JOURNAL OF PHYSIOLOGY AND PHARMACOLOGY ADVANCES

Investigating the Prevalence of Prescribing Errors in General Dentists Prescriptions

Nuroloyuni S, Pirzadehashraf A, Nouroloyouni A, Asdagh S. and Khabiri B.

J Phys Pharm Adv 2015, 5(2): 550-555

DOI: 10.5455/jppa.20150205125023

Online version is available on: www.grjournals.com

Original Article

Investigating the Prevalence of Prescribing Errors in General Dentists Prescriptions

[1]Nuroloyuni S, *[2]Pirzadehashraf A, [3] Nouroloyouni A, [4]Asdagh S and [5]Khabiri B.

[1] Assistant prof, Department of Pediatric Dentistry, Faculty of dentistry, Ardabil University of Medical Science, Ardabil, Iran.
[2] Assistant prof in Hematology and Oncology, Faculty of medicine, Ardabil University of Medical Science, Ardabil, Iran.
[3] Resident Endodontic, Ardabil, Iran.
[4] Assistant prof in Cosmetic and Restorative Dentistry, Faculty of dentistry, Ardabil University of Medical Science, Ardabil, Iran.
[5] General Dentist, Ardabil University of Medical Science, Ardabil, Iran.

Abstract

In order to improve the process of treatment and preventing adverse consequences. Dentists should be informed about prescribing errors such as type of medicine, dose, medicine interactions, etc. The aim of this study was to investigate the prevalence of prescribing errors in general dentist's prescriptions. In this descriptive study insurance number of1000 prescriptions which were written by dentists in Ardabil city during 1 year were selected randomly and evaluated as retrospective study considering errors of medicine type, name of medicine, dose, intervals, way of prescribing, number of medicines in each prescription, medicine interactions and legibility of prescriptions and then with data collected from SPSS.16 and analyzed using descriptive statistics and analysis. Of studied prescriptions 71% had errors. Type of medicine, name of medicine, way of prescribing, time between doses and doses had been written wrong in 42%, 15%, 12%, 2%, and 29% of prescriptions, respectively. There aren't any medicine interactions between prescriptions. Regarding high percentage of errors among studied prescriptions, it is suggested to emphasis more on principles of prescription at university and retraining courses for dentists. It is possible to encourage them by reducing some money given for each wrong prescription.

Keywords: Prescriptions, dentists, errors, Ardabil, prevalence, drugs.

* Corresponding author: Assistant prof in Hematology and Oncology, Faculty of medicine, Ardabil University of Medical Science, Ardabil, Iran.
Received on: 20 Jan 2015
Revised on: 30 Jan 2015
Accepted on: 05 Feb 2015
Online Published on: 26 Feb 2014

Introduction

Drug therapy and drug prescribing is the most commonly used method of any disease treatment in general practice. (Babalola *et al.,* 2011) Rational drug prescription is defined as using the least number of drugs to obtain the best possible effect in the shortest period and at a reasonable cost. Accurate diagnosis and proper administration of prescriptions are some of the main important criteria to achieve the rational drug use. Inappropriate drug prescription is a problem all over the world which leads to ineffective and unsafe treatment, exacerbation of illness, distress and harm to the patient, and higher costs to patients and societies. (Vijayakumar *et al.,* 2011; Tamuno 2011) According to the National Coordinating Council for Errors in Medication Reporting and Prevention (NCCMERP), a medication error is defined as "any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in control of the health care". In the last few years, medication errors have been reported to have caused significant patient harm in many different countries.

Prescribing errors include mistakes or inaccuracies when choosing and ordering treatments, such as wrong doses or illegible prescriptions. Prescribing errors can take many forms, but commonly involve incorrect doses, illegible details or ordering inappropriate medications or drugs that may react with other medications already being. Wrong prescription, in addition to patients' financial loss, can cause adverse effects such as microbial resistance, toxicity, etc. (Velo *et al.,* Classen *et al.,* Laing *et al.,*). The findings of the studies showed that drugs adverse effects were the fourth cause of mortality in developing countries. (Ponte *et al.,* 2013) Irrational prescription of drugs is common in many countries including developed countries. 3 Different studies showed that average number of drugs in every prescription in many countries outnumbers the WHO standards. (Hogerzeil *et al.,* 1989) At first glance, drug interactions and prescribing errors may not seem so important, but prescribing errors may cause discomfort, illness or death of any person. (Marek 1996). Prescriptions study process, as a surveillance activity for reduces the burden caused by medication errors, increase the rate of recovery and discharge patients from hospital is very useful. Given the inevitability of human error, the only way to get rid of medication errors, is exact study of all of the prescriptions and review copies at a crucial stage, i.e. before the delivery of the drug to the patient. (Rodrigues *et al.,* 2010) The aim of this study was to investigate the prevalence of prescribing errors in general dentist's prescriptions.

Materials and Methods

This cross-sectional retrospective study was conducted by reviewing a randomly selected 1000 dental prescriptions registered in insurance office of Ardabil. All prescriptions were assessed for the presence of at least one error, either in drug form (the form not written or written by mistake), error in drug name, the drug dose, interval and quantity and method of administration. Also, we calculated the index of dental practitioners by the annual reports from registered data. All data were interred in a checklist and then analyzed by statistical methods such as t-test and chi-square in SPSS.18.

Results

Of total prescriptions, 61% related to male patients and rest of them for female. There was a significant difference between the rate of error in prescription in male dentists and female dentists in this study (P=0.001). The mean age of patients was 32.8 ± 14.9. The drug number per prescription was 3 in 47 % (figure 1). The average number of drugs per prescription was 2.64 ± 0.8 (range 1-5 per prescription). There were errors in 71% of the studied prescriptions with significant differences between the two groups of dentists (P=0.001). The error in drug name was 42% (figure 2). The most drugs prescribed by general dental practitioner were Antibiotics in 64.2% (figure 3).

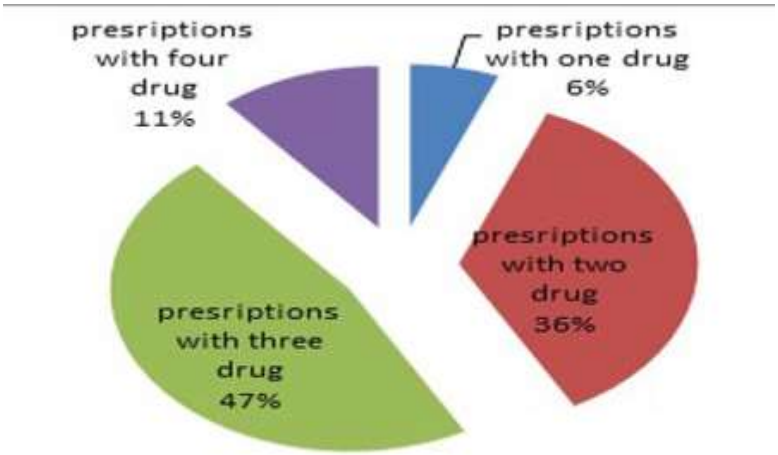

Fig. 1: The number of prescribed drugs in prescriptions.

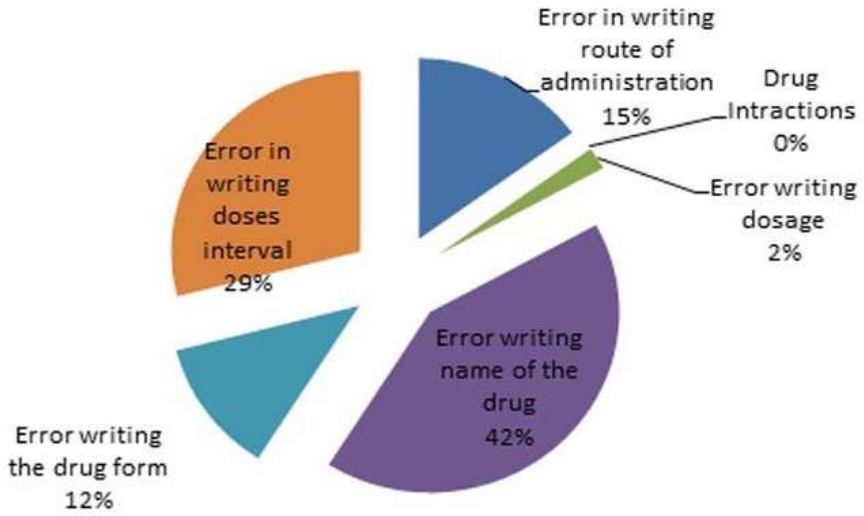

Fig. 2: The type of errors in prescriptions.

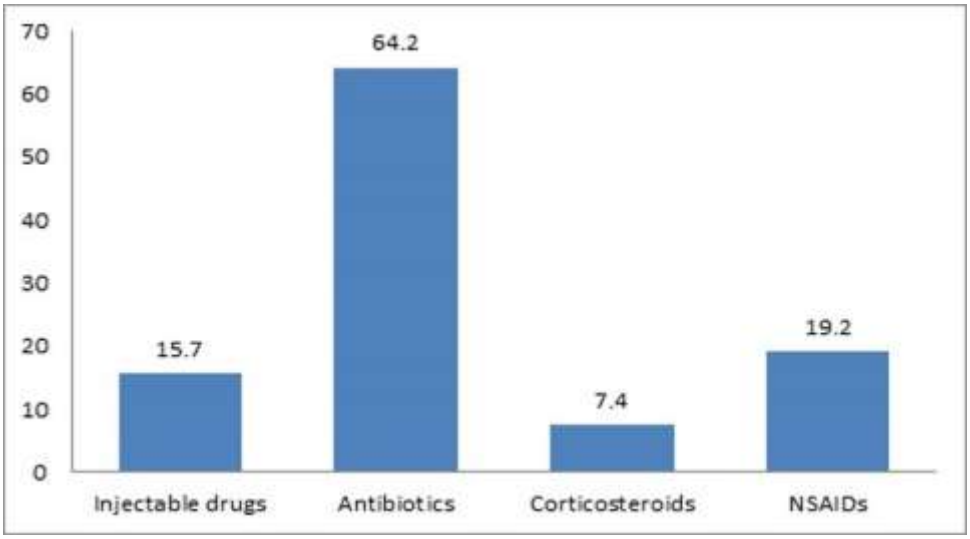

Fig. 3: The type of prescribed drugs in dentist's prescriptions.

Amoxicillin in 83% followed by Ampicillin in 74.7% were the most common prescribed Antibiotics. Gelofen and Ibuprofen in NSAIDs, Chlorhexidine in mouthwashes, and Dexametazone in Coticosteroids were the most prescribed drugs (figure 4).

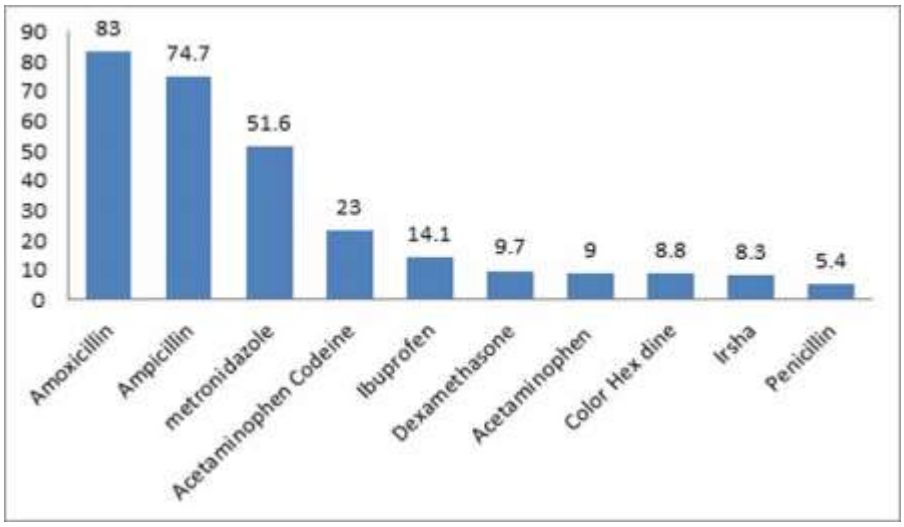

Fig. 4: The frequency of prescription drugs by dentists.

Discussion

Rational drug prescription is considered as a crucial aspect of healthcare policies in each country, because of its influence on patients, society and its economy. The results of this study revealed that most of the dentists prescribed 2 and 3 drugs per prescription (83%). The mean number of drugs per prescription was 2.64±0.8. There was a significant difference in the mean number of drugs between the male and female prescribers. The number of drugs per prescription in our study was higher than other places and WHO reference values about 1.6-1.8 per prescription which can be related to various factors and also a high number of prescribed drugs for a patient increase the risk of drug interactions. (Tamuno *et al.,* Ajit *et al.,* Rehan *et al.,* Nezafati *et al.,* Kia *et al.,*).

In our study, 71% of prescriptions had errors which were not similar to other studies (Nezafati *et al.,* Kia *et al.,*). Also, 12% of prescriptions had errors in drug form that was higher than other places (Nezafati *et al.,* Medonca *et al.,*) because of more errors were seen in the form of new drugs and drugs with multi-forms. Regarding drug name, 42% of prescriptions had error and errors about drug quantity were observed in 2% of prescriptions that was much less than other studies. (Mendonca *et al.,* Patel *et al.,* Philips *et al.,* Dean *et al.,* Micro *et al.,*). The error in writing drug dose has been reported in many studies with various rates. In our study this rate was 2% which was very lower than other studies which represent dentist's accuracy in not remembering and writing the proper dose of medication is due to the limited range of prescription drugs. Some of errors were reported in prescriptions include the drug Acetaminophen Codeine, Dexamethasone and mouthwashes.

The error in dose interval was seen in 29% of prescriptions that it was lower than some studies (Nazafati *et al.,* Kia *et al.,* Philips *et al.,* and Micro *et al.,*). The upper rate of error in this study probably can be this that some of dentists due to issues such as time savings, convenience or forgotten dose interval did not emphasize to this topic and lead to prescription error.

Most of errors in route of administration were seen in oral drugs (15%) lower than other studies (Nazafati *et al.,* Kia *et al.,*) and this upper rate of this error can be due to non-writing method of administration in most orally prescriptions. In this study, drug usage in the form of injection was found 15.7% that was higher than other studies (Patel *et al.,* Adebayo *et al.,* and Babalola *et al.,*). It is

claimed that some patients believe injections are more potent than oral forms of drugs, hence they request doctors to prescribe them. Injections are probably popular in the third world because the syringe and needles are seen as symbols of western medicine.

Amoxicillin followed by Ampicillin, Metronidazole, Acetaminophen Codeine were the most common prescribed antibiotics respectively. Salako *et al.,* Mendonca *et al.,* Nezafati *et al.,* Kia *et al.,* reported, Amoxicillin as the most common antibiotics. NSAIDS such as Gelofen, ibuprofen with 19.2 % was prescribed more than other NSAID drugs in our study. Baghaei *et al.,* and Mendonca *et al.,* reported that the most common prescribed NSAIDS in their study were ibuprofen, Diclofenac and naproxen, respectively. Although NSAIDs, are the most commonly chosen drugs for dental pain management, as they can cause fluid and sodium retention (which is an important risk especially in patients with hypertension), allergic reactions, post-operative bleeding and a variety of serious drug interactions. So, these drugs should be used cautiously especially in elderlies and patients with renal and/or cardiovascular diseases.

In this study Acetaminophen-Codeine was prescribed widely. The mean percentage of patients receiving corticosteroid drugs was 7.4%, lower than Safaeian *et al.,* and Amin *et al.,* unfortunately; corticosteroids are over-prescribed and often given without indication in Iran during recent years. Various side effects are associated with steroids use and corticosteroids should be avoided when effective alternatives like NSAIDs are available.

Conclusion

This study showed that the rate of errors in general dentist's prescriptions was more. Regarding high percentage of errors among studied prescriptions, it is suggested to emphasis more on principles of prescription at university and retraining courses for dentistry students. Also, in future we can encourage dentists to observe proper principles of prescribing by incentive and punitive programs.

Acknowledgment

The result of this study financially supported by Ardabil University of Medical Science and we authors would like to thank all the clinical managers of social insurance and drug and food organization personnel for their good cooperation in this survey.

References

Adebayo ET, Hussein NA (2010). Pattern of prescription drug use in Nigerian army hospitals. Ann. Afr. Med., 9(3): 152-8.

AjitKumar S (2012). Prescribing trends of Non-Steroidal Anti-Inflammatory drugs used in dental outpatient department of a tertiary hospital in Nepal. JPRS., 4(3): 1779-82.

Amin A, Ayaz Khan M, Azam SHMF, Haroon U (2011). Review of prescriber approach towards rational drug practice in hospitalized patients. J. Ayub Med. Coll. Abbottabad., 23(1): 19-22.

Babalola CP, Awoleye SA, Akinyemi JO, Kotila OA (2011). Evaluation of prescription pattern in Osun State (Southwest) Nigeria. J. Publ. Health Epidemiol., 3(3): 94-8.

Baghaei F, Raoof M, Kakoei S, Adhami S (2009). Pattern of analgesics prescription by dentists in Iran. J. Shiraz Univ. Med. Sci., 10(2): 170-4.

Classen DC, Pestotnik SL, Evans RS, Lloyd JF (1997). Adverse drug events in hospitalized patients. Excess length of stay, extra costs, and attributable mortality. JAMA., 277(4): 301-6.

Dean B, Schachter M, Vincent C, Barber N (2008). Prescribing errors in hospital inpatients: their incidence and clinical significance. Qual. Saf. Health Care., 11(4): 4-340.

Hogerzeil HV, Walker GJ, Sallami AO, Fernando G (1989). Impact of an essential drugs programme on availability and rational use of drugs. Lancet., 1(8630): 141-2.

Kia SJ, Behravesh M, Khalighi-Sigaroudi A (2013). Evaluation of drug prescription pattern among general dental practitioners in Rasht,Iran. J. Dentomaxillofacial Radiol. Pathol. Surg., 1(2): 18-23.

Laing R, Hogerzeil H, Ross-Degnan D (2001). Ten recommendations to improve use of medicines in developing countries. Health Pol. Plan., 16(1): 13-20.

Marek CL (1996). Avoiding Prescribing Errors: Asystematic approach. JADA., 127: 617-23.

Mendonca JMD *et al.,* (2010). Analysis and detection of dental prescribing errors at primary health care units in Brazil. Pharm. World Sci., 32: 30-5.

Mirco A, Campos L, Falcao F, Nunes JS (2009). Medication errors in an internal medicine department. Evaluation of a computerized prescription system. Pharm. World Sci., 27(4): 349-51.

Nezafati S, Maleki N, Golikhani R (2009). Quality assessment of health services insurance prescription among the dentists of Tabriz City in 2005-2006. Med. J. Tabriz Univ. Med. Sci., 31(2): 101-4.

Patel V, Vaidya R, Naik D, Borker P (2009). Irrational drug use in India: A prescription survey from Goa. J. Postgrad. Med., 15(1): 9-12.

Philips J, Beam S, Brinker A, Holquist C (2001). Retrospective analysis of mortalities associated with medication errors. Am. J. Health Syst. Pharm., 58(19): 1835-41.

Ponte ML, Ragusa M, Armenteros C, Wachs A (2013). Importance of pharmacovigilance in current medical practice. Med., 73(1): 35-8.

Rehan HS, Singh C, Tripathi CD, Kela AK (2001). Study of drug utilization pattern in dental OPD at tertiary care teaching hospital. Indian J. Dent. Res., 12(1): 51-60.

Rodriguez R, Vidrio H, Campos Sepulveda E (2009). Medicalization of pharmacology teaching: an urgent need in the medical curriculum. Proc. West Pharmacol. Soc., 52: 120-8.

Safaeian L, Mahdanian AR, Hashemi-Fesharaki M (2011). General physicians and prescribing pattern in Isfahan, Iran. Oman. Med. J., 26(3): 205-6.

Salako NO, Rotimi VO, Adib SM, Al-Mutawa S (2004). Pattern of antibiotic prescription in the management of oral diseases among dentists in Kuwait. J. Dent., 32(7): 503-9.

Tamuno I (2011). Prescription pattern of clinicians IV private health facilities in Kano, Northwestern Nigeria. Asian Pac. J. Trop. Dis., 1(4): 235-8.

Velo GP1, Minuz P (2009). Medication errors: prescribing faults and prescription errors. Br. J. Clin. Pharmacol., 67(6): 624-8.

Vijayakumar TM, Sathyavati D, Subhashini T, Sonika G (2011). Assessment of prescribing trends and rationality of drug prescribing. International J. Pharm., 7(1): 140-3.