Evaluation of drug use in Jordan using WHO patient care and health facility indicators

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تقييم استعمال الأدوية في الأردن باستخدام مؤشرات منظمة الصحة العالمية المتعلقة برعاية المرضى والمرافق الصحية

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الخلاصـة: أجريت دراسة منظورية prospective للنمط الحالي لاستعمال الأدوية في الأردن في 21 مرفقاً للرعاية الصحية الأولية تقع في شمال الأردن، وذلك على مدى ثلاثة أشهر. واستخدمت في هذه الدراسة المؤشرات التي توصي بها منظمة الصحــة العالمية. وبيّنت الدراسة قصر الزمن المتوسط الذي تستغرقه استشارة المريض للطبيب (3.9 ± 3.5 دقيقة) والزمن المتوسط لتسليم الدواء للمريض في الصيدلية (28.8 ± 23.7 ثانية)، مما أسفر عن كون متوسط معرفة المرضى لجرعة الدواء الموصوف لا تتجاوز 77.7٪. ولم تتوافر لدى أي مركز صحي قائمة بالأدوية الأساسية أو كتيّب للوصفات أو كلاهما. وبلغ متوسط نسبة الأدوية الأساسية المتاحة في المراكز 80.1٪. ويمكن للباحثين وراسمي السياسات استخدام المعطيات القاعدية التي تم جمعها في هذه الدراسة في رصد وتحسين ممارسات وصف الأدوية واستهلاكها في الأردن.

ABSTRACT We prospectively studied current drug use in Jordan in 21 primary health care facilities in northern Jordan over a three-month period, using World Health Organization-recommended indicators. Both the mean time spent on physician–patient consultations (3.9 ± 3.5 minutes) and mean pharmacy dispensing time (28.8 ± 23.7 seconds) were short, resulting in a mean patient knowledge of prescribed drug dose of 77.7%. No centre had an essential drugs list and/or formulary available. An average of 80% of key drugs were available at centres. Baseline data gathered by this study can be used by researchers and policymakers to monitor and improve pharmaceutical prescribing and consumption practices in Jordan.

Evaluation de l'utilisation des médicaments en Jordanie à l'aide des indicateurs OMS des soins aux malades et des services de santé

RESUME Nous avons réalisé une étude prospective de l'utilisation actuelle des médicaments dans 21 centres de soins de santé primaires en Jordanie du Nord sur une période de trois mois, à l'aide des indicateurs recommandés par l'Organisation mondiale de la Santé (OMS). Nous avons trouvé que le temps moyen consacré par le médecin à la consultation avec le patient (3,9 ± 3,5 minutes) et le temps moyen consacré à la délivrance des médicaments (28,8 ± 23,7 secondes) étaient courts, d'où un pourcentage moyen de malades connaissant la posologie prescrite de 77,7 %. Aucun centre n'avait de liste de médicaments essentiels et/ou de formulaire disponible(s). En moyenne, 80,1 % des médicaments clés étaient disponibles dans les centres. Les données de référence recueillies lors de cette étude peuvent être utilisées par les chercheurs et les responsables de l'élaboration des politiques pour la surveillance et l'amélioration des pratiques en matière de prescription et de consommation des médicaments en Jordanie.

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Introduction

The government of Jordan has a strong commitment to health, education and other social programmes. In 1997, Jordan launched the Health Sector Reform Project in cooperation with the World Health Organization (WHO) and the World Bank. Central to the nation's health plans, the Project has four main areas of focus:

• improving management structures in the public and private sectors;

• introducing more cost-effective health care delivery strategies;

• improving clinical and pharmaceutical care, including quality assurance; and

• improving financial and geographic access to health services.

In 1998, the National Drug Policy was adopted to provide a comprehensive framework for developing Jordan's pharmaceutical sector. The policy aims to improve the rational use of drugs by health professionals and the public to improve health care outcomes. The government of Jordan spends about 2% of its gross domestic product (GDP) on drugs [1,2].

Drug use is a complex subject involving the physician, the patient, and pharmaceutical institutions. Each of these is influenced by many factors that are often difficult to measure and quantify. Despite the complexity of drug use, a number of indicators have been developed, standardized and evaluated by WHO, which provide a useful means of measuring certain aspects of a country's drug use [3]. These indicators are grouped into three categories: prescribing, patient care and facility indicators. Patient care indicators are:

• average consultation time;

• average dispensing time;

• percentage of drugs actually dispensed;

• percentage of drugs adequately labelled; and

• patient's knowledge of the correct drug dosage.

The facility indicators are:

• availability of a copy of an essential drugs list (EDL) or formulary; and

• the availability of key drugs.

The present study is the first attempt in Jordan to report on current drug use in primary health care facilities in order to guide future assessments and interventions. The objectives of the study were to evaluate current patterns of drug use in relation to patient care and facility indicators.

Methods

Details of the sampling, data collection and statistical analysis are reported in an earlier paper [4].

Sampling and data collection

In each of the 21 selected health centres, 30 consecutive physician–patient encounters were prospectively observed and the relevant data recorded on the prescription and patient care forms, from December 1999 to February 2000. The forms were developed and designed in accordance with WHO recommendations [3]. Observations in each centre were performed over a single day, with the exception of a small number of centres that required revisiting because the daily number of patients was less than 30. All patients were interviewed and asked about the dosage regimens for all prescribed drugs. They were considered to be knowledgeable if they knew the dosage for all items on the prescription.

The checklist of key drugs was established before the study was performed. It was based on the prevalence of diseases

and the importance and frequency of use of those drugs. The key drugs included: paracetamol, amoxycillin, erythromycin, metronidazole, antihistamines [chlorpheniramine or astemizole], non-steroidal anti-inflammatory drugs [ibuprofen or diclofenac sodium], diuretics [thiazide group], beta blockers [atenolol or metoprolol or propranolol], antacids, isosorbide dinitrate [or glyceryl trinitrate], H_2-receptor blockers [ranitidine or famotidine], insulin, oral hypoglycaemic agents, salbutamol, ferrous sulfate or folic acid, miconazole, adrenaline, hydrocortisone, and anticolic injections.

Calculation of indicators

Patient care indicators were calculated as follows:

- Average consultation time = total time from a series of consultations/number of consultations.

- Average dispensing time = total time for dispensing drugs to a series of patients/ number of patient encounters.

- Percentage of drugs actually dispensed = (number of drugs actually dispensed/ total number of drugs prescribed) × 100.

- Percentage of drugs adequately labelled = (number of drugs or drug packages adequately labelled/number of drugs or drug packages dispensed) × 100.

- Percentage of patients who could adequately describe the dosage schedule for all drugs = (number of patients who could adequately report the dosage schedule for all drugs/total number of patients interviewed) × 100.

Health facility indicators were calculated as follows:

- Availability of key drugs = (number of specified drugs in stock/total number of drugs on the checklist) × 100.

- Availability of a copy of an EDL or formulary at the health facility = Yes or No.

Results

The total number of physician–patient encounters in this study was 629. Table 1 shows the data for individual centres and for all centres combined. The consultation time overall was 3.9 minutes (± standard deviation 3.5), with a range from 1.7–8.1 minutes at different centres. The mean time taken to dispense medications was 28.8 seconds (± 23.7), range 12.7–41.3 seconds.

The overall percentage of drugs dispensed, as a percentage of drugs prescribed, was 81.8% (ranging from 40.4%–100%). The percentage of prescriptions labelled was 91.4% (range 64.5%–100%) and the proportion of patients who knew the drug dosage was 77.7% (range 48.3%–100%).

Overall 80% of items on the list of key drugs were available at the health centres (range 53%–95%). None of the health centres had of a copy of the EDL and/or formulary available (Table 2).

Discussion

The average consulting time in our study was 3.9 minutes. This finding is within the limits observed by investigators in the Sudan, but shorter than the time in observed Ethiopia [3,5]. Such a short a consulting time, during which the physician must make a complete evaluation of the patient, prescribe an appropriate drug and have a proper physician–patient interaction is insufficient [3]. We observed that in some centres patient turnover was slow and the physician had sufficient time for

Table 1 Patient care indicators in 21 primary health care centres in Irbid governorate, Jordan

Centre no.	Consultation time (minutes) Mean (s)	Dispensing time (seconds) Mean (s)	No. of drugs prescribed Mean (s)	% of drugs dispensed	% of drugs labelled	% of patients who knew dose
1	3.9 (2.0)	41.3 (28.2)	2.7 (0.93)	79.0	91.7	89.7
2	5.9 (3.0)	34.2 (30.7)	1.7 (0.88)	62.5	95.0	64.0
3	5.1 (3.0)	31.9 (23.1)	2.0 (0.94)	93.2	100.0	89.7
4	4.6 (2.4)	36.5 (18.1)	1.8 (0.88)	94.5	100.0	83.3
5	3.1 (1.2)	25.7 (17.3)	2.5 (1.10)	54.0	100.0	76.7
6	3.7 (2.0)	25.5 (14.6)	1.7 (0.69)	92.5	100.0	70.0
7	3.1 (1.5)	29.5 (14.7)	1.8 (0.88)	98.2	100.0	96.7
8	2.4 (1.1)	31.9 (20.7)	2.1 (0.88)	87.1	85.2	64.3
9	3.4 (2.5)	30.8 (40.8)	2.3 (1.20)	77.1	84.6	80.8
10	3.8 (2.1)	25.4 (16.1)	1.8 (0.80)	95.7	93.2	88.0
11	2.2 (0.7)	23.2 (18.3)	1.8 (0.59)	92.7	98.0	86.7
12	6.5 (4.0)	16.6 (20.1)	1.7 (0.87)	40.4	95.2	48.3
13	2.8 (1.6)	35.5 (25.1)	2.3 (0.98)	91.5	96.9	83.9
14	7.0 (5.7)	38.3 (41.8)	2.3 (1.00)	82.4	64.3	85.7
15	2.7 (1.3)	12.7 (12.4)	1.7 (0.70)	47.1	79.2	56.7
16	3.4 (1.3)	12.8 (8.6)	2.0 (0.83)	98.3	96.6	100.0
17	3.5 (2.6)	30.8 (20.1)	2.1 (0.85)	100.0	100.0	87.1
18	8.1 (8.5)	29.6 (14.3)	1.8 (0.85)	73.8	100.0	50.0
19	2.5 (1.3)	38.3 (20.0)	2.6 (0.85)	98.7	100.0	89.7
20	1.7 (0.9)	23.6 (15.9)	2.2 (0.80)	65.0	75.0	80.0
21	3.2 (4.1)	31.5 (17.7)	2.3 (0.87)	97.4	64.5	59.4
Total	3.9 (3.5)	28.8 (23.7)	2.1 (0.93)	81.8	91.4	77.7

s = standard deviation.

the consultation, although the consulting time was also short in these centres. An ideal consulting time is difficult to estimate, and we believe it is best left to the physician to determine, once they have upgraded their understanding of rational drug prescribing and use.

The average dispensing time in our investigation was 28.8 seconds. This is a very short time when compared to times reported by Tanzania and Nepal, but longer than that reported by Nigeria [3,5]. More time is required for the pharmacist to be able to dispense the drug and have a proper interaction with the patient. More time is needed between physician and patient, and pharmacist and patient, to explain the dosage regimen, necessary precautions, and

Table 2 Health facility indicators in 21 primary health care centres in Irbid governorate, Jordan

Centre no.	Items from key drugs list available at centres	
	No.	%
1	16	84
2	16	84
3	15	79
4	18	95
5	12	63
6	16	84
7	17	89
8	15	79
9	15	79
10	16	84
11	12	63
12	12	63
13	17	89
14	17	89
15	15	79
16	14	74
17	16	84
18	10	53
19	18	95
20	17	89
21	16	84
Total (mean ± s)	15.24 ± 2.14	80

None of the centres had a key drugs list available.
s = standard deviation.

adverse effects associated with specific drug therapy. Over time, this will impact significantly on public awareness about appropriate drug use [6].

The percentage of drugs actually dispensed as a proportion of total drugs prescribed varied between health facilities, ranging from 40% to 100%, with an overall average of 81.8%. This value is within the

range observed in Nigeria (70%) and Nepal (83%) [3]. High rates of dispensing at the health centre can contribute to patient trust and cooperation with the health system and personnel. The low dispensing rate in some centres can be attributed to Jordan's distribution system to pharmacies at the health facilities, which occurs either directly through the central drug storage or through the governorate storage. The system is designed to ensure a supply sufficient for a four-week period, but does not take into account variations in patient turnover.

The percentage of correctly labelled prescriptions in our study was 91.4%, and in some instances as high as 100%. Efforts should be made to label all drugs with the drug name, the patient's name and the dosage regimen. This procedure can contribute to patient satisfaction and lower the possibility of misuse or abuse of the drugs in the community [3,6,7].

Patient knowledge of the correct dosage was relatively high in our evaluation, with a mean of 77.7%. This value is similar to values obtained from India, Tanzania and Nigeria and much higher than that for Malawi [3].

The availability of key drugs at the health facilities was high (80% of items from the key drugs list were available). This value is comparable to values reported from other countries [3], suggesting a satisfactory drug supply to health facilities in Jordan—an important element in improving health care standards. It is disappointing to note that none of the health centres had an EDL or formulary available. The availability of the EDL can enhance rational prescribing and dispensing practices and improve patient care.

Our results highlight the necessity of continuing the process of rationalizing therapeutic drug use in Jordan. To promote this concept, Jordanian's authorities need to

provide ongoing medical education for health personnel, encourage better physician–patient and pharmacist–patient interaction, develop standard treatment guidelines for common medical conditions and provide training in the rational use of

drugs through workshops and group discussion. Moreover, it is essential to emphasize the importance of free distribution of the EDL and formulary to all health care facilities.

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