Assessment of Prescriptions Patterns and Drug Use across the Kurdistan Region

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ARTICLE INFO	ABSTRACT

Background: Errors in drug prescriptions are the most common preventable medication errors encountered in clinical practices worldwide. The purpose of this study is to examine the pattern of prescriptions and drug use in the Kurdistan region and to determine whether prescription patterns are based on rational therapeutic considerations.

Methods: A cross sectional-observational study was conducted in the Kurdistan region of Iraq over a period of five months. A total of 1000 prescriptions were selected randomly from different pharmacies and data obtained from each prescription. In these prescriptions a total of 2878 medications were prescribed. After collection, excel software was then used to perform calculations.

Results: The average number of drugs per prescription was calculated to be 2.8. Drugs prescribed by generic name were 27% and more than 98 percent of prescriptions were handwritten. The duration of therapy was mentioned in 56.5% of prescriptions. However, the dose and dosage form of medications were recorded 62% and 87.3% respectively. The percentage of prescriptions containing a signature was 88.1%. Furthermore, the percentage of antibiotics, supplements, non-steroidal anti-inflammatory drugs and other painkillers were prescribed at a rate of 51.8%, 44.2%, 31.8%, and 21.8% per prescription.

Conclusion: Whilst observing the data we can conclude that the rate of drugs written per prescription is much higher than the suggested World Health Organization (WHO0 average. Prescribing errors are one of the most common preventable causes of medication errors and the use of electronic prescriptions may play a huge role in ameliorating this fact.

J Pharm Care 2019; 7(1-2): 26-30.

► Please cite this paper as:

Tawfeeq R, Tahssen Obied T, Ommar A. Assessment of Prescriptions Patterns and Drug Use across the Kurdistan Region. J Pharm Care 2019; 7(1-2): 26-30.

Introduction

A medical prescription is a document created by a physician as an authorization for a patient to receive one or more medications over a period of time. Inappropriate prescribing can lead to medication errors and hence put the patient's health at risk. As a research paper so eloquently put it: "Prescription writing is a science and an art, as it conveys the message from the prescriber to the patient" (1). Therefore, it is important to ensure a proficiency in prescription writing.

Medication errors are quite common and a portion of them could result in the occurrence of adverse events, as Bates et al., (2) have shown in their study in which 10,070 prescription orders were collected. Of these prescriptions, 530 medication errors were determined. That means that there were 5.3 errors in every 100-prescription order. As a consequence five of the 530 medication errors caused an adverse event in the patient. Physician computer order entry can prevent many of these medication errors and adverse events. By using these types of prescription orders 86% of medication errors, which would result in potential adverse event, would be prevented by using computer order entry (2). Therefore monitoring and evaluation of prescription patterns and drug usage plays an important role in identifying the drug related problems and

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providing feedbacks to the prescriber in order to create awareness for the effective use of the drug (3). Irrational use of medication in both developed and developing countries is very common and this leads to medically inappropriate, ineffective and economically inefficient use of medication in clinical practices (3). Drug misuse is a serious worldwide issue encountered nowadays and one of the most commonly misused medications are antibiotics. Irrational use of antibiotic is one of the major challenges globally as it results in resistance of antibiotic against a wide range of bacteria and limits it is usefulness as demonstrated by Hameed et al., (4), 17% of adults do not complete the course of antibiotic, 41% of patients do not know that antibiotic abuse is harmful while 23% purchase antibiotic without prescription. Another study conducted in Jordan by Darwish et al., (5) the study involved randomly selected Iraqi residing in Amman, among 508 participants 62% of them agreed on purchasing antibiotics without prescriptions, 29% agreed to obtain antibiotic from relatives, 90% listed viral infection as an indication of antibiotic.

Till now there is no universally agreed upon definition to describe the rational and good prescription pattern. The WHO guidelines encourage the rational use of drugs and ensures that the patient receive medication according to their needs with the right dose and sufficient duration of therapy with lowest cost possible for the patient and community (6). Interventions that could be used to promote more rational use of medicines are: A mandated multi-disciplinary approach to develop and evaluate interventions to encourage rational use of medicines; clinical guidelines; using an essential medicine list (Essential medicine are those that satisfy the health care needs of the population); committees to insure the safe and effective use of medication for example drug and therapeutic committee; pharmacotherapy training for undergraduate medical and paramedical students; continuing in-service medical education as a licensure requirement; supervision, audit and feedback; provision of unbiased information about medicine and two useful ways to disseminate information are through drug information center and drug bulletins; public education about medicine; avoidance of perverse financial incentives example the practitioner who earn money from the sale of medicines will prescribe more expensive medicine; regulatory measure to support rational use; sufficient government expenditure to ensure availability of medicine and staff (7). The purpose of the research conducted is to study the pattern of drug prescribing in the Kurdistan region and to determine whether the drug prescribing was based on rational therapeutic consideration.

Methods

A cross sectional-observational study was conducted across the Kurdistan region of Iraq from the provinces of Erbil, Duhok, Sulaymaniyah, Akre, Kalar. The study analyzed 1000 prescriptions over the period of five months (20.10.2017 to 20.3.2018). Prescriptions were collected randomly at different pharmacies and the pharmacist were informed to collect the prescriptions in each city. The prescriptions were collected from both public and private sector.

All the drugs prescribed were recorded including the numbers of drugs prescribed per prescription, quantity of medication prescribed, the percentage of prescription that were handwritten.

In this study we calculated the number of encounters with (antibiotic, supplement, NSAID, other painkiller) prescribed and determined whether the (duration of therapy, date of the prescription, name of the patient, address of the prescriber, sign of the prescriber, age of the patient, dose, dosage form) were involved in the prescription or not. Furthermore, the ratio of drug written in generic name to that written in brand was also determined.

Figure 1. Sample prescription

Ah-see et al, 2014, prescription writing, BMJ Group and Pharmaceutical Press, London.

Figure 1 shows an example for a computerized prescription in which all the relevant information is clearly documented according to guidelines.

Results

The prescriptions, which were randomly collected across the Kurdistan region, reached a total of 1000

prescriptions. From these prescriptions a sum of 2878 medications were prescribed for patients by healthcare professionals in order to treat ailments or improve the quality of life of the patient. To summarize the acquired the data, the mean number of drugs prescribed per prescription was determined to be 2.8 medications, and from these prescribed medications 27% were written in the form of their generic name, whilst the majority (73%) were prescribed in the form of their brand name.

Furthermore, from all these prescribed medications, it was found that the medications could be generalized into five main categories, namely supplements, antibiotics, supplements, NSAID's, other painkillers, and a large category of medications denoted as "Others." The percentage of medications prescribed belonging to the class of antibiotics was determined to be 18%, in other words, in one prescription there was a 51.8% chance that the prescription contained an antibiotic. Supplements accounted for about 15% (44.2% per encounter), whilst NSAID's comprised about 11% (31.8% per encounter), other painkillers were found to be about 8% (21.8% per encounter) of the prescribed medications.

The duration of therapy to be implemented by the patient was mentioned in 56.5% of prescriptions, and the age of the patient was mentioned in 19.2% of the prescriptions. Patient names were absent in 7.2% of prescriptions. Date of the prescription was involved in 61.3% of prescriptions and the address of the prescriber was involved in 75% of prescriptions. However, the percentage of prescriptions which mentioned the dose and dosage form were 62% and 87.3% respectively. Also 88.1% of prescriptions were signed by the prescriber leaving 11.9% unsigned. The obtained data from the collected prescriptions are summarized in Table 1.Our study reveals that the prescription pattern in the Kurdistan region is poor in comparison with other systems used throughout the developed world, and the majority of medical practitioners are not adhering to the international standards of prescribing medications. The government authorities both ministry of health and the Kurdistan Syndicate of Pharmacists should encourage the rational use of medication in both the public and private sectors. This can be achieved through new applicable regulations and by formal interventions which can be done by pharmacists to make physicians aware of the situations in which they are likely to commit errors or through the application of proper training or the use of computerized prescriptions. According to the data we collected only 1.7% of the collected prescriptions were computerized, which reflects on the nation's poor usage of technology. Although handwritten prescriptions are generally quicker and simpler to complete, computerized prescriptions allowed the advantage of reducing the occurrence of human errors. It is also more favorable for a physician to prescribe using the medications generic name unless there is significant differences in bio equivalency or

content between the same medicaments manufactured by different companies.

Table 1. Data obtained from the collected prescriptions.

	Number per 1000Rx	Percentage (%)
Antibiotics	518	51.8
Supplements	442	44.2
Non-steroidal anti-inflammatory drugs	318	31.8
Other painkiller	218	21.8
Date of prescriptions	613	61.3
Duration of therapy	565	56.5
Name of patients	928	92.8
Address of prescriber	750	75
Signature of prescriber	881	88.1
Age	192	19.2
Dose	620	62
Dosage form	873	87.3

Discussion

In this study, 1000 prescriptions have been collected and analyzed; and a total of 2878 medications were prescribed. Studies on drug utilization patterns are essential for obtaining data and information about the quality of drug use and its aim towards educating the population for rational use of medication (8). The average number of drugs per prescription was 2.8 that are higher than the suggested WHO criteria of less than two drugs per prescriptions. A study conducted in Delhi showed that the average number of drug per prescription ranged from 1.42 to 4.07 (2). Another study from Lucknow's district reported that poly-pharmacy was common 3.1±1.6 drug per prescription (1). While another study in Iran had reported a mean of 4.4±1.7 drugs per prescription (9).
Poly-pharmacy increase the risk of drug-drug interaction, noncompliance, cost of therapy, errors in prescribing and the number of drug related problems per patient was in direct proportional to the number of drug used (8, 10). Prescribing can be inappropriate or irrational for many reasons, including wrong selection of medication, Poly pharmacy or prescribing multiple medications that could interact with each other, prescribing for conditions that are self-limiting, continuing to prescribe the medication for longer duration than needed. Moreover, they involve prescribing a low dose of medication and/or taking medication for short duration in which the patient will not get the benefit from drug especially the use of antibiotics instead of continuing the course of treatment to prevent antimicrobial resistance. Also, prescribing without discussing the treatment options with the patient and taking into consideration the patient needs can lead to an

inappropriate prescription (6).

To assess the problem of irrational use of medicines, prescribing, dispensing we should regularly monitor the type of irrational use so that to develop strategies towards changing specific problem, the amount of irrational use should be assessed to determine the size of the problem and the reason why medicines are used irrationally so that effective strategies can be chosen (7).

The numbers of drugs written in generic name were 777 drugs out of 2878 (27%), while the number of drugs written in brand name was 2101 drugs out of 2878 (73%). Low generic prescription of drug in Kurdistan region could reflect the influence of pharmaceutical companies. To change the situation the generic prescription of drugs by physician should be encouraged by regular educational program to improve prescribing practices among physicians. A study conducted by Rahman et al., (11) showed that only five prescriptions were written in generic name out of 600 prescriptions. Another study from Jordan showed that the percentage of drugs prescribed by generic name was 5.1% (12). While in northwest Ethiopia the percentage of drugs prescribed by generic name was high with average of 75% in health centers and 83% in health stations (13).

In this study, only 1.7% of prescriptions were computerized written, while 98.3% were handwritten. The computerized written prescription should be encouraged as they are more legible and huge number of errors could be avoided. As demonstrated by Bates et al., (2), computer order entry systems reduced the frequency of medication errors, which could result in potential adverse event. Furthermore, computerized prescriptions could be integrated with other systems present in a hospital or poly-clinic allowing the physician to access, record, and search for information more easily on a database.

Percentage of antibiotic prescribed per encounter in this study was 51.8% and supplements were prescribed in 44.2% of encounters, while the pain killers were prescribed in 53.6% of encounters of which non-steroidal anti-inflammatory drugs formed 31.8%. In Pakistan antibiotics were prescribed in 52% of encounters (14). While in Jordan the percentage of encounters with antibiotic range from 46.7% to 83.3% at different centers (21 center were involved in the study) (12). It is very important to use antibiotic rationally, as overuse of antibiotic is associated with increasing rate of bacterial resistance and antibiotic become less effective against bacteria which has been sensitive to it before especially if the antibiotic is prescribed without a culture sensitivity test (4).

The percentage of prescriptions contained the name of the patient in this study were 92.8%, while the age of the patient were involved in 19.2% of prescriptions. It is important to involve the age of the patient in prescription as children differ from adults in their response to medication and special care is required in case of dispensing the medication to the elderly and neonates because the risk of toxicity is increased by decreasing the drug clearance (Cl) in these population age (15).

Duration of therapy was written in 56.5% of prescriptions. Absence of duration of therapy in drug prescription is regarded as irrational and can result in drug abuse as the patient may take the drug for shorter or longer duration and affect the efficacy of therapy. The dose and dosage form were written in 62% and 87.3% of prescription respectively.

In this study, we found that 61.3% of prescriptions involved the date of prescription, which is an important element of prescription especially for controlled drugs such as Benzodiazepines, Barbiturates, Narcotics analgesics and others). Therefore the date of prescription should be involved in every prescription in order to prevent the use of same prescription for several times (15).

Among the other prescription requirements especially prescriptions containing controlled drugs is that prescriber should specify the prescribers address as well as its signature. In our study the address of prescribers were written in 75% of prescriptions and prescriber in 88.1% of prescriptions signed the prescriptions.

References

1. Kumari R, Idris MZ, Bhushan V, Khanna A, Agrawal M, Singh SK. Assessment of Prescription Pattern at the public health facilities of Lucknow district. Indian J Pharmacol 2008;40(6):243-247.

2. Bates D, Boyle D, Vandervliet M, Scheinder J, Leap L. Relationship between medication errors and adverse drug events J Gen Intern Med 1995;10(4):199-205.

3. Biswas NR, Biswas RS, Pal PS, Jain SK, Malhotra SP, Gupta A, Pal SN. Pattern of prescription and drug use in two tertiary hospital in Delhi. Indian J Physiol Pharmaco 2000;44(1):109-112.

4. Hameed A, Naveed S, Qamar F, Alam T, Abbas S, Sharif N. Irrational Use of Antibiotic, in Different Age Groups of Karachi: A Wakeup call for Antibiotic Resistance and Future Infections. Journal of Bioequivalence and Bioavailability 2016;8(5):242-245.

5. Darwish DA, Abdelmalek S, Abu Dayyih W, Hamadi S. Awareness of antibiotic use and antimicribial resistance in iraqi community in Jordan. J Infect Dev Ctries 2014;8(5):616-23.

6. Marlow H, Whittlesea S. Clinical pharmacy and therapeutics. 5th ed. London: Elsevier; 2012.

7. Promoting rational use of medicine: core components [Internet]. Who. int. 2002 [cited 28 February 2018]. Available from: https://www.who.int/medicines/publications/policyperspectives/ppm05en.pdf

8. Shankar PR, Dubey AK, Rana MS, Mishra P, Subish P, VijayaBhaskar P. Drug Utilization with special Reference to Antimicrobials in a sub health post in western Nepal. Journal of Nepal Health Research Council (2005);3(2):65-69.

9. Moghadamnia A, Mirbolooki MR, Aghili MB. General practitioner prescribing patterns in Babol city, Islamic Republic of Iran. East Mediterr Health J 2002;8(4-5):550-5.

10. Viktil K, Blix H, Moger T, Reikvam A. Polypharmacy as commonly defined is an indicator of limited value in the assessment of drug- related

problems. Brit J Clin Pharmacol 2007;63(2):187-95.

11. Rahman Z, Nazneen R, Begum M. Evaluation of prescribing pattern of the private practitioners by the undergraduate medical students. Bangladesh Journal of Pharmacology 2009;4(1).

12. Otoom S, Batieha A, Hadidi H, Hasan H, Al-saudi K. Evaluation of drug use in Jordan using WHO prescribing indicators. East Mediterr Health J 2002;8(4-5):537-43.

13. Desta Z, Abula T, Beyene L, Fantahun M, Yohannes AG, Ayalew S. Assessment of rational drug use and prescribing in primary health care facilities in North West Ethiopia. East Afr Med J 1997;74(12):758-63.

14. Hafeez A, Kiani AG, UdDin S, et al. Prescription and Dispensing Practices in public sector Health Facilities in Pakistan: Survey Report. J Pak Med Assoc 2004;54(4):187-91.

15. Ah-See k, Badminton M, Bahl A, Barnes P, Bilton D, Bloom S. British National Formulary. 70th ed. London: BMJ; 2015.