ORIGINAL ARTICLE

Attitude, perception and feedback of second year medical students on teaching–learning methodology and evaluation methods in pharmacology: A questionnaire-based study

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ABSTRACT

Background: To assess the student's attitude, perception and feedback on teaching–learning methodology and evaluation methods in pharmacology. **Materials and Methods:** One hundred and forty second year medical students studying at Smt. Kashibai Navale Medical College, Pune, were selected. They were administered a pre-validated questionnaire containing 22 questions. Suggestions were also asked regarding the qualities of good pharmacology teachers and modification in pharmacology teaching methods. Descriptive statistics were used and results were expressed as percentage. **Results:** Majority of the students found cardiovascular system (49.25%) as the most interesting topic in pharmacology, whereas most of the students opined that cardiovascular system (60.10%), chemotherapy (54.06%) and central nervous system (44.15%) are going to be the most useful topics in internship. 48.53% students preferred clinical/patient-related pharmacology and 39.13% suggested use of audiovisual-aided lectures. Prescription writing and criticism of prescription were amongst the most useful and interesting in practical pharmacology. Students expressed interest in microteaching and problem-based learning, whereas seminars, demonstrations on manikin and museum studies were mentioned as good adjuvants to routine teaching. Multiple Choice Question (MCQ) practice tests and theory viva at the end of a particular system and periodical written tests were mentioned as effective evaluation methods. Students were found to have lot of interest in gathering information on recent advances in pharmacology and suggested to include new drug information along with prototype drugs in a comparative manner. **Conclusion:** There is a need of conducting few microteaching sessions and more of clinical-oriented problem-based learning with MCQ-based revisions at the end of each class in the pharmacology teaching at undergraduate level.

Key words: Evaluation methods, medical students, pharmacology, teaching–learning methodology

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INTRODUCTION

Pharmacology forms the backbone of rational therapeutics, 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 practice.[1] It is one of the most evolving branches in medical sciences. Hence, not only concepts but also the teaching methodologies and evaluation methods need to be kept under continuous review.

Traditionally, it has focused more on factual information, with little or no emphasis on clinical and applied aspects. Dispensing pharmacy and experimental pharmacology has remained the cornerstone of conventional pharmacology practical exercises. However, clinical utility and relevance of these practical exercises have always been questioned and criticised.[2]

The primary objective of teaching pharmacology to undergraduate students can be fulfilled only if they are well acquainted with the subject with respect to innovations in this field. This needs continuous

review and modifications in teaching methodology and evaluation methods in pharmacology. Medical teaching at Smt. Kashibai Navale Medical College and General Hospital (SKNMC and GH) is as per Maharashtra University of Health Sciences which mainly focuses on traditional teaching methodologies like lectures in whole class and practicals based on experimental and clinical pharmacy. Little emphasis has been given to clinical patient-related teaching, and newer teaching methods like problem base learning/microteaching and integrated teaching are not advocated as part of regular teaching. However, there is strong demand from students for these newer teaching methodologies. Keeping this demand in view, the present study has been designed.

It is accepted that the feedback from students serves as an effective tool in developing teaching methodology and evaluation methods in undergraduate teaching.[3] 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.

MATERIALS AND METHODS

This cross-sectional study involved 140 second year medical students from III, IV and V terms studying in SKNMC and GH, who were surveyed with pre-validated questionnaire designed for them. 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.[4-7] 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.

Questionnaire validation was done in 15 (5-10%) students to review the questionnaire to determine whether the questionnaire measured what it was designed to measure. Content validation method was used for the validation procedure.[8] Answer to each question was reviewed by our experts and the requisite modifications and deletions were done to validate the 22 questions out of total 25 questions in the questionnaire. The following validation criteria were used:
- Time requirement for completion of questionnaire (5-10 min)
- Appropriateness of questionnaire for collecting data
- Repetition or inappropriate questions
- Logical order of questions
- Clear, concise and unambiguous questions
- Easy and meaningful instructions
- Comments and suggestions specified to the application guidelines.

After getting the protocol approved by the Institutional Ethics Committee (SKNMC No/Ethics/App/2010/72), the list of second year medical students studying at SKNMC was obtained. After getting the list, a total of 140 students were administered a pre-validated questionnaire containing 22 questions at the end of pharmacology class and they were asked to fill up the questionnaire. Suggestions were also asked regarding the quality of good pharmacology teachers and modification needed in pharmacology teaching methods. The filled questionnaires were collected immediately once they were filled up, on the same day. The questionnaire validation was done by a pilot study on 15 students.

Statistical analysis
Descriptive statistics was used for analysis of data and results were expressed as percentage.

RESULTS

Out of total 140 students, 64 were females and 76 were males, and the mean age of the students was 19.7 ± 0.26 years. In reply to the questions, very interesting answers were obtained.

Before entering the pharmacology course, majority of the students (63.62%) were found to know somewhat about the subject; only 17.28% students were totally unaware of the subject. Pharmacology was opined to be a very useful, practically important and interesting subject by 47.89% of senior students when asked about their opinion. None treated the subject as boring and useless. About 7% senior students gave variable responses stating that although useful and interesting, it is a very difficult, volatile and confusing subject. The same response was obtained from second year students, i.e., majority (59.62%) of them found the subject to be very useful, practically important and interesting.

When the students were asked to grade the subject in comparison with the other subjects, majority (51.3%) of them found no difference from the other subjects, i.e., they treated all the subjects equally important. 46.06% students mentioned that they would like to have few lectures on newer drugs/and recent advancement on therapy during internship. 39.93% students also suggested that there should be pharmacology orientation course of few days during internship.

When the students were asked about their opinion on pharmacology teachers, 41.7% students found most of the pharmacology teachers good and knowledgeable and 40.68% found most of the teachers good and few of them average. 58.42% students mentioned that pharmacologists are respected as expert therapeuticians undoubtedly, whereas 24.45% answered they had no idea. Significant number (i.e., 73.8%) of students mentioned that the course

time of 1½ years is adequate for teaching second year MBBS students. Only 14.07% students gave favourable stand on the argument that second year medical course time of 1 year is adequate.

We received varied suggestions and opinions on the qualities of a good pharmacology teacher. According to them, the teacher should be knowledgeable, approachable, student interactive, problem solving, should come up with good audiovisual presentations, should have good communication, clarity in speech, expressivity and clear basic knowledge of the subject. When the students were asked about being a pharmacologist in future, only 4.22% students accepted that they wanted to become a pharmacologist [Figure 1].

Majority of the students found cardiovascular system (49.25%), central nervous system (39.19%) and general pharmacology (36.85%) as the most interesting topics, while autonomic nervous system (32.09%), respiratory system (13.91%), gastrointestinal system (9.08%) and autacoids (7.68%) were treated as less interesting topics in pharmacology. Cardiovascular system (60.10%), chemotherapy (54.06%) and central nervous system (44.15%) are going to be the most useful topics in internship, as per their opinion. 59.06% students suggested change in the order in which pharmacology topics are taught, whereas 40.94% accepted the present order to be the best. 48.53% students preferred audiovisual-aided lectures as the best teaching method, and the second highest (39.13%) preference was given to clinical/patient-related pharmacology followed by Multiple Choice Question (MCQ)-based study (39.13%) and interactive classes (24.23%) with strict bilateral communication. Prescription writing (64.89%), comments on fixed-dose combinations (35.88%) and criticism and rewriting of prescription (29.90%) were found amongst the most interesting and useful topics from pharmacology practicals in future [Figure 2].

When the students were asked about the methods to make pharmacology teaching more interesting, about 46.06% students suggested addition of problem-based learning in conventional teaching and 37.33% insisted in microteaching sessions. Furthermore, when they were asked about the topics they want to be discussed in lecture/practicals of pharmacology in addition to the usual topics, about 46.05% mentioned dose schedule and calculation and 44.44% suggested drugs used in special conditions like kidney dysfunction, sexual dysfunction and emergency drugs [Figure 2].

Students were also questioned about the learning materials and methods that they use to learn pharmacology. 53.95% students mentioned that they learn pharmacology from textbook only. Comparable (47.85%) number of students admitted using the combination of teacher's class notes, self-prepared notes and textbook. About 36.79% students mentioned that they study pharmacology regularly for gaining more knowledge with understanding (57.80%) [Figure 2].

Amongst the evaluation methods for preparing for university examination, preliminary examination (51.12%) was given the highest score, followed by terminal examination (48.52%) and MCQ test (38.16%) [Figure 3]. For making pharmacology more interesting/approachable/understandable and practicable, the students suggested incorporation of new drug information along with prototype drugs in a comparative manner, conduction of MCQ tests and viva at the end of every topic taught, accompanied by video clipping and student slide show.

DISCUSSION

It is very important to emphasize the academic need of reviewing the teaching programs from time to time and making adequate modifications, to keep pace with progress in the subject and to cope with the requirements of the beneficiaries. In the present study, many interesting things came into picture and students suggested many ways that could be incorporated in conventional pharmacology teaching so as to make the subject more interesting and understandable.

Although majority of the entrant students had somewhat knowledge about pharmacology, there was a class of students who were totally unaware of the subject; hence, there is a need to conduct subject orientation programme before the students enter into medical education. Majority of the students found cardiovascular system, central nervous system and general pharmacology as the most interesting topics in pharmacology, whereas autonomic nervous system, gastrointestinal system, autacoids and respiratory system were the less interesting topics. So, these topics need to be emphasized more to draw attention of the students. This could be done by utilizing their suggestions like use of microteaching sessions, problem-based learning, patient-related teaching and interactive teaching with strict bilateral communication in conventional teaching. Involvement of students improves learning, and thereby their performance in university examinations.[4] This approach towards teaching pharmacology would be appreciated by students than theoretical conventional teaching.

Some studies mentioned about the inability of doctors in writing rational prescription and it is suggested that there should be incorporation of some training of clinical pharmacology in the internship.[9] Presently, we are conducting few lectures on pharmacovigilance and rational prescribing as a part of internship-orientation programme. In this study, students have additionally
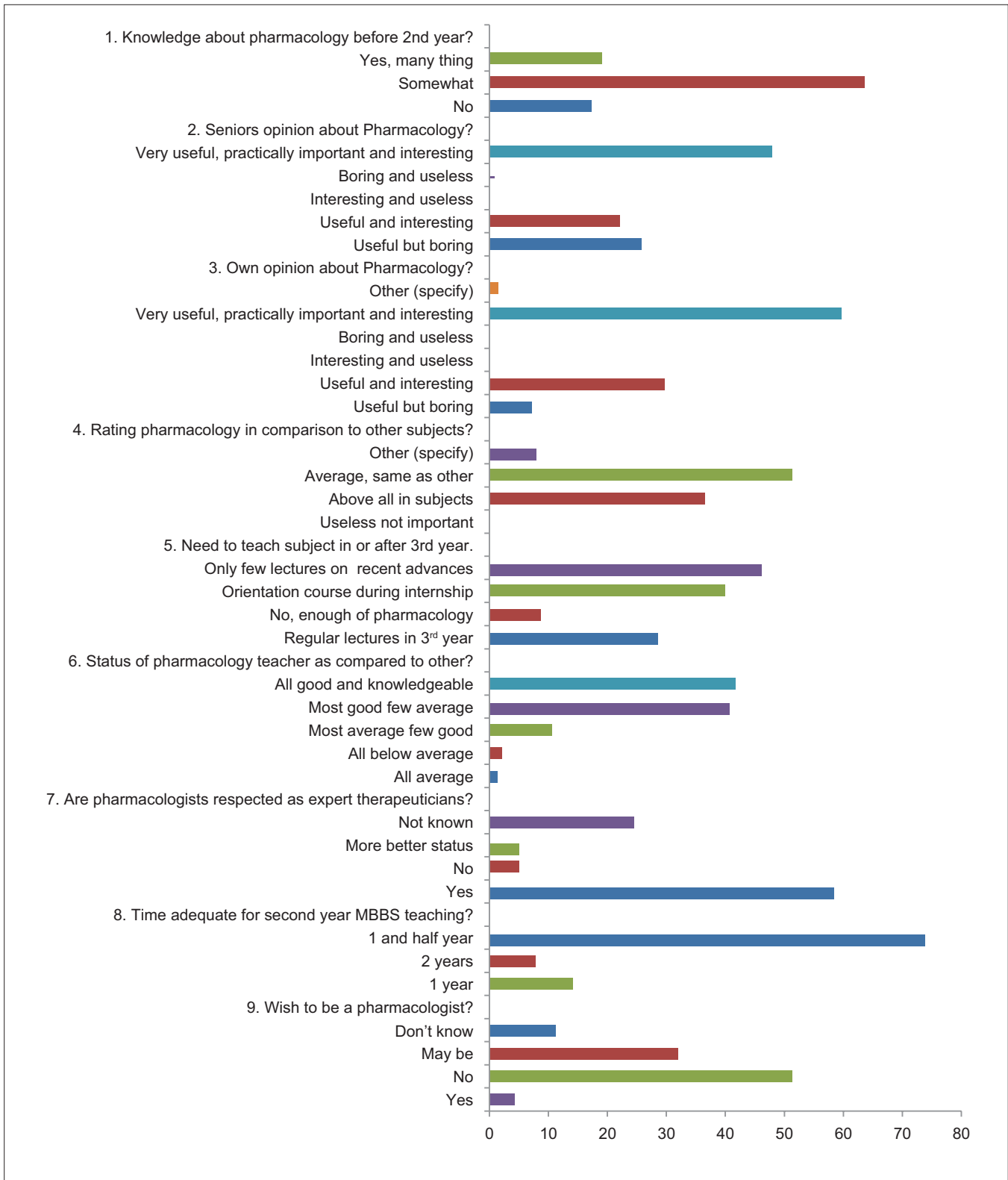
Figure 1: Comparison of responses to general questions (%) of the participants to the questionnaire (*N* = 140)

asked for conducting few lectures on new drugs and recent advances in the therapies, during internship. Hence, few lectures on recent therapies may be incorporated in this programme for the benefit of the students. Student's attitude towards becoming pharmacologist was found unfavourable. This reflects their lack of knowledge about the subject scope and it may be their mindset to treat the subject as a very difficult one. Hence, they need to be
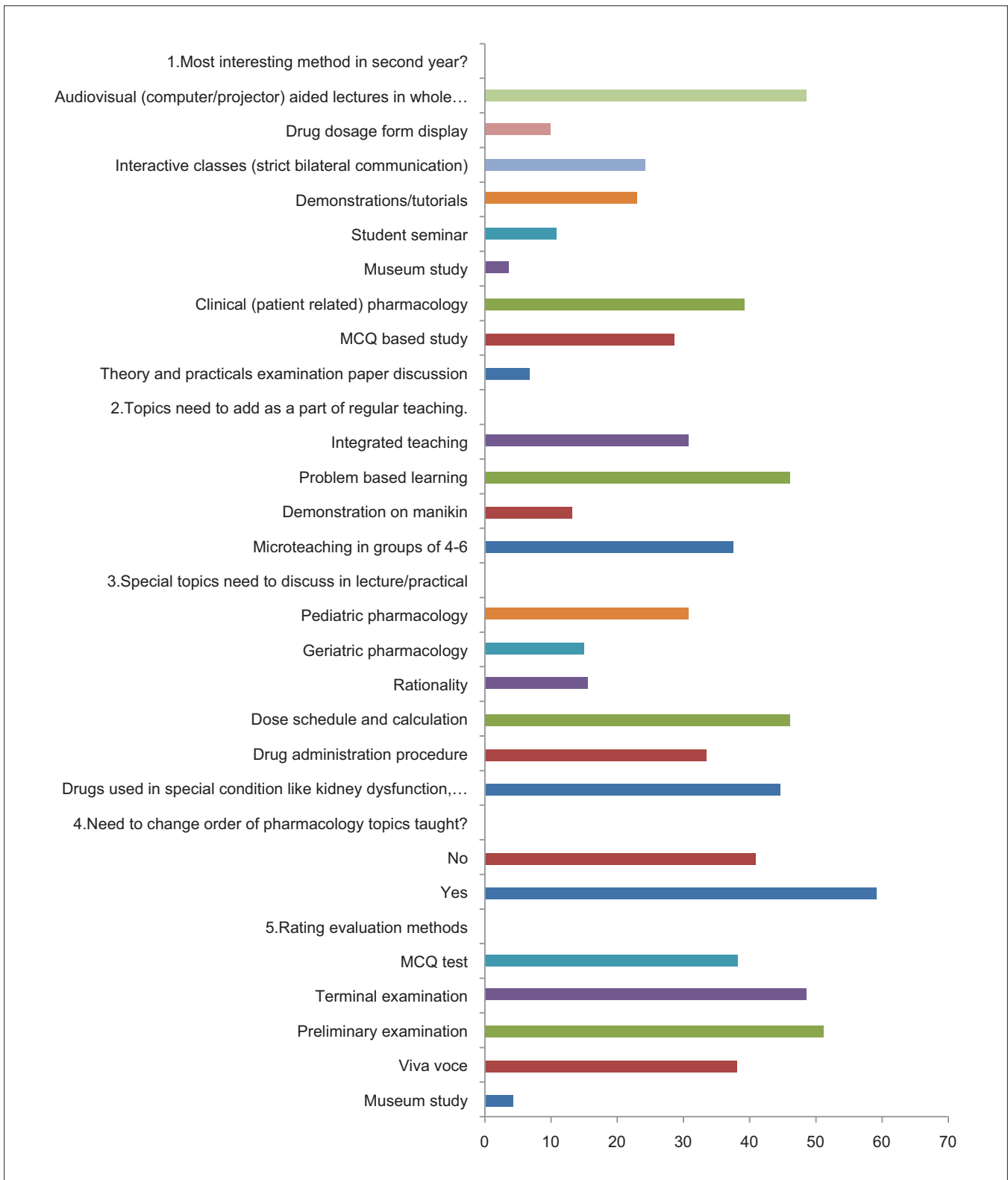
Figure 2: Comparison of responses to teaching and evaluation methods (%) of the participants to the questionnaire (*N* = 140)

well versed with the future prospective in the subject. By assisting the students in subject learning through simple and understandable illustrations, this mindset may be changed.

Students unanimously accepted all pharmacology teachers as good and knowledgeable; however, they expected free interaction and problem solving with the teachers. They suggested that teachers should come up with good
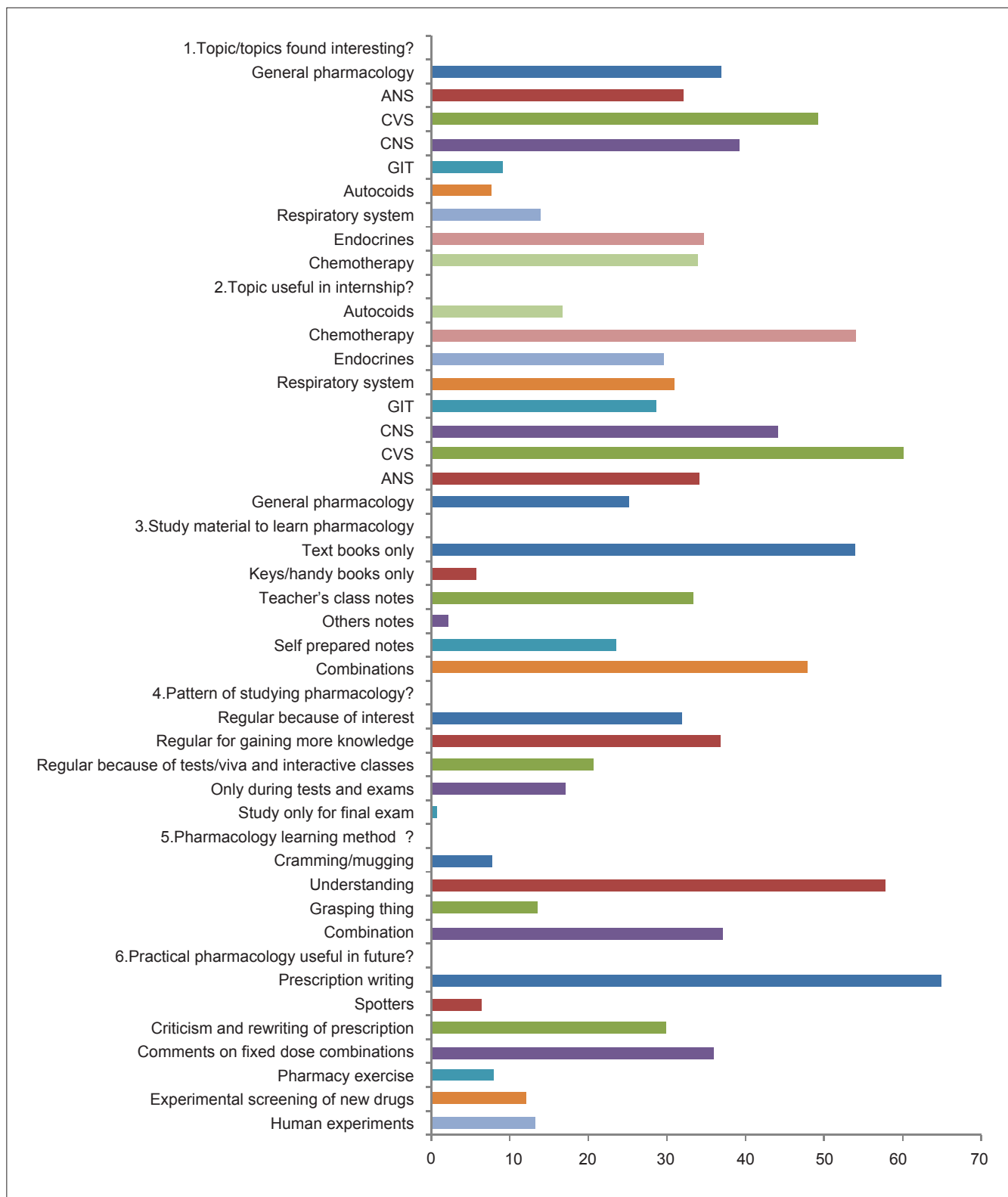
Figure 3: Comparison of responses to learning methodology (%) of the participants to the questionnaire (*N* = 140)

presentation, clarity in speech and expressivity. These are the qualities of good pharmacology teachers according to them. Definitely efforts can be taken in this direction through discussion and seeking guidance from senior experienced faculties. Conducting MCQ tests and viva sessions at the end of every topic was suggested by many students, as they study pharmacology regularly due to these tests. Although not feasible, few MCQs may be provided as

home assignment from time to time and viva sessions may be planned at the end of term during revision classes. In light of the results of the present study, we should understand that all these issues must be taken into consideration while updating the undergraduate curriculum.

CONCLUSION

The students' feedback serves as an array of effective methodologies in pharmacology teaching. Also, there is a definite need for modification of undergraduate curriculum so as to make pharmacology more interesting and practicable.

ACKNOWLEDGMENT

The authors are thankful to Dr. Bhore, Dean, SKNMC and GH, for providing facilities to carry out this work.

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