

Assessment of The Common Practices for Writing Dental Prescriptions among Different Departments of a Dental College and Hospital in India: A Retrospective Study

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ABSTRACT

Prescription standardisation can minimise errors, improve safety and prevent antimicrobial resistance. Errors in prescription writing require to be audited so that necessary corrective steps are taken in the right direction. A retrospective record-based study was carried out in a private dental college and hospital in India. One hundred and fifty prescriptions over a period of 3 months were collected and scrutinised. Several variables were included in the assessment such as the mentioning of date, doctors name, signature/counter signature, patient registration number, diagnosis, handwriting (legibility), completeness of instruction, commonly prescribed antibiotics, analgesics, topical formulations, antacids and miscellaneous drugs, and the use of generic and trade names.

Overall, few prescriptions had all the necessary elements and prescriptions varied widely. The study identifies the need for guidelines and efforts for prescription standardisation and monitoring.

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INTRODUCTION

Reports have highlighted variations in antibiotic prescriptions and recommended the dissemination of standardized information to physicians.^{1,2} There is a pressing need for prescription standardization to minimize errors, facilitate audit research, and potentially inform safety initiatives for drug development.³ Errors in prescription writing within training institutes are well-documented and require thorough assessment.⁴

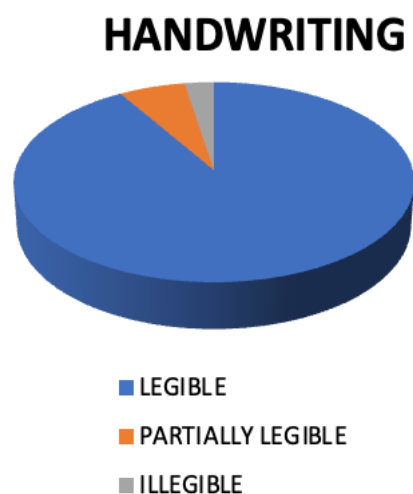
Dentistry, with its limited drug inventory, particularly needs standardization. Digital prescriptions offer promise in this endeavour, yet global standardization of e-prescriptions remains a consideration for the future.⁵ Currently, handwritten prescriptions remain prevalent, upholding the practitioner's liability, legibility, and authority.⁶ Despite ongoing debates, regular prescription auditing remains essential.

Hence, this study aims to assess common practices in dental prescription writing across various departments of a private dental college and hospital.

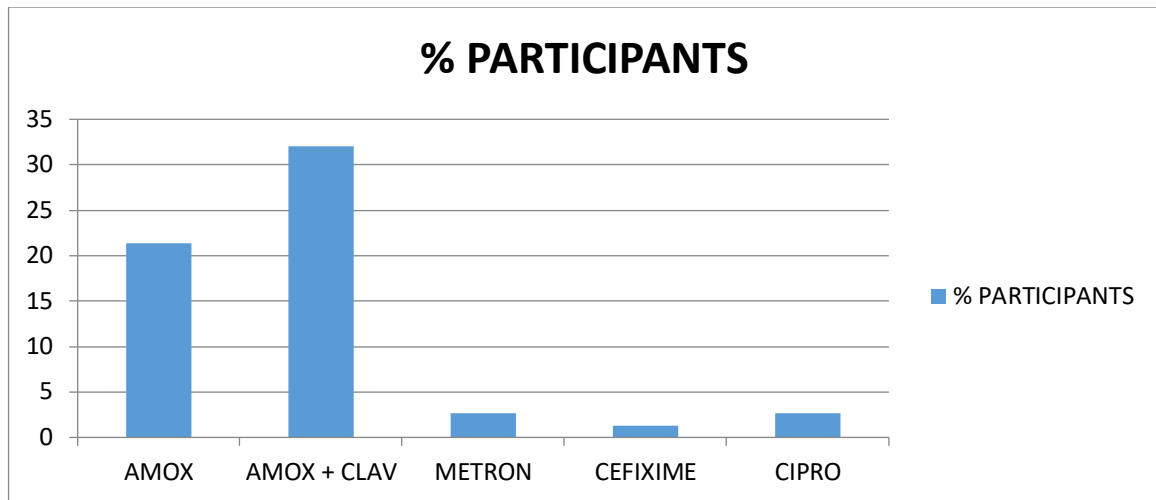
METHODOLOGY

This is a cross sectional retrospective record-based observational study. The sample size for the present study was 150. This was derived as a convenient sample from data

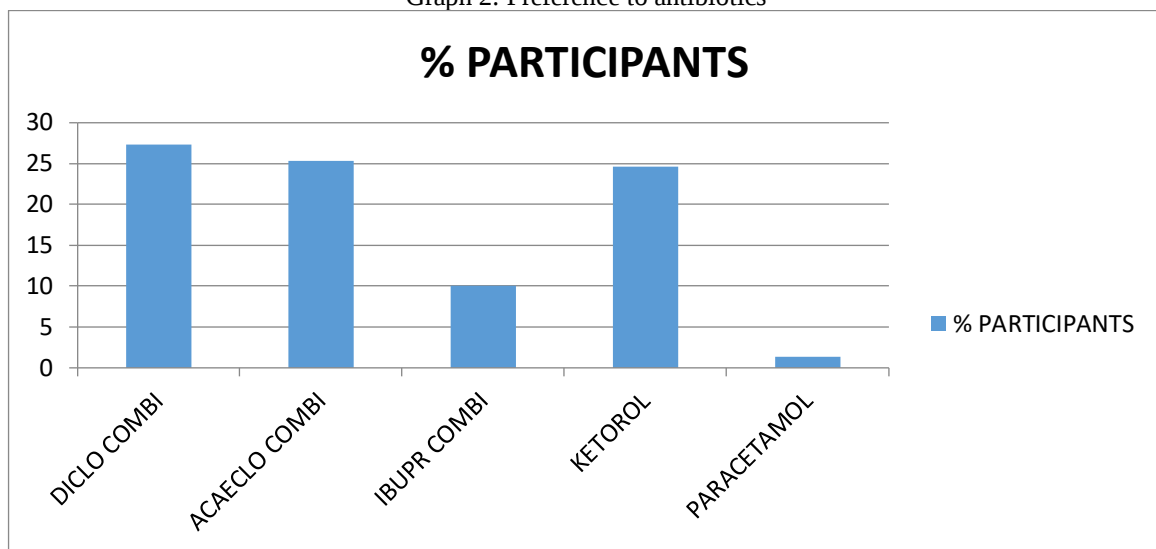
of prescriptions over 3 months of the below stated hospital. Prescriptions from the date of 16th August 2021 till 19th October 2021 were collected from various departments of Bharati Vidyapeeth (Deemed-to-be) University Dental College and Hospital via a WhatsApp group created among all staff members and postgraduate students along with two auditors (AJ and MB). The qualitative and quantitative data were collected from these prescriptions and a master sheet was prepared by two postgraduate students (SG and MT).



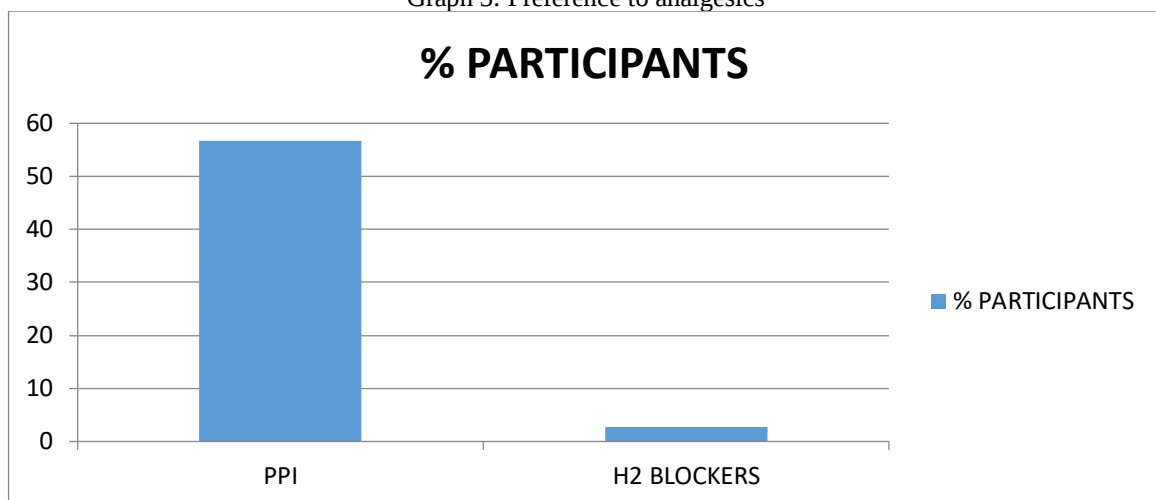
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Graph 2: Preference to antibiotics



Graph 3: Preference to analgesics

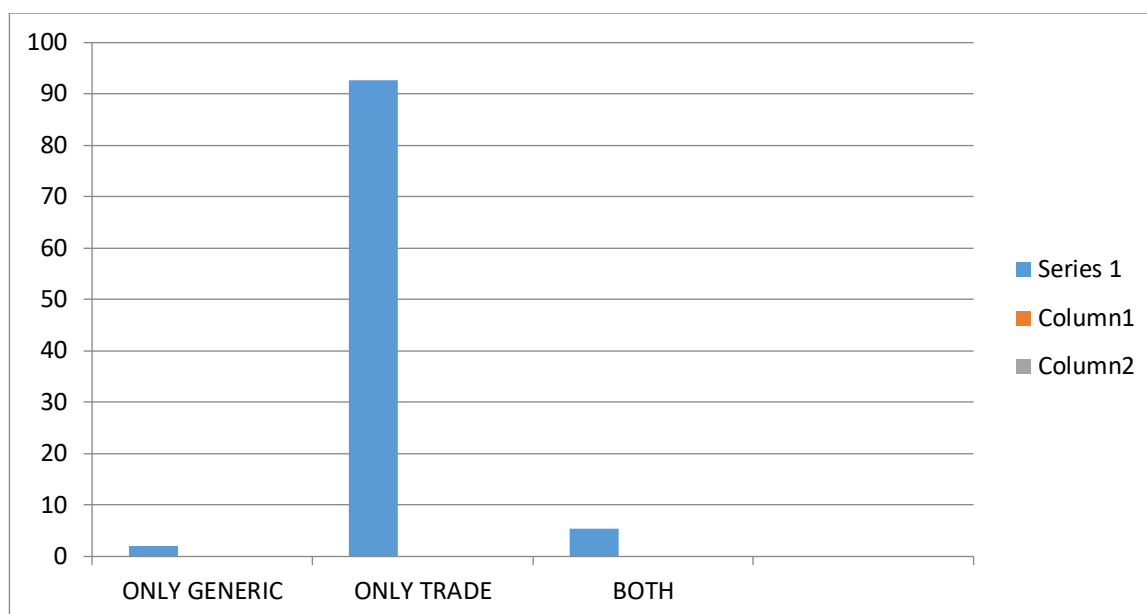


Graph 4: Preference to anti-gastritis drugs

Graph 1: Distribution of legibility of handwriting

The data was sought to include the regular prescriptions which were given to patients in the hospital. The data was entered manually in an MS Excel sheet and was checked for any discrepancies or errors. No specialized training was given to the participants writing prescriptions for the study.

The study had received clearance from the Institutional Scientific Research Committee. All the prescriptions that were written by hand were included in the present study. There was no restriction on the inclusion of specific categories of doctors such as staff or students for this study.



Graph 5: Use of generic/ trade names of drugs

The data were collected for the study from the Departments giving consent for inclusion.

RESULTS

As depicted in Table 1, 96.6% of prescriptions had the date on them. The details of the doctor writing prescriptions such as name, sign, and registration number were present in 37%, 91.3%, and 0.66% respectively. The countersign by a supervisor in the case of student prescriptions was 14% of prescriptions. The description/diagnosis was present in 81.3% of prescriptions. The legibility of prescriptions was assessed by two assessors and was data was categorized as legible (91.33%), partially legible (6%), and illegible (2.66%). The completeness of the prescription was divided as binary categories of complete (26%) and incomplete (74%). Total of 5 antibiotics were prescribed in the assessed prescriptions which included Amoxicillin (21.33%), Amoxicillin and clavulanic acid (32%), Metronidazole (2.66%), Cefixime (1.33%), and Ciprofloxacin (2.66%). Six analgesic or analgesic combinations were prescribed they included Diclofenac and combination (27.33%), Aceclofenac and combination (25.33%), Ibuprofen and combination (10%), Paracetamol (1.3%), Ketorolac (24.66%), Others (2%). The topical preparation prescribed included desensitizing toothpaste (8%), chlorhexidine mouthwash (3.33%), Iodine mouthwash (0.66%), Fluoridated toothpaste (0.66%), and topical diclofenac (0.66%). Antacids prescribed were either PPI (56.66%) or H2 blockers (2.66%). Miscellaneous drugs such as vitamins and supplements (4%), steroids (1.33%), and trypsin-chymotrypsin combinations (0.66%) completed the prescriptions reviewed. Only 2% of prescriptions were for generic drugs, 5.33% included generic and trade names and a majority of 92.66% of prescriptions were with trade names. The results were statistically significant based on both confidence interval method and Chi-square test showing $p < .05$. A few key results are depicted pictorially in Graphs 1 to 5.

DISCUSSION

Prescription-writing is an important assignment for the doctors. It encompasses detailed instructions to the pharmacist and the patients regarding the dispensing and consumption of drugs in an accurate manner to beget health benefits. The scaffold of modern treatment is the thorough understanding of the disease and careful curating of the drugs required to treat the disease. This prescription exercise has many varied practices that have been evolving continuously. To ascertain the success of this endeavor all aspects including the contents of the prescription need to be evaluated thoroughly to ensure completeness and homogeneity of prescriptions. To achieve this regular/periodic audits of the prescriptions is a mandatory assignment that should be carried out meticulously.

Wide variations in the prescriptions of medicines by doctors, particularly the antibiotics, is a known fact.⁷ Prescriptions play a crucial role in modern healthcare. Typically, patients are provided with prescriptions as part of routine care, regardless of whether invasive treatments are pursued, emphasizing the need for standardized prescription practices.

DeVries et al (1999) reported the necessity of audits with the use of prescription data available from pharmacies; with a specific aim for conducting pharmacotherapy audits, for giving appropriate feedback to audit groups.⁸ In another article, DeVries et al (1999) described the development and implementation of computer programme and its potential use for such audits.⁹ Van der Velden et al 2016 established that general practitioners' education and an audited improvement plan around antibiotics for respiratory tract infections caused a sustained change in antibiotic prescriptions.¹⁰

The rationale behind prescriptions and how they are written significantly influence a practitioner's effectiveness, necessitating periodic evaluation. Research has frequently focused on these aspects, leading to the development of

prescription writing guidelines, not only for antibiotics to combat resistance but also for other drug classes where cautious use is warranted.¹¹ Therefore, it is imperative to continually refine best practices in prescription writing through workplace audits, such as those in hospitals, and regular training or guidance sessions to ensure consistency. A qualitative study reported three key findings that have important implications for dental practice and antibiotic stewardship, such as the use of guidelines, awareness of prescribing patterns, and social influence.¹²

A few studies similar to ours, are reported in the literature. Guzmán-Álvarez et al (2012) reported a questionnaire-based study (N=66) exploring several aspects of prescriptions in the final year dentistry students such as the most frequent conditions requiring dental prescription: the most prescribed analgesics and antibiotics. They concluded

that Amoxicillin was the most preferred antibiotic and Ibuprofen, and Paracetamol were the most preferred analgesic.¹³ A study by Arya et al. (2022) suggested that the doctor and patient related parameters were insufficient suggesting the need for auditing prescription writing.¹⁴ Another study by Varghese et al. (2018) assessed the quality of prescription writing in both dental and medical professionals suggesting errors being commonly found in prescriptions written by both professions, hence necessitating the need for intensive training for the safety of patients and doctors.¹⁵

The current study has a few limitations such as a non-probabilistic sample, small tenure, and cross-sectional data. These can be overcome with a larger sample, long-term evaluation, and a mixed-methods study design.

Table 1: Summary of findings

Sr. No.	Name of the variable	Type of the variable	Recorded as	% Participants	Confidence interval
1	Date	Categorical	Written/ Not written	96.6%	0.97 (0.91,0.99)
2	Doctor's name	Categorical	Written/ Not written	37%	0.37 (0.27,0.47)
3	Doctor's sign	Categorical	Written/ Not written	91.3%	0.91 (0.84,0.96)
4	Registration no.	Categorical	Written/ Not written	0.66%	0.01 (0.0002-0.05)
5	Countersign	Categorical	Written/ Not written	14%	0.14 (0.08-0.22)
6	Description/ diagnosis	Categorical	Written/ Not written	81.3%	0.81 (0.72,0.88)
7	Legibility	Categorical	Legible/ partially legible/ illegible	Percentage	
	Legible			91.33%	0.91 (0.84,0.96)
	Partially legible			6%	0.06 (0.02,0.13)
	Illegible			2.66%	0.03 (0.006,0.08)
8	Completeness of instruction	Categorical	Complete / incomplete	26%	0.26 (0.18,0.36)
9	Most common antibiotics used	Categorical	Prescribed / not prescribed	Percentage	
	Amoxicillin			21.33%	0.21 (0.13,0.30)
	Amoxicillin + Clavulanic acid			32%	0.32 (0.23,0.42)
	Metronidazole			2.66%	0.03 (0.006,0.08)
	Cefixime			1.33%	0.01 (0.0002,0.05)
	Ciprofloxacin			2.66%	0.03 (0.006,0.08)
10	Most common analgesics used	Categorical	Prescribed / not prescribed	Percentage	
	Diclofenac combination			27.33%	0.27 (0.19,0.37)
	Aceclofenac combination			25.33%	0.25 (0.17,0.35)
	Ibuprofen and combinations			10%	0.1 (0.05,0.18)
	Ketorolac			24.66%	0.25 (0.17,0.35)
	Paracetamol			1.3%	0.01 (0.0002,0.05)
	Other			2%	0.02 (0.002,0.07)
11	Most common topical formulations used	Categorical	Prescribed / not prescribed		
	Desensitizing toothpaste			8%	0.08 (0.03,0.15)
	Chlorhexidine mouthwash			3.33%	0.03 (0.006,0.08)

Table 1: Summary of findings

Sr. No.	Name of the variable	Type of the variable	Recorded as	% Participants	Confidence interval
	Iodine mouthwash			0.66%	0.01 (0.0002,0.05)
	Fluoridated toothpaste			0.66%	0.01 (0.0002, 0.05)
	Topical diclofenac			1.33%	0.01 (0.002,0.05)
12	Most common Antacids used	Categorical	Prescribed / not prescribed		
	PPI			56.66%	0.57 (0.47,0.67)
	H2 blockers			2.66%	0.27 (0.19,0.37)
13	Miscellaneous drugs	Categorical	Prescribed / not prescribed		
	Vitamins and supplements			4%	0.04 (0.01, 0.10)
	Steroids			1.33%	0.01 (0.19,0.37)
	Trypsin-chymotrypsin			0.66%	0.01 (0.0002,0.05)
14	Generic/ trade names used	Categorical	Used/ not used		
	Only generic			2%	0.02 (0.002,0.07)
	Only trade			92.66%	0.93 (0.86, 0.97)
	Both			5.33%	0.05 (0.02, 0.11)

CONCLUSION

Based on the findings of the present study, it can be concluded that prescriptions lacked standardization and missed important details. Furthermore, varied practices exist in dental prescription writing across departments of a private dental college and hospital.

Thus, this study confirms the need for robust guidelines and monitoring for the standardisation of dental prescriptions.

Conflict of interest

None

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