

Pharmacoepidemiological study of self-medication in adults attending pharmacies in Alexandria, Egypt

S.A. Sallam,¹ N.M. Khallafallah,² N.K. Ibrahim¹ and A.O. Okasha¹

دراسة في الوبائيات الدوائية حول المداواة الذاتية بين البالغين الذين يرتادون الصيدليات في الإسكندرية - مصر
سنى عبده سلام، نوال محمد خلف الله، نهلة خميس إبراهيم، عائشة عمر عكاشة

الخلاصة: أجرى الباحثون دراسة مستعرضة للتعرف على مدى ونمط المداواة الذاتية بين البالغين وللتعرف على المعارف والممارسات التي تتعلق بالأدوية التي يشترونها، ولحساب المؤشرات الخاصة بوصف الأدوية وبالرعاية لمن يشتريها. وقد اتبع الباحثون الطريقة التي أعدتها منظمة الصحة العالمية، فاختاروا بطريقة عشوائية 35 صيدلية من مناطق مختلفة في مدينة الإسكندرية بمصر؛ وأجروا مقابلات مع 1294 مرئاداً لها، كان من بينهم 1050 (81.1%) ممن يشتري أدوية المداواة الذاتية، وكان أكثر الأسباب شيوعاً هو الاعتقاد بأن الحالة بسيطة، وكانت أكثر الأدوية المصروفة هي أدوية الجهاز التنفسي، وكان العدد الوسطي للأدوية لكل مرة يرتاد فيها المشتري الصيدلية 1.10، وكانت التكلفة الوسطية 7.29 جنيهاً، وكان الزمن الوسطي لصرف الأدوية 2.53 دقيقة أما معارف وممارسات المرئادين للصيدليات لشراء الأدوية فقد كانت ضعيفة.

ABSTRACT A cross-sectional study was conducted to determine the extent and pattern of self-medication among adults, to identify their knowledge and practice concerning the purchased drugs and to calculate prescribing and purchaser care indicators. Following WHO methods, 35 pharmacies were randomly selected from districts in Alexandria city, Egypt. Of 1294 clients interviewed at these pharmacies, 1050 (81.1%) purchased self-medication; the commonest reason given was a belief that the condition was minor. The most frequently dispensed drugs were those for the respiratory system. The mean number of drugs per encounter was 1.10, mean cost LE 7.29 and mean dispensing time 2.53 minutes. Purchasers' knowledge and practice regarding the purchased drugs were poor.

Étude pharmacoépidémiologique de l'automédication chez les adultes s'approvisionnant dans des pharmacies d'Alexandrie (Égypte)

RÉSUMÉ Une étude transversale a été menée pour déterminer l'étendue et les caractéristiques de l'automédication chez les adultes, recenser les connaissances et les pratiques de ces personnes concernant les médicaments achetés, et calculer les indicateurs de prescription ainsi que les indicateurs de soins relatifs aux acheteurs. Conformément aux méthodes de l'OMS, 35 pharmacies ont été sélectionnées au hasard dans différents quartiers d'Alexandrie (Égypte). Sur 1 294 clients interrogés dans ces pharmacies, 1050 (81,1 %) achetaient des médicaments pour se soigner eux-mêmes ; parmi les raisons avancées, la principale était que d'après eux, ils ne souffraient pas d'une affection grave. Les médicaments les plus fréquemment délivrés étaient ceux destinés à l'appareil respiratoire. Le nombre moyen de médicaments par déplacement à la pharmacie était de 1,10 ; le coût moyen, de 7,29 livres égyptiennes ; et la durée moyenne de délivrance, de 2,53 minutes. Le niveau de connaissances et de pratiques des clients à propos des médicaments achetés était faible.

¹High Institute of Public Health; ²Faculty of Pharmacy, University of Alexandria, Alexandria, Egypt

(Correspondence to A.O. Okasha: aisha@doctor.com).

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Introduction

Pharmacoepidemiology is considered newly evolving science that studies the use and effects of drugs in large numbers of people [1]. Rational use of drugs has drawn public health attention globally with the aim of maintaining quality health care at lower cost [2]. As dispensing medication in an appropriate way is a cornerstone of rational drug use, the dispenser should be regularly updated with information, tools and skills [3].

Self-medication has been defined as self-administration of medication not prescribed by, or in a manner not directed by, a physician [4]. The public health importance of self-medication has increased since the late 1980s when more drugs were changed from prescription status to be sold over-the-counter (OTC) without a prescription. This is a worldwide trend. The increased possibilities of self-medication have implications for patients, pharmacists, and physicians [5]. It also allows pharmaceutical companies to expand their market [6].

Self-medication is common among individuals in many developing countries but not much is known about its determinants [7], and increasingly self-prescribed medications are obtained and consumed without the advice of the physician [8]. In Egypt in 1996 it was reported that some drugs that were unavailable in many developed countries because of the risks of adverse effects were still manufactured, marketed, prescribed by physicians, recommended by pharmacists and requested for purchase by clients [9]. It is customary in Egypt for drug products to be sold OTC without any prescription, except for a very limited number of drugs specified by the Ministry of Health and Population that require a special prescription for dispensing.

A limited number of drug utilization studies have been conducted in Egypt [10].

A pharmacoepidemiological study on drug utilization among children in Alexandria in 1995 reported that 21.1% of purchased medications were not prescribed [11]. Another study among university students showed that 66.1% took medicines without prescription [12]. The aim of this study was to determine the pattern of self-medication among adults attending pharmacies in Alexandria, to identify their knowledge and self-reported practices concerning the usage of the purchased drugs and to calculate the prescribing and purchaser care indicators for the encounters.

Methods

The study design and sample size followed World Health Organization (WHO) guidelines for investigation of therapeutic practice [13]. Accordingly, a sample of 35 pharmacies was selected randomly from all 7 districts of Alexandria, using the proportional allocation technique, where 30 encounters were included from each selected pharmacy. In order to reach the required sample size, all adults aged 20–64 years attending the selected pharmacies requesting drugs (with or without prescription) were selected. Among all adult clients requesting self-medication drugs (a product for self-use without a prescription indicated for the current complaint), a total sample of 1050 purchasers were interviewed.

Data collection was done through a questionnaire interview of purchasers and observation of the encounter. The interview questionnaire contained items about the purchaser: demographic characteristics (age, sex, education and occupation); complaint; duration of condition; source of advice and reason for self-medication; knowledge about the use of the purchased drug; and practices related to the product purchased. The observation sheet included items about

the dispensing procedure: history-taking; case referral; labelling of drugs; oral instructions about use; and whether the purchasers asked for any advice from the dispenser.

The dispensing time was recorded for each encounter. Data about the purchased drug was also recorded, such as trade name, generic name, dosage form and cost. Certain prescribing and purchaser care indicators were calculated according to WHO guidelines [13].

Analysis of data was conducted using SPSS, version 9.

Results

The sample of adults attending the pharmacies (with or without prescription) was 1294. A total of 1050 (81.1%) purchased products for self-medication and were included in the study.

The demographic characteristics of the purchasers of self-medication revealed a slight male predominance (56.5%); about two-thirds were married (61.7%). The mean age was 39.2 years; 27.9% were aged 20–29 years. Regarding educational level, 52.5% of purchasers were university graduates, while 16.6% and 19.8% respectively were illiterate or could just read and write. The most common occupation was housewife (23.0%), followed by clerical worker (16.2%).

The most frequent complaints expressed by purchasers of self-medication were common cold (9.2%), headache (7.4%), hypertension (5.6%), cough (5.0%) and dyspepsia (4.7%). Table 1 shows the complaints categorized by system; the most frequent were those of the respiratory system (21.0%), followed by the alimentary system (15.8%). Neurological and mental health problems represented 12.9%, followed by skin problems and cardiovascular problems, with 9.5% and 8.9% respectively.

Table 1 Distribution of adult purchasers of self-medication at Alexandria pharmacies by self-reported category of complaint

Category of complaint	No.	%
Respiratory problem	221	21.0
Alimentary problem	166	15.8
Neurological/mental health problem	135	12.9
Skin problem	100	9.5
Cardiovascular problem	93	8.9
Pain	82	7.8
Fatigue	47	4.5
Diabetes	37	3.5
Sensory organ problem	31	3.0
Gynaecological problem	29	2.8
Genitourinary problem	20	1.9
Dental problem	19	1.8
Other	70	6.7
Total	1050	100.0

Data concerning the present complaint revealed that about half of purchasers (48.5%) had had the complaint for less than 1 week; while one-third had had the condition for more than 6 months (32.8%) (Table 2). The majority (88.5%) had previously complained of the same condition. Previous use of the same product purchased was reported by 77.2%.

About half of the purchasers attributed the reason for self-medication to a perception of their problem as minor (44.5%), followed by 31.0% claiming to know the treatment from a previous prescription (Table 3).

Source of advice was mainly a prescription not issued for the current complaint (33.0%), the purchaser's own initiative (25.3%) and the pharmacist (22.0%) (Table 4).

Table 5 shows knowledge and self-reported practices of self-medication purchasers concerning the drug purchased. Drug-related knowledge among adults was poor: 88.3%, 92.9%, 95.7% and 95.4% of

Table 2 Distribution of self-medication purchasers (n = 1050) at Alexandria pharmacies by factors related to their complaint

Factor related to complaint	No.	%
< 1 week	509	48.5
1 to ≤ 4 weeks	116	11.0
1–6 months	81	7.7
> 6 months	344	32.8
<i>Previous complaint of same condition</i>		
Yes	929	88.5
No	121	11.5
<i>Previous use of same medication and completion of course</i>		
Used and completed course	594	56.6
Used but incomplete course	217	20.6
No previous use	239	22.8

purchasers did not know the drug dose, side-effects, precautions and contraindications of the purchased drugs respectively. Regarding self-reported practices, only 50.6% had read the patient information sheet, 62.2% had read the expiry date and 50.3% had followed the pharmacist's instructions on the label.

Statistically significant differences were found between the educational level of purchasers and behaviour concerning the purchased drugs (Table 6); purchasers with a higher level of education were more likely to read the patient information sheet, follow the pharmacist's label and read the expiry date of drug purchased; $P < 0.001$ for all behaviours.

Regarding the purchasers' practices when ill, 79.9% reported taking self-medication as their first action, 96.0% said that they turned to self-medication for perceived minor problems only and three-quarters perceived self-medication to be always effective in treating their condition. About

Table 3 Distribution of self-medication purchasers (n = 1050) at Alexandria pharmacies by reason for self-medication

Reason for self-medication	No.	%
Perceived problem as minor not requiring medical attention	467	44.5
Know the treatment from previous prescription	325	31.0
Confidence in the pharmacist	152	14.5
Cannot afford to see the doctor	52	4.9
No time to see the doctor	32	3.0
No confidence in the doctor	22	2.1

half of purchasers could not remember when they had last visited the doctor. Non-pharmacological home remedies were used by 61.3%.

Concerning the type of drug products regularly available at home, more than half of them were anti-inflammatory and analgesic drugs (58.5%), followed by cough (11.5%) and common cold (7.3%) remedies. The most frequent groups of drugs purchased were products for alimentary tract and metabolic disorders (30.4%), followed by those for respiratory system disorders (16.1%) (Table 7). The most frequent generic names requested were chlorpheniramine (7.7%), followed by diclofenac (4.5%). More than one-half of the drug products purchased (69.9%) were in oral solid dosage form (89.6% tablets and 10.4% capsules). Banned products such as dipyrrone were requested by the purchasers.

Observed dispensing procedure showed that 17.5% of purchasers had a case history taken and 6.2% were referred for medical care. The pharmacist was asked for advice by 29.6% of purchasers (Table 8).

Regarding the prescribing indicators, the mean number of drugs per encounter was 1.10, the mean drug cost per encounter was Egyptian pounds (LE) 7.29, and the percentage of encounters with 1 or more antibiotic dispensed was 6.8%.

Table 4 Distribution of adult purchasers (n = 1050) at Alexandria pharmacies by source of advice for self-medication

Source of advice for self-medication	No.	%
Purchaser's own initiative	266	25.3
Prescription not issued for the current complaint	346	33.0
Personal prescription	(325)	(30.9)
Prescription issued to others	(21)	(2.1)
Pharmacist	231	22.0
Pharmacist assistant	20	1.9
Lay people	187	17.8

As regards purchaser care indicators, the mean dispensing time was 2.53 minutes, the percentage of drugs adequately labelled was 17.4%, the percentage of drugs dispensed with oral instructions was 28.2% and the percentage of drugs actually dispensed was 100%.

Discussion

In the present study the rate of self-medication was high (81.1%), due partly to the lack of enforcement of the Egyptian law concerning drug products requiring a prescription to be sold OTC. Moreover, self-medication appears to be increasing compared to the pattern of drug supply from pharmacies in Alexandria in 1996 which showed that 72% of drugs in all therapeutic categories were dispensed without a prescription or advice from a pharmacist [9]. The findings of a study in south Brazil were consistent with the latter, where 76.1% of medicine users were self-medicated [14].

The educational level of the adult purchasers in the present study indicated that university graduates constituted 52.5%. Probably this educated group feels it has more ability to self-medicate. In India, Deshpande and Tiwari reported that

Table 5 Distribution of self-medication purchasers (n = 1050) at Alexandria pharmacies by knowledge and practice about the drug purchased

Knowledge/practice about drug purchased	No.	%
Knowledge of:		
<i>Dose</i>		
Yes	123	11.7
No	927	88.3
<i>Side-effects</i>		
Yes	15	1.4
No	975	92.9
Will read in information sheet	60	5.7
<i>Precautions</i>		
Yes	5	0.5
No	1005	95.7
Will read in information sheet	40	3.8
<i>Contraindications</i>		
Yes	8	0.8
No	1002	95.4
Will read in information sheet	40	3.8
Practice:		
<i>Expected duration of use</i>		
Until complaint disappears	40	3.8
Until drug finishes	728	69.3
Adjusted by adviser	297	28.3
Adjusted by adviser	25	2.4
<i>Read patient information sheet</i>		
Yes	531	50.6
No	519	49.4
<i>Reasons for not reading information sheet</i>		
Difficult to read	177	34.0
Confidence in pharmacist	44	8.5
Difficult to understand	243	46.8
Written in English	18	3.5
No need to read it	37	7.2
<i>Followed pharmacist's label instructions</i>		
Yes	528	50.3
No	522	49.7
<i>Read expiry date</i>		
Yes	653	62.2
No	397	37.8

Table 6 Distribution of self-medication purchasers at Alexandria pharmacies by educational level and behaviour concerning purchased drugs

Purchasers' education level	Read patient information sheet		Followed pharmacist's label		Read drug expiry date	
	No.	%	No.	%	No.	%
Illiterate (<i>n</i> = 174)	11	6.3	23	13.2	33	19.0
Read and write/primary school (<i>n</i> = 212)	40	18.9	73	34.4	100	47.2
Preparatory/secondary school (<i>n</i> = 113)	42	37.2	45	39.8	70	61.9
University graduate (<i>n</i> = 551)	438	79.5	387	70.2	450	81.7
Total (<i>n</i> = 1050)	531	50.6	528	50.3	653	62.2
Significance	$\chi^2 = 414.0; P < 0.001$		$\chi^2 = 209.6; P < 0.001$		$\chi^2 = 247.5; P < 0.001$	

26% of graduates and 23.1% of illiterate people practised self-medication [15]. Another study in India in an urban slum community indicated that the practice of self-medication was more prevalent among literate people [16]. Among primary care patients in a clinic in Riyadh, literate patients also tended to self-medicate more than illiterate ones [17]. In Sri Lanka, it was suggested that literate people self-medicated far more than illiterate people [18]. In the present study 83.3% of self-prescribers were literate and 16.6% illiterate.

Pharmacists (22.0%) and to a less extent pharmacist assistants (1.9%) were a source of advice to purchasers in the present study. Pharmacists diagnosed certain conditions and prescribed a drug as a treatment. A quarter of the purchasers sought medication on their own initiative. A study on family use and understanding of modern medicine in 2 villages in rural Brazil indicated that the majority of medications were prescribed by pharmacist assistants or by the patients themselves [19]. Deshpande and Tiwari's study in India found that 30.8% purchased a particular medicine on advice from friends or neighbours [15].

The commonest reason given for self-medication was purchasers' belief that their

complaint was a minor problem, not requiring medical attention (44.5%). About one-third of the purchasers claimed that they knew the treatment from a previous prescription (31%), while 14.5% had confidence in the pharmacist. The study in Riyadh indicated that 58% of purchasers attempted self-medication due to the triviality of their symptoms or to save time and money [17]. In the slum community in India inability to pay for established medical facilities was the commonest motivation for self-medication (60.5%) [16].

Purchasers' knowledge relating to the purchased drug product was poor, although 77.2% had previously used the same product. A study in Alexandria investigating 4 different drug groups purchased without a prescription reported that 74% of the clients had used the product before [20]. The majority of the purchasers did not know the dose intended to be taken (88.3%), side-effects (92.9%), precautions (95.7%) and contraindications (95.4%). Other studies have identified clients' lack of information about drug products. Comparing the quality of service in pharmacies in Yugoslavia, patients' knowledge of the correct dosage ranged from 30% to 74% [21]. Research has demonstrated that individuals have

Table 7 Distribution of drugs purchased for self-medication at Alexandria pharmacies by drug group

Drug group	No.	%
Alimentary and metabolic system	351	30.4
Respiratory system	186	16.1
Musculoskeletal	127	11.0
Central nervous system	114	9.9
Cardiovascular system	113	9.8
Dermatological	73	6.3
Anti-infective, systemic	72	6.2
Genitourinary system	40	3.5
Sensory organ	34	2.9
Blood disorder	23	2.0
Antiparasitic	12	1.0
Systemic hormonal	7	0.6
Antineoplastic and immunological system	1	0.1
Total	1153	100.0

Table 8 Distribution of self-medication purchasers (n = 1050) at Alexandria pharmacies by dispensing procedure observed

Observed procedure	No.	%
<i>Patient asked advice</i>		
Yes	311	29.6
No	739	70.4
<i>Case history taken from patient</i>		
Yes	184	17.5
No	866	82.5
<i>Drug labelled</i>		
Yes	183	17.4
No	867	82.6
<i>Oral instructions given</i>		
Yes	296	28.2
No	754	71.8
<i>Medical referral made</i>		
Yes	65	6.2
No	985	93.8

their own ideas and beliefs about drug use, which are important determinants of their use [22–24].

Investigating self-medication and drug-taking behaviour revealed that most of the purchasers generally sought to self-medicate for minor problems (96%) while those who self-medicate for major problems were a minority (0.3%). A survey in Malaysia indicated a marked tendency among the general population to treat minor ailments by self-medication with OTC drugs [25].

Our findings about self-reported practices concerning purchased drugs suggest that purchasers make their own judgements and adjustments regarding adherence to medication regimens. Education appeared to be an important variable as the higher the purchasers' educational level, the more they complied with reading the patient information sheet, following the label instructions and reading the expiry date. In a community study in Spain, the instructions were read in only 48.6% of cases [26].

In the present study, the most frequent complaints were common cold (9.2%) and headache (7.4%). A survey of self-medication in eastern France stated that the 3 most frequent symptoms were headache (46.9%), nose, throat or respiratory tract diseases (22.1%) and abdominal pain (7.3%) [27]. Deshpande and Tiwari's study in India showed that cough (22.2%), fever (17.4%), boils (7.6%) and stomach acidity (6.8%) were the common complaints for self-prescription [16]. A telephone survey among 660 homes in Spain reported headache (42.8%), lumbago (41.7%) and colds (34.4%) as the most frequent symptoms. Self-medication, including physical and home remedies, was the most common response [28]. Products such as dipyron were requested by some purchasers. In many parts of the world dipyron is considered a dangerous drug and is no longer used, as fatalities were observed more than 60 years ago [29]. However, it continues to be marketed in some countries [30].

The mean number of drugs dispensed per encounter was 1.10 and the percentage of drugs actually dispensed was 100%. In the study in Yugoslavia the percentage of drugs actually dispensed was 29% to 63% [21]. A study on rational drug use in Ethiopia showed that most drugs in health centres (89%) and in health stations (71%) were actually dispensed, while the mean number of drugs per encounter was < 2.5 [31].

In the present study the mean cost of drugs per encounter was LE 7.29. A survey in 1995 in 3 outpatient facilities among 331 encounters in Ismailia governorate in Egypt reported that the mean drug cost was LE 8.40 and the percentage drugs actually dispensed was 54.0% [32].

In some drug utilization studies, such as this one, the parameters assessed were subjective, which is a limitation of such studies.

Conclusion

Several aspects of irrational drug use were found in this study, with a very high rate of self-medication and poor knowledge and practice concerning the purchased drugs. It is recommended that the dispensing procedure in Egypt needs improvement through educational, regulatory and managerial strategies.

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