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A Questionnaire based study to identify areas for improvement of teaching in the subject of Pharmacology

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Abstract:
Background:- *Pharmacology as a branch of medicine which is continuously developing. It is generally agreed upon that reviewing the teaching program at regular intervals and modifications in the methodologies of imparting basic knowledge about drugs and drug therapies is a must. Students' attitude regarding the different teaching-learning and evaluation methods are important for further development and restructuring of medical education in future. This study was undertaken to gather students' perception about pharmacology teaching and learning methods, so that new CBME programme can fulfill the goal of training competent doctors.*
Materials and Methods *This study involved 7th term students who have attended online class as per the new CBME programme. A 17 item pre-validated questionnaire was given to students via Google forms with three options for answers namely, Yes, No and May be. The time provided for answering was 30 minutes. The data was analyzed using Microsoft Excel version 2019 version.*
Results*: We included 100 students, out of which we received 91 responses from the students. Among the 91 students who answered, 76 (83.51%) felt that pharmacology is difficult to remember. Majority of students 78 (85.7%) do not want pharmacology as individual subject. 49 (53.8%) students were for incorporating more students' seminars in the training programme. About 50% of the students were in favour of incorporating group discussion in training programme. Regarding bed side teaching, majority of students i.e. 72 (79.12%) agreed that bedside teaching is necessary for some of the topics in pharmacology. 58.2% of the students responded in favour of online teaching platform during pandemic.*
Conclusion: *Medical education is dynamic field of of teaching and learning. So timely evaluation and feedback related to teaching methods are the only way for continuous improvement. This study will help in understanding learning attitude and perception of both teachers and students.*
Key Word*: Questionnaire, education,* online teaching, EdTech, Pharmacology

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I. Introduction

Pharmacology is a dynamic branch of medicine which developments every day. A good pharmacology foundation is must for newly graduated doctors. Hence, to have competent doctors, pharmacology knowledge and teaching need to be upgraded as per the clinical environment.1

Competency based Medical Education (CBME) provides an effective outcome-based strategy where various domains of teaching including teaching-learning methods and assessment form the framework of competencies. This type of education is more focused and tailored to deliver competencies that are required by the medical graduates in executing their professional duties as health care professionals. CBME trains the doctor to provide preventive, promotive, curative, palliative and holistic care to his patients. This is possible only when curriculum enunciates clearly the skills the student must learn with clearly defined teaching learning strategies and effective methods of assessment.2

In recent years undergraduate training in pharmacology has been revolutionized with adoptions of new methods of teaching that focus on supportive learning through novel teaching approaches like small group discussions, role plays, computer assisted learning, using audio-visual aids, clinical and community pharmacology studies. 3,4

This study was conducted to know the impact of COVID- 19 on teaching learning activities as per new competency based medical curriculum and perception of students towards online teaching.

II. Material And Methods

This was a cross-sectional study based on the questionnaire. Study was planned and executed by the department of Pharmacology at our teaching hospital, amongst undergraduate medical students.

Inclusion criteria:
1. 2nd MBBS students who had attended the online classes conducted by the Department of Pharmacology.
2. 2nd MBBS students who have experienced the new competency-based curriculum.

The study population comprised of 7th term undergraduate medical students at our teaching hospital. Ethical approval was obtained from the Institutional Ethics Committee before the commencement of the study. Informed consent was obtained from the study participants. A 17-item self-administered pre-validated questionnaire was distributed to the students in the classrooms just after completion of classes by the investigators. A brief explanation of the objectives and data processing procedures, including the objectives of the study and maintenance of anonymity of the participants, was given to the students. The questionnaire was designed based on literature review in this field and suitably modified to suit our teaching curriculum. It had multiple options and students were free to opt more than one option. The main categories explored in the questionnaire were in reference to students' perception of pharmacology as a subject, teaching methodologies employed and the resources they utilized to learn pharmacology. The time allocated for the completion of the questionnaire was 30 minutes. It was also explained that the data would be used for quality assurance, as well as, for research purpose with a request for their co-operation. The completed questionnaire was collected and data was analyzed. The results were expressed as percentage responses.
Duration of study: - 3 months

Statistical analysis
Microsoft Excel version 2019 version

III. Result

Out of 100 students, 91 completed the study. Amongst the 91 students who answered, 76 (83.51%) felt that pharmacology is difficult to remember, 49 students (53.8%) felt that pharmacology should be included as a part of general medicine. Also, majority of students 78 (85.7%) do not want pharmacology as individual subject. 70.3% of the students were of the opinion that 3 semesters are required to cover the pharmacology curriculum.

Table no 1 : Student responses to the questionnaire (n=91).

SN.	Questionnaire	Responses		
		Yes	No	May be
1	Do you feel pharmacology is difficult to remember?	76	15	0
2	Do you feel pharmacology should be included as a part of general medicine?	49	42	0
3	Do you feel pharmacology should remain as an individual subject?	78	13	0
4	Do you feel pharmacology should be covered over 3 semesters?	64	10	17
5	Do you want more student seminars to be incorporated in the training programme?	49	42	0
6	Do you want more group discussions to be incorporated in the training programme?	45	46	0
7	Do you feel that bedside teaching is necessary for learning some topics in pharmacology?	72	19	0
8	Do you feel MCQ assessment is a better way to assess pharmacology than theory exams?	63	28	0
9	Do you think revision classes are useful before examinations?	68	23	0
10	Do you think clinical case-based teaching is required in pharmacology?	86	5	0
11	Do you find pharmacokinetic calculations difficult?	35	56	0
12	Do you feel think self-study and clarification of doubts is more useful than revision classes?	69	22	0
13	Do you think online teaching is the best way of teaching during pandemics?	53	38	0
14	Do you think small group teaching is the best way of teaching during pandemics?	55	36	0
15	Do you think open space teaching with social distancing is the best way of teaching during pandemics?	49	42	0
16	Do you think online platforms can effectively replace offline classes?	30	61	0
17	What is your main mode of learning pharmacology?	Online lectures (11)	Pre recorded video (21)	Text books (56)	Notes From peers (3)

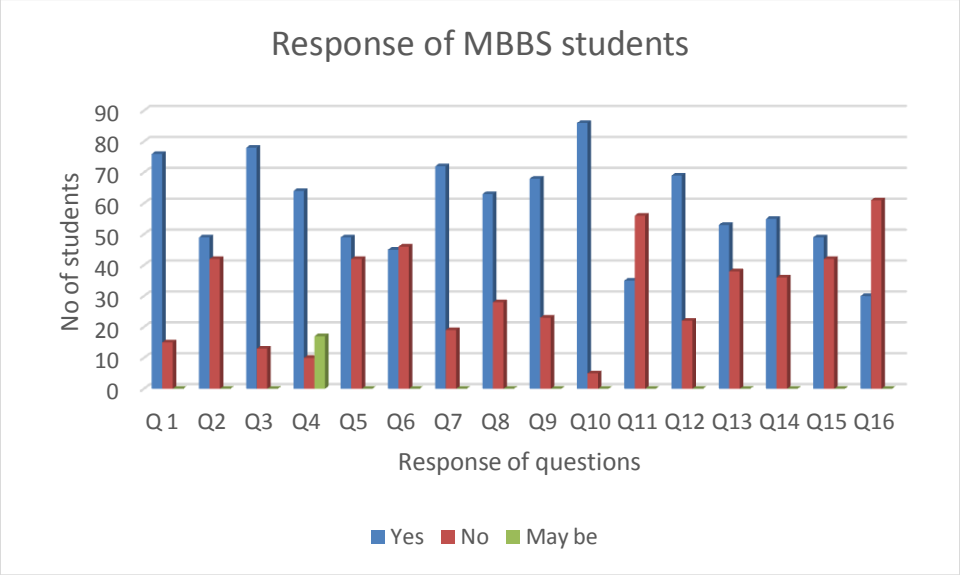

Fig 1.Responses of MBBS students. (n=91)

49 (53.8%) students were for incorporating more students' seminars in the training programme. Similarly, 50% of the students were in favour of incorporating group discussion in training programme. Majority of students i.e. 72 (79.12%) agreed that bedside teaching is necessary for some of the topics in pharmacology. 58.2% of the students responded in favour of online teaching platform during pandemic.

Majority of Students 63 (69.23%) also agreed that MCQ assessment is a better way to assess pharmacology than theory exams. 68(74.72%) students felt that revision classes before exams are useful. Almost 86(94.55) students think that clinical case-based teaching is required in pharmacology. 56(61.6%) students don't find pharmacokinetic calculation difficult. 69(75.8%) feel that self-study and clarification of doubts is more useful than revision classes.

53 (58.2%) students were of the opinion that online teaching is the best way of teaching during pandemics. 61 (67.1%) student think that online platforms cannot effectively replace offline classes, however 30 (32.9%) students were in thinking in favour of it.

Regarding the best way of teaching, majority of students were in favour of small group teaching over online teaching and open space discussions with social discussions.

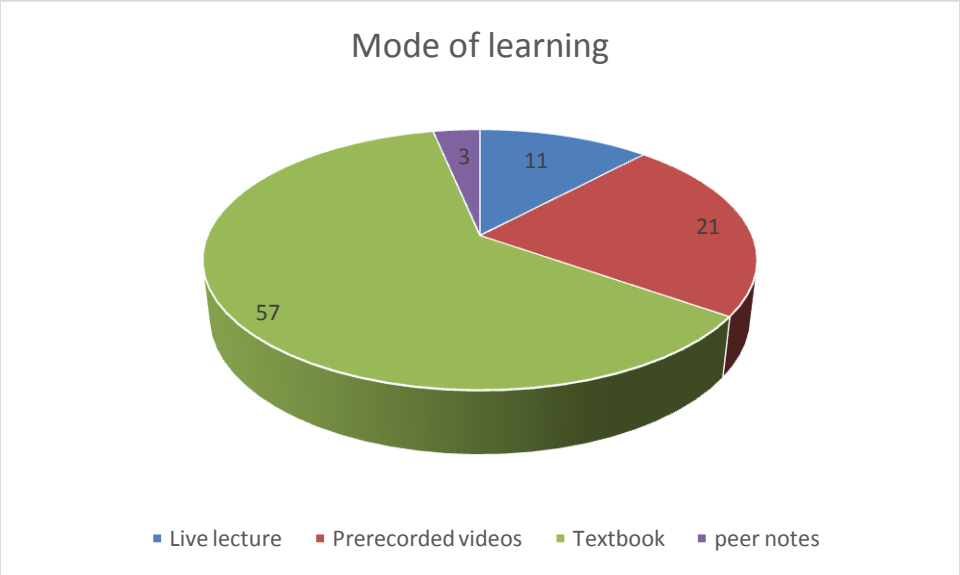

Fig:-Pie chart showing various mode of learning among the students(n=91)

The most popular means of learning pharmacology amongst students seemed to be using textbooks (60.4%) followed by pre-recorded videos (23%), live lectures (12.1%) and peer notes (3.3%).

IV. Discussion

In this study, many facts came into light and students gave vital inputs which could be incorporated in the teaching curriculum, so as to make the subject more interesting and rewarding. In our study majority (83.51%) of students responded that pharmacology is difficult to remember. In our study,16.5% of students do not find pharmacology difficult even though, it is considered one of the most difficult subjects of the basic sciences since students generally lack first-hand information about associated diseases.5 This suggests that there might be an element which makes the subject easier to understand and recall, which has made it easy for the latter students.

In a study conducted by A prasad et al in 2014 in MBBS students, the subject which was perceived as interesting and useful by majority of students was pharmacology and most of them were for integration of pharmacology with the clinical subjects.6

Almost half of the students i.e. 49.8% were in favour of small group teaching in our study. In a 2020 study, Sireesha Bala Arja et al reported that students who had group discussion had better overall pharmacology grade on the summative assessment than students who had no group discussions.7

M. Roshni and A. Rahim et al in 2020 studied that students strongly preferred spontaneous group discussion (SGD) over lectures as the teaching-learning methodology for principles of family medicine. SGD was found to be an effective instructional tool in improving the attention span of students, understanding the principles of family medicine, and recall.8

In present study regarding bed side teaching majority of students (79.12%) agreed that bedside teaching is necessary for few topics in pharmacology. In a study conducted by Akat PB et al around three fourth of the students expressed that bedside teaching of pharmacology should be included during 2nd MBBS. However, another study in interns reported that 73.20 % of the participants suggested that apart from 2nd MBBS it should be included in or after 3rd MBBS.9 Also, a study conducted in New Delhi, India has shown that 80.47% students and 87.50% teachers were in favour of bedside teaching.10 In a pilot survey conducted by Vasundara et al, the majority of the interns (95%) felt necessity for bedside clinical case study and the necessity of integrating pharmacology teaching with clinical subjects in MBBS phase-III, i.e. contextual learning gaining of knowledge and skills simultaneously.11

In our study almost 94.55% students think that clinical case-based teaching is required in pharmacology. Our study correlates with the study conducted by Garg A et al where students wanted introduction of case studies and treatment regimens as part of the regular teaching schedule and as many as 81% opined that pharmacology lectures should be more clinically oriented and case studies and treatment protocols to be added as a part of regular teaching in pharmacology.12

In our study, textbooks were the main source of learning pharmacology, followed by pre-recorded lectures. In a study conducted by Joanna Gutmann et al in 2015 it was noted that the most used media for learning were lecture slides (26.8 ± 3.0%), apps (22.0 ± 3.7%) and personal notes (15.5 ± 2.7%), followed by textbooks (> 300 pages) (10.6 ± 3.3%), internet search (7.9 ± 1.6%) and e-learning cases (7.6 ± 3.0%).13

In present study, majority of students 69.23% agreed that MCQ assessment is a better way to assess pharmacology than theory exams. Similarly, in a study conducted by Vijayarani Kannaiyan et al, 83.5 % students choose MCQ to study in depth and to score marks easily.14 Including MCQ in evaluation can help poor scorers to gain confidence, and can double as practice to face future competitive exams.

V. Conclusion

It is the need of the hour to know the students' preferences on various methods of teaching and learning pharmacology. It is important to know the various learning methods employed by students, so as to modify the undergraduate teaching programme accordingly. Formulating new educational strategies to meet the objectives of making pharmacology more interesting and practicable is the hours' need. The results of our study can serve as positive feedback to make the teaching programme more interesting and robust. As teaching and learning is a self-evolving process, well-designed and systematic prospective research needs to be carried out often so that students get updated every year. This would go on to ensure the training of medical students into competent healthcare professionals.

Limitation:- Since this is a study carried out in a single teaching hospital, one may cannot generalize the findings to other teaching institutions. Also, one-time feedback may not be sufficient to arrive at a concrete conclusion. Heterogeneous group of students and long-term acquisition and analysis will provide us with more information and results more representative of the actual student population.

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