



Taibah University  
Journal of Taibah University Medical Sciences

www.sciencedirect.com



Original Article

## A qualitative analysis of pharmacists' attitudes and practices regarding the sale of antibiotics without prescription in Syria

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Received 5 August 2014; revised 8 September 2014; accepted 16 September 2014; Available online 13 October 2014



### المخلص

**أهداف البحث:** تشكل مقاومة المضادات الحيوية تهديداً خطيراً للعلاج بهذه المضادات في جميع أنحاء العالم. تنتشر هذه الممارسة على نطاق واسع في سوريا كما في بلدان أخرى. تهدف هذه الدراسة إلى التعرف على مواقف وممارسات الصيدالبيين السوريين فيما يتعلق بصرف المضادات الحيوية من دون وصفة طبية.

**طرق البحث:** اعتمدت الدراسة المقابلات الشخصية التي تضمنت أسئلة مباشرة وخمسة سيناريوهات افتراضية. تم التقدم بالطلب إلى 350 صيدلياً في ثلاث مدن سورية كبرى للمشاركة. كما تمت عملية إعداد نصوص المقابلة الشخصية وتميزها وتصنيفها في خمسة أفكار رئيسية باستخدام برنامج حاسوبي.

**النتائج:** وافق 147 صيدلياً على المشاركة في الدراسة. اعترف جميع الصيدالبيين بصرف المضادات الحيوية من دون وصفة طبية. كان الصيدالبيون أكثر احتمالاً لصرف المضادات الحيوية لأقاربهم، وزبائنهم المعتادين، والمرضى الذين استعملوا نفس المضادات الحيوية سابقاً. لم يوافق معظم الصيدالبيين على أن هذه الممارسة تشكل مشكلة في الرعاية الصحية للمرضى. البعض وافق على أن هذه الممارسة تشكل مشكلة أكد أن هناك حاجة إلى المزيد من القوانين وأن يتم تطبيقها بصرامة.

**الاستنتاجات:** هذه النتائج مثيرة للقلق حيث تبين دراستنا أن هذه الممارسة ستبقى موجودة على الأرجح. وأن الحلول المقترحة تكون بفرض المزيد من القوانين وتطبيقها بصورة أكثر صرامة إضافة إلى توفير تثقيف خاص بالصيدالبيين والجمهور للحد من انتشار هذه الممارسة في سوريا.

**الكلمات المفتاحية:** ممارسة الصيدلة; صيدلة المجتمع; مقاومة المضادات الحيوية; سوريا

### Abstract

**Objectives:** Antibiotic resistance poses an alarming threat in antimicrobial therapy worldwide. This practice is widely spread in Syria as in other countries. This study aims to investigate the Syrian pharmacists' attitudes and practices in regard to antibiotic dispensing without prescription.

**Methods:** Direct interview questions and five hypothetical scenarios were presented to 350 pharmacists in 3 major Syrian cities. Interview transcripts were prepared, coded, and categorized under 5 major themes using a computer software.

**Results:** 147 pharmacists agreed to participate in our study. All pharmacists admit to dispense antibiotics without a prescription. Pharmacists were more likely to dispense antibiotics to their relatives, usual customers, and to patients who were prescribed the same antibiotic before. Most pharmacists did not agree that this practice posed a problem to patients welfare. The ones who agreed felt that more laws were needed and that the existing laws lacked enforcement.

**Conclusions:** The results are quite alarming as our study shows that this practice will most probably continue to exist. Stricter laws and more law enforcement in addition to pharmacists and public education may constitute the most important elements to limit the spread of antibiotic dispensing without prescription in Syria.

**Keywords:** Antibiotic resistance; Community pharmacy; Pharmacy practice; Syria

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Peer review under responsibility of Taibah University.



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## Introduction

Antibiotic resistance poses an alarming threat in antimicrobial therapy worldwide.<sup>1–4</sup> A recent report by WHO found that this serious threat is no longer a prediction for the future because it is happening right now in every region of the world and has the potential to affect anyone of any age and in any country.<sup>2</sup> This phenomenon is particularly evident in developing countries.<sup>3–8</sup> Previous studies revealed that resistance rates are higher in communities where antibiotics sales without prescription is a common practice.<sup>5</sup> Although no studies have shown so far that antibiotic use without prescription is worse than equally frequent prescription antibiotic use in developing antibiotic resistance,<sup>6,7</sup> the use of antibiotics without a prescription is often associated with insufficient treatment durations<sup>6,8</sup> and inappropriate drug and dose selections.<sup>5–9</sup>

Community pharmacies have been selling antibiotics openly in many Arab countries including Syria.<sup>9–13</sup> The Syrian health authorities have passed legislations determining the medications that can be sold in Syrian community pharmacies without a prescription<sup>14</sup> and antibiotics were not part of this list. Accordingly, there is an implication that the sale of antibiotics without a prescription is prohibited, however, these regulations are not clearly stated or strictly enforced.<sup>10,11</sup>

There are many factors that may contribute to the wide spreading of this practice including; lack of pharmacist's knowledge, poor legislations enforcement, customers' pressure, financial incentives from the pharmaceutical industry, and the business nature of the pharmacy.<sup>15–18</sup>

Although this practice is unlawful,<sup>14</sup> it is common in Syria,<sup>10</sup> favored by the fact that it is not clearly punishable by law. This, in turn, means that dispensing depends on the attitude of each pharmacist. No previous study qualitatively collected the views and attitudes of community pharmacists towards this practice in Syria. Accordingly, This study has sought to estimate the percentage of pharmacists who practice antibiotic dispensing without a prescription and identify such pharmacists' personal and professional views as well as their knowledge and attitudes to investigate the potential link between this and the practice of antibiotic dispensing without a prescription.

## Materials and Methods

### *Ethical statement*

Although our study was strictly observational, the Ethics Committee for Clinical Research of the college of pharmacy was informed and approval was granted (N<sup>o</sup> 2014/006).

### *Sample selection*

A purposeful sample of 350 registered community pharmacies was selected out of a total of 2143 available pharmacies in these jurisdictions. Sample size was chosen to provide an error margin of  $\pm 3.5$  with a confidence level of 95%. The pharmacies selected were distributed over 3 major Syrian jurisdictions; Damascus (200 pharmacies), Latakia (90 pharmacies), and Tartous (60 pharmacies). A list of

pharmacies and their addresses was generated from the directory of community pharmacies provided by the syndicate of pharmacists in each jurisdiction (1258 community pharmacies in the city of Damascus, 453 in Latakia, and 432 in Tartous). The list was arranged alphabetically according to the major areas in each jurisdiction. The selection took into consideration the number of areas in each jurisdiction, the number of community pharmacies, the availability of any major health centers, and the population and demographic indicators of pharmacy clientele as defined by the Syrian Bureau of Statistics<sup>19</sup> in the area. Some areas were not accessible to the investigator due to safety concerns. All pharmacies in Syria are independently and privately owned, thus no exclusion criteria was applied in selecting the visited pharmacies. The selection of pharmacists reflected a wide range of geographic and demographic regions in these jurisdictions which may be used to reflect to other regions in Syria. Damascus, Latakia, and Tartous, were chosen for many reasons including the investigator's safe access to most areas in these jurisdictions, recent influx of Syrians from other regions to these areas looking for safety, and the availability of an updated community roaster system in these jurisdictions. The study was conducted between March 5, 2014 and July 2, 2014.

### *Interview structure*

Our interviews were structured to provide a qualitative analysis of our results, and were conducted one on one with each participating pharmacist. Pharmacists were visited individually in their pharmacies and were asked to participate in the study. All pharmacists were assured not to be penalized for expressing their honest opinions. Anonymity and confidentiality of their personal information was confirmed through applying a coding ID system that does not include the pharmacist's name or personal data.

The study design relied on qualitative methods using a semi-structured interviews. Interview questions were classified into three sections modified from previous studies to suit the Syrian environment and practice circumstances.<sup>17,18</sup> The first section involved personal and professional information such as the pharmacist's age, school, year of graduation, and length of professional experience, the second section was related to pharmacist's knowledge of and attitudes to antibiotics and antibiotic resistance; these questions included the frequency of customers asking for antibiotics, the indications that customers provide when asking for antibiotics, side effects that customers complain about when using antibiotics, the frequency of pharmacists' questioning their patients about the use of the antibiotics before dispensing, and the counseling steps that pharmacists follow when dispensing antibiotics to their patients without a prescription. . All questions are listed in [Table 1](#). Finally, the interview provided five hypothetical scenarios regarding dispensing antibiotics without prescription. All questions were provided to participating pharmacists in Arabic. All of the interview questions including Arabic and English translations were reviewed and approved by 3 independent community pharmacists not participating in the study.

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