

# Knowledge of Drug Prescription in Dental Students of Punjab Pakistan

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## ABSTRACT

**Aim:** To determine the knowledge of drug prescription among dental students of Punjab Pakistan

**Design:** Cross- Sectional Survey

**Duration:** June to July 2017

**Setting:** de'Montmorency College of Dentistry, Lahore, Lahore Medical and Dental College Lahore, Multan Medical and Dental College Multan.

**Methods:** A self-administered questionnaire consisting of 10 open questions on knowledge of drug prescription was distributed among final year BDS students..

**Results:** A total 66 students participated in this study. The most frequent response was considered as most significant. The most common reason for prescribing medications was infection (57.6%) followed by Pain (39.4%).the most common painkiller was paracetamol (37.8%) followed by flurbiprofen (25.7%) and naproxen (16%); the most widely prescribed antibiotics were amoxicillin (46.9%) followed by co-amoxiclav (37.9%) and metronidazole (9.1%).The most frequent errors reported by the students were lack of knowledge about drug posology (60.6%) followed by wrong duration of drug (12.1%).The source of information for drug prescription was taken by the students from their teachers (43.9%) followed by pharmacology books (18.2%) and course (12.1%). Only 22.7% students have knowledge about WHO guide to good Prescription.

**Conclusion:** we concluded that knowledge of drug prescription among dental students of Punjab have some gapes which can affect the patient's safety. More studies needed on this issue. WHO Guide to Good Prescription is best tool to improve drug prescription skills.

**Key words:** Drug prescription, dental students and dentistry

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## INTRODUCTION

Prescribing in the act of suggesting one or more drugs to be administered to or taken by the Patient, its proper dose, and duration of treatment<sup>1</sup>. Prescribing appropriate drugs in correct doses is an essential part by which a physician may influence their patient's health<sup>2</sup>. It is an individualized and dynamic process and every doctor will have to be a "specialist" in drug prescribing.<sup>3</sup> In spite of their unique characteristics, prescription patterns may be influenced by social, cultural, economic, and/ or promotional factors<sup>4</sup>. Prescribing is a mandatory skill for doctors in nearly all medical specialties<sup>1,3</sup>. Error in prescription may be a reason for rise in reported hospital adverse events, medico-legal problems,

aggravation or persistence of illness, ineffective treatment, distress to the patient and increased cost<sup>1,2</sup>. Errors in prescription is common around the globe<sup>5,6</sup>. At undergraduate level, dental students study pharmacology in second year and implicate it clinically in third and final year. During these years, students are exposed to clinical practice (exodontia, endodontics, periodontal surgery) and they prescribe the drugs to the patient under direct supervision of professors and demonstrators<sup>4</sup>.

The term rational drug prescription means as using the least number of drugs to obtain the best possible effect in the shortest period and at a reasonable cost<sup>7,8,9</sup>. The knowledge and skills of drug prescription of medical students and interns should be regularly assessed to minimize errors<sup>10,11,12</sup> A thorough knowledge of principles of drug prescription, therapeutics, commonly used drugs and the mechanism of action of different drugs are essential for all medical graduates<sup>3</sup>.

The most commonly prescribed drugs in dentistry are local anesthetics used during dental procedures, antibiotics and Non-Steroidal Anti-inflammatory Drugs (NSAIDs)<sup>4</sup>. It is utmost important that to have accurate knowledge of the safe doses of

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these drugs, their toxic and side effects<sup>4</sup>. These drugs can be harmful to the patient if prescribed inappropriately<sup>7</sup>. Thus, the knowledge of pharmacology and prescription writing is most important component of undergraduate teaching curriculum where students learn about the art of prescription writing and different drug formulation<sup>2,3</sup>.

Even though, prescription in dental practice provide short term relief or treatment specifically for dental surgical procedure, still dentists need to have a detailed knowledge about drugs they are prescribing and should be aware of international rules of drug prescription.<sup>4</sup> Evidence suggest that in some countries like Mexico, dentist are prescribing medications without proper knowledge thus making prescription error<sup>13,14,15,16</sup>.

The aim of the present study was to assess the prescription knowledge and common errors made by final year students in three dental colleges of Punjab.

## MATERIALS AND METHODS

A pilot study was conducted. The present cross sectional study on the knowledge related to drug prescription was approved by the institutional Review board of the dental colleges. A semi structured pretested questionnaire with 10 open ended questions was used for the study as previously used by Jain et al.<sup>1,7</sup> The content validation of the questionnaire was performed by a group of 4 experts, all of whom were assistant professors of the dental colleges.

The study was conducted in three colleges of Punjab which are de'Motmorency College of Dentistry Lahore, Lahore Medical and Dental College Lahore, Multan Medical and Dental college Multan from 1st June 2017 to 1st July 2017. The questionnaire was distributed among 66 students of three dental colleges. Informed consent was obtained from the participants before administration of questionnaire.

Data analysis was performed using SPSS version 24 and data was presented in tabular and graphic form.

## RESULTS

66 Final year students from three dental colleges participate in the study. 28 students from Multan Medical and Dental College, 20 students from de'Montmorency College of Dentistry, 18 students from Lahore Medical and Dental College Lahore willingly participate in this study. There was 41 (62.12%). Females and 25 (37.88%) male students in this study. Mean age of the students in this study was  $22.58 \pm 1.024$  (Fig. 1,2)

Most common reason for drug prescription was infection 38(57.6%) followed by pain 26(39.4%) and others 2(3%) as described by the students in this

study. (Fig. 3) It has been noted in this study that most of the students used trade (brand) name for prescription rather than generic name.

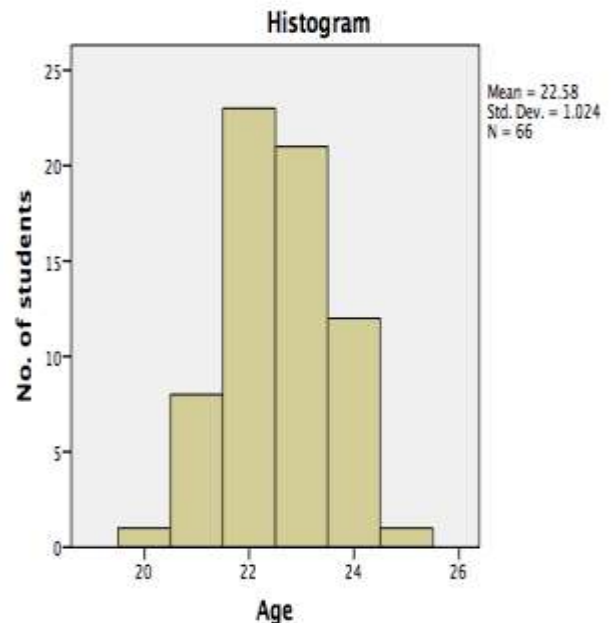
Most common painkiller prescribed by the students in this study was Paracetamol 37.8% (22 students use trade name and only 3 students use generic name) , followed by Flurbiprofen 25.7% (all the students use trade name) , Naproxen 16% ( all students use trade name), ibuprofen 13.6% (8 student use trade name while only one student use generic name for prescription) and other painkillers 6%. (Fig. 4) Out of 66 students in this study, 58(87.87%) student prescribe painkiller with trade name and only 8(12.12%) students use generic name for prescription.

Most common antibiotic prescribed by students was amoxicillin 46.9% (28 students use trade name while only 3 students use generic name), followed by co-amoxiclav 37.9% (all students use trade name), Metronidazole 9.1% (6.1% students use trade name while 3.0% use generic name), 6% use polypharmacy for prescription. In this study, 58 (87.87%) students prescribe antibiotic with trade name while one 8 students use generic name for antibiotic prescription.

The most frequent errors made by the students were: wrong drug posology 60.6% followed by wrong duration of drug 12.1%, not taking drug allergy history 7.6% and others (Fig. 6).

Teachers (43.9%) were the main source of information about drugs for the students followed by books (18.2%), pharmacology course (12.1%), internet (12.1%) and others (Fig. 7).

Fig.1:



22.7% (15 students) have knowledge about WHO guide for good drug prescription while 77.3% have no knowledge about this guide (Fig. 8). 83.3% have known about drug dosage while 16.7% have no knowledge about drug dosage. 72.7% students answered that they know how many time the drug has to be prescribed. 62.1% have students answered that they know about duration of drug treatment while 37.9% have no knowledge about duration of drug treatment. 59 students (89.4%) know about different routes of drug prescription while only 7 students (10.7%) said that they have no knowledge about different routes of drug delivery.

Fig. 2: Gender

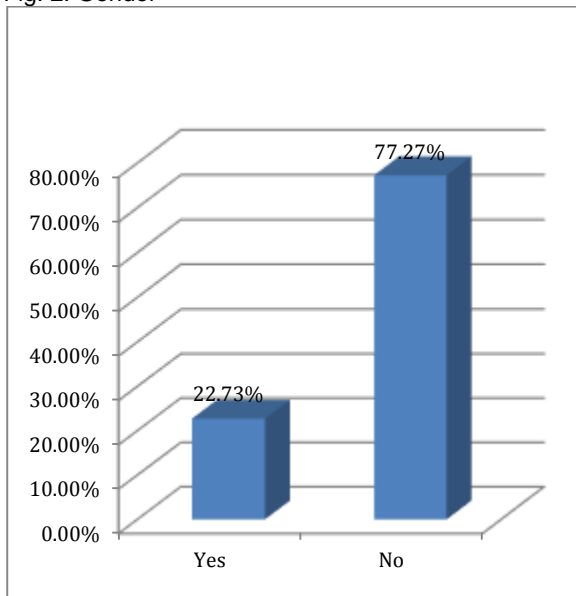


Fig 3: Question 1: What is the most common (dental) health condition that require drug prescription.

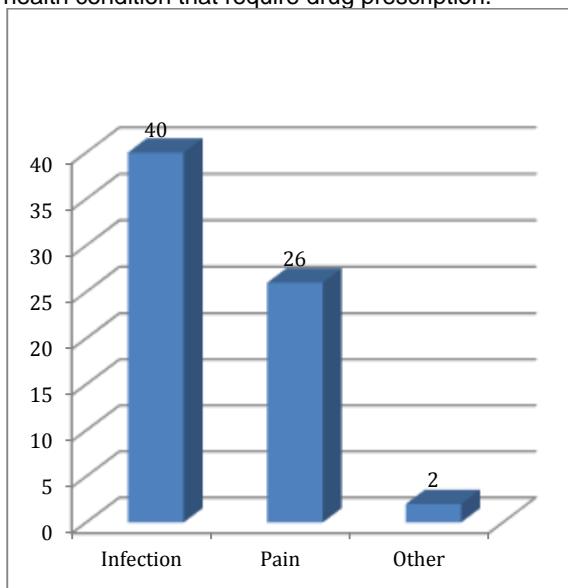


Fig. 4: Question 2: What is the most common painkiller you prefer to prescribe?

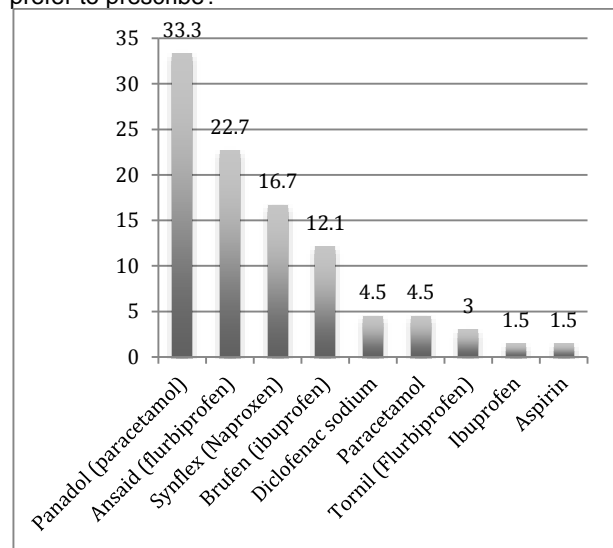


Fig 5: Question 3: What is your antibiotic of choice for dental patients?

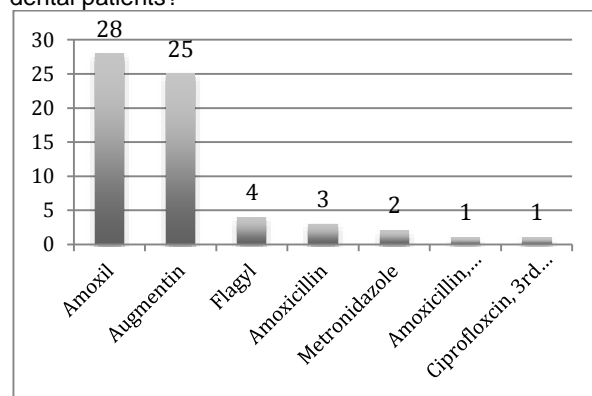


Fig. 6: Question 4: What is the most frequent error/errors you encounter during drug prescription?

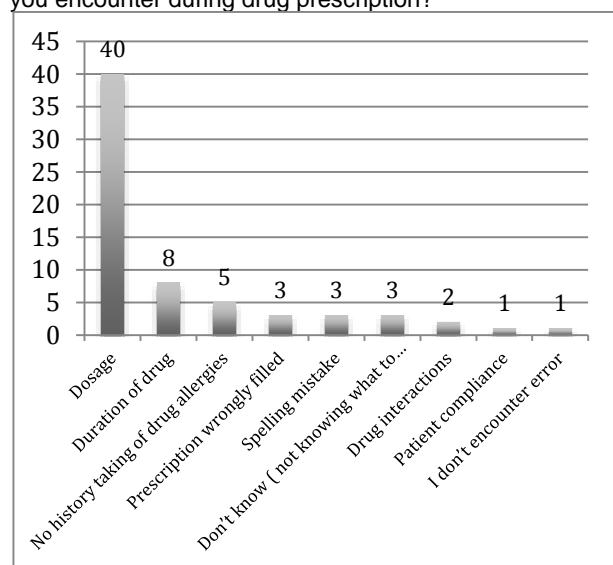


Fig. 7: Question 5: Where do you get the information about drug prescription?

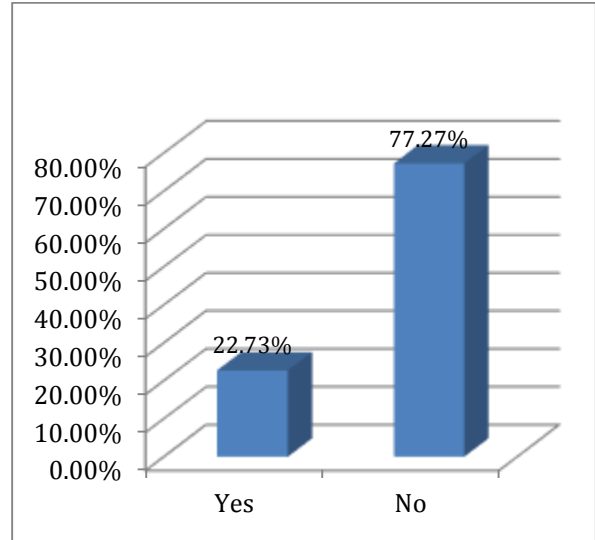
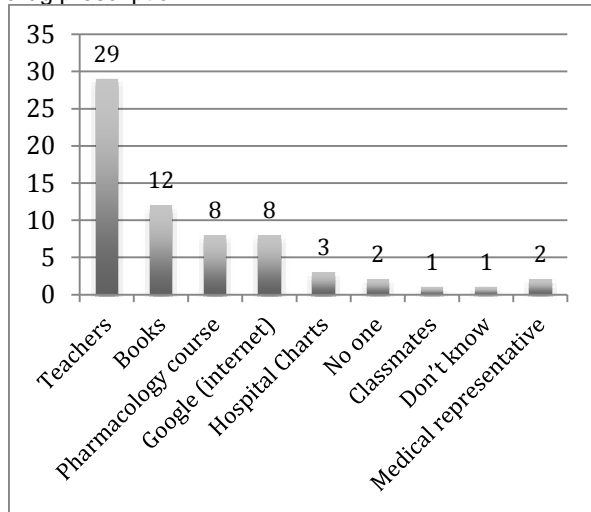


Fig. 8: question 6: Do you know about WHO guide to good drug prescription?

Table 1:

Question	N	(%)
<b>1.what is the most common (dental) health condition that require drug prescription:</b>		
Infection	38	(57.6)
Pain	26	(39.4)
Other (not related to oral health)	02	(3.0)
<b>2.What is the most common painkiller you prefer to prescribe?</b>		
Panadol (paracetamol)	22	(33.3)
Ansaid (flurbiprofen)	15	(22.7)
Synflex (Naproxen)	11	(16.7)
Brufen (ibuprofen)	8	(12.1)
Diclofenac sodium	3	(4.5)
Paracetamol	3	(4.5)
Tornil (Flurbiprofen)	2	(3.0)
Ibuprofen	1	(1.5)
Aspirin	1	(1.5)
<b>3.what is your antibiotic of choice for dental patients?</b>		
Amoxil	28	(42.4)
Augmentin	25	(37.9)
Flagyl	4	(6.1)
Amoxicillin	3	(4.5)
Amoxil, Flagyl	2	(3.0)
Metronidazole	2	(3.0)
Amoxicillin, Metronidazole	1	(1.5)
Ciprofloxacin, 3rd generation cephalosporin	1	(1.5)
<b>4.What is the most frequent error/errors you encounter during drug prescription?</b>		
Dosage	40	(60.6)
Duration of drug	8	(12.1)
No history taking of drug allergies	5	(7.6)
Prescription wrongly filled	3	(4.5)
Spelling mistake	3	(4.5)
Don't know (not knowing what to prescribe)	3	(4.5)
Drug interactions	2	(3.0)
Patient compliance	1	(1.5)
I don't encounter error	1	(1.5)
<b>5. Where do you get the information about drug prescription?</b>		
Teachers	29	(43.9)
Books	12	(18.2)
Pharmacology course	8	(12.1)
Google (internet)	8	(12.1)
Hospital Charts	3	(4.5)
No one	2	(3.0)
Medical representative	2	(3.0)
Classmates	1	(1.5)

Don't know	1	(1.5)
<b>6. Do you know about WHO guide to good drug Prescription?</b>		
Yes	15	(22.7)
No	51	(77.3)
<b>7. Do you know about the doses of drugs you commonly prescribe?</b>		
Yes	55	(83.3)
No	11	(16.7)
<b>8. Do you knowledge about the frequency of drugs you commonly prescribe?</b>		
Yes	48	(72.7)
No	18	(27.3)
<b>9. Do you know about the duration of drugs you commonly prescribe?</b>		
Yes	41	(62.1)
No	25	(37.9)
<b>10. Do you know about different routes of drug delivery?</b>		
Yes	59	(89.4)
No	7	(10.6)

## DISCUSSION

Higher Education Commission (HEC) formulated the curriculum for Bachelor of Dental Surgery (BDS). It is implemented through Pakistan Medical and Dental Council (PMDC). Students in their second professional of Bachelor of dental surgery (BDS) study general as well as dental pharmacology including prescribing and knowledge regarding pharmacodynamics and pharmacokinetics of drugs.<sup>4</sup> It is the responsibility of the universities, dental colleges and the faculty to educate the students in a professional manner so that they can prescribe the medications in their clinical practices in a highly skilled and professional way.<sup>4,7</sup> Students are not entirely responsible for prescribing as they prescribe under the guidance of faculty members (seniors, teachers)<sup>7</sup>.

Many deficiencies noticed in drug prescription in different parts of the world<sup>13,14,15,16</sup>. This is a multicenter study which investigates the knowledge of final year dental students about drug prescriptions and prescribing errors encountered in Punjab.

The most common reason for drug prescribing in this study was infection (57.6%) which was in accordance with Guzman Alvarez et al study in which he also found as infection (56%) as the primary reason for drug prescription<sup>4</sup>. As infection leads to pain, it should always be treated<sup>1,4</sup>. Although Pain is the most frequent reason for patients to visit dentist, infection is one of the reason for pain<sup>4</sup>. This study was in contrast with Jain et al studies in which they found that pain in the most common reason for prescription.<sup>1,7</sup> Second most common reason for drug prescription in this study was also pain. Appropriate diagnostic procedures should be taken to differentiate between different origins and type of pain so that best possible treatment can be offered to the patients<sup>4,17</sup>.

Most of the students prescribe Paracetamol (37.8%) as the most common painkiller. This is in accordance with Guzman Alvarez et al in which paracetamol (37.8%) is most commonly prescribed NSAID by the students<sup>4</sup>. This is in contrast with Jain

et al study in which most of students prescribe Dicofenac as the Painkiller<sup>1,7</sup>. Second most common painkiller prescribed by the students in this study is Flurbiprofen (25.7%) which is in contrast with Guzman Alvarez et al and Jain et al study in which students prescribe ibuprofen (37.8%) and diclofen as second most common NSAIDs<sup>1,4,7</sup>. Paracetamol has less anti-inflammatory properties but it can be prescribe alone or in combination with other NSAIDs<sup>4,17,18</sup>. Flurbiprofen is more potent than ibuprofen that might be the reason of prescription. The prescription of NSAIDs for a particularly patient depends upon the knowledge of pharmacokinetic and pharmacodynamics of the particular NSAIDs and these NSAIDs share common properties and small differences between the drugs<sup>17</sup>.

In this study, 87.87% students use trade name for drug prescribing while only 12.12% students prescribe NSAIDs with their generic name. This is in contrast with most of the international studies in which all the students prescribe NSAIDs with the generic name<sup>1,4,7</sup>.

As infection was the most common health condition in this study and the antibiotic of choice for infection treatment in this study was found to be Amoxicillin (46.9%). This is in accordance with Guzman Alvarez et al, Jain et al and most of the other studies<sup>1,4,7</sup>. The second most common antibiotic in this study was Co-amoxiclav (37.9%) which is contrast with other studies in which ampicillin and penicillin v was the second most common antibiotics<sup>1,4,7</sup>. As with Painkiller, 87.87% students use trade name (brand name) for antibiotic prescription.

60.6% students acknowledged that lack of awareness about drug posology as the most common prescription error which is in total agreement with the previous studies<sup>1,4,7</sup>. This is a major concern because it affects patient's health and safety<sup>4</sup>. The patient's health condition affects with too low dose, short duration of treatment, extended drug administration and it further complicated the health condition<sup>4</sup>. Toxicity may occur with high doses of drug, long

duration of treatment, short interval between the administration of drug<sup>19</sup>. Most of the students use brand name for drug prescription which is not found in other studies<sup>1,7</sup>. World Health Organization (WHO) guide to good prescription recommends making a customized list including the essential drugs for each medical professional who prescribes drugs at their clinic<sup>20</sup>.

43.9% students in this study gather information of drug prescription from their teachers, professor, demonstrators which is in total agreement with previous studies<sup>1,4,7</sup>. To acquire the knowledge of drugs from their teachers at the stage of students development is good but it has been noticed that still most of the students rely on books, pharmacology course and internet which is quite less as compared to previous studies<sup>1,7</sup>.

WHO guide to good prescribing provides with step by step guidance to the process of reasonable prescribing, together with many illustrative examples<sup>20</sup>. It teaches skills necessary throughout the clinical career. This guidance not only help professionals but also students to prescribe any medication. 77.3% students in this study have no knowledge about this WHO guide which is more than previous studies<sup>1,4</sup>. Only 22.7% students know about WHO guide which is also very low as compared to Guzman Alvarez et al study but high as compared to Jain et al study<sup>1,4</sup>. Knowledge about dosage of drug commonly prescribed (83.3%), frequency of drug prescribed (72.7%), duration of prescribed drug (62.1%) and different routes of drug prescription (89.4%) was found to be good in this study. This is quite high as compared to previous studies<sup>1,7</sup>.

Limitation of the study was that the sample size was small because it was a pilot study. Second limitation of the study that it consists of 10 open ended questions. The inborn problem with the open ended questions is that the students can answer however they wish.

## CONCLUSION

In conclusion, the knowledge of pharmacology and its clinical implications among final year students of dental colleges has gaps that can affect the patient's health care. The knowledge of prescribing drugs is of utmost need for good clinical practices and it is essential to expand the knowledge of pharmacology and drug prescription guidelines. WHO Guide to Good Prescription is one of the best tools to begin the journey. Further studies are needed to determine whether this issue affects the quality of patient care, the effectiveness and safety of the treatment.

**Conflict of Interests:** None

**Financial Disclosure:** No relevant financial interests

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