Drugs dispensed with and without a prescription from community pharmacies in a conurbation in Egypt

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الأدوية المصروفة بموجب وصفة أو من دون وصفة من صيدليات مجتمع حضري في مصر

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خلاصة : تم تقدير نمط صرف الأدوية من الصيدليات ، سواء كان ذلك بموجب وصفة طبية أو بناء على تزكية من الصيدلي أو طلب المريض لمستحضر معين . فجرى استقصاء للأدوية المصروفة في 25 صيدلية من 25 منطقة مختلفة من مناطق الإسكندرية . وتمت زيارة كل صيدلية مرتين ، استغرقت كل منهما ثلاث ساعات ، وذلك لجمع بيانات عن كل الأدوية المصروفة . ووجد أن عدد المنتجات المصروفة يبلغ 1174 ، صرف منها 28% بناء على وصفة طبية و72% من دون وصفة (وكان 17% من الفئة الأخيرة قد صرف بتزكية من الصيادلة) . ووجد أن نطاق المنتجات المصروفة بوصفة طبية أو بدونها متماثل في الحالتين . وتناقش هذه المقالة مضامين هذه النتائج .

ABSTRACT The pattern of drug supply from pharmacies, whether by prescription, recommendation from the pharmacist or a request for a particular product by the client, was assessed. The drugs dispensed from 25 pharmacies, each from a different area of Alexandria, were investigated. Two three-hour study visits were made to each pharmacy to collect data on all drugs dispensed. A total of 1174 products were supplied; 28% on prescription and 72% over-the-counter sales (17% of the latter were recommendations from pharmacists). The range of products supplied with and without a prescription were similar. The implications of these findings are discussed.

Médicaments délivrés sur/sans ordonnance dans des pharmacies d'une conurbation égyptienne

RESUME On a procédé à une étude sur la fourniture de médicaments par les pharmacies - sur ordonnance, sur recommandation du pharmacien ou à la demande du client pour un produit pharmaceutique particulier. Les médicaments vendus par 25 pharmacies, situées chacune dans un endroit différent de la conurbation d'Alexandrie, ont été examinés. Deux visites de trois heures ont été effectuées auprès de chaque pharmacie pour recueillir des données sur l'ensemble des médicaments délivrés. Au total, 1174 produits pharmaceutiques ont été fournis, 28% sur ordonnance et 72% sans ordonnance (17% de ces derniers sur recommandation du pharmacien). La gamme des produits pharmaceutiques fournis sur ordonnance et sans ordonnance était similaire. On examine actuellement les implications des résultats de cette étude.

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Introduction

A number of researchers have drawn attention to irrational drug use, and the problems are believed to be particularly acute in developing countries. Many of the issues involved in achieving rational use of pharmaceuticals were discussed in a special conference organized by the World Health Organization (WHO) on the rational use of drugs in 1985 [*1*]. Attention has been drawn to the role of governments, professionals and consumers [*1,2*]. The practices of the pharmaceutical industry to maximize profits, often to the detriment of the health of the people, have received much criticism [*3–7*]. Heavy and inappropriate marketing, exaggerated claims, production of products of doubtful efficacy and safety, and inadequate and incomplete information have aroused particular concern [*3,4,5,8*]. Deficiencies in the prescribing practices of physicians and in over-the-counter prescribing and advice from pharmacists have also been identified [*9–11*].

In many developing countries, community pharmacies are the main source of drugs. The importance of this role and its implications have been addressed and stressed worldwide [*12*]. The objective of this study was to investigate the patterns of drug supply from community pharmacies in Alexandria. This information is important to the Faculty of Pharmacy at the University of Alexandria, where there is interest in addressing the role of pharmacists in the community to ensure relevant drug use and health care.

Method

The study was conducted in 25 pharmacies randomly selected from different areas of Alexandria. The data collection was conducted by trained researchers who were all third-year students in the Faculty of Pharmacy at the University of Alexandria. Information was collected on all drugs dispensed from the pharmacy (with and without a prescription) during a six-hour study period.

Coding frames were developed for the analysis of the data. Drugs were coded according to therapeutic groups as listed in the *Egyptian index of medical specialities* [*13*] in conjunction with the *Therapeutic index of available drugs in the Egyptian market* [*14*]. Those drugs which may have more than one indication were coded according to their most common use. Separate categories were usually developed for combination products so these could be included in different parts of the analysis as appropriate. The analysis was performed using the *Statistical package for the social sciences* [*15*].

Results

The total number of drugs dispensed in 150 hours of study visits (six hours in each of the 25 pharmacies) was 1174. Supplies were made to a total of 1066 persons. In all, 329 items (28.0%) were dispensed with a prescription from a physician and 72.0% were dispensed without a prescription. Of the non-prescription items, 17.2% were purchased on the recommendation of the pharmacist (Table 1).

A total of 205 prescriptions were presented during the study visits of which 172 were private prescriptions and 33 were health insurance prescriptions. The prescriptions were for more than one item in 50% of the cases. The mean number of items per prescription was 1.6 items. In addition, 15% of clients purchased more than one item without a prescription.

Table 1. **Drugs dispensed from pharmacies**

Type of dispensation		No.	%
Prescription from physician		329	28.0
No prescription			
Request for particular product by client	700		
Recommended by pharmacist	145		
Subtotal		845	72.0
Total		1174	100

Anti-infective products (Table 2). A total of 232 anti-infective products were dispensed during the observation period (accounting for 19.8% of all items). Of these 232 items, 35.8% were prescribed by physicians, 13.8% were recommended by pharmacists and 50.4% were sold to clients on request. The results showed that 23.7% of the prescriptions for anti-infectives included more than one anti-infective product. Five clients requested two different anti-infective products.

Eye preparations. A total of 45 eye preparations (3.8% of the total) were dispensed, five of which were on prescription. Nineteen (19) preparations included an anti-infective, 11 included a steroid and 20 were a combination of a decongestant and an antihistamine. Two clients purchased products for glaucoma.

Analgesics, antipyretics and non-steroidal anti-inflammatory drugs (NSAIDs). There were 190 analgesic preparations dispensed (16.2% of all items supplied). Of these 190 items, 25.3% were prescription items, 14.7% were on the pharmacists' recommendations and 60.0% were requested by name by the clients. Of the 205 prescriptions, 40 (19.5%) included an analgesic. In other words, the share of analgesics in prescriptions is close to their share among all preparations dispensed.

Table 2. **Anti-infective products dispensed**

Anti-infective product	Prescription	Request/sale	Recommended by pharmacist	Total
Antibiotics (including sulfonamides)	47	42	9	98
Antifungals (oral)	2	0	0	2
Antiamoebics	3	1	2	6
Anthelminthics	1	3	3	7
Hydroxyquinolines	0	4	4	8
Hydroxyquinolines with other antibiotic	4	5	1	10
Antibacterial for urinary tract infection	1	7	0	8
Topical anti-infectives (including vaginal antifungal, antiparasitic and eye preparations)	25	55	13	93
Total (percentage)	83 (35.8%)	117 (50.4%)	32 (13.8%)	232 (100%)

Table 3 **Analgesics dispensed**

Analgesic		No.	(%)
Simple analgesics[a]			
Acetylsalicyclic acid containing products	35 (18.4)		
Dipyrone containing products	31 (16.3)		
Paracetamol containing products	20 (10.5)		
Subtotal		86	(45.3)
Glafenine or floctafenine products		11	(5.8)
Others		25	(13.2)
NSAIDs (excluding acetylsalicylic acid)		68	(35.8)
Total		190	(100)

[a] *No products included more than one of acetylsalicylic acid, dipyrone and paracetamol*

Simple analgesics containing acetylsalicylic acid, dipyrone or paracetamol comprised 45.3% of all analgesics. A further 35.8% were NSAIDs (excluding acetylsalicylic acid) (Table 3). Acetylsalicylic acid was the product most frequently dispensed during the observation period. Of the 31 products containing dipyrone, it was the sole ingredient of 21 products. Six of the 20 paracetamol-containing products also included propyphenazone and caffeine. In 16 cases, the preparations supplied also contained phenobarbitone. Nine different NSAIDs were dispensed.

Other analgesic preparations dispensed included: proquasone, tizanidine, pipoxolan, nefopam, pizotifen, antipyrine, various topical rubs, cartilage and bone marrow extract from young animals (for arthritic pain), and local anaesthetics for oral/dental pain. In addition to the above, six clients purchased a product containing a combination of ergotamine, meprobamate, dipyrone, phenobarbitone and caffeine; no prescriptions were presented for this product.

Ten products dispensed for urinary tract infection included phenazopyridine as an analgesic. Many of the cough and common cold remedies discussed later contained an analgesic.

Drugs dispensed for respiratory symptoms. A total of 139 drugs were dispensed for respiratory symptoms (11.8% of all items). They accounted for 11.9% of prescription items, 11.0% of items requested by clients and 15.8% of products recommended by pharmacists.

Cough mixtures and common cold remedies comprised 7.6% of all drugs dispensed and 64.0% of products dispensed for respiratory symptoms (Table 4). All except three of the cough mixtures, i.e. 45 products, were combinations including up to five constituents such as antihistamines, xanthines, ephedrine, analgesics, expectorants, steroids and bronchodilators. In fact, 11 included at least four constituents. Ten preparations also included phenobarbitone. The constituents of the products supplied with and without a prescription were similar.

In eight cases, the pharmacists recommended antibiotics for upper respiratory tract infections when the client complained of sore throat or tonsillitis.

Drugs dispensed for gastrointestinal symptoms. A total of 113 products were

Table 4 **Drugs dispensed for respiratory symptoms**

Drug	Prescription	Request/sale	Recommended by pharmacist	Total
Cough mixtures	20	20	8	48
Common cold remedies	3	28	10	41
Nigella sativa fennel-flower oil	0	4	0	4
Bronchodilators	2	6	0	8
Theophylline derivatives	2	3	0	5
Antihistamines	3	5	1	9
Steroids	5	1	1	7
Throat lozenges	0	5	2	7
Nasal decongestants (local)	4	5	1	10
Total	39	77	23	139

dispensed for gastrointestinal symptoms (accounting for 9.6% of all items). Of these, 24.8% were prescribed by physicians, 14.1% were recommended by the pharmacists and 61.1% were sold to clients on request.

Antibacterial and anthelminthic preparations, and products containing hydroxyquinolines are listed in Table 2. Table 5 lists other products supplied for gastrointestinal symptoms, and shows that 17 antidiarrhoeal products were dispensed, beside the hydroxyquinolines shown in Table 2. Two of them were oral rehydration preparations; one was prescribed and the second was requested by the client. Products containing kaolin were dispensed in seven cases. Other remaining products contained methyloxine, loperamide, domperidone and diphenoxylate.

Table 5 **Drugs dispensed for gastrointestinal symptoms**

Drug	Prescription	Request/sale	Recommended by pharmacist	Total
Antidiarrhoeal	6	8	3	17[a]
Antispasmodic	7	20	6	33
Antacid	3	18	1	22
Anti-emetic	8	9	3	20
Laxative	2	11	2	15
Digestive	2	3	1	6
Total	28	69	16	113

[a] *Included 2 cases of oral rehydration therapy*

Table 6 **Drugs dispensed for cardiovascular disease**[a]

Drug	Prescription	Request/sale	Total
Nitrates	3	6	9
Calcium channel blockers	3	8	11
Diuretics	3	2	5
β blockers	2	6	8
Angiotensin-converting enzyme inhibitors	2	4	6
Other antihypertensives	2	6	8
Digoxin	1	3	4
Other cardiac-acting drugs	4	1	5
Drugs for peripheral vascular disease	5	13	18
Anticoagulants	1	3	4
Lipid-lowering agents	7	5	12
Total	33	57	90

[a] *No drug was recommended by pharmacists*

Vitamins and nutritional supplements. Of all drugs dispensed, 128 (10.9%) were vitamin preparations. Brans or food substitutes were supplied in an additional 12 cases. Out of the 128 vitamin preparations, 35.0% were prescribed by physicians, 61.0% were requested by name by the clients and 4.0% were recommended by pharmacists. A vitamin product was included in 17.0% of all prescriptions, comprising 12.5% of all prescription items. Ten per cent (10.0%) of the 700 client requests for named products and 3.0% of the 145 pharmacists' recommendations were for vitamins. Of all vitamin products, 74.0% were combinations, and 39.0% of these were combinations of the B vitamins.

Drugs for cardiovascular diseases (Table 6). Of all the drugs dispensed, 90 items (7.7%) were for cardiovascular disorders, of which 63.3% were sold on request to clients and 36.7% were prescribed by physicians. No preparation in this category was dispensed upon the pharmacists' recommendations.

Drugs acting on the central nervous system (Table 7). Sedatives, hypnotics, antidepressants and tranquillizers comprised 1.9% of all drugs supplied. Benzodiazepines were supplied to ten clients and major tranquillizers to seven. Drugs for epilepsy accounted for a further 1.0%. Fifteen items of this group (29.4%) were prescribed by physicians, two (3.9%) were recommended by the pharmacists and 34 (66.7%) were sold to clients on request.

Other products dispensed. These included: hypoglycaemic agents (27); hormone preparations (26); anorectal products (21); hair products (9); uricosurics (8); skeletal muscle relaxants (7); vaginal douches (6); parenteral fluids (5); anaesthetics (4); cytotoxics (2); and diagnostic agents (1).

Table 7 **Drugs acting on the central nervous system**

Drug	Prescription	Request/sale	Recommended by pharmacist	Total
Sedatives/hypnotics/tranquillizers	7	11	0	18
Antidepressants	2	2	0	4
Anticonvulsants	3	9	0	12
Antiparkinsonian	1	5	0	6
Cerebral stimulants/vasodilators	1	4	0	5
Motion sickness/vestibular function	1	3	2	6
Total	15	34	2	51

Discussion

Clients with a prescription from a physician were more likely to receive more than one product than those purchasing products without a prescription. However, the average number of items per prescription (1.6 items) was lower than that found in some other studies [*16,17*]. The range of products dispensed with and without a prescription in this study were broadly similar.

As typical of developing countries, anti-infective agents, other respiratory drugs, analgesics and vitamin supplements constituted a high proportion of drugs dispensed (both with and without a prescription), whilst preparations for cardiovascular disease and drugs for mental health problems were less frequently dispensed [*9,18,19*].

Banned products such as dipyrone and hydroxyquinolines continue to be marketed, prescribed, recommended by pharmacists and requested by clients. In many parts of the world, dipyrone is considered a dangerous drug and is no longer used. Serious adverse effects, often leading to fatalities, were observed and confirmed more than 60 years ago [*20,21*]. In this study, dipyrone products constituted 36% of simple analgesics and it was also an ingredient in many combination products for the common cold. Concern has also been expressed about the use of hydroxyquinolines for the treatment of diarrhoea [*22,23*]. Oral rehydration therapy was not widely dispensed. Instead, kaolin, pectin, calcium carbonate, di-iodohydroxyquinoline, phthalylsulfathiazole, and sulfadimidine-containing compounds were dispensed.

A high proportion (72.0%) of drugs in all therapeutic categories were dispensed without a prescription or advice from a pharmacist; this included about half of the anti-infective agents, the majority of products for the treatment of chronic problems in which some monitoring would be required (e.g. for cardiovascular diseases, epilepsy, asthma, diabetes) and drugs for which serious adverse drug reactions are relatively common (e.g. NSAIDs, hypnotics and tranquillizers). Many items dispensed at the request of the clients may have been previously prescribed and resupply may be appropriate. However, formal opportunities for ensuring that continued use is advisable may be limited. A paucity of information to clients on drug products has been identified [*8,24*]. Although we have no information on the knowledge base or rationale of individuals

for the use of drugs in Alexandria, researchers elsewhere have supplied anecdotal evidence demonstrating how individuals have their own ideas and beliefs about drug use which are important determinants of their use [*16,24,25*].

The appropriateness of widespread prescribing and supply of vitamin preparations is doubted. The majority of vitamin products dispensed in this study were combination products which are used as nutritional supplements rather than to address a specific deficiency. As with the use of cough and cold remedies, many of which are believed to be of doubtful efficacy, these drugs are probably overused. Supplies of these products may increase the strain on financial resources, a problem which has greater implications in poorer communities and those with limited access to health care.

The data collected relate only to Alexandria. The patterns of drug use may be very different in other urban or in rural areas. In general, health professionals are more numerous in metropolitan areas, and Alexandria in particular possesses faculties of medicine and pharmacy and professional associations which may be expected to provide more opportunities for sharing information and professional experience. Pharmacies are numerous in Alexandria, they are staffed by qualified pharmacists, and are virtually the sole source of drugs in the city. Pharmacists are therefore well-placed to perform a role in informing clients and promoting appropriate drug use.

Conclusion

The patterns of drug use in Alexandria share many characteristics with developing countries. The majority of drugs were dispensed without a prescription or advice from pharmacists; about 60% of the items were requested by clients compared with 40% which were dispensed with professional advice from physicians or pharmacists. Thus, opportunities for ensuring the appropriateness of therapy were limited. Drugs for which risks are considered high are in common use, both with and without a prescription. These findings raise questions about the availability and uptake of drug information by health professionals and their clients in a city which possesses characteristics that would be expected to be favourable to the promotion of rational drug use. They are of importance in the undergraduate and postgraduate education of pharmacists and other health care professionals.

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