentioned teaching exclusively by lectures on board. The results also showed improvement in performance among pharmacology students.[13] similarly, in a study by Gerzina *et al*,[14] lectures were rated very highly by students as a useful method for assessment preparation as they provided a large amount of course content. In another study conducted in Nepal, a combination of didactic lectures and PBL sessions was found to be beneficial as a teaching aid in physiology.[15] Similar success was achieved in Gujarat in India where a combination of didactic lectures and case-oriented problem solving tutorials was followed for teaching.[16]

Pharmacology teaching has to focus on various approaches of teaching, alliance of different teaching methods like lectures, tutorials, and PBL sessions should be embraced for teaching different topics.

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