

## Principles of Prescription among Dentists in Tabriz In 2011

Mehdipour, M.\* Taghavi Zenooz, A.\*\* Khoeini Poorfar, H.\*\*\* Narges  
Gholizadeh, N.\*\* Bahramian, A.\*\* Sayyady, F.\*\*\*\*

\*Associate Professor, Dept. of Oral Medicine, Dental Faculty, Shahid Beheshti University of Medical Sciences, Tehran, Iran.

\*\*Associate Professor, Dept. of Oral Medicine, Dental Faculty, Tabriz University of Medical Sciences, Tabriz, Iran.

\*\*\*Assistant Professor, Dept. of Pediatric Oncology, Medical Faculty, Hamadan University of Medical Sciences, Hamadan, Iran.

\*\*\*\*Dentist.

### ABSTRACT

**Statement of the problem:** Many diseases to be treated by dentists require drug therapy. Lack of paying enough attention to principles of drug prescription can lead to problems such as unsuccessful treatment. On the other hand, the most important way to prevent such problems is paying enough attention to prescription of drugs.

**Materials and Methods:** In this descriptive study, 260 prescriptions randomly gathered from 20 drugstores in Tabriz were evaluated. Each prescription was assessed on the basis of numbering, drug form, instructions, dosage, spelling and interactions. Data were analyzed using SPSS 15.

**Results:** 72.3% of prescriptions belonged to male and 27.7% belonged to female dentists. Of these 80.8% were prescribed by general dentists, 2.7% by post-graduate students and 16.5% by specialists. In order to assess the relation between the time of graduation and attention to principles, medical certificate number was used to categorize data.

**Conclusion:** Principles of drug prescription were followed more accurately by female groups. Instructions and spelling received more attention by specialists and post-graduate students compared to general dentists, which might be attributed to the fact that more explanations are needed for specialized treatments offered to pharmacists and patients.

**Keywords:** Prescriptions, Abnormalities, Drug-Induced, Dentists.

### INTRODUCTION

Dentistry is one of practical sciences in medicine that pays attention to techniques and therapy. A lot of diseases have oral manifestations that need drug prescription by dentists. Prescription is a drug order that is given in written form or orally by a physician or dentist or other people who have legal permission.<sup>(1)</sup>

**Corresponding Author:** N. Gholizadeh Address: Research Center, Dental Faculty, Tabriz University of Medical Sciences, Email: n.gholizadeh88@gmail.com Tel: 0411 335 59 64-8

Out of order or wrong prescription, in addition to inflicting unnecessary expense on people and country drug and health system, increases side effects, like drug interaction and drug resistance and psychologic drug dependence. Wrong drug prescription is one of the complications that can lead to dangerous situations in patient's health.<sup>(1)</sup>

Evaluation of prescriptions by physician's community can give us useful data for correction and reduction of faults in drug

prescription.<sup>(2)</sup> In 1993 American Community of Medical Insurance reported in one of its research studies on drug prescription errors that drug prescription fault is the sixteenth of common faults in medical issues in courts.<sup>(2)</sup>

Philips et al<sup>(3)</sup> reported in 2001 that faults in wrong drug dose prescription had a rate of 40.9%. Meanwhile Lesar<sup>(4)</sup> in 2002 reported a drug form prescription fault rate of 69.7%. In 2003 Tissot et al<sup>(5)</sup> reported wrong drug dosage prescription as the most prescription fault with a rate of 41%.

Bobb et al<sup>(6)</sup> evaluated in drug prescription faults by pharmacists in 2004 and demonstrated that the most common drug prescription fault was related to antibiotics and their wrong dosage prescription. In 2005, Mirco et al<sup>(7)</sup> reported wrong drug dosage prescription to have a rate of 30%. In 2006 Crucial-Souza<sup>(8)</sup> reported drug interaction prevalence as the most common mistake in prescription with a rate of 49.7%. Unfortunately research studies in this field in our country are limited.

In 2004 Nezafati et al<sup>(9)</sup> reported that faults in drug's name as the most common drug prescription fault as shown by their evaluation of drug prescriptions. As physicians and dentists have the main role in clarifying drug consumption protocols, drug prescription by them will increase the quality of treatment. Considering the limited number of studies in this field, we analyzed more faults and strong points in our study.

## **MATERIALS AND METHODS**

This study was a descriptive research. Twenty pharmacies were randomly selected in Tabriz. Dentists in this study were divided into three groups: general dentists, post-graduate students and specialists. A checklist was prepared for collecting data, which contained attention to writing Rx sign, numbering of drugs, form, drug's name, drug's dosage, the order of drug consumption and drug interactions.

In the next step relationship between these items and gender and academic degrees of dentists were analyzed as a secondary goal. In this paper the faults under evaluation were:

- 1) Faults in writing the drug form considered as a mistake in prescription of drug type or not writing the drug type.
- 2) Faults in writing the name of the drug were considered as mistakes in spelling or bad handwriting or not writing it and incomplete writing of drug name.
- 3) Faults in writing drug dosage were considered as not prescribing the exact drug dosage or not writing the drug dosage order as bad handwriting.
- 4) Faults in drug interaction were considered as interaction between drugs in one prescription that augments or declines the drug's efficacy.
- 5) Fault in numbering of prescription that consisted of evaluation of prescriptions without numbering and incomplete numbering.

Data was analyzed using chi-squared test.  $P < 0.05$  was considered statistically significant in this study.

## RESULTS

Prescribed drugs that were evaluated consisted of antimicrobial drugs, analgesics like acetaminophen, NSAIDs and steroids like dexamethazone or mouthwashes. The most commonly prescribed drugs were antibiotics. The results of this study are summarized in Table 1 according to academic degree and according to sex in Figure 1.

In this research 72.3% of prescriptions belonged to the male group and 27.7% to the female group; 80.8% of prescriptions belonged to general dentists, 2.7% to post-graduate students and the remaining 16.5% to specialists.

In the evaluation of the faults, the most common error was related to writing the names of drugs as in 59.2% of prescriptions their name were incomplete and in 8.1% the spelling was incorrect; in other words, these faults were noted in 73.9% of males and 50% of females ( $P=0.001$ ). 42.90% of post-graduate students, 28.60% of general dentists and 51.20% of specialists paid attention to this matter, with a significant relationship with academic level ( $P=0.019$ ). A total of 42.7% of prescriptions that were evaluated did not have drug consumption orders and this finding had a significant relation with dentist's gender as 69.4% of female group paid attention to this matter ( $P=0.043$ ) and in relation with academic

degrees 83.7% of specialists paid attention to this matter, revealing that paying attention to drug prescription had a significant relation with academic degree ( $P=0.000$ ).

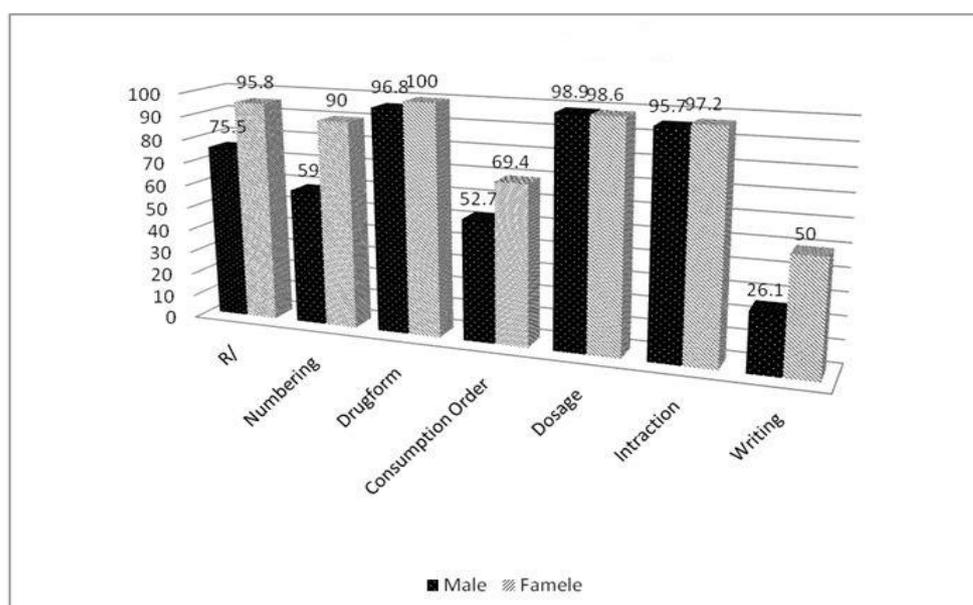
The fault of beginning prescription without R sign was 18.8% and not numbering the drugs was 32.2%. Regarding these two errors the male group had more faults (24.5%) compared to the female group (4.2%) ( $P=0.000$ ) and in relation to academic degrees 100% of post-graduate students paid attention to this matter, without any significant relation with academic degree ( $P=0.124$ ).

The error in drug form was 2.3%, which was restricted only to the male group but 100% of female group paid attention to this issue ( $P=0.191$ ) and this error had a significant relation with dentists' academic degrees ( $P=0.000$ ). The error in drug dosage was analyzed as 1.2% rate in prescriptions that had no significant relation with dentist's gender ( $P=0.525$ ) and 100% of specialists and post-graduate students paid attention to it ( $P=0.000$ ).

Drug interactions were noted in 3.8% of prescriptions, with no significant relation with gender ( $P=0.459$ ) and academic degree ( $P=0.731$ ). The error in numbering of prescription was evaluated in this study and 41% of them belonged to the male group but 90% of the female group subjects paid attention to this issue ( $P=0.000$ ), with no relation with academic degrees ( $P=0.056$ ).

**Table 1: The frequency distribution of principles evaluated with respect to education**

Principles	Graduation	General Dentists	Resident	Specialist
R/		81.90%	100.00%	74.4.%
Numbering		66.20%	100.00%	69.80%
Drug form		100.00%	100.00%	86.00%
Consumption order		53.30%	14.30%	83.70%
Dosage		98.60%	100.00%	100.00%
Interaction		96.20%	85.7.%	97.7.%
Writing		28.60%	42.90%	51.20%

**Figure 1: Frequency distribution of principles evaluated with respect to gender.**

## DISCUSSION

The results of this research study were compared with those of medical prescriptions because research in dentistry is limited on the subject. The most common errors in this research are related to drug name; 59.3% of these errors were related to incomplete writing of drug's name and 8.1% were related to spelling errors of drug names.

The basis to evaluate drug name spelling was drug information published by the

Ministry of Health and it was our reference for the correct spelling.

The results of this research are consistent with those reported by Nezafati,<sup>(9)</sup> Rupp,<sup>(10)</sup> and Lesar,<sup>(4)</sup> revealing that dentists paid less attention to such issues.

As there are not too many drugs that are prescribed by dentists, the number of drugs is not the etiology for these problems and perhaps saving time or the belief that the pharmacist will read their prescription can explain these errors.

Incomplete writing of the drug dosage was the second error in prescriptions we found. This was compatible with the studies carried out by Philips and Lesar.<sup>(3,4)</sup>

Consequences of incomplete writing of drug dosage can be very dangerous since recurrent bacterial infection and drug resistance leads to serious damage and threatening of patients' health and lengthening of patient's disease. The expense of these illogical treatments is high for patients and health insurance systems.

Not numbering of prescriptions was the third error, with 41% of them written by the male group; however, 90% of females paid attention to this matter. Writing numbers can accelerate drug preparation by pharmacists in addition to being more acceptable.

In this research, errors in writing drug's form and dosage comprised 6.2% of faults, consistent with Fortescue<sup>(11)</sup> and Mirco<sup>(7)</sup> research studies.

Fortunately, drug interaction (3.8%) was the least error, which was related to prescription of steroids and NSAIDs. For example, prescription of dexamethazone with ibuprofen, which cause peptic ulcer and hemorrhage as an adverse effect in affected patients or deregulation of control or treatment of diabetes as another example.<sup>(13)</sup> Prescriptions of ampicillin in women who probably consume OCP were not considered, either.<sup>(14)</sup>

The results of studies by Souza<sup>(8)</sup> and Philips<sup>(3)</sup> on medical prescriptions are not

consistent with those of the present study, perhaps because fewer drugs are prescribed by dentists, decreasing the rate of complications and lower knowledge of patients' histories of systemic diseases such as diabetes or hypertension. We could not evaluate all the interactive factors in this issue.

Dentists must be aware of drug side effects and their interactions in prescriptions and they must not prescribe unnecessary drugs. It is clear that we must plan standard educational programs on logical prescriptions in dentistry courses.

In conclusion, there should exist continuing educational program for dentists and better supervision of drugs by health systems to convince medical community to pay more attention to ethical principles in drug prescription.

## REFERENCES

1. National Patient Safety Agency. Safety in doses: improving the use of medicine in the NHS. London: National Patient Safety Agency, 2009.
2. Marek CL. Avoiding prescribing errors: A systematic approach. *J Am Dent Assoc* 1996; 127:617-23.
3. Phillips J, Beam S, Brinker A, Holquist C, Honig P, Lee Ly et al. Retrospective analysis of mortalities associated with medication errors. *Am J Health Syst Pharm* 2001; 58:1835-41.
4. Lesar TS. Prescribing errors involving medication dosage forms. *J Gen Intern Med* 2002; 17:579-87.

5. Tissot E, Cornette C, Limat S, Mourand J, Becker M, Etievent J, Dupond J et al. Observational study of potential risk factors of medication administration errors. *Pharmacy World Science* 2003; 25:264-68.
6. Bobb A, Gleason K, Husch M, Feinglass J, Yarnold PR, Noskin GA. The epidemiology of prescribing errors: the potential impact of computerized prescriber order entry. *Arch intern Med* 2004; 164:785-92.
7. Mirco A, Campos L, Falcão F, Nunes JS, Aleixo A. Medication errors in an internal medicine department. Evaluation of a computerized prescription system. *Pharm World Sci* 2005; 27:351-2.
8. Crucial-Souza JM, Thomson JC. A pharmaco epidemiologic study of drug interactions in a Brazilian teaching hospital. *Clinics* 2006; 61:515-20.
9. Nezafati, S, Maleki N, Qlykhany R. Prescriptions Quality of Health Services Insurance Dentists in Tabriz in the second half of 2002, *Medical Journal of Tabriz University of Medical Sciences* 2002;2:101-4.
10. Nezafaty S, Maleky N, Gholikhany R. Quality evaluation of prescription of medical services insurance of Tabriz dentists in second half of 1384. *Journal of Tabriz medical school*. 2006; 2:101-104.
11. Rupp MT, DeYoung M, Schondelmeyer SW. Prescribing problems and pharmacist interventions in community practice. *Med Care* 1992;30:926-40.
12. Fortescue EB, Kaushal R, Landrigan CP, McKenna KJ, Clapp MD, Federico F, et al. Prioritizing strategies for preventing medication errors and adverse drug events in pediatric inpatients. *Pediatrics* 2003; 111(4):722-29.
13. Piper JM, Ray WA, Daugherty JR, et al. Corticosteroid use and peptic ulcer disease: role of nonsteroidal anti-inflammatory drugs. *Ann Intern Med* 1991; 114:735-40.
14. ADA Health Foundation Research Institute, Department of Toxicology. Antibiotic interference with oral contraceptives. *J Am Dent Assoc* 1991; 122(12):79.