RESEARCH ARTICLE

Self-Medication Patterns in Amman, Jordan

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Abstract

Objective The classification of medicine as Prescription-Only-Medicine (POM) and Over-The-Counter (OTC) drugs in Jordan is present but not yet enforced on community pharmacies, the fact that allows access of the public to a wider range of medications that otherwise are provided only on prescription. This, of course, has its implications on safety and effectiveness of the pharmacotherapy in question. This research aims to establish a baseline data concerning the extent of self-medication among Jordanians, and to assess possible factors associated with self-medication, so that future interventions can be documented and planned.

Setting A total of 155 out of Amman's 900 community pharmacies.

Methods A cross-sectional observational study using a pre-piloted questionnaire was conducted. Over 800 customers who visited the pharmacies over a period of 4 months were interviewed and their non-prescription drug requests patterns were recorded to assess the prevalence of self-medication and offered justification.

Results Self-medication was a common practice among Jordanians (42.5%). The variable that was associated with extent of self-medication was respondents' age, where patients younger than 16 years and those older than 60 years were less likely to self-treat. The most common reasons for self-medication were that the ailments were too minor to see a doctor (46.4%), the long waiting time to be seen by doctors (37.7%) and avoiding the cost of doctors' visits (31.4%). People tended to select medication based on advice received from pharmacy staff (14.2%), friends/neighbors (17.6%) or informal advice from other health professionals like dentists and nurses (21.9%). Alternatively, patients selected products based on their previous experiences with similar symptoms (27%) or similar diseases (33.5%).

Conclusions Self-medication is a common health care practice in Jordan, where people are becoming increasingly familiar with drugs and their brand names. Self-medication behavior varied significantly with a number of socio-economic factors. Unfortunately, only a small percentage of patients engaged pharmacy personnel in therapeutic consultations beyond briefly mentioning a symptom.

Impact of findings on practice

- The assessment of self-medication is one important element in the study of rational drug use.
- Our findings provide a solid basis for a future intervention, that could be sponsored by the Jordan Ministry of Health in collaboration with the Jordanian Pharmacists Association.
- Considering the breadth of medicine available without a prescription and the problems that can arise with medication use, pharmacists in Jordan working in

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community pharmacies should have the potential to make a huge impact on society.

- Future health care plans should emphasize the role of pharmacists to better educate patients to contribute more actively and rationally in drug selection.

Introduction

Self-medication is part of the larger frame of self care and can be defined as obtaining and consuming drugs without the advice of a physician either for diagnosis, or treatment [1, 2]. Self-medication has become quite common in developed [1, 3, 4] as well as developing countries [5–7].

Self-medication has a positive impact on individuals, and healthcare systems. It allows patients to take responsibility and build confidence to manage their own health, thereby promoting self-empowerment [2]. Furthermore, from the medical doctor's perspective, unnecessary medical consultations could be avoided through appropriate and effective self-medication [8, 9].

On the other hand, instances of inappropriate self-medication have been identified in the literature. This has resulted in misuse of OTC products through overuse, using several drugs concurrently, or using home remedies to treat potentially serious diseases [10], which have resulted in misdiagnosis [11, 12], or masking of serious medical conditions [13].

In Jordan, community pharmacies are the most accessible primary health care facilities. The main duties of pharmacists in community pharmacies involve dispensing with very little pharmacist-patient interaction. In Jordan very few community pharmacies maintain patients' medication records and seldom use technology for patient care. Although the laws pertaining to drug dispensing are similar to those of the West, these laws are not strictly enforced in community pharmacies. Patients visit a community pharmacy to purchase a product much like they would at a supermarket. In Jordan, like most other developing countries [7, 14–19], having a valid prescription is not enforced for receiving prescription-only drugs (POM). With the exception of narcotics and major tranquilizers, patients can buy any medication without a prescription.

This research sought to: obtain baseline data on the extent of self-medication among Jordanian population; assess the effect of a number of variables (e.g. age, gender, level of education, geographical area and socioeconomic factors like income, health insurance and family size) on self-medication; and assess patients' reasons for self-medication.

Method

A cross-sectional observational study was conducted in pharmacies located in Amman between December 2003 and April 2004. Pharmacists in-charge were given covering letters explaining the purpose of the study, and assuring the confidentiality of information. Once in the community pharmacy, patients were asked to consent to participate in the study. The target number was 4–6 patients per pharmacy. Patients were interviewed using pre-piloted questionnaire and their current drug dispensing patterns were recorded. The research proposal obtained *priori* approval by the ''Deanship of Scientific Research'' at Jordan University.

Sampling procedure and frame

Amman is the capital city of Jordan with an estimated population of approximately two millions. For convenience reasons, researchers could not extend outside the capital. Pharmacy stores in Amman were stratified into four major geographical areas; North, West, South, East and Center, then 20% were selected randomly and a list of 200 was compiled. The geographical classification ensured that low, middle and high-income localities were represented.

The sampling frame was defined as any patient who suffered from any ailment and visited any of the 200 community pharmacies within the vicinity of Amman. Where patients were younger than 16 years old, caregivers were interviewed. People who asked for medicine on behalf of someone else were excluded from the study.

Questionnaire development and contents

A questionnaire was developed by the research team at the University of Jordan and then was piloted in 10 pharmacy stores where 20 customers were interviewed. The pilot results were not included in the statistical analysis of the study.

The questionnaire consisted of four parts; Part A: demographic data (e.g. age, gender, education level, health insurance status, family size and monthly income); Part B: information regarding medications purchased by participants on the day of interview; Parct C: reasons for not consulting a doctor.

Statistical analysis

All data were entered and analyzed using the SPSS$^{©}$ software (version 11.0; SPSS, Inc, Chicago, IL). Chi square ($\chi 2$) and Fisher exact tests were used to test any significance between categorical variables. All *P*-values were

two-sided and $P < 0.05$ was considered statistically significant.

Results

Demographic data

Table 1 summarizes patients' demographic characteristics. The total number of pharmacy stores that participated in the study was 155 out of 200 (77.5%), and 819 out of 1326 patients approached (61.8%) agreed to participate in the study. Patients presented at pharmacy stores in the south/

Table 1 Demographic and socioeconomic characteristics of participants and the Amman population

Criteria	Number/Mean (Percent)	
	Sample population ($n = 819$)	Amman population [33]
Gender		
Men	444 (54.2%)	(50%)
Age		
Average age	35.3 years (±16.7[d])	33.8 years
Education[a]		
Graduate	402 (52.7%)	(23.5%)
High school	194 (25.5%)	(22%)
Middle school	72 (9.4%)	(27.5%)
Primary and illiterate	94 (12.4%)	(27%)
Place of pharmacy		
North of Amman	48 (31%)	(21%)
West of Amman	39 (25%)	(32%)
Center of Amman	52 (34%)	(30%)
South/East of Amman	16 (10%)	(17%)
Family size		
1–3	138 (21.3%)	(21.1%)
4–6	349 (54.0%)	(42%)
7–10	160 (24.7%)	(30.4%)
Health insurance		
Yes	358 (46%)	(62%)[c]
Monthly income[b]		
Average income	450 JD (±640[d])	(465.75) JD

[a] The researchers identified five levels of education; illiterate, primary for 1st till 5th graders, middle for 6th to 10th graders, high for 11th to 12th graders, and graduate for people who completed or were still attending a 2-year or a 4-year college programs

[b] Income is expressed by the local currency; Jordanian Dinar (1.0 US dollar = 0.709 Jordanian Dinar)

[c] All children younger than six years and all pregnant women are insured

[d] Standard deviation

east area cluster had the lowest number of participants representing only 10% of the whole sample. The remaining sample was evenly distributed among the rest of the geographical areas. Men accounted for 54% of the total sample. The average age was 35 (±16.7) years, with the majority ($n = 620$, 76%) of the sample was between 20 and 59-years old. There was no significant age difference between men (36 ± 16.9 years) and women (34 ± 16.3 years) ($P = 0.24$). The researchers identified 5 levels of education: illiterate, primary (1st–5th graders), middle (6th–10th graders), high (11th–12th graders), and graduate level for those who completed or were still attending college programs. More than half of the respondents had graduate education. Men within the studied sample had slightly higher levels of graduate education than women (men: ($n = 257$, 58%) versus women: ($n = 176$, 47%), $P = 0.01$). The average family size was five individuals and almost half of the participants ($n = 358$, 46%) had health insurance plans. Almost two thirds ($n = 167$, 70%) of the respondents reported an income less than 400 Jordanian Dinars (JD) ($571) per month. Gender, age, education level, family size, and monthly income of the sample were representative to that of Amman's population (Table 1). Demographics of patients presented with prescriptions were not different from patients presented without prescriptions.

Non-prescription drug supply pattern

Researchers defined three different patterns of medication-supply that took place in the pharmacies:

a) Dispensing of a drug by a medical doctor's prescription, this was beyond the scope of this paper;
b) Supply of a drug through direct self-medication, where patients may order non-prescription drugs either by their scientific/generic names, brand names or physical appearance;
c) Supply of a drug through indirect self-medication, where patients sought the advice of a pharmacy staff regarding their ailments before purchasing the needed medicine.

Self-medication

Self-medication was reported by 42.5% ($n = 348$) of cases interviewed (Table 2). The factor that was associated with self-medication was age, where patients younger than 16 years (<16 years: ($n = 20$, 27%) versus ≥16 years: ($n = 325$, 44.2%), $P = 0.004$) and those older than 60 years (>60 years: ($n = 16$, 29.6%) versus ≤ 60 years: ($n = 329$, 45.3%), $P = 0.045$) were less likely to self treat. The

Table 2 Participants methods of obtaining medicines from community pharmacies (n = 818)

Criteria	Number (Percent)
Dispensing by valid prescription	470 (57.5%)
Self medication	348 (42.5%)
Direct self medication[a]	250 (28.3%)[c]
Generic	13 (4.5%)[d]
Brand name	213 (73.2%)[d]
Physical appearance	24 (8.3%)[d]
Indirect self medication[b]	41 (14.1%)[c]

[a] Consumers may order medications by their generic name, brand name or physical appearance

[b] Consumers sought medical advice from attending pharmacist or pharmacy assistant

[c] Percentages are expressed against ''Self medication'' with 83.6% response rate

[d] Percentages are expressed against ''Direct self medication''

majority (n = 213, 73.2%) of self treated patients requested their medications by their brand names while the remainder asked for their drugs by their generic/scientific names (n = 13, 4.5%) or described the physical appearance of a medication (n = 24, 8.3%) (Table 2). The factors that were associated with ordering medications by their brand names were income, residential area and level of education. People with higher income (≥450 JD: (n = 23, 87.5%) versus <450 JD: (n = 34, 60.7%), P = 0.018) and people living in the west of Amman (west (n = 59, 86.7%), north (n = 62, 76.8%), center (n = 64, 64.8%), south/east (n = 16, 57.1%), P = 0.01) ordered medications by their brand names more than others. On the other hand, we found that patients with higher education level tended to order their drugs by their scientific names more than others (graduates (n = 12, 9%), others (n = 3, 1.9 %), P = 0.023), while they were the least to order medications by their physical appearance (graduates (n = 9, 5.4%), others (n = 17, 16.2%), P = 0.01).

The factors that most commonly influenced people's choice of non-prescription drugs were: advice received from pharmacy staff (n = 41, 14.2%); neighbors/friends (n = 61, 17.6%); and informal advice by other health professionals such as dentists, or nurses (n = 76, 21.9%). Alternatively, patients purchased medicines without prescription because they have used them before and found them successful in relieving symptoms (n = 94, 27%) or because they regularly used them to manage their chronic diseases (n = 116, 33.5%) (Table 3). There was a sharp increase in the prevalence of patients who purchased their drugs without prescriptions for their chronic disorders by the age of 40 (0–19 years (n = 4, 13.3%), 20–39 years (n = 31, 20.4%), 40–59 (n = 55, 56.1%), 60–80 (n = 17, 65.4%), P = 0.001).

Reasons for self-medication

The study identified patients' potential reasons to self medicate (Table 4), which were mainly: their ailments being minor (n = 111, 46.4%); saving the time they had to wait before they can be seen by a physician (n = 90, 37.7%); saving physicians' visiting cost (n = 75, 31.4%); being afraid to discover a more serious disorder (n = 14, 5.9%) and having no-trust in medical doctors (n = 9, 3.8%). The numbers do not add up to 100% as patients might have more than one reason at a time. Men (men: (n = 32, 24.4 %) versus women: (n = 41, 39%), P = 0.016), people with medical insurance (yes: (n = 23, 24.5%) versus no: (n = 47, 37%), P = 0.048), and people residing in west of Amman (west: (n = 31, 24.8%) versus others: (n = 36, 45%), P = 0.003) were the least likely to justify self-medication by saving physicians' visiting costs.

Misuse of medications

Current study revealed that one-quarter (n = 196, 23.9%) of the Jordanians admitted to misuse medicaments against doctors' or pharmacists' directions, where 130 (~16%) admitted to under use and 73 (~9%) admitted to over use their drugs. The most common reasons that were given for under use were; failure to remember (28.5%), symptoms already resolved (26.2%), and indifference and laziness (22.6%). The justifications for over use were; better control of symptoms/disease (51.7%), need more effect (27.6%), and looking for faster healing (20.7%). All classes of medications were mentioned to be misused, including analgesics, anti-inflammatory drugs, antibiotics, hypoglycemics, anti-hypertensives and others. Dermatological and gynecological preparations were the most overused medications. Current study revealed that only 200 out of 427 (46.8%) of patients read the accompanied leaflets.

Discussion

Current study revealed that self-medication was a common practice among different age groups, gender, financial situations, and education levels. The common reasons to self-treat were: the long waiting time to be seen by doctors; avoiding the cost of doctors' visits; and the ailments being too minor to see a doctor. Patients' choice of non-prescription medication was based on advice received from pharmacy staff, friends/relatives or informal advice from other health professionals. Alternatively, patients selected products based on their previous experiences with similar symptoms or similar diseases.

The extent of self-medication observed from this study was close to that produced by another study conducted in

Table 3 Factors that influence patients' choice of non-prescription medication. Comparison of current study conducted in Jordan with previously published studies in different countries

Factor	Number (Percent)			
	Developing countries		Developed countries	
	Jordan[b,c,e] (OTC + POM) (n = 819)	Sudan[d,f] [34] (POM) (n = 1200)	Portugal[c,e] [35] (OTC + POM) (n = 2879)	Britain [d,e] [34] (OTC) (n = 1000)
Pharmacists' recommendations	41 (14%)[a]	(55.2%)	(77.8%)	(27.3%)
Relatives' and friends' advice	61 (17.6%)	(31.1%)	(7.8%)	(14%)
Previous experience	210 (60.5%)	(13.7%)	NA	(22.5%)
Other health professionals	76 (21.9%)	NA	(10%)	NA
Media	NA	NA	(4.4%)	(13%)

NA: not available

[a] Assessment of pharmacists' recommendations was independent of other factors

[b] Percentages do not add up to 100%, as patients may choose more than one factor

[c] Cross-sectional study conducted in community pharmacies

[d] Community-based cross-sectional study

[e] Interview-based questionnaire

[f] Self-administered questionnaire

Table 4 Reasons reported for self medication (n = 240)

Reason	Number (Percent)
Minor ailment	111 (46.4%)
Save time	90 (37.7%)
Save money	75 (31.4%)
Fear of more serious disorder	14 (5.9%)
No trust in MD	9 (3.8%)

Amman studying community consumption of antibacterial drugs [20]. Other studies reported similar findings [6, 7, 14]. Several studies revealed the presence of different factors that influence self-medication including patient's satisfaction with the healthcare provider, cost of drugs, educational level, socio-economic factors, age and gender [21, 22]. The only factor that was found to influence the extent of self-medication among Jordanians was patients' age where patients younger than 16 years and those older than 60 years old were less likely to self-treat. This may be because children and elderly were perceived as more liable to adversity of self-medication. Other studies revealed an extensive self-medication during childhood, with nursing infants above all being frequently and intensively treated with drugs [15, 16].

The majority of participants in the current study asked for medicines without a prescription by their brand names. Similarly, an Indian study found that 66% of dispensed drugs were requested by their brand names [5]. This may indicate the cumulative tendency for people from all walks of life in developing countries to self-treat with medicaments and this has been associated with greater familiarity with drugs and their brand names [5, 15]. Alternatively, the ordering of non-prescription drugs by their brand names may reflect physicians' insistence to prescribe famous brand names, which are usually more expensive while offering no proven advantages over generics. This is probably the influence of marketing strategies of big pharmaceutical companies and their physicians-directed promotion plans. Self-treating patients tend to follow the steps of physicians [5]. Unfortunately this limits patients' choices and encourages patients to purchase just enough to control symptoms. Current study found that more than one quarter of patients who admitted to under use their medications did so because their symptoms were already resolved. Such behavior is expected to contribute to the emergence of resistance against antibiotics [20] and the high rates of uncontrolled chronic diseases [23]. Kamat and Nichter [5] concluded that when medicine was requested by name in higher income areas, a brand name was invariably used. Current study found that patients with higher income and people living in west of Amman ordered medications by their brand names more than others. West Amman is perceived as a high socioeconomic locality and south/east Amman as low socioeconomic residential area.

Chang and Trivedi hypothesized that economic factors like family size, income, and availability of health insurance would be influential determinants of self-medication [24]. In a large Mexican study, authors found that residents who resorted to self-medication had lower income [25]. In

the current study, this was not found to be the case. Current study revealed that Jordanians who had health insurance plans and people living in high-income residential area (west Amman) were the least to justify self-medication by lowering the overall health care cost. In Jordan just like most other countries [26, 27], non-prescribed drugs are not reimbursed by the state, where public health insurance plans do not provide coverage for this category of drugs. Moreover, even if a consumer is medically insured, a number of obstacles hinder the full utilization of such insurance and thus direct some insured patients towards self-medication. In the case of state-sponsored insurance; patients have to wait for quite sometime before they can be seen by a doctor, because of drug availability problem, patients quite often end up buying the medications themselves; and regular, non-emergency health services are only available during usual working hours/days, which necessitate the employee to ask for sick leave which may not be easily granted. The private health insurance plans usually have limited lists of physicians and pharmacy stores, and a fee is payable for every visit to a physician.

Patients selected non-prescription medication mostly based on their previous experiences with similar symptoms or similar diseases. Purchasing medications without prescription to manage chronic ailments was observed more among people over the age of 40. This is interesting as a recent study conducted by local ministry of health indicated a sudden increase in the incidence of chronic diseases by the age of 40 years [23]. Other factors that affected patients' choice of non-prescription medications include advice received from either pharmacy staff, friends/neighbors or informal advice from other health professionals. The prevalence of these factors varied among different studies (Table 3), potentially because of the differences in the design of these studies, differences in the health care systems, and differences in the perceived role of pharmacists.

Researchers [5, 17, 19] had reported that only very small percentage of people actually engage in therapeutic consultations with pharmacy personnel, while others have reported significantly higher proportion of therapeutic consultations in other developing countries [15, 16, 18]. In current study only one seventh of the patients questioned sought the advice of attending pharmacists. Legally, only licensed pharmacist may run community pharmacies in Jordan. However, the supply of non-prescription medicines was provided by unsupervised pharmacy assistants in one third of the cases. Additionally, pharmacist-patient encounter time was unduly short which may be explained by the time limitations imposed on both pharmacists and patients, and that the usually crowded pharmacies provide a poor environment for customers to consult pharmacists beyond a quick question. A recent study revealed that

Jordanian patients' awareness regarding proper NSAIDs use was poor and pharmacists' role in counseling was inadequate [28].

Almost one half of the sample justified their self-treatment practice by suffering from minor ailment, which they thought required no medical intervention. It is worth mentioning, that self-treatment of minor ailments gives patients the opportunity to take responsibility and build confidence to manage their own health [2, 11]. This involvement should not be limited to minor diseases, but it should be extended to all aspects of health care. Patient empowerment should be seen as a positive step towards the development of the patient-clinician partnership [7, 29], where doctors and pharmacists are reflected as facilitator and collaborators rather than mere controllers [30].

Inappropriate use, which is sometimes described as misuse [2, 31, 32], is applied to the use of drugs for medical purposes, but for a longer or shorter period of time or higher dose than recommended [31]. A quarter of participants in the current study admitted to misusing their medications. In a survey of US consumers, a third of all respondents admitted taking more than recommended dose of non-prescribed products because they believed that they needed to do so in order to treat their conditions effectively and 21% said that they rarely or never read the label on such products [1].

Further research is warranted to extend this study outside the capital city, so as to include other cities and rural areas. It is also imperative to evaluate the appropriateness of non-prescription drug selection, to assess pharmacists' awareness of rational treatment of minor ailments and chronic diseases and pharmacists' willingness to attend continuous education programs. Furthermore, there is a need for a follow-up study to evaluate the ramifications of current research.

The findings in this paper need to be interpreted within the context of the following potential limitations:

1) The quality of non-responders was not evaluated and thus we can not exclude the possibility that the true dispensing patterns of drugs may deviate to some extent from the current results

2) The survey relied on patients admitting reports of drug misuse but no attempts were made to verify their statements. This is important because people are usually reluctant to admit wrong practice, especially with face-to-face interviews.

3) Patients buy medicines at pharmacies both for themselves and for others. Every effort has been exercised to obtain data from the patients themselves rather than other people purchasing medications for them.

4) A sound comparison of our data with other reports is difficult because of the different age groups, different

methodologies, different classification of drugs and different health systems.

Conclusion

The assessment of self-medication is one important element in the study of rational drug use. The findings of this research should form the basis for future interventional plans to maximize benefits and minimize risks. To achieve this, authors suggest expanding existing educational programs sponsored by the Ministry of Health and directed towards the public, so that patients contribute rationally to drug selection. Additionally the health authorities have to implement their regulations to prohibit the selling of POM without prescription. Authors recommend starting mandatory continuous education programs that target pharmacists and their assistants so that pharmacy attendants can play a more active role in helping people reaching appropriate decisions related to their health. Considering the breadth of medicine available without a prescription and the problems that can arise with medication use, community pharmacies in Jordan have the potential to make a huge impact in ensuring medicines are used appropriately.

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