



Awareness and Prescription patterns of drugs among dental students of India

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ABSTRACT:

Introduction: Drug Prescription is a written order about administration of a medicine to be carried out by a health personnel in the course of treatment for a specific patient. The study was conducted to ascertain and evaluate awareness regarding prescription knowledge and the pattern of prescription by dental students. **Methodology:** A total of 349 responses obtained from an online survey as given by third-, fourth-, and intern-year dental students in India formed the study sample. A 14 variable questionnaire was constructed and validated for assessing the drug prescription awareness and pattern. Chi square test was applied to find significant differences between the years. **Results:** Drugs were most commonly prescribed for infections by 145 (41.5%) of the student. Interns had better knowledge as compared to third- and fourth-year students. All students were aware of antibiotic resistance. A combination of amoxicillin and clavulonic acid was the preferred antibiotic and paracetamol the preferred analgesic. **Conclusion:** Dental students had moderate knowledge about prescription pattern of medication.

Keywords: prescription, antibiotics, analgesics, medicine, dentistry

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Introduction:

Drug prescription is primarily employed by the doctors to improve patients' health. Though these medications often help patients, they also carry the risk of some adverse effects. Most of the time, the health practitioners' interventions revolve around

prescribing medication, irrespective of the speciality they pursue further. [1] Most interns and family physicians don't know that errors in prescribing medicines may play a major role in the alarming rise in reported hospital adverse events and consequent medico-legal issues. Some of

the prescribing mistakes are under prescribing, overprescribing, inappropriate prescribing, and irrational prescribing.

A prescription is a legitimate, official document. The prescription order is a significant exchange between the patient and the doctor. [2] The words "prescription" and "script," which stand for writing and before respectively, signify that a written order is required before or for the manufacturing and administration of a medicine. A prescription is described as a health-care course carried out by a doctor in the form of guidelines that direct the course of treatment for a specific patient. [3] The core of a successful prescription is to make sure that the patient receives precise written instructions for self-administration of the prescribed drug and that the doctor knows exactly the drug formulation and dosage to deliver. The term "prescribing" is often used to refer to specific actions, such as the distribution of medications and medical equipment. It refers to any type of written guidance or information given to patients.

A student who enrolls in a Bachelor's degree programme in dentistry studies for five years. They learn about fundamental medical topics like anatomy, physiology, pharmacology, microbiology, and pathology in their first and second years of study. Dental students begin working with patients from the various clinical courses in the third year and enter clinics (oral surgery, endodontics, dental surgery). At this point, they frequently prescribe medications while working under the oversight and direction of academics.

Local anaesthetics, antibiotics, and NSAIDs are the most often recommended medications in dentistry. Due to the properties of these medications, it's crucial to calculate precise doses and be aware of any negative or harmful effects. Hence the present study was conducted to answer the research question "What is the prescription pattern of drugs among dental students of India?"

Methodology:

A cross sectional study was employed to evaluate the knowledge regarding drug pattern prescription among dental students. A convenient sampling technique was followed, wherein the questionnaire was circulated through social media platform to students of dental college across India via google forms. Confidentiality of every participant was ensured. Only those questionnaires completed were included for the final analysis. Students of third year, final year and interns were included.

A 14 variable questionnaire was designed for the present study eliciting details on dosage, duration, pattern, indication and contraindications of drugs used for dental practice. The constructed questionnaire was testing for face validity using Cohen's Kappa, which had a value of 0.78 suggesting acceptable inter-rater agreement. Content Validity Ratio was used to verify the content validity. The Lawsche approach was used to analyse the content validity ratio (CVR), which was computed using the formula

$$CVR = \frac{ne - (N/2)}{N/2}$$

N is the total number of expert panel members, and ne is the number of members signifying "essential." CVR rating was 0.82, and every question was marked "essential" by the expert panel. To ensure the questionnaire was feasible, it was then pilot tested on a set of 20 students. The data obtained was subjected to statistical analysis using Statistical Package for the Social Sciences (SPSS Version 23; Chicago Inc., IL, USA). Data comparison was done by applying specific statistical tests to find out the statistical significance of the comparisons. Chi square test was used to find differences for each variable between groups. P value lesser than 0.05 was considered to be statistically significant.

Results:

A total of 349 responses were considered for the final survey, of which 107 were third year dental students, 119 fourth year and 123 pursuing internship.

Infection was the common reason for drug prescription (41.5%), followed by swelling. While third and final year students prescribed drugs for pain, interns did it for infection which was statistically significant at $p=0.000$. Overall, 61.6% of them were aware of dosage. But when compared between the years, interns (94.9%) knew as against 45.7% of third

years and 44.5% of final years which was significant. The same result was found for duration of the prescription. The most commonly prescribed antibiotic was the combination of Clavulonic acid and Amoxicillin in 70.4% of the respondents followed by amoxicillin. Paracetamol was the most commonly prescribed analgesic by 39.5% of the students and was considered to be safe to be administered in pregnancy. Table 1 shows the responses for the questionnaire in all years among dental students.

Table 1: Responses of dental students for drug prescription pattern

Options	3 rd year N (%)	4 th year N(%)	Interns N (%)	Total N (%)	Chi square statistic	P value
The most common reason for prescribing drugs						
Infection	36 (24.8)	45 (31.0)	64 (44.2)	145 (41.5)	30.5336	0.000*
Pain	43 (46.2)	38 (40.8)	12 (13.0)	93 (26.6)		
Swelling	27 (25.4)	35 (33.0)	44 (41.6)	106 (30.3)		
Others	1 (20.0)	1 (20.0)	3 (60.0)	5 (1.6)		
Sources of information regarding prescription						
Teachers	41 (38.3)	45(37.8)	56 (45.5)	142 (40.6)	11.955	0.062 (NS)
Seniors	32 (29.9)	39 (32.7)	32 (26.0)	103 (29.5)		
Books	31 (28.9)	23 (19.3)	21 (17.0)	75 (21.4)		
Medical representative	3 (2.9)	12 (10.2)	14 (11.5)	29 (8.5)		
Are you aware of the dosage of the drugs prescribed						
Yes	49 (45.7)	53 (44.5)	113 (94.9)	215 (61.6)	73.594	<0.001*
No	58 (54.3)	66 (55.5)	10 (5.1)	134 (38.4)		
Are you aware of the rational prescription format as per WHO standards						
Yes	27 (74.8)	45(37.8)	84 (68.2)	156 (44.6)	46.381	<0.001*
No	80 (25.2)	74 (62.2)	39(31.8)	193 (55.4)		
Are you aware of the dosage of all prescriptions used in dentistry						
Yes	38 (35.5)	47 (39.4)	118 (95.9)	203 (58.1)	111.717	<0.001*
No	69 (64.5)	72 (60.6)	5 (4.1)	146 (41.9)		
Are you aware of the duration of all prescriptions used in dentistry						
Yes	41 (33.3)	58 (48.7)	102 (82.9)	201 (57.5)	52.418	<0.001*
No	66 (66.7)	61(51.3)	21 (17.1)	148 (42.5)		
Most commonly employed antibiotics in dentoalveolar infection						
Clavulonic acid + Amoxicillin	66 (61.6)	79 (66.3)	101 (82.1)	246 (70.7)	16.4577	0.03*
Amoxicillin	17 (15.8)	19 (15.9)	13 (10.5)	49 (14.0)		
Ciprofloxacin	13 (12.1)	12 (10.0)	7 (5.6)	32 (9.1)		
Erythromycin	8 (7.4)	5 (4.2)	1 (3.4)	14 (4.0)		

Metronidazole	3 (3.1)	4 (3.6)	1 (3.4)	8 (2.2)		
Antibiotic of choice in case of penicillin allergy						
Clindamycin	28 (26.1)	15(12.6)	97 (78.8)	140 (40.1)	154.5097	<0.0001*
Metranidazole	24 (22.4)	17 (14.2)	24 (19.5)	65 (18.6)		
No idea	55 (51.5)	87(73.2)	2 (1.7)	144 (41.3)		
Commonly prescribed NSAID						
Paracetamol	39 (36.4)	43 (36.1)	56 (45.5)	138 (39.5)	46.6312	<0.0001*
Ibuprofen	35 (32.7)	48 (40.3)	30 (24.3)	113 (32.3)		
Diclofenac	28 (26.1)	15 (12.6)	5 (4.0)	48 (13.7)		
Ketorolac	5 (4.8)	13 (10.9)	32 (26.2)	50 (14.5)		
Alternative medicine in case of NSAID failure						
Opioid	63 (58.8)	71 (59.6)	58 (47.1)	192 (55.0)	39.085	<0.0001*
Corticosteroid	22 (20.5)	41 (34.4)	62 (50.4)	125 (35.8)		
No idea	22 (20.7)	7 (6.0)	3 (2.5)	32 (9.2)		
Do you have any idea of anti – inflammatory medications						
Yes	23 (21.4)	43(36.1)	98 (79.6)	164 (46.9)	86.301	<0.0001*
No	84 (78.6)	76 (63.9)	25 (20.4)	185 (53.1)		
Conditions for which medications are mostly prescribed						
Pulpitis	35 (32.7)	36 (30.2)	54 (43.9)	125 (35.8)	10.404	0.034*
Periodontitis	32 (29.9)	41 (34.4)	43 (34.9)	116 (33.2)		
Impaction	40 (37.4)	42 (35.4)	26 (21.2)	108 (30.9)		
Are you aware of antibiotic resistance						
Yes	107 (30.6)	119 (34.0)	123 (35.4)	349 (100.0)	Not computed	-
No	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)		
Medications which are safe in pregnancy						
Paracetamol	94 (87.8)	101 (84.8)	118 (95.9)	313 (89.7)	8.5602	0.013*
Not sure	13 (12.2)	18 (15.2)	5 (4.1)	36 (10.3)		
Total	107 (30.6)	119 (34.0)	123 (35.4)	349 (100.0)		

*=Significant; NS=Not Significant

Discussion:

Odontogenic and nonodontogenic infections of the oral cavity are of common occurrence in the general population. Odontogenic infections are diseases that originate within tooth or other dental supporting structures. On the other hand, nonodontogenic infections do not involve tooth structures [4,5]. Dental infections that affect both the soft and hard tissues of the oral cavity can be caused by dental caries, pulpal necrosis, trauma, and periodontal disorders.

Pain and swelling around the mouth are typical signs of dental infections. Antibiotics and analgesics are the commonly prescribed medicines for the alleviation of signs and symptoms of the dental infection. Literature evidence shows that 12% of dental practitioners prescribe antibiotics routinely as prophylactic treatment. [6]

The most common cause of prescription was for infections (41.5%) followed swelling (30.3%). But the patients generally come to the dentist because of pain. Pain should always be treated because infection is frequently the cause of it. In order to discern

between the many types and sources of pain, it is crucial to utilise the right diagnostic techniques. [7]

The most commonly prescribed antibiotic was the combination of Clavulonic acid and Amoxicillin in 70.4% of the respondents followed by amoxicillin. This was contradictory to the study results of Jain et al[8,] George et al[9] and Shahroom NSB et al[10] who reported amoxicillin as the preferred choice. Paracetamol was the most commonly prescribed analgesic by 39.5% of the students. This was similar to the findings of Ravinthar et al [11] and Shahroom NSB et al [10].

However, antibiotic therapy should not be used as a substitute for eradicating an infection source. Dentists treat kids with antibiotics to lower the risk of bacteremia brought on by dental infections [12]. The misuse of antibiotics, their improper use, and their overuse in children are all factors that contribute to antibiotic resistance [13]. Consequently, dental professionals should be knowledgeable with appropriate antibiotic selections and indications for antibiotic therapy for children under the age of 13.

Overall, when a comparison was made between the students, interns had better knowledge about medications, their prescription, dosage and duration. This could possibly be because of the accumulated awareness in the clinical postings of third and fourth year. In addition, their full-time exposure to clinics and varying clinical conditions further reinforces their practice and awareness.

It is important to educate students about drug prescription even before they begin with their clinical years. To avoid prescribing the wrong treatment, the wrong medication, or the wrong dosage, it is imperative for the student to obtain an accurate medication history before writing one. [14] History taking is even more pronounced in cases of polypharmacy, which is common in older people with chronic diseases and may result in negative

pharmacological effects. [15] In this context, recommendations are put forth by World Health Organisation (WHO) for prescription to obtain an elaborate medical history of the patient including the clinician's names, the dosage, frequency, and duration of medication, as well as patient counselling.

Medications when wrongly prescribed may cause emergencies during dental treatment. Several emergency situations, including syncope, postural hypotension, bronchospasm, anaphylaxis, hypoglycemia, seizures, angina pectoris, and cardiac arrest, may occur while treating patients. [16]. It is hence important enhance the students' knowledge and abilities by conduction of training and educational programmes on how to manage medical emergencies. [17]

The study does have some limitations. The responses obtained are amenable to subjective errors. Owing to cross sectional nature of the study design, no causal relation can be arrived at. The study is not without any merits. Open ended nature of the questions helps to gather a greater amount of information from students. The questionnaire employed was validated to ensure a construct with adequacy and relevance.

Conclusion:

This study demonstrates that dental students at had a fair amount of understanding about drug prescription. It is important for the students to have a concrete understanding of the art of prescription drugs. The patient's ailment and the therapeutic goal should be stated in the prescription, which should then be followed by the selection of the best medication therapy. To ensure that students are aware of these prescription drug restrictions, several training programmes and seminars should be implemented.

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