

PERCEPTION AND FEEDBACK OF BASIC SCIENCE MEDICAL UNDERGRADUATE STUDENTS ON VARIOUS TEACHING -LEARNING IN PHARMACOLOGY AT PATAN ACADEMY OF HEALTH SCIENCES

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ABSTRACT

Effective and safe drug therapy education is a core component of pharmacology teaching for MBBS students. Regular evaluation of teaching-learning methods, especially through student feedback, is essential for improving teaching quality. This study aimed to assess the perception and feedback of first- and second-year MBBS students at Patan Academy of Health Sciences (PAHS) regarding pharmacology teaching-learning methods. A descriptive, cross-sectional study was conducted among 134 students using a structured questionnaire. Data were analyzed using descriptive statistics. Problem-Based Learning (51.1%) was the most preferred method, followed by group discussion (30.8%). Prescription writing, experimental graphs, and case writing were the most engaging practical topics. A majority recommended increasing clinical-based learning. Students favored interactive and clinically integrated pharmacology teaching methods, highlighting the need for more problem-based and case-based learning approaches.

KEYWORDS

Pharmacology, teaching-learning methods, problem based learning (PBL), medical students

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INTRODUCTION

Medical pharmacology combines basic pharmacology, clinical pharmacology and pharmacotherapeutics. While taking classes for first and second year MBBS students in pharmacology, it is essential to teach them the effective and safe drug therapy. For making pharmacology lectures more engaging and understanding, we have to review the teaching methods regularly.^{1,2}

The best way to assess and improve the teaching methodology is through the student's feedback. Feedback is a frequent ongoing review of strength and area to improve; with the goal of enhancing performance.³ Feedback from students will help the teachers to identify their strengths and weaknesses.⁴

Feedback is considered to be the best method to bridge the communication gap between teachers and students. It is an inexpensive and invaluable tool to improve the quality of teaching.⁵ The feedback that is delivered on time with a positive attitude toward improvisation is helpful. When suggestions/comments are made by students and then adopted in practice, it helps improving teaching experience and student performance.⁶

In Nepal, limited studies have been conducted on medical students' perception and feedback on teaching-learning in pharmacology. So far, we could find only two studies done on this topic in Nepal. Both the studies were done in private medical colleges in Western Nepal.^{7,8} Hence, this study will be conducted to determine the perception and feedback of teaching-learning pharmacology in first and second year MBBS students of Patan Academy of Health Sciences (PAHS). This study aims to assess student's views on pharmacology teaching methods that will be valuable for improving the teaching-learning activities of pharmacology at PAHS.

MATERIALS AND METHODS

This descriptive, cross-sectional study was conducted at the Department of Pharmacology, PAHS, Lalitpur, Nepal, over a period from September to November 2025. Ethical approval for the study was obtained from the Institutional Review Committee of PAHS (Ref.: bss2411191960).

A self-administered, pre-tested questionnaire adapted from previously published literature was used.⁹ The questionnaire consisted of

four sections: socio-demographic information, opinion regarding teaching-learning methods used in pharmacology and perception toward learning pharmacology. Perception to learning pharmacology was measured using a four point Likert scale (agree, strongly agree, disagree, strongly disagree). And students recommendations for improving pharmacology teaching in PAHS. The questionnaire was face-validated by five faculties from the Department of Pharmacology, and reliability was assessed by pretesting among 30 students (Cronbach's alpha = 0.98). Those students involved in pretest were excluded from the study.

Section 1: Is about sociodemographic profile of the students: it includes year, gender, nationality, profession of father and mother.

Section 2: Opinion of students regarding better teaching and learning method use in Pharmacology. In this we have constructed 3 questions which is multiple choice questions, it includes:

- Teaching learning methods, in this students was provided with three options- group discussion, problem based learning and lecture
- Practical topics more interesting and useful for students in pharmacology, students was provided with these options - clinical case writing, experimental graphs, prescription writing, communication skills and P- drug
- Most interesting method for learning pharmacology in lectures, students provided with three options-Whiteboard, power point (PPT) and Both

Section 3: Perception of students to learning Pharmacology which is phrased in Four point Likert scale: agree, strongly agree, disagree, stronglydisagree. Students need to select one option. It included seven questions:

- Pharmacology is my favorite subject in basic science
- I find pharmacology lecturers interesting and stimulating
- I would like Pharmacology to be more closely integrated with the clinical sciences and would like real cases in hospital to be used during Problem based learning
- The subject has helped me to develop my problem solving and logical reasoning skills
- The subject has created knowledge base which will help me in choosing drugs rationally in my future practice
- Discussion charts help in better understanding of mechanism of action of drugs

7. Calculation of pharmacokinetic parameters (e.g. volume of distribution, half life ($t_{1/2}$), and therapeutic index) is relevant and helps in better understanding of general pharmacology.

This question was adapted from similar study conducted previously by Manjunath *et al*⁹ and some of the questions were constructed by authors. For validation of the questionnaire; it has been face validated by five faculties of pharmacology department. For reliability of questionnaire pretest was performed among 15 students each from first and second year students. Cronbachs alpha was calculated which was 0.98.

Section 4: Recommendation/feedback of students for improvement of Pharmacology. For this, student needs to select one option agree, strongly agree, Disagree, Stronglydisagree. It consist of five questions:

1. Increase group discussions
2. Increase case based learning
3. Include more clinical based pharmacology in practical sessions
4. Decrease the number of lectures
5. Increase the number of lectures
6. Include more pharmacology content in PBL session

Enumerative sampling was used, and all first- and second-year MBBS students present during data collection were included. Students who provided written informed consent and completed the questionnaire were included, while incomplete responses were excluded. A total of 134 students (68 first year, and 66 second year) participated in the study.

Participants were briefed about the study objectives, and questionnaires were distributed at the end of a pharmacology lecture. Students

were instructed to complete the form independently and honestly within the allotted 30 minutes. Confidentiality and anonymity were maintained throughout the study.

Collected data were checked for completeness and entered into SPSS-16 for analysis. Descriptive statistics, including frequency and percentage, were used to summarize socio-demographic variables, preferred teaching-learning methods, practical topics, and student perceptions.

RESULTS

A total of 134 MBBS students participated in the study, comprising 68 (50.7%) first-year and 66 (49.3%) second-year students (Table 1). Among them, 99 (73.9%) were male and 35 (26.1%) were female. The majority were Nepali nationals (92.5%), while 7.5% were foreign students. Most students' parents were from non-medical professions 91.8% of fathers and 95.5% of mothers respectively. Regarding the teaching-learning methods in pharmacology, problem-based learning (PBL) was perceived as the most effective by 121 (51.1%) students, followed by group discussion (30.8%) and Lecture (18.1%) (Table 2).

When asked about the practical topics that were more interesting and useful, the majority of students found prescription writing (24.9%), experimental graphs (24.3%), and clinical case writing (23.3%) to be the most engaging (Table 2). Topics such as communication skills (19.5%) and P-drug (8.0%) were rated comparatively lower. With regard to the preferred method for learning pharmacology in lectures, PowerPoint presentation (36.5%) was most favored, followed by whiteboard teaching (29.9%) and the combination of both methods (33.6%) (Table 2) The students' perception toward learning

Table 1: Socio-demographic characteristics of the study participants

Variables	Categories	N	%
Year	First	68	50.7
	Second	66	49.3
Gender	Male	99	73.9
	Female	35	26.1
Nationality	Nepali	124	92.5
	Foreign	10	7.5
Profession of father	Medical	11	8.2
	Non-medical	123	91.8
Profession of mother	Medical	6	4.5
	Non-medical	128	95.5

Table 2: Opinion of students regarding better teaching learning method use in Pharmacology

Effective teaching learning methods	n	%
Group discussion	73	30.8
Problem Based Learning (PBL)	121	51.1
Lecture	43	18.1
Practical topics more interesting and useful		
Clinical Case writing	73	23.3
Experimental Graphs	76	24.3
Prescription writing	78	24.9
Communication skills	61	19.5
p-Drug	25	8.0
Most interesting method for learning pharmacology in lectures		
Whiteboard	41	29.9
Power point (PPT)	50	36.5
Both	46	33.6

pharmacology is summarized in (Table 3). About 52.3% of students (44.0% agree, 8.27% strongly agree) considered pharmacology as their favorite subject in basic science. A total of 59.0% (47.8% agree, 11.2% strongly agree) found pharmacology lectures interesting and stimulating. Almost all students (99.3%) desired pharmacology to be integrated with clinical sciences through case-based PBL sessions. Most respondents (84.3%) agreed that pharmacology helped in developing problem-solving and logical reasoning skills, while 95.5% believed that it created a strong knowledge base for rational drug selection in future practice. Furthermore, 97.7% of students agreed that discussion charts enhanced their understanding of drug mechanisms, and 81.3% considered pharmacokinetic parameter calculations relevant to their learning. The students' opinions on improving pharmacology teaching are presented in (Table 4). A majority of participants suggested increasing group discussions (94.0%), case-based learning (98.5%), and inclusion of more clinical pharmacology in practical sessions (98.4%). About 56.7% disagreed with increasing the number of lectures, and 57.7% disagreed with decreasing them, indicating that most students were satisfied with the existing

Table 3: Perception of students to learning pharmacology

n	Question	Agree n (%)	Strongly agree n (%)	Disagree n (%)	Strongly disagree n (%)
1.	Pharmacology is my favorite subject in basic science	59 (44)	11 (8.27)	56 (41.8)	8 (6.0)
2.	I find pharmacology lecturers interesting and stimulating	64 (47.8)	15 (11.2)	47 (35.1)	8 (6.0)
3.	I would like Pharmacology to be more closely integrated with the clinical sciences and would like real cases in hospital to be used during Problem Based Learning (PBL)	58 (43.3)	75 (56)	0 (0.0)	1 (0.7)
4.	The subject has helped me to develop my problem solving and logical-reasoning skills	85 (63.4)	28 (20.9)	19 (14.2)	2 (1.5)
5.	The subject has created knowledge base which will help me in choosing drugs rationally in my future practice	82 (61.2)	46 (34.3)	6 (4.5)	0 (0.0)
6.	Discussion charts help in better understanding of mechanism of action of drugs	61 (45.5)	70 (52.2)	3 (2.2)	0 (0.0)
7.	Calculation of pharmacokinetic parameters (e.g. volume of distribution, half life ($t_{1/2}$), Therapeutic index) is relevant and helps in better understanding of general pharmacology	72 (53.7)	37 (27.6)	20 (14.9)	5 (3.7)

Table 4: Student's opinions about changes recommended in teaching pharmacology

n	Recommendation of students	Agree	Strongly agree	Disagree	Strongly disagree
1.	Increase group discussions	72 (53.7%)	54 (40.3%)	7 (5.2%)	1 (0.7%)
2.	Increase case based learning	52 (38.8%)	80 (59.7%)	2 (1.5%)	0 (0%)
3.	Include more clinical based pharmacology in practical sessions	44 (32.7%)	88 (65.7%)	2 (1.5%)	0 (0%)
4.	Decrease the number of lectures	35 (26.1%)	41 (30.6%)	45 (33.6%)	13 (9.7%)
5.	Increase the number of lectures	25 (18.7%)	17 (12.7%)	56 (41.8%)	36 (26.9%)
6	Include more pharmacology content in PBL session	60 (44.8%)	43 (32.1%)	25 (18.7%)	6 (4.5%)

number of lecture sessions. Moreover, 76.9% of students recommended including more pharmacology content in PBL sessions.

DISCUSSION

In our study, students of first and second year MBBS at PAHS provided valuable feedback regarding pharmacology teaching-learning methods. The majority of students were male (73.9%) and Nepali nationals (92.5%), similar to the demographic pattern seen in other Nepalese medical colleges.^{7,8}

Problem-based learning (PBL) was identified as the most effective method by more than half of the participants (51.1%), followed by group discussion (30.8%) and lecture (18.1%). This finding is consistent with earlier reports from India and Nepal, where students expressed preference for active and interactive learning strategies over traditional lectures.^{1,2,9,10} Shankar *et al*⁷ and Dhama *et al*⁸ also observed that PBL and case-based learning enhanced understanding and retention of pharmacological concepts. Such methods allow students to apply theoretical knowledge to clinical situations, promoting rational drug use in future practice.

Among practical topics, prescription writing (24.9%), experimental graphs (24.3%), and clinical case writing (23.3%) were considered most interesting and useful. This aligns with studies by Rege *et al*¹² and Bhosale *et al*¹⁰ who highlighted that clinically oriented practicals improve problem-solving ability and promote logical reasoning in students. In contrast, activities such as P-drug selection and communication skills were less preferred in

our study, possibly due to limited exposure or insufficient integration of these sessions into the curriculum.

Regarding lecture delivery, a combination of PowerPoint and whiteboard teaching was favored by most students (36.5% and 33.6%, respectively). This mixed preference has also been reported in previous studies by Garg *et al*² and Kaur *et al*¹³ who found that while PowerPoint enhances visual learning, traditional board teaching helps in maintaining student attention and interaction. Therefore, a blended approach may be optimal.

Most students agreed that pharmacology has helped them develop problem-solving and logical reasoning skills (84.3%) and that it will aid in rational prescribing (95.5%). Similar positive perceptions were reported by Jaykaran *et al*³ and Shankar *et al*¹¹ indicating that well-structured pharmacology courses contribute to sound clinical decision-making in future doctors. Furthermore, 97.7% of students in our study stated that discussion charts improved their understanding of mechanisms of drug action, echoing the findings of Sehgal *et al*⁵ who emphasized the importance of visual aids in concept retention.

Student feedback revealed a strong demand for curriculum modification — 94% recommended more group discussions, 98.5% favored more case-based learning, and 98.4% preferred greater clinical integration in practical sessions. These results are consistent with reports by Zaman *et al*,⁶ Acharya *et al*,¹⁴ and Desai.¹⁵ Such uniform feedback from different institutions underscores the need to incorporate active, clinically relevant, and student-centered teaching modalities into

pharmacology curricula across Nepal and India. However, our study found that while students preferred interactive teaching, they did not wish to change lecture frequency drastically. A similar balanced attitude was observed by Dhama *et al*⁸ suggesting that lectures continue to play a complementary role when supplemented with participatory methods. The findings of this study reinforce the global trend toward transforming pharmacology

teaching into a more applied and problem-oriented discipline. Integration of pharmacology with clinical sciences not only enhances student engagement but also prepares them for rational therapeutic decision-making in real patient care.

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REFERENCES

- Sharma R, Verma U, Kapoor B, Chopra VS. Novel teaching approaches in Pharmacology. *JK Sci* 2004; 6: 172-3.
- A Garg, PV Rataboli, Muchandi K, Students' opinion on the prevailing teaching methods in pharmacology and changes recommended. *Indian J Pharmacol* 2004; 36: 155-8.
- Jaykaran, Chavda N, Yadav P, Kantharia ND. Intern doctors' feedback on teaching methodologies in pharmacology. *J Pharmacol Pharmacother* 2010; 1: 114-6-9.
- Neumann R. Communicating student evaluation of teaching results: rating interpretation guides (RIGs). *Assess Eval High Educ* 2000; 25: 121-34.
- Sehgal R, Dhir V, Sawhney A. Teaching technologies in Gross Anatomy (Abstract). *J Anat Soc India* 1998; 48.
- Zaman SU, Beedimani RS, Pavani AN, Kumar KS. Feedback of second-year medical students towards teaching/learning of pharmacology in a private medical college of India. *Int J Basic Clin Pharmacol* 2016; 5: 2086-93.
- Shankar RP, Dubey AK, Palaian S, Pranaya M, Saha A, Deshpande VY. Favorable student attitudes towards pharmacology in a medical college in western Nepal. *J Int Assoc Med Sci Educ* 2005; 15: 31-8.
- Dhama DB, Rathor RS, Bhargava VK, Neupane G, Singh R, Singh A. Student's perceptions and feedback about teaching-learning pharmacology in Nepalgunj medical college of Chisapani, Nepal. *Int J Basic Clin Pharmacol* 2017; 6: 2789-93.
- Manjunath SM, Nagesh Raju G, Srinivas TR, Someswara GM. A study on the evaluation of medical students' perception and feedback of teaching-learning of pharmacology in a medical college. *Int Arch Integr Med* 2015; 2: 102-10.
- Bhosale UA, Yegnanarayan R, Yadav GE. Attitude, perception, and feedback of second-year medical students on teaching-learning methodology and evaluation methods in pharmacology: A questionnaire-based study. *Indian J Pharmacol* 2013; 45: 587-91.
- Shankar PR, Palaian S, Gyawali S, Mishra P, Mohan L. Knowledge, attitude and skills before and after a pharmacology practical session on rational prescribing. *BMC Med Educ* 2007; 7: 37.
- Rege NN, Thatte UM, Dahanukar SA. Adaptation of student-centered learning methods in pharmacology. *Indian J Pharmacol* 1996; 28: S13-S19.
- Kaur G, Mahajan R, Mittal N, Kaur H. Students' feedback on the teaching and evaluation methodology in pharmacology. *Int J Appl Basic Med Res* 2011; 1: 52-4.
- Acharya S, Shrestha B, Thapa P, Shankar PR. Students' perceptions about learning pharmacology at a new medical school of Nepal. *J Clin Diagn Res* 2014; 8: HC01-HC04. DOI: 10.7860/JCDR/2014/8295.4405.
- Desai M. Changing face of pharmacology practicals for medical undergraduates. *Indian J Pharmacol* 2009; 41: 151-2.