

Original Research

# Professional practices and perception towards rational use of medicines according to WHO methodology in United Arab Emirates

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Received (first version): 22-Oct-2009

Accepted: 10-Jan-2010

## ABSTRACT\*

Inappropriate prescribing reduces the quality of medical care and leads to a waste of resources. No study has been reported concerning rational drug use in United Arab Emirates, UAE, recently.

Objectives: 1. assessing patterns of use and defining problems regarding the rational drug use. 2. Setting baseline situational analysis study for practices in the health care system relevant to drug use.

Method: A descriptive pilot study, consisting of pharmacists, physicians and patients (100 of each of category) from four private hospitals, (12) medical clinics, (80) community pharmacies in addition to 150 prescriptions. A questionnaire of three sections was designed to include WHO indicators regarding patients, facility and prescribing patterns that are relevant to rational drug use was carried out in four emirates of the UAE in the period December 2008-February 2009.

Results: Consultation and dispensing times were 10 (SD=2.75) min and 68 (SD=9.7) seconds, respectively. Average no. of drugs per prescription was (2.9 + 0.97), % of prescriptions using generic name (7.35%), % of antibiotic containing prescriptions (31.1%), % of injection containing prescriptions (2.9%), adherence to Standard Treatment Protocols (46%), adherence to the essential drug list (64%), patient's knowledge of correct dosage (55%), adequately labeled drugs (45%), patient's information (65%).

Conclusions: Several areas of deficiency in rational drug use had been defined in the private sector through UAE that can be remedied through adopting several strategies such as adherence to national standard treatment guidelines and essential drug list based on treatments of choice, interaction between health care system and providing drugs information to consumers.

**Keywords:** Prescription Drugs. Physician's Practice Patterns. United Arab Emirates.

## PRÁCTICAS PROFESIONALES Y PERCEPCIÓN SOBRE EL USO RACIONAL DE MEDICAMENTOS SEGÚN LA METODOLOGÍA DE OMS EN EMIRATOS ÁRABES UNIDOS

### RESUMEN

La prescripción inapropiada reduce la calidad de la atención médica y lleva a un desperdicio de recursos. No se ha escrito ningún estudio sobre el uso racional de medicamentos en los Emiratos Árabes Unidos (EAU) recientemente.

Objetivos: 1, evaluar los patrones de uso y definir problemas en el uso racional de medicamentos. 2, establecer la situación de base para el estudio de prácticas en el sistema sanitario relevantes al uso de medicamentos.

Métodos: Estudio piloto descriptivo, incluyendo farmacéuticos, médicos y pacientes (100 de cada categoría) de 4 hospitales privados, (12) consultas médicas, (80) farmacias comunitarias además de 150 prescriptores. Se diseñó un cuestionario de tres secciones incluyendo los indicadores de la OMS relativos a pacientes, local y patrones de prescripción relevantes al uso racional de medicamentos para los cuatro emiratos de EAU en el periodo de diciembre 2008 a febrero 2009.

Resultados: los tiempos de consulta y dispensación fueron e 10 (SD=2,75) minutos y 68 (SD=9,7) segundos respectivamente. La media de medicamentos por receta fue de 2,9 (SD=0,97), el 7,35% de las recetas usaban nombres genéricos, el 31,1% contenía antibióticos, el 2,9% contenía inyectables, el 46% cumplía los protocolos estándar de tratamiento, el 64% contenía medicamentos de la lista de medicamentos esenciales, en el 55% había conocimiento de los pacientes de la dosis correcta, en el 45 hubo etiquetado adecuado de los medicamentos, y en el 65% hubo información a los pacientes.

Conclusiones: Se identificaron varias deficiencias en cuanto al uso racional de medicamentos en el sector privado en los EAU que pueden remediarse adoptando algunas estrategias como el cumplimiento de las guías de estándares nacionales tratamientos y la lista de medicamentos esenciales para la elección de tratamientos, la interacción entre el sistema sanitario y los proveedores de información sobre de medicamentos a los consumidores.

**Palabras clave:** Prescripción de medicamentos. Patrones de ejercicio de médicos. Emiratos Árabes Unidos.

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## INTRODUCTION

Rational use of medicines is a crucial part of the national health policy and access to medicines is one of the vital tools needed to improve and maintain health. Rational use of medicine has been defined by the World Health Organization (WHO) as "patients receive medications appropriate to their clinical needs, in doses that meet their individual requirements, for an adequate period of time, and at lowest cost to them and their community".<sup>1</sup>

Irrational use of medicines is now a worldwide problem, which has a serious impact on health and economy that may result in wastage of resources, inappropriate patient demand, serious adverse drug reactions, increase antimicrobial resistance, increase drug-related morbidity and mortality.<sup>2</sup> World Health Organization (WHO) has reported that more than 50% of national and 60 – 80% of individual health care expenditure are spent on medicines.<sup>3</sup>

To assess drug use problems in a health care facility, WHO defined certain core drug indicators into three types: a) Patient indicators which includes: average consultation time, average dispensing time, percentage of drugs actually dispensed and percentage of drugs adequately labeled and patient knowledge of correct dosage; b) Facility indicators:

availability of copy of essential drug lists or formulary and the availability of key drugs; and c) Prescribing indicators: average number of drugs per prescription, percentage of drugs prescribed by generic name, percentage of drugs with antibiotic prescribed, percentage of drugs with injections.<sup>4</sup>

In the United Arab Emirates, UAE, health care is provided and accessible for all residents of the country through primary, secondary and tertiary care. Drug dispensing is regulated by UAE health regulation, which forbids dispensing of incomplete prescription or prescription drug without a prescription. It is essential to evaluate the completeness of the issued prescriptions to assess patient care and eliminate some aspects of irrational use of medicines. An ideal prescription should have all necessary information; a) patient information i.e. name of the patient, age, sex, weight and contact information; b) pharmaceutical product information i.e. name, strength, dose, frequency of administration, duration and number of refills if needed<sup>5</sup>; c) Prescriber information; name, address, signature, contact information, specialty and medical license number.

The present pilot study was designed to assess health care professionals (HCPs) practices, HCPs and patients perception towards certain aspects of the rational use of medicine, assessing certain core drug use indicators according to WHO criteria and analyzing components of prescription issued by

private hospitals, covering all medical specialties in UAE.

The main objective of this pilot study is to identify areas in need for intervention and set recommendations regarding the rational use of medicines, thereby minimizing medication errors and improving therapeutic outcomes. This study will serve as baseline to assess the needed strategies that promotes the rational use of medicine in the private health care sectors and community pharmacies in UAE.

## METHODS

I- Assessing health care professionals' practices and patient perception towards rational use of medicines were done in four private hospitals, 12 private medical clinics and 80 community pharmacies across UAE (Abu Dhabi, Dubai, Sharjah, and Ajman). Data was collected during the period of Dec. 2008– Feb. 2009. Relevant data was collected through designed questionnaires targeted at physicians, pharmacists and patients. Subjects were randomly selected i.e. 100 physicians with different specialties, 100 pharmacists and 100 patients predominantly adults visiting different clinics. The interviewers provided explanation of the questions when required.

II- To investigate drug use problem in health care facilities the following selected indicators were assessed:

II-1- Patient indicators: assessing dispensing time and consultation time.

Average consultation time is calculated by the formula:

$$\text{Average consultation time} = \frac{\text{total time from a series of consultations}}{\text{number of consultations}}.^3$$

Average dispensing time is calculated using the formula:

$$\text{Average dispensing time} = \frac{\text{total time for dispensing drugs to a series of patients}}{\text{number of patient encounters}}.^3$$

II- 2- Prescribing indicators: the following indicators were assessed: average no. of drugs per prescription, percentage of drugs prescribed by generic name, percentage of drugs with antibiotic prescribed, percentage of drugs with injections.

III- Analyzing component of prescription was done by collecting one hundred and fifty prescriptions from 80 private community pharmacies covering all specialties across UAE. All prescriptions were collected retrospectively and were dated between Jan 2009 to March 2009. Prescriptions issued by governmental hospitals were excluded from the survey due to the difference in prescribing practice in both public and private sectors. Indicators assessed included prescription date, patient name, age, sex, weight and contact information, and the physician's name, contact details, stamp and signature. Pharmaceutical product details: name, strength, dose frequency and duration of use. The percentage of prescription having this information was calculated.

## RESULTS

### I. Assessing health care professionals' practices and perception towards rational use of medicine

#### Physicians' Practices and Perception

Around 63% of the physicians are using computerized prescriptions at their facilities, but only 18% have computer software that gives them warning of ADR, drug-drug interaction or allergy.

Results showed that, 60% of the physicians reported that the patients gave them full information regarding their other prescribed medications, 64% of the physicians are prescribing using drug formularies implemented in their facilities and only 46% are following standard treatment protocols. In addition, 72% of the physicians prescribed by generic name and 54% of physicians confirmed that there is a clinical pharmacist existing in their facilities. The response of the 100 physicians to the distributed questionnaire regarding their current practice in their facilities revealed that 33% of physicians rely on pharmaceutical representatives as a source to update their information on medicine use, 27% getting the latest information from conferences attended, 27% from scientific journals and 13% from their colleagues.

Physician responses towards their perception regarding rational use of medicine revealed that 94% of physicians agreed that poly-pharmacy is one of the main reasons for irrational use of medicines in UAE, 36% of physicians agreed that most of the prescription are patient-driven and 89% of physicians confirmed that there is an over use of antibiotics. All physicians agreed that printed labels are more preferable than hand written labels to reduce medication errors. Only 27% of physicians attended a seminar regarding rational use of medicine within the last year. Data is shown in table 1.

Parameters	% of physicians
Dose polypharmacy increase irrational drug use?	94
Are there any patient driven prescriptions?	36
Is there over antibiotic prescription?	89
Did you attend a seminar for RDU recently?	27
Do you prefer printed drug labels over hand-writing ones?	100

To assess professional relations between physicians and pharmacists, 65% of the respondents confirmed that they are receiving corrections of medication errors from pharmacists and 81% of physicians allow pharmacists to report any medication error made by physicians.

Physicians' perception towards the proposed solutions to improve the practice revealed that 90% of the physicians agreed that a system that gives warning regarding drug-drug interactions would eliminate many adverse drug reactions that may be expressed in patients and also will minimize the

medication error occurring during prescribing. All physicians agreed that online medical records for patients will be very helpful to track all patients' medications. In addition, on line medical records will allow physicians to be aware of patient's attendance to other clinics and be informed regarding the medicines they are taking. All physicians agreed that the existence and availability of standard treatment protocols (STPs) would reduce irrational in prescribing while 92% of physicians agreed that the availability of clinical pharmacist will minimize irrational use of medicine to some extent. 80% of physicians prefer to have a unit dose system to be available for in patient dispensing, as this will minimize medication errors occurring in that setting. 92% of physicians agreed to the usefulness of the drug information centers in providing guidance/information for medicines use.

#### Pharmacists' Practices:

Assessing the pharmacists' practice (n=100) revealed that 65% had up to date practice leaflet in their pharmacy, 51% had undertaken a patient satisfaction survey within the last 6 months, 89% of the pharmacists have standard operating procedures in place for dispensing. Regarding training of pharmacy staff, around 84% revealed that there is a training program provided with regard to pharmacist's role and 68% of pharmacists have in place arrangements for identifying and supporting the continuing education requirements for registered pharmacists in UAE. 62% of pharmacists agreed that there are arrangement in place for poor work performance and 57% of the pharmacists confirm that they have enough physical space inside the pharmacy, which facilitates for patient counseling.

Also 69% of respondents ensure that the medications handled in the pharmacy are of good quality. 94% of pharmacists ensure that the dispensed medication were against prescriptions. 70% of the respondents allows pharmacy students trainees to dispense medications but under the supervision of registered pharmacist.

Assessing pharmacists dispensing practice showed that 100% of pharmacists do check the appropriate medications for individuals i.e. contraindications, drug-drug interactions in community pharmacy, 94% do double-check on the dispensed medications, 66% explains possible side effects that may happen to the patient with medicines use. Only 41% of pharmacists assess prescription validity (table 2).

Parameters	Yes	Sometimes	No
Do you assess prescription validity?	41	28	31
Double checking the prescriptions before dispensing?	94	6	0
Do you explain possible S/E to the patient?	66	3	31

Assessment of the professional relationship of pharmacists with other professionals revealed that about 87% of pharmacists prefer to establish a professional relationship with physicians and 81% of

pharmacists may consult other pharmacists regarding specific patient problems.

Only 12% of the pharmacists in community pharmacies have a role or involved in the selection of the most appropriate medication to the patient as it was expected in the community pharmacy setting. 3% have attempt to identify any drug related problem that the patient may experience and were involved in planning and implementation of a strategy to resolve these drug related problems. 88% of the pharmacists confirming that they assess the patient's health related problem and their medication requirements, 44% of pharmacists keep record about the patient medical conditions, their medication and progress in therapy. 81% of pharmacists confirmed that they explain to the patients what they should expect from their medicines. 62% monitor patients' progress after administering the dispensed medications. Only 66% of pharmacists communicate with doctors regarding their patient progress on the drug therapy (table 3).

Parameters	Yes	No
Assessing medication requirements	88	12
information records	44	56
Explain the effect of medications	81	19
Monitoring	62	38
Communicate the patient progress on their drug therapy to their doctors	66	34

Parameters	Present study	Dubai <sup>9</sup>	Sharjah <sup>6</sup>
Date of Survey	2009	2007	1997
Type and Facility (no.)	4 hospitals and 12 clinics	Private Hospital (1)	Primary Health care centers (12)
<i>Prescribing indicators</i>			
Average number of drugs/encounter	2.9	2.2	2.7
Drugs prescribed by generic name (%)	7.35	4.4	0
Antibiotic prescribed (%)	31.1	21.4	35
NSAIDs prescribed (%)	29.4	23.4	-----
<i>Patient care indicators</i>			
Average consultation time (min.)	10.7	-----	10.8
Average dispensing time (sec.)	68	-----	89
Poly-pharmacy (%)	-----	-----	-----
> 4 drugs/prescription	-----	16	-----

#### Patients' Perception

Patients' satisfaction from physician (n=100) after consultation revealed that 57% of the patients are satisfied with the doctor examination, 47% are satisfied with their consultation time with doctors and 45% of patients are satisfied with the physicians answer to their questions.

Patient perception towards pharmacists role (n=100) other than dispensing medication survey revealed that 75% of the patient think that it would be of benefit if they have group sessions with the concerned pharmacists to discuss drug specific topics. 85% of the patients see that pharmacists' access to patient record is very important to double check and confirm the appropriateness of the prescribed medications to them. Only 30% of patients think that the medication leaflets give full information regarding the medicine and 23% of the patients confirm that pharmacist provide full information regarding their medicines. Only 25% of

patients see that pharmacists assess the drug therapy for their conditions.

25% of patients feel that the pharmacist tell how to identify side effect of an administered medicine, 20% of pharmacists tell if the patient took a wrong medicine or a wrong dose, 45% of pharmacists give information on how to store the dispensed medicine and only 10% tell the patient what to do if he forgets to take their medicine.

#### II- To investigate drug use problem in health care facilities the following selected indicators were assessed:

##### 1. Patient Indicators

The mean consultation time was estimated to be (10; SD=2.75) minutes. The age and sex of the physician had no impact on the duration of the consultation. This estimate was calculated based on consultation time of patients with physicians in the private sector covering all specialties.

Average Dispensing time was estimated to be (68; SD=9.7) seconds, which is longer than the estimated time reported in Jordan, 28.8 seconds (SD=23.7), range 12.7– 41.3 seconds.7

Average consultation time and average dispensing time estimated in the study are presented in Table (4) in comparison to estimates calculated from previous studies done in UAE.

##### 2. Prescription Indicators Study

It was estimated that the average number of drugs prescribed was (2.9; SD=0.97). Only 7.35% of the drugs were prescribed by generic name. Antibiotics were prescribed in 31.1% of the prescriptions, only 2.9% of the prescriptions containing injections. Data of the present study is presented in table 4 in comparison to previous studies done in UAE.

#### III- Analyzing component of prescription:

Prescriptions analyzed according to the written information with regard to patient, drug and

physician information. There were 97% of the prescriptions showing patient name, 85% of the prescription showing the date at which it was issued, 36% has the patient age written, only 4% of the prescription showing patient weight, 30% showing patient contact information and 32% of the prescription showing patient sex..

Percentage of prescription showing drug products information is estimated to be 98% of prescription contains readable drug name, 70% identifies the dosage form of the drug product, 79% with drug strength written, 84% with frequency written and only 65% of prescription identifies the duration of drug use. Percentage of prescription showing physicians' information was estimated to be 87% of the prescriptions showed both physician name and contact information and 82% showed their stamps and signatures. Results of the prescription audit are shown in table 5.

Parameters	Percentage (%)
<i>Patient information</i>	
Name	97
Date	85
Age	36
Weight	4
Contact number	30
Gender	32
<i>Drug information</i>	
Name	98
Dosage form	70
Strength	79
Frequency	84
Duration	65
<i>Physician information</i>	
Name	87
Contact information	87
Stamp	82
Signature	82

## DISCUSSION

The presented pilot survey served as a baseline situational analysis study to identify health care professional practices and perceptions towards different aspects of rational use of medicines. Also, it helps in identifying the common problems and causes of irrational use of medicine which is a prerequisite for planning the needed interventions to promote rational use of medicines.<sup>4</sup> Physicians determined the main reasons of drug use irrationality in UAE were mainly poly-pharmacy and over use of antibiotics. These results are in accordance with similar studies done in some neighboring Arab countries in the Middle East, Syria and Jordan, where over use of antibiotics was the most common drug use problem in these two countries.<sup>5</sup> Percentage of prescriptions containing antibiotics in Syria and Jordan were 45% and 55% respectively. Also, it was reported that over use of antibiotics was observed in 45% of the prescription that were assessed from primary health care centers in Sharjah, UAE.<sup>7</sup> A full investigation of factors influencing the prescribing of antibiotics by physicians is needed and patient education regarding the misuse of antibiotics should be

considered as intervention to lead for more rational use of antibiotics.

Physicians agreed that the use of a good computerized system that gives warning for any drug- drug interactions should be available and to be implemented in all health care facilities to help physicians minimizing medication errors occurred during prescribing. The use of online medical records for patients will make physicians knowledgeable regarding the medicines that their patients are taking which will help minimizing poly-pharmacy.

On other hand, encouragement of physician- patient and pharmacist-patient interactions is very important to reduce the occurrence of adverse reactions and medication errors, which in turn provide more patient care.

The present study revealed that the consultation time is estimated to be 10 (SD=2.75) min. This results is in accordance with other studies made in six European countries<sup>8</sup> where the average consultation time was estimated to be (10.7; SD=6.7) but was longer than what was reported in Jordan (3.9 minutes).<sup>9</sup> This consultation time turned to be short to enable physicians to communicate with their patients regarding their therapy and illness. During this consultation, the physician has to make a complete patient evaluation, select the appropriate medications, and enable for proper patient- physicians interaction. An ideal estimate for the consultation time is left open for physicians to determine based on patient conditions and applying good prescribing practices.

Average dispensing time was estimated to be 68 (SD=9.7) sec. the estimated dispensing time was longer than that reported for other countries (28.8; SD=23.7 sec in Jordan)<sup>9</sup> and was shorter than that reported for Sharjah (89 sec).<sup>7</sup> We believe that this time still too short for patient pharmacist interaction and to give more time for pharmacists to explain all drug details with regard to its use, dosage frequency and possible adverse events and other information needed to be delivered to the patient which may affect patient compliance. Short dispensing time should invite serious attention as it may lead to medication errors and lack of compliance by patients to their medications.

It is obvious that the pharmacists' role rather than dispensing should be expanded toward more patient pharmaceutical care. The health care facilities should provide sufficient staff and space in pharmacy to give more time and space for pharmacists to discuss with the patients' regarding their medications, treatment, possible side effects of the administered drugs and enough time for patient consultation to improve patient care by reducing possible side effects that may be expressed by patients.

Average number of drugs per prescription is turned to be higher estimate than that reported in previous studies done in UAE as shown in Table 4, which was 2.2 in a study in Dubai<sup>10</sup> and 2.7 in a study in Sharjah.<sup>7</sup>

Percentage of drugs prescribed by generic name was slightly higher than the earlier estimate reported in Dubai (4.4%)<sup>10</sup> and higher than that reported in Lebanon (2.9%).<sup>11</sup> There should be a great concern from regulatory bodies to mandate generic prescribing to move towards more rational use of medicine. It provides inexpensive alternative for the patient and enables pharmacists to maintain a more limited stock of medicines.

Percentage of prescriptions containing antibiotics estimate (31.1%) which is higher than that reported previously in Dubai (21.4%)<sup>10</sup> but it was less than that reported for Sharjah (35%)<sup>7</sup>. Over use of antibiotics represent a major irrational drug use problem and certain intervention should be implemented to overcome the problem.

Percentage of prescriptions containing injections turned to be low (2.9) compared to estimates reported for Syria and Jordan<sup>6</sup> (25% and 15%, respectively). The low estimate reported here in the present study is expected due to the limitation of the study in the inclusion of prescription collected from community pharmacy rather than inpatient facilities.

In summary, assessment of prescribing indicators revealed that average number of drugs per prescription, average number of antibiotic prescribed and drugs prescribed by generic name are three main areas need further attention to improve the quality of health care.

Our results demonstrate the need for improving prescriptions writing by physicians due to missing information to be filled in the prescriptions. The estimated results from the present study compared to that reported in Dubai<sup>10</sup> revealed that patient name is mostly written in all prescriptions (97%) which are similar to that reported in Dubai.<sup>10</sup> Patient age was written in only 36% of the prescription compared to 90.3% in Dubai. 32% of the prescription showed patient gender which is very low compared to that reported in Dubai study (88%). Patient contact information was written in 30% of the prescription which is higher estimate than that reported in Dubai (0%).

Physicians' information was estimated to be 87% of prescriptions showed physician name which is comparable to that in Dubai study (87.8%), % of prescription showed contact information was 87% which is high estimate than that reported in Dubai study (0%) Physician signature was there on 82% of the prescription which is comparable to that reported in Dubai study<sup>10</sup> (89.7%).

The estimates of patients' contact information (30%) and patient age (36%) were low as this information may be documented in the patient's record, but that does not help the pharmacists if they need to immediately communicate with the patients in case of dispensing error.

There is a great concern of completing all patient information on the issued prescription. This will ease the process of evaluating the prescription by pharmacists to avoid any suspected adverse reaction or over dosing written by physicians that may reach to the patients.

Assessing drug information written in the prescription showed good estimates which indicate good prescribing by physicians but with great concern for the duration of use of medicines (65%) by patients, which is very important information to be delivered to patients.

All prescription components should be filled by physicians that will contribute to patient satisfaction and reduce the possibility of irrational use of medicines in the community which in turn improve patient care in reducing adverse drug reactions and medication errors. This will attract attention to the need of a unified prescription format with mandatory field requirement to be filled with full information regarding patient, drug and physician information.

To promote for more rational use of medicines, different programs addressing rational use of medicines should be implemented with the involvement of academia, regulatory authorities and other involved organizations working together to address the existing problem of irrational use of medicines and agreed on the different strategy to be implemented.

To ensure that medicines are used optimally to meet the patients' clinical needs, efforts should be spent by the regulatory agencies to ensure safe and effective use of medicines all over UAE.

Our results highlights on the necessity of the involvement of the regulatory authorities to provide continuous medical education targeting health care professionals by organizing training sessions and workshops to discuss aspects of rational drug use.

Moreover, it is essential to emphasize the importance of developing standard treatment protocols for common medical conditions to promote rational prescribing by physicians and the existence of drug information centers as a source of information to ensure adequate resources provided to health care professionals.

More investigation is needed to assess the prescribing practice to cover primary health care centers and governmental hospitals throughout the country to investigate drug utilization in UAE.

It is important to emphasize the limitation of this study which was done on a relatively small scale (n=100). This sample size may not be representative number for the whole population, so inferences to whole population cannot be made. Despite the study limitations and comparably less number of prescriptions reviewed, it highlighted on the different concerns toward the need to more monitoring of medicines use.

## CONCLUSIONS

Several areas of deficiency in rational drug use have been defined in the private sector through UAE and can be remedied through adopting the following strategies: Adherence to national standard treatment protocols and essential drug list based on treatments of choice, interaction between health care system, providing health and drugs information to consumers. Development of a strategic approach

to improve prescribing in the private sector through appropriate regulation and long term collaboration with professional associations is necessary.

#### CONFLICT OF INTEREST

None declared.

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