



RESEARCH ARTICLE

ASSESSING PRESCRIPTION WRITING SKILLS OF INTERNS, POST-GRADUATE STUDENTS
AND STAFF OF A DENTAL COLLEGE IN PUNE - A CROSS-SECTIONAL STUDY

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ABSTRACT

Introduction:- Prescription writing is “a written order, which includes detailed instructions of what medicine should be given to whom, in what formulation and dose, by what route, when, how frequently, how long.” Most of the time dental treatments require prescription. The study mainly focuses on assessment of prescription writing skills of interns, post-graduate students and faculty member of a dental college.

Objectives:- To writing determine their competency and knowledge gained during pharmacology and therapeutics and to assess the knowledge of prescription skill of interns, post graduate students and staff of a dental college and hospital, Pune.

Method:- It is a cross sectional questionnaire based study to assess the prescription writing skills following WHO format was conducted among 200 participants including interns, PG, Staff. Participants were asked to write a detailed prescription format without any pre-printed format. A blank space without any pre-printed parameter was provided for prescription writing. Each twenty parameters were used for prescription writing having a score of 1. The parameters used for the study were taken from WHO prescription writing format which are as follows Hospital name, hospital address, date, patients name, patients age, patients sex, patients address, doctors name, professor degree and registration number, doctors signature, symbol Rx, diagnosis, drug name, dose, frequency, route, duration, refill information, quantity to be dispensed and instruction for labeling.

Results:- The forms were scored for 20 parameters which were to be ideally mentioned in a well written prescription. Frequency (99%) and symbol Rx (94.5%) were the most commonly listed, followed by duration (92%), Patient's name (81%), Patients age (77.5%), Refill Information (2%), Patient's Sex (60%), Date (60%), Doctors Signature (55.5%), Doctor's Name (47.5%), Quantity (77%), Label (37.5%) Registration Number (39.5%) and Designation: - Interns (37.5%), Post Graduates (27.5%) and Faculty Member (35%). Parameter that where least or not listed include Route of Administration (0%), Diagnosis (1%), Patient's Address (3%), Hospital Address (6%), Hospital name (8%), Dose (18%), drug name (21%).

Conclusion:- The current study concluded that prescription writing skills of interns, postgraduates and faculty members were deficient in important details.

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INTRODUCTION

Prescription writing is “a written order, which includes detailed instructions of what medicine should be given to whom, in what formulation and dose, by what route, when, how frequently, how long (Wali, 2012).” However due to an inconsistent criteria used for assessing prescription writing skills, errors have been reported to range from 4.2 to 82% (Velo, 2009).

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Prescribing is the act of indicating one or more drugs to be administered to or taken by the patient, it's (their) dosage, and the duration of the treatment. It is an individualized and dynamic clinical process. Drugs are usually prescribed for a number of conditions by dentists. Antibiotics, NSAIDs and Local Anesthetics are routinely prescribed during dental practice. It is very important that the doctor knows the complete pharmacology of the prescribed drug along with its multiple uses and interaction with other drugs. Not only should the doctor know the correct dose of the drug to be given but should also know how the situation or how the patient should be managed in case of overdose.

The prescription should be legible to the patient not only for the name of drug but also its dosages. The prescription should clearly state when a particular drug is to be ingested either before food or after food and how many times a day it needs to be consumed. The patient should also be able to comprehend the duration for which he is supposed to continue the medication. The prescription should clearly convey the pharmacist the state of the drug which is to be administered to the patient for the treatment outcome. The act of prescribing has become increasingly challenging due to multiple factors. Prescribing errors are categorized as decision making or prescription writing. Under prescribing, overprescribing, irrational prescribing and inappropriate prescribing such errors may be seen in the former. While the later highlights errors while the prescription is being written. Knowledge based errors have been reported in several studies due to poor prescribing by junior doctors and students. Most adverse drug events (68 to 75%) are reported to have been related to incorrect prescription writing (Lee, 2006). These events may be source of morbidity to the patient although they are not fatal. Multiple factors are making the act of prescribing greatly challenging. Most of the time dental treatments require prescription.

The dental course is of 5 years and pharmacology is taught in the 2nd year. Students do not have the exposure to clinics in the 2nd year. Hence by the time they start treating and prescribing during their final year and internship they may miss out on details of prescription writing. Hence the study was conducted to highlight the skills of prescription writing of interns, post graduate student and faculty members of dental college of Pune. It focuses on assessing their knowledge possessed throughout their dental education regarding prescription writing skills. It also examines the pharmacological knowledge of the intern's postgraduates and faculty members of dental college and tests their skills while writing superscription, inscription and transcription.

MATERIALS AND METHODS

A cross-sectional questionnaire based study was conducted among 200 participants which included interns (70), postgraduates (60) and faculty members of Sinhgad Dental College and Hospital(70), Pune to determine their competency and knowledge gained during pharmacology and therapeutics and to assess the knowledge of prescription writing from July 2017 to Sept 2017 using STROBE guidelines. Ethical clearance was obtained from the institutional Ethical committee and necessary permissions from the college authorities. Sampling method was census sampling in which all the interns (70), postgraduates (60) and faculty members (70) of the dental college were included.

A question-based form was designed to assess the prescription writing skills. The questionnaire was validated for its face and content validity and reliability 0.84 kappa was achieved in the pilot study. Each participant was required to write a detailed prescription in response to a clinical question. A completely blank space was provided to write a prescription without any pre-printed parameters. All forms had the same clinical question to maintain the standard assessing criteria. The survey forms were distributed and collected on the same day to test the skills without any materials or electronic aid. None of the interns, postgraduate students or faculty members was foretold

about the prescription writing skills assessment until on the day of the survey.

Scoring

The forms were scored for 20 parameters which were to be ideally mentioned in a well written prescription (Fig.no.1). Every prescription written was, therefore, analysed and scored for date, patients name, patients age, patients sex, patients address, doctors name, professor degree and registration number, doctors signature, symbol Rx, diagnosis, drug name, dose, frequency, route, duration, refill information, quantity to be dispensed, instruction for labeling. Each of the above-mentioned parameters was given a score of 1. Instead of determining the total score of every prescription per doctor, a total of each parameter of the 200 forms was calculated. The focus was not to determine which interns, post-graduates and faculty members was scored best, but to evaluate the writing skills of all participants in total in relation to every parameter. Data was analyzed using SPSS (Statistical Package for Social Sciences) v.21. Frequency analysis was done and Chi-square test of proportion was used.

Prescription Writing skills Survey

The following exercise is designed to assess your prescription writing skills as part of a survey. No names or your details will be published. Result will be shown in numerical values.

Questionnaire given to the participants

Mr. X, 40 years, had a simple dental extraction today in your clinic/hospital. You, as a dentist of this hospital, are required to prescribe an analgesic. Please write a complete prescription with all the necessary details.

Hospital name	
Address: ABC Chowk, Pune	Date: _____
Mr.X-40yrs/Male	
Address:- _____	
Simple extraction done	
Rx	
• Tab.Panadol 500mg	09 tablets
1-1-1	for 3days
Morning-lunch-dinner	should take it after meals ,orally
It should be refilled after 3 day if not feeling well	
	Dr Signature
	Dr Name
	Registration number

Fig. 1. An example of an ideal filled sample survey form

Prescription writing is “a written order, which includes detailed instructions of what medicine should be given to whom, in what formulation and dose, by what route, when, how frequently, how long.”¹ However due to an inconsistent criteria used for assessing prescription writing skills, errors have been reported to range from 4.2 to 82% (Velo, 2009). Prescribing is the act of indicating one or more drugs to be administered to or taken by the patient, it's (their) dosage, and the duration of the treatment. It is an individualized and dynamic clinical process. Drugs are usually prescribed for a number of conditions by dentists. Antibiotics, NSAIDs and Local Anesthetics are routinely prescribed during dental

practice. It is very important that the doctor knows the complete pharmacology of the prescribed drug along with its multiple uses and interaction with other drugs. Not only should the doctor know the correct dose of the drug to be given but should also know how the situation or how the patient should be managed in case of overdose. The prescription should be legible to the patient not only for the name of drug but also its dosages. The prescription should clearly state when a particular drug is to be ingested either before food or after food and how many times a day it needs to be consumed. The patient should also be able to comprehend the duration for which he is supposed to continue the medication. The prescription should clearly convey the pharmacist the state of the drug which is to be administered to the patient for the treatment outcome. The act of prescribing has become increasingly challenging due to multiple factors. Prescribing errors are categorized as decision making or prescription writing. Under prescribing, overprescribing, irrational prescribing and inappropriate prescribing such errors may be seen in the former. While the later highlights errors while the prescription is being written. Knowledge based errors have been reported in several studies due to poor prescribing by junior doctors and students. Most adverse drug events (68 to 75%) are reported to have been related to incorrect prescription writing (Lee, 2006). These events may be source of morbidity to the patient although they are not fatal. Multiple factors are making the act of prescribing greatly challenging. Most of the time dental treatments require prescription.

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RESULTS

Table 1. Number of participants who listed each parameter

Parameter	Total	%	p- value
Hospital name	16	8	
Hospital address	12	6	
Date	120	60	
Patients name	162	81	
Patients age	145	77.5	
Patients sex	120	60	
Patients address	06	03	
Doctors name	95	47.5	
Registration number	79	39.5	
Doctors signature	111	55.5	<0.05*
Symbol Rx	189	94.5	Significant
Diagnosis	02	01	
Drug name	42	21	
Dose	36	18	
Frequency	198	99	
Route of administration	00	00	
Duration	184	92	
Refill information	04	02	
Quantity	144	77	
Label	75	37.5	

The forms were scored for 20 parameters which were to be ideally mentioned in a well written prescription. Frequency (99%) and symbol Rx (94.5%) were the most commonly listed, followed by duration (92%), patient's name (81%), patients age (77.5%), quantity (77%), patient's sex (60%), date (60%), doctors signature (55.5%), doctor's name (47.5%), label (37.5%) registration number (39.5%) and designation:- interns (37.5%), post graduates (27.5%) and faculty member (35%) Parameter that were least or not listed include route of administration (0%), diagnosis (1%), patient's address (3%), hospital address (6%), hospital name (8%), dose (18%), and drug name (21%). (Table 1)

DISCUSSION

The study highlights overall knowledge of interns, postgraduates, and faculty members in relation to each prescription writing parameter. The omission of key parameters can be majorly attributed to lack of preprinted blanks provided in the survey form. However, since the aim of the study was to assess knowledge and prescription writing skills, this blank omission was necessary. The result of this study as well as others clearly suggest that a majority of participants miss out key information while writing a prescription, such as route of administration of drug and patient address. Since no study on adverse drug reaction due to incorrect prescription has been carried out in Pune, the nature and prevalence of these reactions are unknown. The parameters listed by more than 50% of the participants are just 8 out of the total of 20 and include date, patient name, patient age, patient sex, doctors signature, symbol Rx, and route of administration, frequency and duration. The hospital name (6%) and address (8%) were not mentioned by most of the participants while writing the prescription as they were probably used to hospital prescription pads which have this information already listed. Route of administration of drugs (0%), diagnosis (1%) and refill information (2%) were also seldom listed; this shows negligence on the part of the dental clinicians.

The name of the drug and dosage were written by only 21% and 18% of the participants respectively which is very less and shows the lack of awareness among the participants about drug posology. This is a critical issue as it affects the patients health and safety; too low doses, extended administration intervals, or short duration of treatment will undoubtedly lead to therapeutic failure, which could complicate patient's condition. It also greatly reduces the choice and cost savings on the drugs of the patient. It has been reported that the date was omitted by 40% of the participants. The percentage of participants who wrote their name and registration number on the prescriptions was also found to be less than 50 % i.e. 47.5% and 39.5% respectively. These key omissions by the participants in writing a prescription are very disturbing as they represent ignorance on the legal importance of prescription order. These findings highlight the urgent need of educational interventions during undergraduate studies and close monitoring during hospital postings. The Emerge recommendations provide some guidelines to reduce medication errors by newly graduated dental doctors. These can be included and thus students exposed to clinical environment and trained in prescription writing during undergraduate studies rather than after graduating in internship (Aronson, 2009). This was also concluded in a study done in Nepal (Rauniar et al., 2008). A study conducted by Kaun Mun Ni *et al.* (2002) reported 397

omissions of error related to prescriber and were due to failure to mention age (32.7%), followed by date (17.1%), registration number (0.5%), prescribers name (1.8%), 862 errors of omission were due to failure to mention route of administration (80%), dosage form (36.4%), duration or number of doses (8.8%), dose (8.7%), frequency (5.3%) and drug name (0.2%). Our study reveals that the prescription writing knowledge is higher when compared to study conducted by Kaun Mun Ni *et al.* (2000). In the prescription failure to mention the strength, dosage forms and refill information may pose some problems as many drugs are available in various strength and dosage forms. The legibility of the prescription is subjective and it depends on the assessor's familiarity with the handwriting of prescriber. However it should be emphasized that the prescription could be easily read by anyone involved in dispensing, since the prescription could be filled by any pharmacy outside the hospital.

The errors of commission represent greater threat to the patient's health than the errors of omission; hence they should be identified and corrected. The commission error such as wrong dosage form and wrong strength may lead to serious consequences as the same drug is available in various dosage forms and also in various strengths. Students confusion about the large number of available drugs with different brand names was also formed (World Health Organization Patient Safety Curriculum, 2011). To avoid this, the WHO Guide to Good Prescribing recommends making a customized list including the essential drugs for each healthcare professional who prescribes drugs at the clinic (World Health Organization, 2011; Pollock, 2007). Helen and Joseph have also reported that with change in dental curriculum that focuses more on pharmacology therapeutics in the preclinical years, significant improvements in the knowledge of dental graduates regarding drug prescribing can be seen (Ryding, 2016). The study, however, has its limitation because it did not focus much on accuracy of the information but more on the number of parameter listed. Drug dose, frequency and duration were scored only if these were mentioned even if they were inaccurate. More studies that focus both on accuracy of drug information and overall knowledge regarding prescription writing parameters are needed to fully assess the skills of participants.

Conclusion

The current study concluded that prescription writing skills of a majority of participants were deficient in important details. The results highlight an urgent need for vigorous educational interventions regarding prescription writing skills during undergraduate studies and close monitoring during hospital posting.

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