

Knowledge of drug prescription among dental and medical student in India – an online survey

Nor Syakirah Binti Shahroom¹, T. Lakshmi², Anitha Roy²

¹Bachelor of Dental Surgery, Saveetha Dental College and Hospitals, Saveetha University, Tamil Nadu, India, ²Reader, Department of Pharmacology, Saveetha Dental College and Hospital, Saveetha University, Tamil Nadu, India

Correspondence: Anitha Roy, Faculty of Pharmacology, Saveetha Dental College & Hospital, Chennai, Tamil Nadu, India. E-mail: anitharoy2015@gmail.com

ABSTRACT

To determine and assess the level of knowledge of drug prescription among dental and medical students during their clinical practice. This study was conducted by distributing a total of 108 online surveys to the 3rd year, 4th year and intern of dental and medical students in India. Survey Planet was used as the medium to frame various questions about the knowledge of drug prescription. The questions were pretested to check the validity and reliability of the questionnaires. The most common health condition treated is pain by medical (32%) and dental (62%) students. All the participants agreed that general factors such as past medical and dental history should be considered before prescribing. The most common mistakes while prescribing was not asking the patient about allergies (26%) and wrong dosage (17%). The students commonly seek information from the pharmacology course (32%) and professors (28%) about drug prescription. (62%) of medical and (74%) of dental students knew about the dose need to be given. (67%) and (82%) of medical and dental students, respectively, knew about the frequency of the drug. (91%) of medical and (90%) of dental students knew about the route of administration. 96% of the participants agreed that pharmacology is really important for their future career. Prescription knowledge is an art, and medical and dental students should be aware of the various aspects of the prescribed drugs for the effective management of the condition for which the drug is prescribed. This study shows that the level of knowledge of drug prescription among the dental and medical students is moderate.

Keywords: Prescription, self-medication, polypharmacy, antibiotics, NSAID's

Introduction

Prescribing drug is generally done by professional and qualified doctors and dentists.^[1] The primary prevention by giving prescription may influence their patient's health.^[2,3] Although undergraduate of health-care students is not allowed to prescribe drugs, they are trained to prescribe drugs under the supervision of a clinical teacher.^[1] The training will help them to practice for their future patients. Besides, it is important for the graduates to get information about latest medicines and have strong knowledge about the drug action and principle of therapeutics to give quality health in the future developments.^[3]

Prescribing is an act of indicating one or more drugs to be administered by the patient, its dosage and the duration of the treatment.^[4]

Prescription has unique characteristics, but cultural, social, economic, and promotional factors may affect this action.^[5] It is an important skill which depends on the knowledge of drugs, pharmacodynamics, it benefits and adverse effects of drugs.^[6]

In dental practices, dental medications such as antibiotics and analgesics are essential for management of pain and infection.^[7] However, antibiotic prescribing in dentistry is generally empiric which means that the responsible organism is unknown. Thus, broad spectrum antibiotics are commonly used.^[8]

In India, problem-based learning is the current teaching method in various dental and medical colleges.^[4] 2nd year students will take pharmacology course which focused on general pharmacology, where they learn about medical and dental issues.^[9] It helps the student to think critically to provide a precise diagnosis and appropriate prescription for their patient.^[4]

It is important for the health science students such as medical, dental, pharmacy, and nursing students to have knowledge and attitudes toward medication used to maintain the safety of the patient.^[10] Therefore, the aim of this study is to assess the level of knowledge of drug prescription among dental and medical student in India during their clinical year.

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Materials and Methods

This cross-sectional study was conducted in 10 dental and 10 Medical College in India. It was done to evaluate the knowledge and behavior of dental and medical students in India. An online survey was used as a medium to frame 14 questions related to the knowledge of drug prescription and some demographic questions (Table 1). The survey was distributed among students who have started their clinical year including 3rd year to interns who were willing to participate in this study.

Results

A total of 108 students in medicine and dentistry field consisting of male (32%) and female (68%) have participated in this study (Figure 1). The questionnaires were given to the clinical students in their 3rd and 4th year and internship (Figure 2). In this study, 64% medical students and 36% dental students were participated (Figure 3).

The most common reason for giving prescription to the patients among dental students was pain (62%) followed by infection (26%),

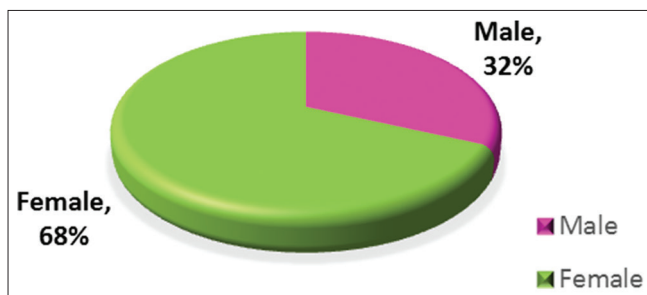


Figure 1: The gender of the students who participated in this study

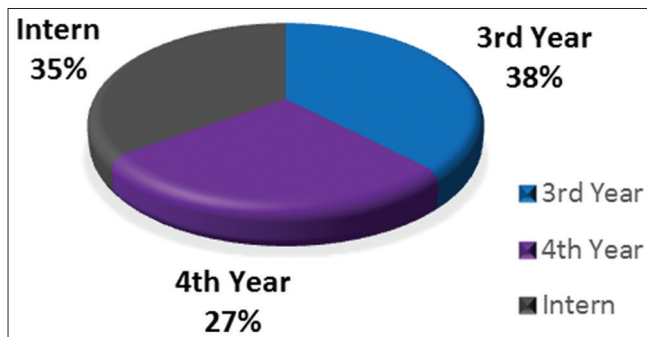


Figure 2: The year of study of the students who participated in this study.

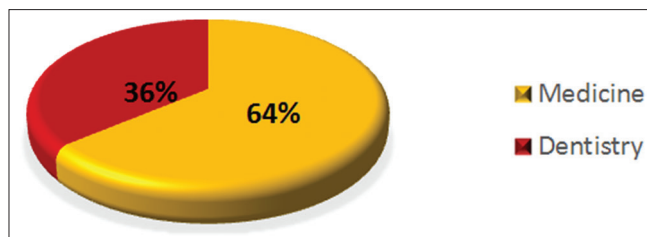


Figure 3: The field of study of the students who participated in this study

and only 12% have not prescribed any drugs. On the other hand, approximately 52% of medical students choose others as an option. Most of them have not prescribed any drugs (Figure 4). The most common reason among medical students was pain (32%) and infection (16%) (Figure 4). 99% of medical and 100% of dental students knew that general considerations such as past medical and dental history should be taken before prescribing drugs to the patients (Figure 5).

Among the medical students, only 9% of them have prescribed antibiotics to the patient. However, the percentage is higher among dental students in which 41% of them have prescribed antibiotics (Figure 6). For NSAIDs, almost 23% of medical and 38% of

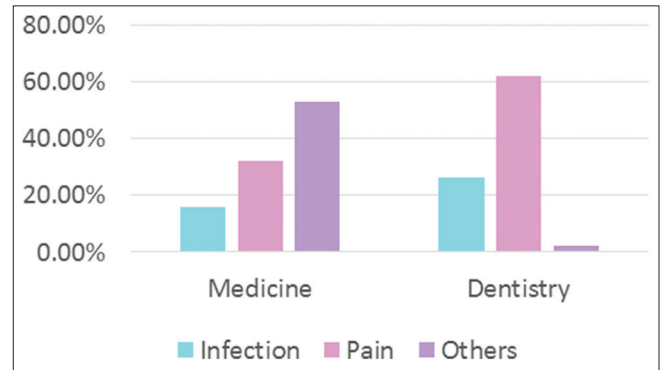


Figure 4: The reasons for drug prescription

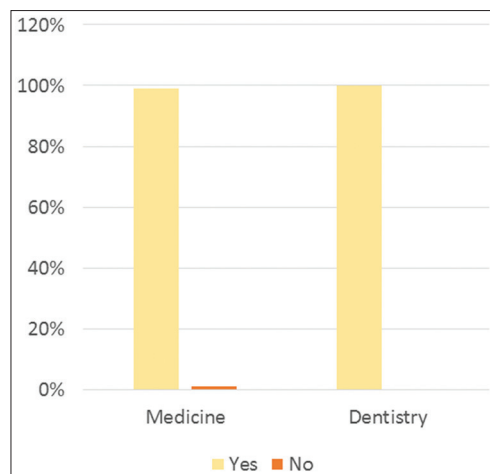


Figure 5: The consideration of general factors such as past medical and dental history.

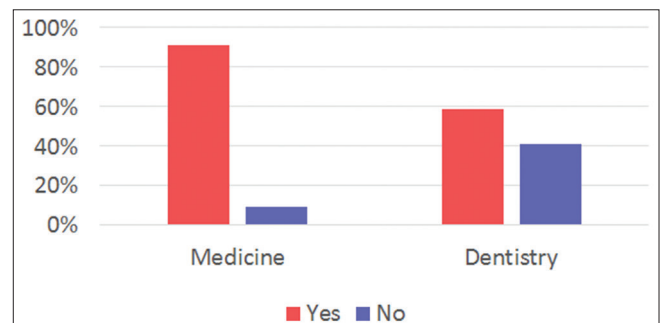


Figure 6: Percentage of the students who have prescribed antibiotics

dental students have prescribed the drugs (Figure 7). The most common source of information about drug prescription is from the pharmacology course (32%), professors (28%), official books (24%), medical representatives (13%), and classmate (3%) (Figure 8).

The most common mistakes done by the students were not asking the patients about allergy (26%), followed by not knowing what to prescribe (21%), wrong dosage (17%), and wrongly filled the

prescriptions (7%) (Figure 9). The awareness of the World Health Organization (WHO) guidelines among medical students (65%) is higher compared to dental students (58%) (Figure 10). Besides, almost 74% of dental students knew about the dose need to be given to the patient compared to 62% of medical students (Figure 11). The knowledge on the frequency of drug to be prescribed among dental students (82%) is significantly higher than medical students (67%) (Figure 12). There is a slight difference between medical (91%)

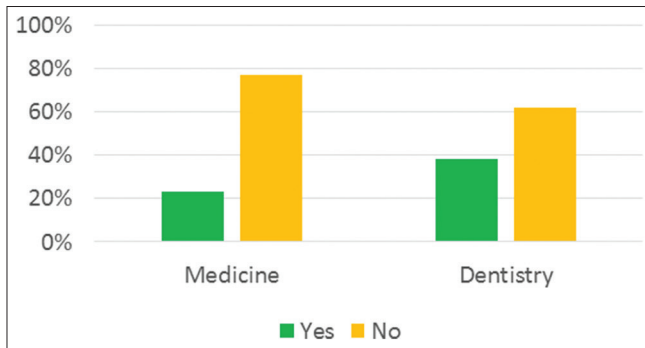


Figure 7: Percentage of the students who have prescribed NSAID's.

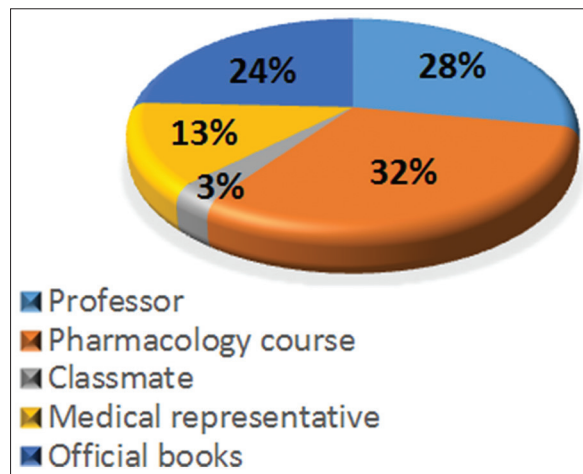


Figure 8: The sources of information on drug prescription

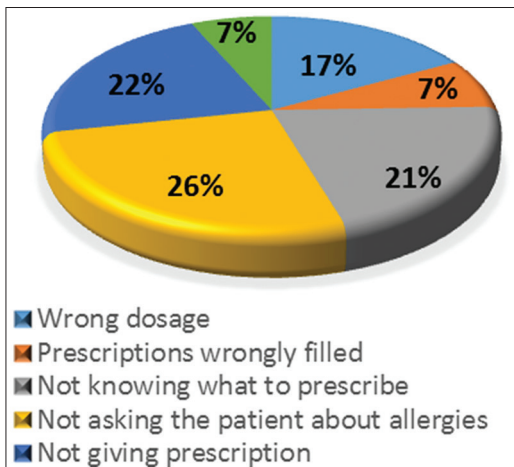


Figure 9: Mistakes done by the students while prescribing drugs.

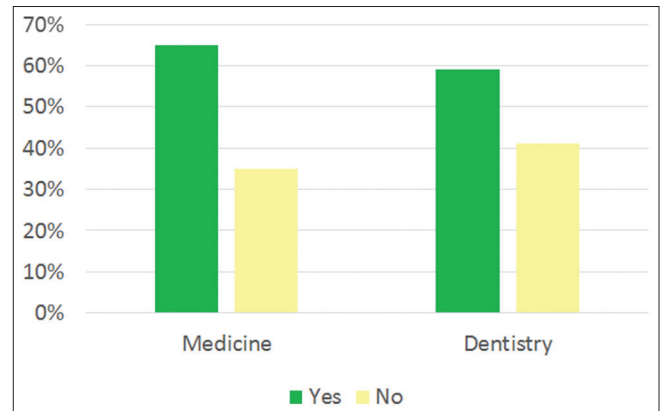


Figure 10: Percentage of students aware of the World Health Organization guidelines among students.

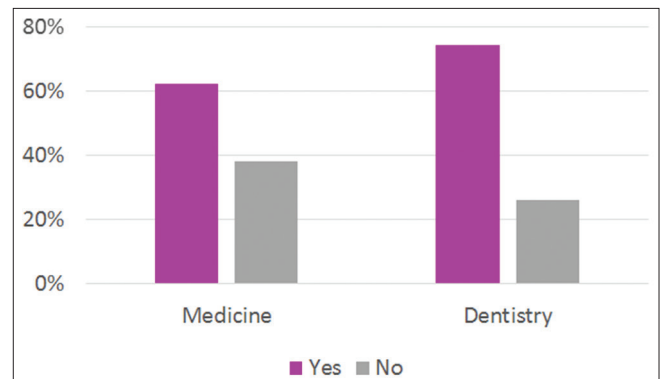


Figure 11: Percentage of students on knowledge of dosage of the drugs prescribed

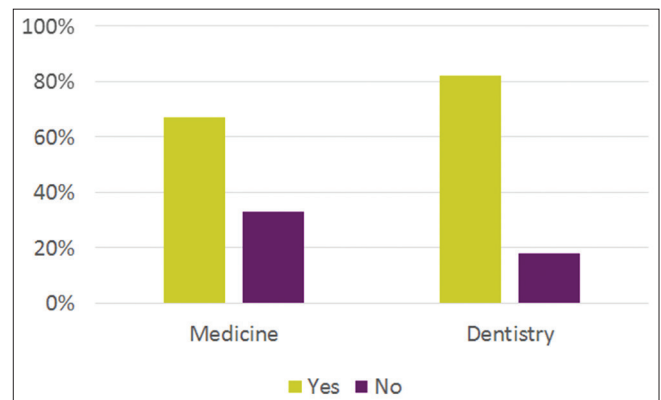


Figure 12: Percentage of students on knowledge of the frequency of the drugs prescribed

and dental students (92%) on their knowledge about the route of administration of the drugs prescribed (Figure 13).

In case of emergency due to the presence of side effects of the wrongly filled drugs prescription, only 9% of medical students and 38% of dental students have come across this situation (Figure 14). The awareness of the drug interactions due to polypharmacy, medical students (74%) was highly aware compared to dental students (44%) (Figure 15). In a situation in which the students have to tell about the side effects of the drugs prescribed, 83% of medical students and 69% of dental students were aware about it (Figure 16). Finally, 96% of the

students whom participated in this study believed that pharmacology course is really important to their future career (Figure 17).

Discussion

In India, the students take pharmacology courses in the 2nd year BDS and MBBS which covers prescription writing and knowledge about all aspects of drugs.^[4] It is important to develop the awareness of the drug prescription at the earliest before they enter their clinical years. Students initially prescribe drugs under the supervision of the staff.

Before prescribing drugs, it is essential for the prescriber to get an accurate medication history to avoid incorrect treatment, wrongly prescribed drugs or wrong dosage.^[11] History taking is also important in polypharmacy which is common among elderly patients with chronic disease which also may lead to adverse drugs effect.^[12] Using polypharmacy or prescribing more than one drugs for one indication may prevent a rational prescribing attitude.^[13] Common mistakes done during prescription by the students were due to unawareness of patient allergies which may lead to toxicity.^[4,14,15] These mistakes done by the students may be reduced by implement of the study based on blended learning. The study conducted by Eachempati *et al.*^[16] showed that there was an improvement in drug selection and prescription writing among the medical students. Based on this study, pharmacology course is chosen as the source of drugs prescription information. Therefore,

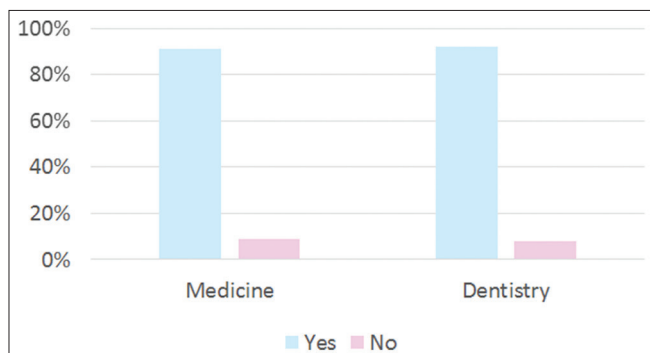


Figure 13: Percentage of students on knowledge of route of administration of the drug prescribed

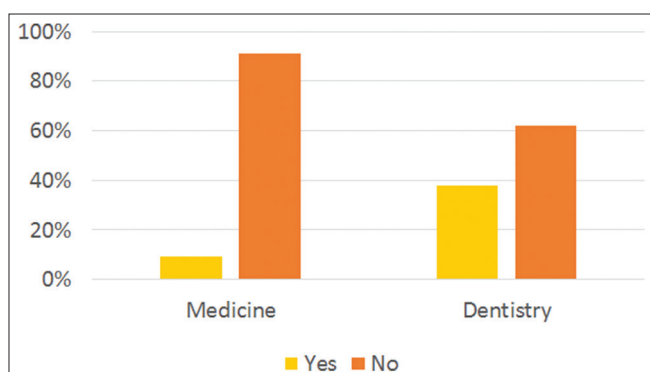


Figure 14: Percentage prescribed of students who had come across emergency situation due to wrong drug

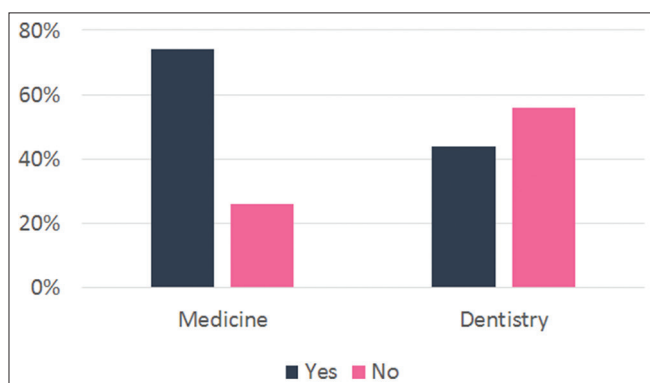


Figure 15: Percentage of students who were aware about the drug interactions due to polypharmacy.

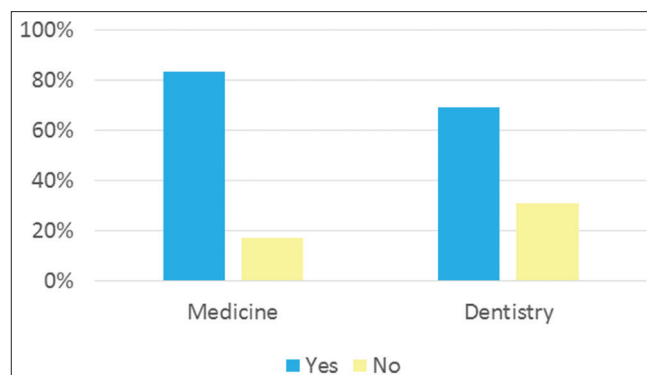


Figure 16: Percentage of students whom tell the patients about side effects of the drugs

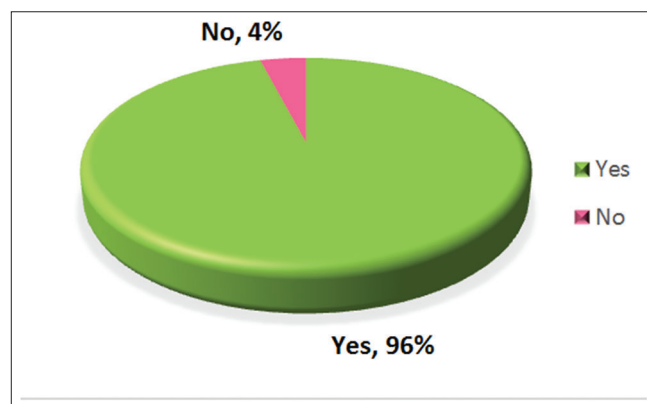


Figure 17: Percentage of students who believe that pharmacology is important for their future career

Table 1: Demographic and knowledge of drug prescription questions and its results

Questions	Percentage (%)	
Gender	Male (32) Female (68)	
Year of study	3 rd year (38) 4 th year (27) Internship (35)	
Field of study	Dentistry (36) Medicine (64)	
Sources of drug prescription information	Professor (28) Pharmacology course (32) Classmate (3) Medical representative (13) Official books (24)	
Common mistakes during prescription	Wrong dosage (17) Prescriptions wrongly filled (7) Not knowing what to prescribe (21) Not asking the patient about allergies (26) Not giving prescription (22) Others (7)	
Why do you prescribe drugs to the patient?	Medicine	Dentistry
General factors consideration	Pain (32) Infection (16) Others (52) Yes (99) No (1)	Pain (62) Infection (26) Others (12) Yes (100) No (0)
Antibiotics prescription	Yes (9) No (91)	Yes (59) No (41)
NSAIDs prescription	Yes (23) No (77)	Yes (38) No (62)
WHO guidelines	Yes (65) No (35)	Yes (59) No (41)
Dosage prescribed	Yes (62) No (38)	Yes (74) No (26)
Drug frequency	Yes (67) No (33)	Yes (82) No (18)
Route of drug administration	Yes (91) No (9)	Yes (92) No (8)
Side effects or emergencies due to wrong prescription	Yes (9) No (91)	Yes (38) No (62)
Drug interaction due to polypharmacy	Yes (74) No (26)	Yes (44) No (56)
Common side effect expected from the medicine	Yes (83) No (17)	Yes (69) No (31)
Pharmacology for future	Yes (96) No (4)	

the improvement in teaching has a significant role in the knowledge of prescription among the dental and medical students.^[17]

The most common health conditions treated among both medical and dental students were pain which is in agreement with Jain *et al.*^[4] whereas there was a disagreement with Guzmán-Álvarez *et al.*^[9] Based on this study, the most prescribed antibiotics among dental students were amoxicillin which has a similar results with Jain *et al.*^[2,4] and George *et al.*^[15] This antibiotic is the first choice of drug to be prescribed.^[18] However, unnecessary prescription of antibiotics should be avoided as it may increase bacterial resistance.^[13,15,19] Nowadays, self-medication is preferred as it is widely available in the pharmacies or other general retail outlets.^[20] Toothache is the most common

reason why dental patients take self-medication instead of seeing the dentist for treatment.^[20] In this study, the NSAID's drugs prescribed by the students were paracetamol, diclofenac sodium, ibuprofen, aspirin, and zerodol p which is almost similar to the study conducted by Ravinthar, in which paracetamol, ibuprofen, and diclofenac sodium were the most common drug prescribed by the students.^[21]

WHO has recommended guidelines on drug prescription which should include the identity of the clinician and patient, method of administration, pharmaceutical form, its dosage, frequency, duration of the treatment, and advices to patients.^[17,22] Emergencies during medical and dental treatment may arise due to wrong prescriptions. During dental treatment, several emergency cases may arise such as syncope, postural hypotension, swallowed foreign bodies, bronchospasm, anaphylaxis, hypoglycemia, seizures, angina pectoris, and cardiac arrest.^[23] Therefore, various programs on handling medical emergencies can be established to improve the knowledge and skills of the students such as workshops and assessment on practical skill.^[24]

Conclusion

This study shows that the level of knowledge of drug prescription among the dental and medical students is moderate. However, medical students should have a higher level of knowledge on prescription as they may encounter many cases. Prescription knowledge is an art, and medical and dental students should be aware of the various aspects of the prescribed drugs for the effective management of the condition for which the drug is prescribed.

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