

Original Research Article

# Teaching Pharmacology Prescription Writing and Criticism-Commenting on Fixed-Dose Combinations by Assignment-Based Method: Learning Outcome in II MBBS Students.

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## ABSTRACT

**Background:** Prescribing is an indispensable skill for doctors in nearly all medical specialties. Teaching medical students to choose and prescribe drugs in a rational, safe, and effective manner is a major challenge for medical schools. II MBBS Pharmacology practical curriculum intends to teach the students prescription writing and also to criticize and comment on the fixed-dose combinations (FDCs). The present study was undertaken to assess the effect of an assignment-based intervention on learning outcome of II MBBS students in the area of prescription writing and criticism-commenting on FDCs.

**Materials and Methods:** An interventional prospective study was done pertaining to learning of prescription writing and criticism-commenting on FDCs. The participants were II MBBS students in a medical college in India. Group 1 was the 2014-15 batch (n=103), who were taught by the traditional method. Group 2 was the 2015-16 batch (n=147), who were subjected to an intervention by asking them to learn by assignment-based method. This was done by students themselves studying and writing the taught prescriptions and criticisms on FDCs in an assignment book and getting these exercises duly checked. The marks of II term-end examination in the heads of prescription writing and criticism-commenting on FDCs were compared for both the groups to assess the effect of intervention.

**Results:** The mean scores obtained on prescription writing by Group 1 and Group 2 was  $3.06 \pm 1.12$  and  $3.33 \pm 0.85$  respectively. The mean scores obtained on criticism-commenting on FDCs were  $1.9 \pm 1.04$  and  $2.5 \pm 1.02$  respectively.

**Conclusion:** Higher scores obtained by Group 2 suggested that the assignment-based method was found to be an effective intervention for learning prescription writing and criticism-commenting on FDCs, therefore the techniques based on self-learning would be useful to improve the learning outcomes.

**Key words:** II MBBS students, Prescription writing, Criticism-commenting on FDCs, Assignment-based method

## INTRODUCTION

Pharmacology, like other branches of medical sciences, is an ever changing medical subject. <sup>[1]</sup> Doctors require

knowledge of pharmacology throughout their practicing life.

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.<sup>[2]</sup> Solving problems in therapeutics, prescribing appropriate drugs for a disease condition, and delivering the drug- and disease-related information in a meaningful way to the patients should be regarded as key 'transferable skills' in pharmacology.<sup>[3]</sup>

"The WHO Guide to Good Prescribing" describes a methodology for teaching rational prescribing to medical undergraduates.<sup>[4]</sup> The normative six-step approach to rational prescribing enumerated in the guide has been shown to be effective in improving the prescribing skills of medical students. Once a student understands and follows these steps then writing a prescription is simply an extension of his knowledge of clinical pharmacology and skills on a tailor-made prescription format.

In India, the students study the pharmacology course in their II MBBS, and the practical curriculum intends to teach the prescription writing and criticism-commenting on the fixed-dose combinations (FDCs). It has been observed that even after conducting various classes on prescription writing for various disease conditions and criticism of FDCs, students are not able to write the prescription and criticism properly. The study done by Kumar et al<sup>[5]</sup> reveals that the acquisition of prescription writing skill by medical students in Nepal during their preclinical years is only suboptimal. The variables involved in their poor performance are supposed to be the learner, the teacher, and instructional method. Other studies observed that the medical and dental students acquired prescribing skills to a limited extent in preclinical phase.<sup>[6]</sup> There is sufficient data to indicate that the prescribing performance of medical students, interns, and junior doctors is poor, partly because of inadequate training.<sup>[3,5,7]</sup> A wide range of educational interventions have been conducted to develop and maintain prescribing competency of

students.<sup>[8]</sup> Most of the questionnaire-based studies have been done pertaining to attitudes, knowledge, and perceptions of II MBBS students on pharmacology teaching-learning methods.<sup>[2,9,10]</sup>

Very few studies have been done to assess the improvement in the skill of writing the prescriptions and criticism by an intervention. Therefore the present study was planned to assess the improvement in performance of students in practical exam of prescription writing and criticism-commenting on FDCs after an assignment-based intervention

## MATERIALS AND METHODS

A prospective interventional study was conducted in the Department of Pharmacology of MIMER Medical College, Talegaon, Pune, India in the period from August 2014 to July 2016. Two batches of II MBBS students constituted the whole study population.

The first batch was admitted to II MBBS in June 2014 (n=103) (Group 1). The second batch was admitted to II MBBS in June 2015 (n=147) (Group 2).

Pharmacology practical examination scores of Group 1 and Group 2 were studied to ensure the comparability of these two groups.

Pharmacology practical sessions were conducted each week in the groups of 50 to 75 students.

Introductory classes on prescription writing as well as criticism-commenting on FDCs were conducted for both groups. The prescription writing class included the discussion on parts of prescription and format of prescription according to The WHO Guide to Good Prescribing.<sup>[4]</sup> The students were taught according to the "Maharashtra Model of Prescription Format".<sup>[11]</sup> During the prescription-writing classes, the correct choice of drug with its formulation, dose and frequency, and duration of treatment was discussed for various diseases. Single-drug and multiple-drug prescriptions were included in the discussion. The class about criticism-

commenting on FDCs included discussion on the headings under which the FDC is to be written, indications with dose and route, justification for combination of drugs, and detailed commenting on whether a combination is rational or not. Seven classes (each class of 1.5-hour duration) for prescription writing and criticism-commenting on FDCs; each based on different systems like autonomic nervous system, cardiovascular system, central nervous system, respiratory system, gastrointestinal system, and endocrine system. Both the batches of the students had not undergone any intervention during their first term.

During the second term of II MBBS, an assignment-based intervention was introduced for Group 2. They were asked to maintain a separate 200-pages A4-size ruled notebook for studying and entering the prescription-writing exercises and criticism-commenting on FDCs. The students were instructed to follow the correct FDA format of prescription and the correct headings assigned for FDCs. It was mandatory for the students to get the notebooks checked within 8 days by the tutors and make the suggested corrections.

A terminal examination was conducted at the end of second term for both the groups. The syllabus for both groups was the same and included endocrine system, respiratory system, gastrointestinal system, and cardiovascular system. The practical examination included prescription writing for 5 marks (including 3 marks for multiple-drug prescription and 2 marks for single-drug prescription). It also included 4 marks for criticism-commenting on FDC. These exercises were the part of table work during the practical examination. Answer sheets were assessed and the scores were tabulated separately for prescription writing and criticism-commenting of FDCs in Microsoft Excel spreadsheet. The scores and percentages were analyzed using independent t-test. The scores of the two groups were compared. A p-value of less than 0.05 was taken statistically significant.

## RESULTS

Table 1 shows performance of Group 1 and Group 2 at their respective I term-end practical examination. This was seen to ensure the comparability between the two groups. (Eight students from Group 2 were absent for this examination).

Table 1: Performance of Group 1 and Group 2 at their respective I term-end practical exam. (Max. marks-40)

	Group 1	Group 2
Mean	20.28±4.99	21.31±4
Variance	24.96	16.4
N	103	139
T	-1.7711	
Degrees of freedom	240	
Critical value	1.972	

The means of Group 1 and Group 2 were not significantly different at  $p < 0.05$ , thus showing the comparability of the two groups included in the present study.

Table 2 shows scores of Group 1 and Group 2 for prescription writing skills at their respective II term-end practical examination. (Three students from group 2 were absent for the II term end examination).

Table 2: Scores on Prescription writing skills: II term-end practical exam

	Group 1	Group 2
Mean	3.06±1.12	3.33±0.78
Variance	1.12	0.62
N	103	144
T	-2.2232	
Degrees of freedom	245	
Critical value	1.972	

The Group 2 with a mean score of  $3.33±0.78$  showed significantly better performance as compared to Group 1 ( $p < 0.05$ ).

Table 3 shows scores of Group 1 and Group 2 for criticism-commenting on FDCs at their respective II term-end practical examination. (Three students from group 2 were absent for the II term end examination).

Table 3: Scores on criticism-commenting on FDCs: II term-end practical exam

	Group 1	Group 2
Mean	1.97±1.04	2.57±1.02
Variance	1.0867	1.0513
N	103	144
T	-4.5196	
Degrees of freedom	245	
Critical value	1.972	

The means of Group 1 and Group 2 are significantly different at  $p < 0.05$ .

The Group 2 with a mean score of  $2.57 \pm 1.02$  showed significantly better performance as compared to Group 1 ( $p < 0.05$ ).

## DISCUSSION AND CONCLUSION

The similarity and matching in the overall performance of Group 1 and Group 2 included in the present study were ensured by comparing their general performance at the first term-end practical examination in pharmacology. The first term-end examination scores of the students of Group 1 and Group 2 were not significantly different.

Acquisition of skills for prescription writing and criticism among students of our institute was deficient at least to some extent. So an intervention in the form of a practice assignment notebook was planned to improve the skills and help improve their scores in the practical examination. There was a marked improvement in the marks of the student group that was subjected to the intervention. (Table 2 and Table 3)

According to a study, the students of pharmacology found prescription writing as the most useful and interesting practical.<sup>[12]</sup> Acquiring prescription writing skills is a gradual process that builds up by practice. So practicing and writing by an assignment-based method is likely to encourage self learning, and this is one of the reasons of improved performance of Group 2. The same applies for the criticism-commenting on FDCs. As the note books were checked by the faculty and suggested corrections were done by the students, it was easy to refer them before the practical examination.

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