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Original Research Article

Drug prescription awareness among dental students in Kerala: a survey of current knowledge and awareness

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ABSTRACT

Background: Prescribing medicine is a core skill for dentists, impacting patient safety and requiring knowledge of medications, dosages, and risks. This study evaluates dental students' awareness of these critical aspects in Kerala, India.
Methods: This study aimed to assess drug prescription awareness among dental students in Kerala, India, highlighting current knowledge, standard practices, and areas for improvement.
Results: Dental pain emerged as the most commonly treated condition (57.7%), with Amoxicillin reigning as the antibiotic of choice (69.2%-76.3%). Textbooks reigned supreme as the primary source of prescription information (66.4%-58.3%), even as most participants (78.1%-72.4%) acknowledged the WHO prescribing guidelines. While interns demonstrably boasted greater confidence in their knowledge, nearly half of all participants grappled with a lack of confidence in drug dosage and frequency. Incorrect dosage stood out as the Achilles' heel of prescription practices (71.9%-77.6%). Strengths included awareness of the correct route of delivery (61.6%-74.4%) and adherence to WHO guidelines.
Conclusions: Dental students in Kerala demonstrate fair drug prescription awareness but have gaps in knowledge regarding dosage, frequency, and duration. Textbooks are the primary information source, highlighting the need for more in-depth education and reliance on evidence-based resources. Targeted interventions focused on these areas could enhance prescribing practices and patient safety.

Keywords: Awareness, Dental Students, Drug Prescription, India, Kerala

INTRODUCTION

Drug therapy is the critical tool doctors use to influence patient health, which offers benefits and risks. Regardless of their chosen career path, most medical graduates must specialize in drug prescribing as a primary intervention. Prescription involves detailing medications, dosages, and durations for patients, requiring a solid foundation in therapeutic principles.[1]

Various factors, such as social, cultural, economic, or promotional influences, can impact prescribing patterns.[2] Elevating the standard of dental prescriptions is crucial to reduce pharmaceutical errors, promote judicious pharmacotherapy, and enhance patient safety.

According to the World Health Organization, good prescription writing involves defining the patient's problem, specifying therapeutic objectives, confirming

personalized treatment suitability, initiating treatment, providing information, and monitoring the treatment process.[3] Even though dental prescriptions often focus on short-term or surgical treatment, dentists must possess drug-related knowledge and adhere to international prescribing guidelines.

Prescribing the wrong medication or an incorrect dosage is a serious risk, potentially causing harm to the patient or rendering the treatment ineffective. Incomplete prescriptions, particularly those missing information about patient allergies, can lead to medications being administered at the wrong time, exacerbating the patient's condition and even causing toxicity.[4]

Pain and infections are common oral health issues, with antibiotics and painkillers frequently prescribed. Accurate prescriptions require knowledge of dosages, side effects, and interactions with other medications. This study assesses dental students' understanding of these crucial aspects, recognizing their pivotal role in oral healthcare delivery. Dental students significantly impact patient safety, making their prescribing practices crucial. Comprehensive knowledge and awareness of drug prescription are vital for dental graduates to ensure appropriate, effective, and safe medication use. For dentists, prescribing the proper medication isn't just about easing pain but patient safety. Yet, gaps in knowledge can lead to harmful errors. The study aimed to assess the drug prescription awareness among dental students in government and private dental colleges across Kerala.

METHODS

Study design

With the institutional review board's approval and informed consent from each participant, we launched a 6-month cross-sectional study (December 2022-June 2023) to investigate the knowledge, attitudes, and practices regarding oral health among final-year dental students and interns in Kerala. We utilized a validated questionnaire containing ten targeted questions to achieve this which was distributed through google forms.

Sample size

$$\frac{\frac{z^2 \times p(1-p)}{e^2}}{1+\left(\frac{z^2 \times p(1-p)}{e^2 N}\right)}$$

Where, N=Population size (450), e=Margin of error (absolute precision (d) = 5% (0.05), P=Percentage value (Expected proportion of respondents)-30%, Z $_{\alpha}$ at 95% CI=1.96, 292.34.

Final sample = 300 (Minimum required sample). The study required a sample of 300 participants, as determined by our calculations.

Inclusion criteria

Individuals who willingly agree to participate in the research possess proficiency in reading, writing, and comprehending English. They are in their final year of dental studies and serving as house surgeons in a dental college in Kerala were included.

Exclusion criteria

Individuals in their first, second, or third year of dental studies, or those who were uncooperative or unwilling to participate, were excluded.

Statistical analysis

We actively entered the collected data into Microsoft Excel sheets and performed the analysis using the statistical package SPSS 22.0 (SPSS Inc., Chicago, IL). We set a predetermined level of significance at $p < 0.05$. We employed descriptive statistics to evaluate the respective groups' mean and standard deviation. We then assessed the normality of the data using the Shapiro-Wilkinson test. Finally, we utilized inferential statistics, such as the Student-t test and Chi-square test, to explore associations between variables.

RESULTS

We recruited 146 final-year students and 156 dental interns (302 participants total) for our study. The results revealed dental students perceived dental caries (47.9%) and dental pain (43.8%) as the most commonly treated conditions, while interns leaned more towards pain. Paracetamol emerged as the most frequently prescribed nonsteroidal anti-inflammatory drug (NSAID), followed by Amoxicillin as the leading antibiotic, often paired with clavulanic acid. Incorrect dosage topped the list of perceived errors in drug prescribing, and textbooks stood as the primary information source for students. Despite the encouraging finding that most participants followed WHO prescribing guidelines, significant knowledge gaps emerged. Almost half lacked confidence in their understanding of drug dosage and frequency, and they also struggled with drug duration and route of delivery.

Table 1: Responses to antibiotic prescriptions as per year of study.

	Final year	Intern	P value
What are the most common health conditions treated in dental practice?			
Dental caries	47.9	38.5	
Dental pain	43.8	57.7	0.06

Continued.

	Final year	Intern	P value
Others	.7	0	
Tooth sensitivity	7.5	3.8	
Which is the most common nonsteroidal anti-inflammatory drugs (NSAID) you prescribe?			
Aceclofenac	8.9	6.4	
Diclofenac	17.1	25.6	0.28
Others	1.4	1.9	
Paracetamol	72.6	66.0	
Which antibiotics are most commonly prescribed?			
Amoxicillin	69.2	76.3	
Amoxicillin and clavulanic acid combination	21.9	16.7	0.58
Metrogyl	7.5	5.8	
Others	1.4	1.3	
What are the most common errors occurring during prescription of drugs?			
Incompatibilities/drug interactions	18.5	12.8	
Incorrect dosage	71.9	77.6	0.59
Incorrect name of the drug	4.8	5.1	
Others	4.8	4.5	
What are your sources for prescription information?			
Colleagues	7.5	14.1	
Others	5.5	4.5	0.24
Professors	20.5	23.1	
Textbook	66.4	58.3	
Do you use World Health Organization (WHO) guide to good prescribing for drug prescription?			
No	21.9	27.6	0.25
Yes	78.1	72.4	
Do you have appropriate knowledge about dose of drug to prescribe?			
No	56.2	35.9	0.0001*
Yes	43.8	64.1	
Do you know about the frequency of drug to be prescribe?			
No	41.8	30.8	0.04*
Yes	58.2	69.2	
Do you know for how long the drug has to be given?			
Yes	19.2	19.9	0.87
No	80.8	80.1	
Did you know the correct route of drug delivery?			
Yes	61.6	74.4	0.01*
No	38.4	25.6	

*Statistically significant

DISCUSSION

This study focuses on drug prescription awareness among dental students in Kerala, involving approximately 302 participants from various dental colleges. This study involved a carefully prepared questionnaire to assess drug prescription awareness among dental students in government and private colleges across Kerala.

In our investigation of drug prescribing confidence among dental students, we found that only 64.1% of interns and 43.8% of final-year BDS students felt confident prescribing appropriate drug doses. This contrasts significantly with Rauniar et al.'s study, where 87.8% and 84.6% of second-year and pre-clinical students reported similar confidence. Variations in curriculum focus, student experience levels, or the specific cohorts studied likely contributed to this marked difference. The starkly different confidence levels can most likely be explained by differences in curriculum design, student experience, or the characteristics of the specific student groups involved in each study.[5]

About 47.9% of the final year students and 38.5% of the interns who participated in our study consider dental caries as the most common health condition treated in dental practice, while 56% of the participants in the survey conducted by Guzman-Alvarez et al consider infection as the most common health condition treated in dental practice.[2]

About 57.7% of the participants in our study consider dental pain as the most common condition treated in dental practice, which is per the study conducted by Ashraf et al.[6]

Most of the participants in our study (69.2% of final year students and 76.3% of interns, respectively) consider Amoxicillin as the most prescribed antibiotic in dental practice, while only 26.7% of the participants in the study conducted by Ashraf et al think the same.[6]

About 67.1% of the participants in the study conducted by Dali et al have faculties as the primary source for prescription information. Still, most of the participants in our study (66.4% of the students and 58.3% of interns) have textbooks as the primary source of prescription information.[7]

More than half of the participants in our study (78.1% of students and 72.4% of the interns) are aware of the WHO guidelines for drug prescription, while only a few of the participants (17.03%) in the study conducted by Dali et al are aware of the WHO guidelines.[7]

Most of the participants in our study (61.6% of the final year students and 74.4% of the interns) know the correct drug delivery route per the study conducted by Jain et al (65.88%).[4]

Most participants in our study agreed dental pain is the most common health condition encountered in the dental practice, which agrees with the survey conducted by Shahroom et al (62% of the participants). In contrast, there is a disagreement about the most common error during prescription. Most of the participants of our study consider incorrect dosage as the most common error, but 26% of the participants in the survey conducted by Nor Shahroom et al consider not asking patients about allergy as the most common error faced in dental practice.[8]

AboAlSamh et al.'s study revealed that 88.4% of dental students prefer Amoxicillin as their first-choice antibiotic, which aligns with our findings. Among our final-year students and interns, 69.2% and 76.3% favor amoxicillin for initial antibiotic therapy.[9]

Ravichandran et al.'s study revealed that students are pretty good at identifying drug duration and administration routes. 58% of their participants could accurately say how long a medication should be taken, while 88% knew how to administer it. This aligns with our findings. In our study, 58.2% of final-year students and 69.2% of interns could determine the correct drug duration, while 61.6% of final-year students and 74.4% of interns knew the appropriate administration route.[10]

Hajj et al conducted a study aimed to assess the drug prescribing perception and practices in addition to drug-related educational needs among Lebanese dentists. According to their research, the majority (80.3%) had a fair to good perceived knowledge of pharmacology and therapeutics, whereas in our study conducted by us, where 43.8% of final-year students and 64.1% of interns have appropriate knowledge about the dosage of drugs to be prescribed.[11]

Ultimately, prescribing isn't about the dentist but the patient. Decisions should be based on the best evidence, with safe and effective medicines chosen to give the patient the best possible results, all through open communication and shared decision-making.[12] The present study had some limitations. Firstly it was an online cross sectional survey which depended on self reported information. Second, people who weren't familiar with the topic might have skipped the survey, thus influencing the generalisability of the study. In summary, this study sheds light on the drug prescription awareness of dental students in Kerala, revealing notable insights and areas for improvement in their understanding and practices.

CONCLUSION

This study of dental students in Kerala found a fair level of drug prescription awareness among them. In our research, dental pain emerged as the most commonly perceived condition requiring treatment, with more than half of the participants reporting its occurrence. Over half of the participants, when asked about the conditions they typically treat, identified dental pain as the primary reason for dental intervention. Amoxicillin is the preferred antibiotic; the most prevalent error is incorrect dosage. Textbooks serve as the primary source of prescription information. Most students follow the World Health Organization (WHO) guidelines for drug prescription. Interns generally feel confident in prescribing knowledge, while final-year students express less confidence. Overall, participants demonstrate a comprehensive understanding of drug dose, duration, route of administration, and frequency.

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