



ORIGINAL RESEARCH ARTICLE

EVALUATION OF STUDENTS' PERCEPTIONS AND FEEDBACK ABOUT TEACHING-LEARNING PHARMACOLOGY IN A MEDICAL COLLEGE OF CENTRAL NEPAL

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ABSTRACT

Background: Learners' feedback is considered an effective tool in evaluating teaching-learning methods and revising curriculum. The aim of the present study was to assess perception and feedback of undergraduate medical students towards teaching-learning pharmacology.

Methods: This was a descriptive cross-sectional questionnaire-based study conducted among 183 undergraduate medical students of Chitwan Medical College, Chitwan Nepal from March 2021 to April 2021. Perception and feedback of students towards teaching-learning pharmacology was assessed using a pretested and validated questionnaire.

Results: More than half (53.6 %) of the students reported pharmacology as their favorite subject, but only 27.4 % students would opt to pursue post-graduation in the same subject. Majority of the students opined a review of curriculum was necessary with inclusion of recent advances (86.4 %) and emphasis on national health problems (83 %) with a change in assessment (inclusion of multiple choice questions) (83 %). Liquid-crystal display (LCD) projector and whiteboard combined was chosen as the ideal teaching-learning media and group discussion as the ideal teaching-learning method by 85.2 % and 53.6% of students respectively. Majority of the students suggested more use of audio-visual aids (94.5%) and inclusion of case-based learnings (98.9 %) into the curriculum.

Conclusions: Perception of students towards teaching-learning pharmacology was positive. A review of the current curriculum with inclusion of a new assessment tool was suggested.



INTRODUCTION

Pharmacology is one of the most important and ever growing subject of undergraduate medical course.¹⁻³ Teaching-learning methods in pharmacology have to be revised on regular basis to make it more effective and outcome oriented.² There has not been significant revision and change in teaching-learning methods in pharmacology in Chitwan Medical College (CMC) for more than a decade as the curriculum dates back to 2008 AD. So, there is an urgent need to revise teaching learning methodologies in pharmacology as well as the curriculum itself. Several studies done in different countries have shown that one of the basis for the modification of teaching-learning methodologies is to take the perception and feedback of students towards the pre-existing methods.³⁻⁶

In Nepal, limited studies have been conducted on the medical students' perception and feedback on teaching-learning 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.^{6,7} So, this is the first study of its kind in central Nepal.

This study aimed to assess the perception and receive feedback of undergraduate medical students towards teaching-learning pharmacology in CMC.

METHODS

This was a descriptive cross-sectional questionnaire based study conducted among preclinical undergraduate medical students of Chitwan Medical College, Chitwan Nepal from March 2021 to April 2021. Ethical approval for the study was obtained from Institutional Review Committee, Chitwan Medical College before the initiation of the study. (Ref No. CMC-IRC/077/078-207). Complete enumeration method was used for data collection. All the students from MBBS first and second year who were present at the time of data collection and gave consent were included in the study.

Questionnaire was designed based on the literature review in this field and modified after consultation with the experts related to the field.^{4,6,7} The self-administered questionnaire consisted of four parts. The first part consisted of sociodemographic details of participants (age, sex,

nationality, profession of parents). The second part had 16 statements with five point Likert scale. It was used to assess perception and opinion of students towards pharmacology teaching-learning in CMC. The statements were grouped into those dealing with student attitude towards the subject and those concerned with improvements in pharmacology teaching and learning. Third part contained three questions with multiple options to assess students' opinions about pharmacology teaching- learning methods in CMC. Fourth part contained 8 statements to assess students' opinions about changes recommended in teaching pharmacology.

These questionnaires were self-administered to all the students at the end of pharmacology lecture in the lecture hall after briefing about the study. Proper precautions as per the national and global guidelines were taken during data collection considering the Covid-19 pandemic. Thirty minutes time was given for answering the questionnaire, and then the questionnaires were collected. Data was entered into Microsoft excel and analysed using Statistical Package for the Social Sciences (SPSS) version 20.0. Standard descriptive statistics was used. Categorical variables were expressed as frequency (percentage). Variables in Likert scale were also expressed as frequency (percentage).

RESULTS

Students involved in this study were preclinical undergraduate medical students from Chitwan Medical College. A total of 183 students (M=126, F=57) with age ranging between 18 to 24 years participated in the study.

Most of their parents (90%) were from non-medical background. Almost all participants (98.4 %) were Nepalese except three students (1.6%) who were Indian nationals (Table 1).

Table 1: Socio-demographic characteristics of the study participants (n=183)

Variables	Categories	Frequency (%)
Year	First	92 (50.3)
	Second	91 (49.7)
Gender	Male	126 (68.9)
	Female	57 (31.1)
Nationality	Nepali	180 (98.4)
	Foreign	3 (1.6)
Profession of father	Medical	19 (10.4)
	Non-medical	164 (89.6)
Profession of mother	Medical	10 (5.5)
	Non-Medical	173 (94.5)

Perception of students towards teaching learning pharmacology was assessed as shown in table 2.

More than half (53.6 %) of the students agreed that pharmacology is their favorite subject. However, only 27.4 % students agreed to consider pharmacology as a subject for post-graduation. Majority (86.4 %) of the students were of the opinion that recent advances should be included in curriculum. Around 66 % of the students agreed that assessment system and process in pharmacology are fair and transparent whereas 25.1 % remained neutral. Most of the students (83 %) opined that MCQs should be included in the assessment (Table 2).

Table 2: Perception of students towards teaching-learning pharmacology (n=183)

Statements (Items)	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Pharmacology is my favorite subject in the basic sciences.	5 (2.7%)	20 (10.9%)	60 (32.8%)	75 (41%)	23 (12.6%)
The subject has created the knowledge base which will help me in choosing drugs rationally in my future practice.	1 (0.5%)	2 (1.1%)	17 (9.3%)	104 (56.8%)	59 (32.2%)
I find pharmacology lectures interesting and stimulating	2 (1.1%)	7 (3.8%)	61 (33.3%)	87 (47.5%)	26 (14.2%)
I would like Pharmacology to be more closely integrated with the clinical sciences and would like real cases in hospital to be used during problems stimulated learning (PSL)	1 (0.5%)	1 (0.5%)	9 (4.9%)	62 (33.9%)	110 (60.1%)
The subject has helped me to develop my problem-solving and logical-reasoning skills	3 (1.6%)	5 (2.7%)	36 (19.7%)	102 (55.7%)	37 (20.2%)
I would like the subject to focus more strongly on the management of health problems of Nepal.	2 (1.1%)	7 (3.8%)	22 (12.0%)	79 (43.2%)	73 (39.9%)
I would like practical session on rationality of prescription and evaluation of drug advertisements	1 (0.5%)	8 (4.4%)	23 (12.6%)	82 (44.8%)	68 (37.2%)
I would like to include recent advances in pharmacology curriculum	1 (0.5%)	4 (2.2 %)	20 (10.9 %)	79 (43.2 %)	79 (43.2 %)
I would like to welcome modules on Pharmacology and therapeutics during the clinical years of my training.	2 (1.1 %)	2 (1.1%)	26 (14.2 %)	96 (52.5%)	57 (31.1 %)
The assessment system in Pharmacology is fair.	6 (3.3 %)	11 (6.0 %)	46 (25.1 %)	84 (45.9%)	36 (19.7 %)

The assessment process is transparent	5 (2.7%)	11 (6.0%)	46 (25.1%)	88 (48.1%)	33 (18.0%)
I would like MCQs to be included in the assessment	7 (3.8%)	5 (2.7%)	19 (10.4%)	50 (27.3%)	102 (55.7%)
The assessment concentrates on ability to acquire facts rather than on the development of problem-solving skills	3 (1.6%)	8 (4.4%)	39 (21.3%)	91(49.7%)	42 (23.0%)
The Pharmacology teaching has inculcated in me a capacity for self-directed learning.	3 (1.6%)	12 (6.6%)	49 (26.8%)	88 (48.1%)	31 (16.9%)
I will consider Pharmacology as one of my subjects for post-graduation	9 (4.9%)	33 (18.0%)	91 (49.7%)	40 (21.9%)	10 (5.5%)
There should be more emphasis on objective structured practical examination (OSPE) and PSL, rather than didactic lectures	1 (0.5%)	5(2.7%)	28 (15.3%)	82(44.8%)	67 (36.6%)

Majority of the students i.e. 85.2 % chose the use of LCD projector and whiteboard combined as the ideal teaching and learning media for pharmacology. More than half (53.6%) of students consider group discussion as the most ideal teaching-learning method of pharmacology. Whereas central nervous system was considered most difficult by the students (36.1 %) followed by chemotherapy (antimicrobial/anticancer drugs) 31.1 % (Table 3).

Table 3: Students' opinions about teaching-learning methods in pharmacology (n=183)

No	Item	Frequency	Percentage
1	The ideal teaching and Learning media for learning Pharmacology subject is:		
	a. LCD projector	13	7.1%
	b. Whiteboard	14	7.7%
	c. LCD projector + Whiteboard	156	85.2%
2	The ideal teaching method for learning Pharmacology is:		
	a. Didactic lecture	18	9.8%
	b. Tutorial	27	14.8%
	c. Group discussion	98	53.6%
	d. Seminar	5	2.7%
	e. Demonstration	35	19.1%
3	The most difficult system to understand in Pharmacology is:		
	a. General Pharmacology	23	12.6%
	b. Antimicrobials/anticancer	57	31.1%
	c. musculoskeletal system	7	3.8%
	d. Central nervous system	66	36.1%
	e. Respiratory system	1	0.5%
	f. Cardiovascular system	14	7.7%
	g. Gastrointestinal/hepatobiliary system	2	1.1%
	h. Renal system	2	1.1%
	i. Repro-endocrine system	8	4.4%
	j. Others – Specify	3	1.6%

Most of the students (94.5%) opined that there should be more use of audio-visual aids. Similarly, majority of them are of view that group discussions and case based learnings should be introduced in the curriculum as supported by 96.7 % and 98.9 % of students respectively. 76.5 % of students agreed to increase student's seminars. Whereas 51.4 % of students wish that number of lectures should be increased (Table 4)

Table 4: Students' opinions about changes recommended in teaching pharmacology (n=183)

Opinion about changes recommended	Yes	No
Make more use of audio-visual aids	173 (94.5%)	10 (5.5%)
Introduce group discussions	177 (96.7%)	6 (3.3%)
Introduce case Based Learning	181 (98.9%)	2 (1.1%)
Include more clinical pharmacology	182 (99.5%)	1 (0.5%)
Case studies and treatment	181 (98.9%)	2 (1.1%)
Decrease the number of lectures	57 (31.1%)	126 (68.9%)
Increase the number of lectures	94 (51.4%)	89 (48.6%)
Include more student seminars	140 (76.5%)	43 (23.5%)

DISCUSSION

Evaluation of students' perception and feedback serves as one of the most effective ways to improve teaching-learning as well as to update the curriculum.^{2,5} Overall, most of the participants of this study revealed positive perception towards teaching-learning pharmacology.

In our study, majority of the students 66.2 % agreed that pharmacology is their favorite subject in basic sciences. This is in contrast with the findings of Mahfoudh AM et al. and Manjunath SM et al. where only 28 % considered pharmacology as their favorite subject.^{4,8} This discrepancy might be due to the fact that those studies were conducted in Malaysia and India respectively where the teaching learning methodologies and the curriculum may be different and accordingly students' preferences might also differ.

However, only 27.4 % of the participants agreed to consider pharmacology as a subject for post-graduation. Similar findings were reported in a study done in Malaysia.⁴ This might be because pursuing post-graduation in basic science subjects like pharmacology still considered a social stigma in country like ours where the scope of the subject is still very limited and clinical pharmacologists are often restricted to teaching only. Also, clinical doctors involved in patient care are considered to have more prestigious and financially secure life as compared to basic science experts.

This study depicted that addition of recent advances can be an important step in upgrading the curriculum as supported by the opinion of 86.4% students. This demonstrates students' eagerness and enthusiasm towards newer drugs and treatment approaches. We plan to send this finding to the curriculum revision committee so that recent advances will be included in the new curriculum.

This study demonstrated that 83% of the participants would like MCQs to be included in the assessment. This is in good correlation with the findings by Jai Krishna et al 61.4%, Mahfoudh AM et al, 58.6% and by Manjunath SM et al, 79.68%.^{9,4,8} This might be because MCQs are more convenient for the students to answer as compared to short answer and long answer questions. Also, answering MCQs from the early days of MBBS course can be of great help later in the competitive exams that students have to face after MBBS, as most of these exams are MCQ-based e.g. Medical licensing exam, PG entrance exam etc.

This study also revealed that 83.6 % of the students agree to include modules on Pharmacology and therapeutics during the clinical years which is supported by the study of Manjunath SM et al.⁸ This shows that the students are well aware of the importance of pharmacology as a subject and that only with a good knowledge and expertise of pharmacology they can become competent and rational prescribers.

Our study showed that majority (83.1 %) of the students wish the subject to focus more strongly on the management of health problems of Nepal. Since this finding will also be shared

with curriculum revision committee, TU, we hope in the new university curriculum more emphasis will be laid upon the management of health problems of Nepal.

Based on our study findings, more than half of the students believe in the fairness and transparency of assessment system and process in pharmacology. This is in sync with the findings by Mahfoudh AM et al.⁴ However, since around 34 % students have not agreed, we need to work towards conducting our assessments more effectively and transparently.

This study showed use of both LCD projector and white board media combined as the best media for teaching and learning pharmacology as supported by 85.2% of participants. This is in correlation with the findings (82%) by Manjunath SM et al.⁸ So, we will continue using these media and also keep looking for innovative technologies for teaching-learning. More than half of the students (53.6 %) were of the opinion that ideal method for teaching-learning pharmacology is group discussion. This is in contrast with the finding by Manjunath SM et al.⁸ where demonstration was found to be the most ideal teaching method. But on our study, demonstration as ideal teaching method was chosen by one fifth of students only. Whereas the most common method of teaching i.e. didactic lecture was chosen by least number of students i.e. 9.8 %. From these findings, we can conclude that it's high time we shift our priority from just giving lectures to other ways of teaching learning namely group discussion followed by demonstration and tutorials. Since we have been using such methods in practical classes, we can now increase hours for practical classes as compared to theory classes.

This study reported that the most difficult system in understanding pharmacology for both first year and second year students is central nervous system 36.1 % followed by antimicrobial/ anticancer (31.1 %) in first year. Hence, there is a need to focus more on these systems using the feedback on teaching learning media and methods as suggested by students.

Based on the feedback provided by our students as well as evidence from the past, we need to include more audio-visual aids, group discussions, clinical case studies and seminars to our preexisting methods of teaching-learning pharmacology.¹⁰⁻¹²

Since this is a single center study, multi-center studies need to be carried out in different medical colleges under TU for the generalizability of the findings. We believe such findings can definitely guide the concerned authorities in drafting a curriculum that is not only up to date but also evidence-based and outcome-oriented.

Hence, our study findings have not only provided the valuable insights on how students perceive the preexisting teaching learning methods in pharmacology but also paved the path for making teaching-learning methods more effective and interesting for students.

CONCLUSION

In general, the perceptions of students towards teaching-learning

pharmacology was found to be positive in our study. Nevertheless, the study also unveiled the areas where improvements can be done to make pharmacology teaching-learning more effective and outcome oriented. Based on students' feedback, case studies, clinical pharmacology, management of health problems of Nepal, recent advances are some of the aspects that need to be incorporated in the upcoming curriculum.

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