

## Prescribing Pattern and Rational use of Drugs in Al-Basrah Governorate Retail Pharmacies, Iraq

Haydar Fakhri Hadi Al Tukmagi

Department of Clinical Pharmacy, College of Pharmacy, University of Baghdad, Baghdad, Iraq

### Abstract:

This study was designed to investigating the drug prescribing pattern, the important factor to determine the rational or irrational use of drugs among patients dispensing their prescriptions from the private pharmacies in Al-Basrah governorate, Iraq for a period of 1 month.

The data collected from prescriptions were calculated and analyzed according to the WHO prescribing guidelines.

The data showed that the mean of drugs included in single prescription was 4%, and 13% of prescribed drugs were written as generic names; moreover, the percentage of antibiotics, corticosteroids and anxiolytics were 45.7%, 12% and 19.3% respectively.

Those results indicate the irrationality of prescribing drugs when compared with the world health organization standard values of prescribing indicators; in addition to the bad prescribing pattern regardless of the degree of specialization of the physician, were 61% of those prescriptions have been written by specialized physicians.

In conclusion, actual intervention and follow up, training on rational use of drugs and intervention strategies for prescribers is required to improve the rational use of drugs.

**Keywords:** prescription pattern, polypharmacy, rational drug use

### الخلاصة:

صممت هذه الدراسة لتحديد طريقة وصف العلاج وهو عنصر مهم في تحديد الاستخدام الامثل او غير الامثل للدواء بين المرضى المراجعين للصيديات الاهلية في محافظة البصرة/العراق ولمدة شهر واحد. جمعت البيانات وحللت اعتماداً على مقاييس منظمة الصحة العالمية

وقد اظهرت هذه البيانات بان معدل الادوية التي كتبت في كل وصفة ( 4)، النسبة المئوية لعدد الادوية الموصوفة باستخدام الاسم العلمي ( 13%)، النسبة المئوية لعدد المضادات الحيوية الموصوفة (45.7%)، النسبة المئوية لكمية الستيرويدات القشرية الموصوفة ( 12%)، واخيراً النسبة المئوية للمهدئات الموصوفة (19.3%).

دللت هذه النتائج وبالمقارنة مع مقاييسها العالمية على الاستخدام غير الامثل للدواء بالاضافة الى طريقة الوصف السيء للواصفين بالرغم من ان مايقارب الـ 61% من الواصفين هم من الاطباء الحاصلين على درجة عالية من التخصص. هذا يدعو وبصورة ملحة الى اجراء تغيير حقيقي ومتابعة جدية للوصول الى الاستخدام الامثل للدواء والتدريب المستمر على الدقة في كتابة الوصفه وصولاً الى الوصف الجيد للدواء.

### Introduction:

Prescription order is an important transaction between the physician and patient.

It is order for scientific medication for a person at a particular time. It brings into focus the diagnostic acumen and therapeutic proficiency of the physician with instruction for palliation or restoration of patient health <sup>[1]</sup>.

It has been frequently observed that doctors are adopting polypharmacy,

promoting unnecessary use of tonics and other drugs under marketing influence of drug companies and overlooking drug interaction <sup>[2]</sup>.

In developing country like Iraq, a substantial proportion of medicines in the market are irrational fixed dose combinations and some of them are even hazardous. Analysis of properly selected sample of prescriptions would reveal the extent of use of irrational and hazardous drugs by doctors. This will help in assessing

the extent of wastage (health wise and money wise) due to irrational prescribing and in developing ways to overcome the wastage<sup>[3]</sup>.

According to the World Bank, governments in developing countries expend between 20% and 50% of their national health budgets on drugs and medical sundries<sup>[4]</sup>. Unfortunately, the World Health Organization (WHO) believes that much of such expenditure is misapplied, as irrational use of drugs is prevalent especially in developing countries<sup>[5]</sup>.

Hence, governments, health workers and the community are concerned with the availability, handling, effectiveness and safe use of drugs. The drug prescribing skills and approaches are important issues for providing acceptable health care to the community, since risks and benefits of the treatment directly affect the patients' treatment outcome. Prescribed drugs are reimbursed by the society.

Hence, prescribing pattern of drugs is also a key question from a public expense perspective. Financing of drugs is a vast problem, since costs for drugs are increasing and resources are limited<sup>[6]</sup>.

Evaluation of costs and benefits for alternative treatment strategies is essential and rational drug use implies physicians' prescribing of drugs with favorable cost-benefit balances.

Guidelines for recommended drugs are important for rational drug use.

However, prescribing and adherence to prescribing guidelines vary between health care units<sup>[7]</sup>. for example according to patient characteristics<sup>[8-10]</sup>. physician characteristics, practice settings<sup>[9]</sup>. budgetary policies<sup>[11]</sup>. and country of residence<sup>[12]</sup>.

Sources of drug information used by the clinicians may be of additional significance<sup>[13]</sup>. There are a limited number of objective measures or indicators that can

describe the drug use situation in a country, region or individual health facility<sup>[14]</sup>.

Those indicators include prescribing pattern, patient care and

the facility indicators; the most reliable type is the prescribing indicators that measure the performance of health care providers

in several key dimensions related to the appropriate use of drugs<sup>[15]</sup>.

This project was designed to evaluate prescribing pattern and rational drug use in Al-Basrah governorate, Iraq.

### **Materials and Methods:**

This study was based on a surveillance conducted in private pharmacies in Al-Basrah governorate during June to July 2005.

The pharmacies were chosen randomly depending on systematic random sampling method<sup>[16]</sup>. To calculate sampling interval, we divide the size of the list (no. of pharmacies in the governorate) by desired sample size (10 pharmacies), then choosing random number between 0 and 1 from the table of random numbers and multiplying it by sampling interval; this result must be rounded upward to get the number of the 1<sup>st</sup> pharmacy.

A total of 896 prescriptions were selected randomly from the 10 pharmacies and the data obtained from each prescription were introduced in the prescribing indicator form (Table 1).

In addition to those prescribing indicators, the degree of specialization of the physicians was taken into account to check whether it affects the prescribing pattern or not. Calculations were done using the following equations:

$$\text{Average No. of drugs per each Rx} = \frac{\text{Total no. of Drugs}}{\text{Total no. of Rxs}}$$

$$\% \text{ of Drugs prescribed in Generic name} = \frac{\text{Total no. of Drugs in generic names}}{\text{Total no. of Drugs prescribed}} \times 100$$

$$\% \text{ of Rxs containing antibiotics (AB)} = \frac{\text{No. of Rxs containing AB}}{\text{Total no. of Rxs}} \times 100$$

$$\% \text{ of Rxs containing corticosteroids (CS.)} = \frac{\text{No. of Rxs containing CS}}{\text{Total no. of Rxs}} \times 100$$

$$\% \text{ of Rxs containing anxiolytics} = \frac{\text{No. of Rxs containing Anxiolytics}}{\text{Total no. of Rxs}} \times 100$$

The ten pharmacies were coded as (A, B, C, D, E, F, G, H, I & J).

### **Results:**

The prescribing indicators were calculated from each pharmacy and summarized in the table 2 in addition to the WHO standard value for each indicator<sup>[17]</sup>. From table 2, we can find that the average number of drugs in prescription is 4; the percentage of drugs prescribed in scientific name is 13% which mean that the prescriber used the trade name in about 87% of the prescriptions. The percentage of AB prescription is 45.7% and the

predominant type is cephalosporin derivatives (especially cefotaxim and ceftriaxone) which is 30%, then ampicillin (15%) and then quinolone derivatives (especially ciprofloxacin) which is 10%, while the other types of AB represent the remaining percent. The percentage of the prescribed CS is 12% and the Anxiolytics percentage was 19.3%. The comparisons between each prescribing indicators value with its counterpart WHO value were shown in figures 1-4.

### **Discussion:**

The role of pharmacist as gatekeeper to pharmacotherapy services is vital not only to the individual but also to the effective and economic functioning of the health service. The gatekeeper role should recognize the need for vigilance not only over entry to

secondary care services but also over exit from these services.

The rationality of drug prescription has been studied in various countries, but most of studies have limited on numeric analysis of certain indicator, number of drugs per prescription, percentage of antibiotics prescribed etc. Moreover there are many studies available on hospital based analysis.

The core drug use indicators evaluate prescribers, patient care and the facility. Among the uses of these indicators are to describe current treatment practices, compare health facilities and prescribers and allow for identification of potential drug use problems that may affect patient care<sup>[18,19]</sup>.

The present study represent an insight on the prescribing pattern in private sector health facilities, because this sector is continuously growing and share important part in health providing services in Iraq; however, many serious problems and challenges emerged in this issue, including minimal, professional categorization with regard to drug prescribing, inefficient patient counseling, and finally high percentage of prescriptions are misused.

The study showed that the average number of drugs in prescription that represent a polypharmacy approach (more than one drug in single prescription) was greater than that mentioned by WHO list; this will definitely lead to high consumption

of drugs, loss of resources, increasing side effects due to drug interactions and misuse of drugs; this seems to be compatible with that published by Shewade and Pradhan (1998), where average number of drugs per prescription was found to be 2.9 and 2.1 respectively for the prescription collected from retail medical stores and government teaching hospital in India respectively<sup>[20]</sup>.

Moreover, Shankar *et al* (2004) reported in their study number of drugs per prescription 4.3. However prescriptions with more than 4 drugs were 0 in public sector and 27 in private sector<sup>[21]</sup>.

Though no universal or even national standards exist for what the number of drugs in each prescription should be, the disparity between developing countries is worrisome and the number is quite high. Our findings are higher than those from Sudan 1.4 and Zimbabwe 1.3<sup>[19]</sup>.

The prescription of several drugs per prescription (polypharmacy) is a serious problem; it has been attributed to patients' demand<sup>[22]</sup>; desire to treat several ailments at the same time and inadequate diagnostic facilities to determine definitive cause of ill health<sup>[23]</sup>.

There is a need for education of patients and prescribers on the hazards of poly pharmacy. Also, managerial interventions to improve training of prescribers to ensure accurate diagnosis and provision of diagnostic facilities at the primary care level in Iraqi health facilities would alleviate such tendency.

In the present study, the percentage of drugs prescribe in generic names is 13% only, which is very low percentage compared with the WHO standard value that may reach 100%; this could be due to low training prescribers, no health education about the importance of restriction in drug use.

Moreover, many prescribers believe that the patient satisfy by receiving more than one or two drugs and finally lack of

education facilities like leaflets or posters accessible by the prescribers<sup>[24]</sup>.

The percentage of AB prescribed in each prescription is 45.7%; this value is higher than WHO standard value (26.8%) which indicates the well known problem of misuse of AB with disputable problems like hypersensitivity, higher cost, resistance and drug interaction. However, another study in Iraq reported more serious data in this respect that reflect antibiotics misuse in governmental institutions<sup>[25]</sup>.

This could be due to the same reasons that Reez *et al*<sup>[26]</sup> mentioned in his study, where physicians prescribe AB for any reason, just because they believe that the illness was attributed to bacterial infection. When comparing the percentage of the prescribed corticosteroids in our study (12%) with the WHO value (1.6), the data revealed a real dangerous problem related to misuse of such agents with high and severe side effects.

Choosing the anxiolytics as prescribing indicators in our study is due to the increase in consumption of such compounds in the community, especially during the period of unstable situation of the country and the well known consequences of war and its disasters. So, in spite of lack of the WHO value of prescribed anxiolytics, we reported a high percentage (19.3%); this is also a frightening percentage due to the wide range of side effects associated with these compounds.

The last indicator considered in the present study is the level of specialization of the physician; the result showed a disappointed point, where 61% of the prescriptions categorized as bad prescribing pattern in this study, were ordered by highly specialized physicians; such finding reveal no relation between the highly specialization level and the prescribing pattern as one may expect.

In conclusion, the rational use and prescription practice of drugs in Al-

Basrah/Iraq has many problems associated with misuse of drugs and the prevalent problems among physicians working in the private clinics; this require urgent intervention and follow up to promote the rational use of drug in this city.

**Acknowledgement**

The author thanks University of Baghdad for support and the Basrah Directorate of Health for technical aid.

**Table-1: Prescribing indicators form**

Sequence	No. of drugs/Rx	Drugs in Generic name	Antibiotics	Corticosteroids	Anxiolytics
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
Total					
Average					
Percentage		% of total Drugs	% of AB in Rxs	% of CS in Rxs	% of anxiolytics in Rxs

**Table-2: The values of each prescribing indicator for 10 pharmacies compared with the WHO standard value.**

Indicator	P/A	P/B	P/C	P/D	P/E	P/F	P/G	P/H	P/I	P/J	Mean	WHO value
Average no. of D/Rx	4.3	4.1	3.8	3.9	3.9	4.3	3.9	4.1	3.8	3.9	4.0	1.6-1.8
% Drugs in scientific name	12	14	13	18	12	13	12	12	11	12	13%	100%
% of AB/Rx	35	39	33	40	45	49	50	56	47	63	45.7%	20-26.8%
% of CS./Rx	10	11	13	16	17	9	11	9	12	12	12%	1.6%
% of Anxiolytic s/Rx	17	23	20	18	17	22	18	17	20	21	19.3%	-

**P: Pharmacy; D: Drug; Rx: Prescription; AB: Antibiotics; CS: Corticosteroid**

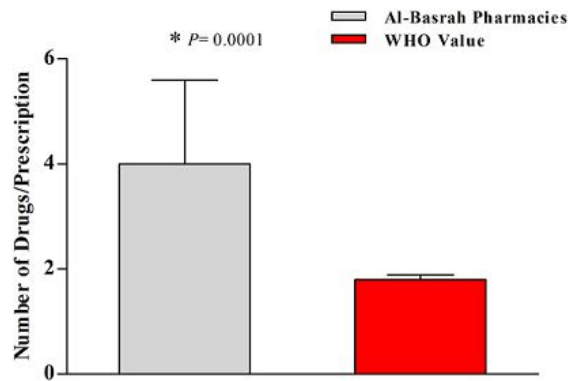


Figure-1: Comparison of the mean of average number of Drugs/Rx in 10 of Basrah pharmacies with WHO standard value.

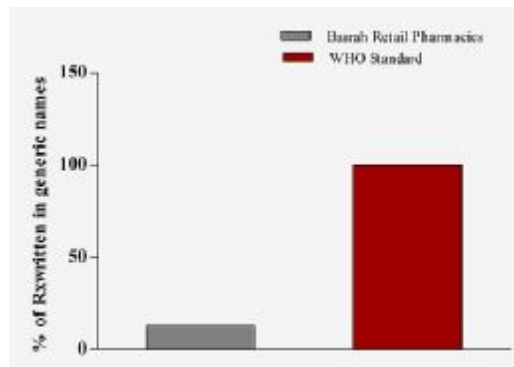


Figure-2: Comparison of the mean of Drugs in prescribed as Generic name in 10 of Basrah pharmacies with WHO standard value.

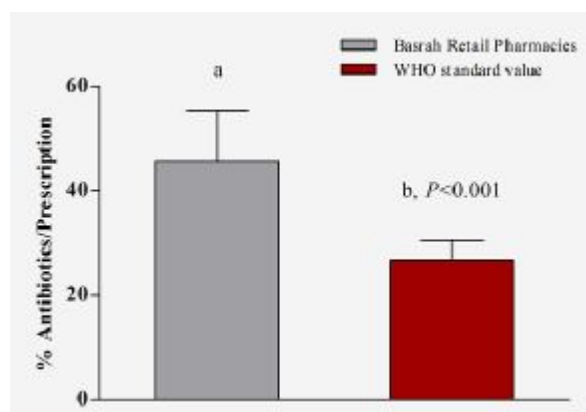
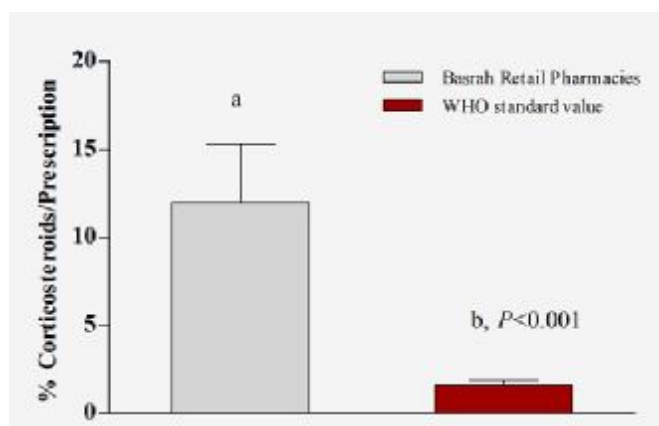


Figure-3: Comparison of the mean of percent Antibiotics/Rx in 10 of Basrah pharmacies with WHO standard value; values with non-identical letters (a,b) are significantly different ( $P<0.001$ ).





**Figure-4: Comparison of the mean of percent Corticosteroids/Prescription in 10 of Basrah pharmacies with WHO standard value; values with non-identical letters (a,b) are significantly different ( $P<0.001$ ).**

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