

# Impact of patient-based teaching in improving prescription writing skills of II MBBS students

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## ABSTRACT

**Background:** Although prescription writing is a part of the medical students' curriculum, their prescribing skills are still poor either as a part of their examinations or as they go out as qualified health professionals which may be due to inadequate training. Educational intervention like patient-based teaching in pharmacology offers lifelike preparation and provides more relevance, easier recall, and help in improving prescribing skills. This study aims to determine the role of patient-based teaching in improving the prescribing skill of II year medical students compared to conventional case-based teaching.

**Materials and Methods:** This prospective, comparative study was carried out after giving orientation to prescription writing as per the WHO prescribing guidelines ( $N = 50$ ). The 25 students in control group were given case-based teaching and 25 students in test group were given patient-based teaching of prescription writing for the same five common clinical conditions. The prescription writing skill (knows how level) was assessed by evaluating the prescriptions written in the prescribed format and scored by a 14-point scoring system. **Results:** The mean scores obtained by the control (9.6) and test (12.04) groups were compared by unpaired Student's *t*-test ( $P < 0.001$ ). On comparing the individual parameters in the 14-point scoring by Chi-square test, significant difference was found regarding patient and doctor's particulars, diagnosis, quantity, duration of therapy, and signature between study groups. Student feedback revealed that patient-based teaching enhanced responsibility, focus, and memory. **Conclusion:** Patient-based approach for prescription writing enables students to develop prescribing skills in a complete and professional way.

**Key words:** Case-based teaching, MBBS students, patient-based teaching, prescription writing

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## INTRODUCTION

Prescription writing is a complex and challenging task that requires diagnostic skills, knowledge of medicines, communication skills, an understanding of the principles of clinical pharmacology, and appreciation of risk.<sup>[1]</sup> In recent years, medical researchers observe deficiencies in health care occurring due to many prescribing errors, which arise

because of two factors. One could be due to decision making and the other due to defect in the art of writing prescriptions. The factors related to the former could be inappropriate prescription, irrational prescription, under prescribing, or over prescribing. Those related to the latter is purely because of inappropriately writing the prescription.<sup>[2]</sup>

The illegibility of the prescription or omission of any of the details in a prescription order could result in misinterpretation and medication errors. A good prescription should be legible and possess all the essential information necessary for the

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pharmacist to dispense and the patient to follow in such a way to avoid possible errors and thereby the complications introduced by such defaults. Although prescription writing is a part of the medical students' curriculum, their prescribing skills are still poor either as a part of their examinations or as they go out as qualified health professionals. Although many prescribing errors are unintentional, studies have shown that the prescribing performance of interns and medical students are poor partly because of inadequate training.<sup>[3]</sup> Furthermore, studies reveal that many medical graduates feel under-prepared to take on prescribing responsibilities after graduation even though prescription writing is taught by lectures or case-based teaching.<sup>[4]</sup> Hence, there is a need for new educational interventions to improve prescribing.

Educational interventions such as problem-based tutorials, interactive electronic tutorials, teaching sessions based on WHO prescribing guide, case scenario-based methods, etc., have been tried by researchers to improve the skill. However, most of the trials failed to provide a definitive answer and a strong evidence to support the use of above interventions.<sup>[5]</sup> Patient-based teaching is one of the educational interventions to teach clinical skills using real patients. This offers lifelike preparation and has more relevance to the trainee's future, i.e., their day-to-day performance as a doctor. This intervention may improve prescribing skills since the learning occurs within the context of real patients and is easier to recall.<sup>[6]</sup> Based on the above facts, this study was conducted to determine the role of educational intervention (patient-based teaching) to improve the prescribing skill of II year medical students.

## MATERIALS AND METHODS

This prospective comparative study was done in a Tertiary Care Medical College after obtaining permission from the Institutional Ethics Committee. The study was performed between August 2015 and September 2015. As this is a pilot study in its aspect to test a newer intervention, we decided to select a small sample size. Two groups of 25 students were selected randomly from II MBBS to participate in this study. The control group included all the 25 students who were posted to surgery postings and the test group included whole of the 25 students who were posted in General Medicine Department. Written informed consent was obtained from the participants and permission obtained from the heads of the concerned departments. Both groups of students ( $N = 50$ ) participating in the study were given general introduction about prescription writing, prescribing format and the WHO guidelines for selecting the preferred drug after making clinical diagnosis. Five common clinical conditions were chosen for teaching prescription writing to both the groups (peptic ulcer, bronchial asthma, new case of hypertension and diabetes mellitus, hypothyroidism).

The participants of the test group were subjected to patient-based teaching which was carried out in the General

Medicine Department of our hospital exposing the students of test group to real patients suffering from the above mentioned clinical conditions. After briefing about clinical conditions and appropriate prescriptions, students were given 10 min duration to interact with patients. Students of control group were trained on prescription writing by explaining five clinical conditions using case scenarios in the Department of Pharmacology. After allowing the participants of both the groups to undergo self-study for 2 days, they were asked to write prescriptions in the standard format for the same five clinical conditions discussed. Then, assessment of their prescribing skill was done by analyzing scores obtained [Figure 1]. To prevent teaching and evaluation biases, teaching for both the groups were done by the first author; evaluation by the second author and providing dummy numbers to prescriptions of the students of both the groups.

Scoring for the prescriptions written by all the participants was done by a modified 14-point scoring format.<sup>[7]</sup> The mean scores obtained by both the groups for the five prescriptions were analyzed using unpaired *t*-test and the individual parameters in the 14-point score were compared by Chi-square test. An open-ended feedback was obtained from the test group students who were exposed to the newer educational intervention [Figure 1].

## RESULTS

Results were analyzed using Student's *t*-test and Chi-square test. The five prescriptions written by each student were scored and the average obtained for each student and the mean score calculated for both the study groups. The mean score for the five prescriptions

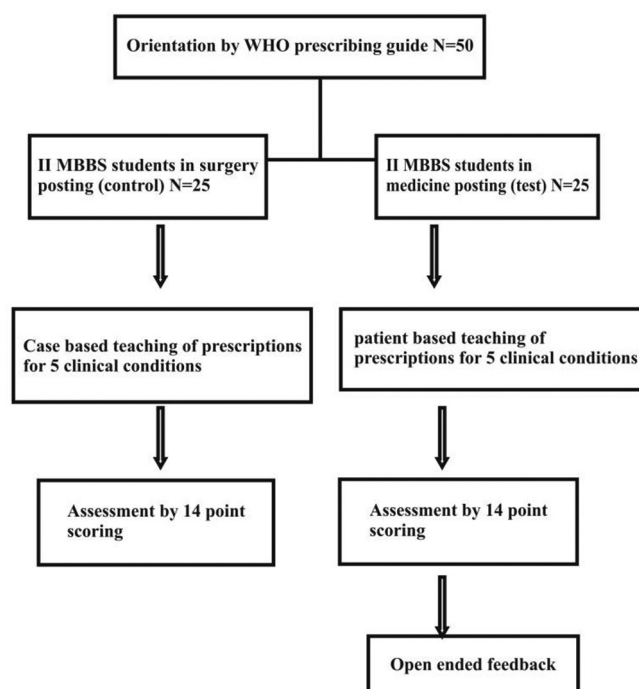


Figure 1: Methodology

obtained by the students in control group (by 14-point score) was 9.6 and that of the test group was 12.04 [Figure 2].

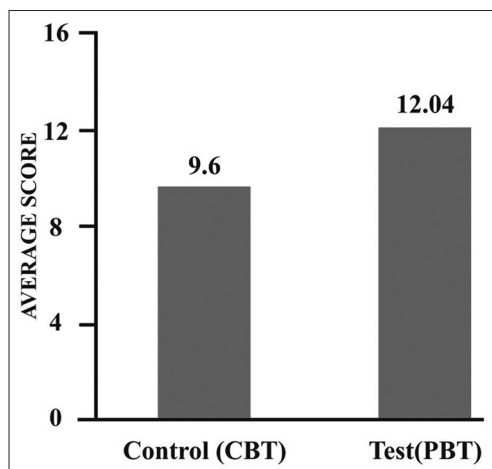
On comparison of the mean score obtained by both the group of students by unpaired Student's *t*-test, there was a significant difference between both the groups ( $P < 0.001$ ).

The performance of students in both the groups with regard to the individual parameters of the 14-point score was also assessed. A total of 125 prescriptions obtained from each group were compared for the individual components of the score by Chi-square test. There was a significant difference between groups in writing the doctor's particulars, patient particulars, diagnosis, quantity of the drugs and duration of medications to be taken, follow-up particulars and doctor's signature. There was no obvious difference noted in mentioning the parameters such as patient name, doctor name, drug name, dosage, and date of prescription [Table 1].

**Table 1: Comparison of individual parameters on 14-point scoring**

Parameters in 14-point score	Number of correct response (control) (n=125)	Number of correct response (test) (n=125)	Significance
Patient name	125	125	NS
Patient address	90	120	<0.001
Age/sex	85	110	<0.001
Doctor's name	120	125	NS
Doctor's address	95	120	<0.001
Doctor's degree	80	120	<0.001
Doctor's registration number	80	115	<0.001
Date of prescription	112	120	NS
Diagnosis	90	115	<0.001
Drug name	118	122	NS
Strength	116	120	NS
Quantity/duration	98	115	<0.05
Directions for use	82	118	<0.001
Signature	92	121	<0.001

NS: Not significant



**Figure 2:** Comparison of mean score of both groups

On consolidating the open-ended feedback from all students of test group, they concisely opined that patient-based teaching was more interesting and motivating, gave more focus, they felt more responsible, felt empathic toward patients, and this way of teaching made them to remember the subject easily.

## DISCUSSION

Prescriptions are orders that are issued to communicate between the prescriber and the patient or pharmacist. Poor prescribing is one of the avoidable causes of medication errors and related hazards. Case-based teaching is an established method of teaching prescription writing to II MBBS students since it provides student motivation, activates self-directed learning and imparts deeper knowledge.<sup>[8]</sup> However, a review by Koh *et al.* reveals that such type of teaching methods would not be much fruitful for skills such as prescribing, patient education, and doing procedures.<sup>[9]</sup> Furthermore, in the upcoming competency-based medical education, there is emphasis on teaching clinical skills and the assessment at the performance level. This context necessitates teaching prescription writing in a patient-based approach.<sup>[10]</sup> Hence, it is essential to introduce better educational interventions which would give a lifelike experience while learning that could improve the prescribing confidence of undergraduate students.

This study based on the above facts identifies the usefulness of patient-based teaching of prescriptions to medical students. The performance of students after patient-based teaching is significantly more than those who were trained by case based teaching ( $P < 0.001$ ). There are studies to mention about the marked weakness of newly graduating medical students regarding prescribing skill.<sup>[11]</sup> A study done in Nigeria among final year students found that the students possess only knowledge about drugs, but their prescribing skills do not match the knowledge insisting on a more practice-based teaching of prescription writing.<sup>[12]</sup> Similar pattern was observed in our study also. The analysis of the individual parameters of the 14-point score between both groups showed no significant difference in variables such as mentioning the doctor's name, patient's name, date of prescription, the drug name, and its strength. This shows that the students were able to memorize the drug information and reproduce it in both methods of teaching. On contrary, there was a significant difference noted between the groups in fulfilling the following parameters (patient address, age/sex, doctor's address, degree, registration number, diagnosis, directions for use and signature -  $P < 0.001$  and quantity/duration -  $P < 0.05$ ). This proves the fact that the patient based teaching offers more impact on writing complete prescriptions than the traditional case-based

teaching. Standard prescription writing is not just writing the drugs and dose alone. Every element in the prescribing format is absolutely important and essential for both legal and therapeutic requirements.<sup>[13]</sup> The study proves this lacuna of the current teaching of prescriptions which is drug centered rather than practice centered to offer the complete skill of prescribing.

In patient-based teaching, the students have added advantages of communicating with patients, visualizing their agony and giving follow-up advice to them. These advantages help the students to gain real-life experience which enhances their memory and performance in prescription writing. Feedback obtained from students also brought out the fact that the patient-based teaching improves their learning, motivation, and makes them to remember all the essential components of the prescribing format. Apart from these, this method also provides better attitude of students toward patients and make them more empathic.

Most of the studies on educational interventions to improve prescriptions used objective structured clinical examination (OSCE) as assessment method (at performance/does level of Miller's pyramid).<sup>[14]</sup> In this study, since the control group was not exposed to patients, instead of OSCE, the scoring system was used for assessment (at the knows how level) and the students were evaluated for prescribing competence rather than prescribing performance.

The limitations expected with this newer intervention in teaching prescription writing are the difficulty in organization for a larger group of students and the availability of adequate faculty. This could be alleviated by faculty development programs and proper planning. The other limitation of this study is its shorter duration. Studies with longer duration can check the long term memory of students. Furthermore, before and after studies of patient-based teaching with OSCE as scoring would very well assess the communication skill of students also which offers holistic approach to prescribing skill.

## CONCLUSION

Patient-based approach for prescription writing enables students to develop prescribing skills in a complete and

professional way along with adequate medical knowledge. The use of real patients in teaching prescription writing should be considered more widely, as it provides strong contextualization and more relevance to learning.

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**Conflicts of interest**  
There are no conflicts of interest.

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