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Assessment of Antibiotic Prescribing Practices in Community Pharmacies in Benghazi City

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الملخص

الخلفية :يُعد صرف المضادات الحيوية بشكل غير مناسب من قبل الصيدليات المجتمعية أحد العوامل الرئيسية المساهمة في تطور مقاومة مضادات الميكروبات .(AMR) وفي ليبيا، حيث قد لا تُطبَّق اللوائح التنظيمية بصرامة، يصبح فهم ممارسات الصيدليات أمرًا بالغ الأهمية.

الهدف :هدفت هذه الدراسة إلى تقييم ممارسات وصف وصرف المضادات الحيوية، ومستوى المعرفة بمقاومة مضادات الميكروبات، والعوامل المؤثرة لدى العاملين بالصيدليات في مدينة بنغازي، ليبيا.

المنهجية :أُجريت دراسة مقطعية خلال الفترة من يوليو إلى سبتمبر 2024 باستخدام استبيان مُعتمد ذاتيّ التعبئة، وُزِّع على 211 من المهنيين العاملين في الصيدليات المجتمعية. جرى تحليل البيانات باستخدام الإحصاءات الوصفية واختبارات مربع كاي.

النتائج :كان صرف المضادات الحيوية دون وصفة طبية شائعًا، ويعود ذلك أساسًا إلى طلب المرضى التعافي السريع (55.9%) والاستخدام الناجح السابق للمضاد (46.0%). وبينما ارتبط المستوى التعليمي الأعلى ارتباطًا معنويًا بمعرفة أفضل بمقاومة مضادات الميكروبات (χ^2=145.94، p<0.001)، لم يُظهر التدريب الرسمي على المضادات الحيوية ارتباطًا معنويًا (χ^2=1.33، p=0.248).

الاستنتاج :توجد فجوة واضحة بين المعرفة والممارسة. وتتطلب المعالجة تدخلات متعددة الجوانب تشمل تفعيل تطبيق اللوائح، والتطوير المهني المستمر، وحملات توعية عامة لتعزيز الاستخدام الرشيد للمضادات الحيوية.

الكلمات المفتاحية :مقاومة المضادات الحيوية، الصيدليات المجتمعية، ممارسات الصرف، ليبيا، ترشيد استخدام مضادات الميكروبات.

Abstract

Background: Inappropriate antibiotic dispensing by community pharmacies is a major driver of antimicrobial resistance (AMR). In Libya, where regulations may be poorly enforced, understanding pharmacy practices is crucial. **Objective:** This study assessed antibiotic prescribing practices, knowledge of AMR, and influencing factors among pharmacy professionals in Benghazi, Libya. **Methods:** A cross-sectional study was conducted (July-September 2024) using a validated, self-administered questionnaire distributed to 211 pharmacy professionals in community pharmacies. Data were analyzed using descriptive statistics and chi-square tests. **Results:** Dispensing antibiotics without a prescription was common, primarily driven by patient demand for quick recovery (55.9%) and prior successful use (46.0%). While higher education level significantly correlated with better AMR knowledge (χ^2=145.94, p<0.001), formal antibiotic training did not (χ^2=1.33, p=0.248). **Conclusion:** A significant knowledge-practice gap exists. Interventions must be multifaceted, including enforced regulations, continuous professional development, and public awareness campaigns to promote responsible antibiotic use.
Keywords: Antibiotic resistance, community pharmacy, dispensing practices, Libya, antimicrobial stewardship.

INTRODUCTION

Antimicrobial resistance (AMR) presents a critical and escalating threat to global public health, undermining the efficacy of treatments for bacterial infections and jeopardizing medical advances in surgery and cancer therapy (World Health

Organization [WHO], 2023). The role of community pharmacies is pivotal in combating this crisis through patient education, prescription verification, and promoting diagnostic testing, which are essential strategies to curb unnecessary antibiotic use (WHO, 2019).

In Benghazi, Libya, a dense network of community pharmacies operates, often under conditions of weak regulatory enforcement. Reports suggest a prevalent practice of dispensing antibiotics without prescriptions, potentially accelerating AMR locally. This study, therefore, aims to evaluate the current antibiotic dispensing practices, explore the underlying knowledge and attitudes of pharmacy professionals, and analyze the factors influencing their decisions. The findings are expected to inform targeted interventions to improve practices and strengthen the community pharmacy's role in promoting rational antibiotic use.

I. Research Problem:

Despite established guidelines, there is a perceived widespread practice of non-prescription antibiotic dispensing in Benghazi's community pharmacies. This gap between official policy and on-ground practice contributes to antimicrobial resistance but remains inadequately documented and analyzed in the Libyan context, particularly regarding the knowledge, attitudes, and external pressures influencing pharmacy professionals.

II. Previous Studies:

Previous research in various regions highlights that non-prescription antibiotic dispensing is often driven by patient demand, financial incentives, and limited access to physicians (Hadi *et al*., 2016). Studies also indicate a common knowledge-practice gap among pharmacy staff, where awareness of AMR does not necessarily translate into adherence to dispensing guidelines (Ventola, 2015). In the Eastern Mediterranean region, factors such as self-medication culture and regulatory challenges have been identified (Dyar *et al*., 2017). This study builds on this literature by providing specific data from the under-researched setting of Benghazi, Libya.

AIMS OF THE STUDY

i. Assessing antibiotic prescribing frequency and patterns in Benghazi, Libya's community pharmacies.
ii. Evaluating the appropriateness of antibiotic prescribing practices in community pharmacies according to established guidelines and standards.
iii. Identifying factors influencing pharmacist decision-making on antibiotic dispensing in community pharmacies.
iv. Examining the correlation between pharmacist adherence to prescribing Guidelines and the prevalence of inappropriate antibiotic prescribing.

METHODOLOGY

A descriptive cross-sectional study was conducted over three months (July to September 2024) across community pharmacies in Benghazi. The study population included all accessible pharmacists, pharmacy technicians, and consulting doctors working in these settings. Using convenience sampling, researchers visited a random selection of pharmacies across city districts, inviting all available staff to participate, resulting in a final sample of 211 respondents.

Data collection employed a structured, self-administered questionnaire, developed based on a review of relevant literature. The instrument's validity was confirmed by three experts in clinical pharmacy and public health, and its reliability was ensured through a pilot test involving 15 pharmacy professionals, leading to minor adjustments. The questionnaire covered four domains: (1) demographic and professional background; (2) antibiotic dispensing practices and patient interactions; (3) knowledge and awareness of AMR and prescribing guidelines; and (4) attitudes and perceived influencing factors.

The survey was distributed in both electronic (Google Forms) and paper formats. Participation was voluntary, following informed consent, and all responses were anonymized. Data analysis was performed using SPSS software (Version 25). Descriptive statistics (frequencies, percentages) summarized the data, and Chi-square (χ^2) tests examined associations between categorical variables, with statistical significance set at $p < 0.05$.

RESULTS

A total of 211 healthcare professionals participated in the study, the majority of whom were pharmacists (65.9%), followed by doctors (22.7%) and other health professionals. Most respondents were female and aged under 40 years, with the predominant educational level being a bachelor's degree.

As shown in Figure 1, dispensing antibiotics without a prescription was reported as a frequent practice in community pharmacies. Most respondents indicated that they encounter requests for antibiotics without a prescription occasionally to often, highlighting the widespread nature of this practice in the local community.

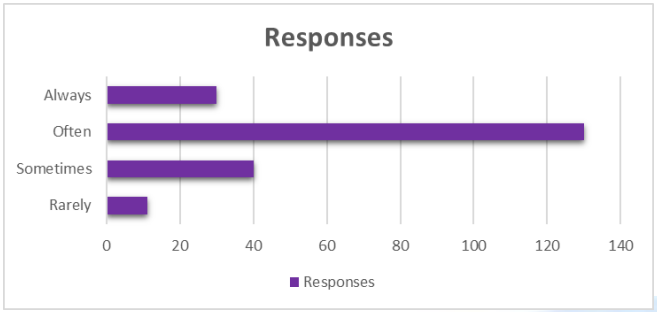

Figure 1: Demonstrates that dispensing antibiotics without a prescription is a common practice in community pharmacies in Benghazi City.

Regarding pharmacist practices and decision-making, a considerable proportion of respondents acknowledged personal use of antibiotics without a prescription, with significant variation across professional roles. Most respondents reported providing patient education, primarily through verbal counseling, when dispensing or refusing antibiotics, although several challenges were identified in refusing inappropriate requests.

The main factors driving patient requests for antibiotics without a prescription are presented in Figure 2. The most commonly reported reasons included an urgent desire for rapid symptom relief, previous successful antibiotic use, and self-diagnosis of illness. Limited access to medical consultation was also identified as an important contributing factor, emphasizing the strong influence of patient expectations on pharmacists' dispensing decisions.

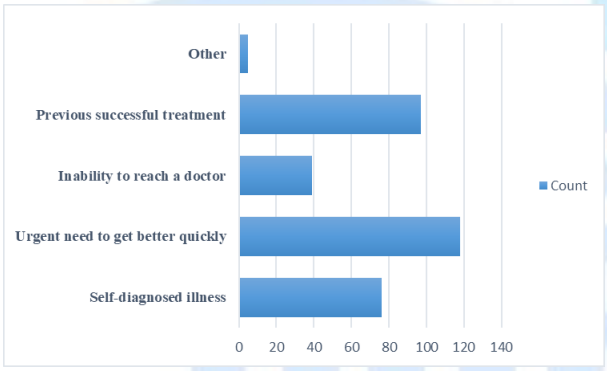

Figure 2:shows that the primary drivers of patient requests for antibiotics without a prescription

The association between respondents' educational level and their knowledge of antibiotic resistance is presented in Table 1. A statistically significant relationship was observed, indicating that higher educational attainment was associated with better knowledge of antibiotic resistance ($\chi^2 = 145.94$, $p < 0.001$). Participants holding a master's degree demonstrated the highest proportion of excellent knowledge, whereas lower educational levels were associated with comparatively lower knowledge scores.

Table 1: Shows Association between Educational Level and Knowledge of Antibiotic Resistance

Educational Level	Excellent Knowledge	Average Knowledge	Poor/No Knowledge	Total
High Diploma	12	9	0	21
Bachelor's Degree	112	66	3	181
Master's Degree	9	0	0	9
Total	133	75	3	211

As shown in Table 2, a significant association was also identified between professional role and knowledge of antibiotic resistance ($\chi^2 = 13.16$, $p = 0.0105$). Pharmacists and physicians exhibited higher levels of excellent knowledge compared to other professional groups, suggesting that professional exposure and clinical responsibilities play an important role in shaping awareness of antibiotic resistance.

Table 2: Illustrates the association between Professional Role and Knowledge of Antibiotic Resistance

Career	Excellent Knowledge	Average Knowledge	Poor/No Knowledge	Total
Pharmacist	90	46	3	139
Doctor	35	13	0	48
Dentist	10	3	0	13
Public Health Specialist	2	1	0	3
Student	6	3	0	8
Total	143	66	3	211

In contrast, the relationship between formal training in antibiotic administration and knowledge of antibiotic

resistance was not statistically significant (Table 3). Although respondents who had received formal training demonstrated higher proportions of excellent knowledge, the difference did not reach statistical significance (χ^2 = 1.33, p = 0.248), indicating that formal training alone may not be sufficient to ensure optimal knowledge levels.

Table 3: Shows Formal Training in Antibiotic Administration and Knowledge of Antibiotic Resistance

Formal Training	Excellent Knowledge	Average Knowledge	Poor/No Knowledge	Total
Yes	96	33	2	131
No	44	33	1	80
Total	140	66	3	211

Overall, the results demonstrate that non-prescription antibiotic dispensing remains prevalent in Benghazi community pharmacies, driven by patient demand, professional role, and varying levels of guideline awareness. Strengthening guideline adherence, targeted continuing education, and enforcement of regulatory policies may be essential to reduce inappropriate antibiotic use and mitigate antimicrobial resistance.

DISCUSSION

The findings reveal a persistent and concerning gap between knowledge and practice regarding antibiotic stewardship in Benghazi. Although a significant portion of professionals, particularly the highly educated, demonstrated good awareness of AMR, practical dispensing behavior appears heavily swayed by external pressures. Consistent with studies from other regions, patient demand for quick fixes and reliance on past successful self-medication emerged as dominant forces compelling pharmacists to deviate from guidelines (Ventola, 2015; Hadi *et al*., 2016).

The lack of a significant link between formal training and knowledge levels suggests that current training programs may be insufficient or not designed to effect behavioral change in the face of real-world pressures like patient insistence. This is compounded by the finding that pharmacists themselves reported higher personal use of non-prescription antibiotics, indicating that the challenge is not only professional but also cultural.

Educational interventions, therefore, need to evolve beyond knowledge transmission to include practical communication skills training, enabling pharmacists to effectively counsel patients and manage inappropriate requests. As highlighted in stewardship literature, empowering frontline dispensers with concrete tools and scripts is crucial for bridging the knowledge-practice gap (Davey *et al*., 2017).

CONCUSION

This study confirms that non-prescription antibiotic dispensing remains a common practice in Benghazi's community pharmacies, sustained by patient pressure, self-diagnosis habits, and inadequate regulatory enforcement. A clear disconnect exists between the understanding of AMR risks and daily dispensing behaviors. Educational attainment and professional role enhance knowledge, but this does not automatically translate into appropriate practice, underscoring the limitations of awareness-raising alone.

RECOMMENDATIONS

- Regulatory Bodies: Strengthen monitoring and enforcement of laws prohibiting non-prescription antibiotic sales.
- Professional Associations: Develop and mandate continuous professional development programs focused on practical communication skills, ethical dispensing, and updated local guidelines.
- Pharmacy Owners & Managers: Implement internal protocols and provide support tools (e.g., information leaflets, refusal scripts) to empower staff in managing patient demands.
- Public Health Authorities: Launch sustained public awareness campaigns to educate the community on the dangers of AMR and the importance of professional consultation.

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REFERENCES

1. Davey, P., Marwick, A., Scott, L., Charani, E., McNeil, K., Brown, E., ... & Michie, S. (2017). Interventions to improve antibiotic prescribing practices for hospital inpatients. *The Cochrane Database of Systematic Reviews*, 2(2), CD003543.
2. Dyar, O. J., Huttner, B., Schouten, J., & Pulcini, C. (2017). What is antimicrobial stewardship? *Clinical Microbiology and Infection*, 23(11), 793–798.
3. Hadi, M. A., Karami, N. A., Al-Muwalid, A. S., Al-Otabi, A., Al-Subahi, E., Bamomen, A., ... & Elrggal, M. E. (2016). Community pharmacists' knowledge, attitude, and practices towards dispensing antibiotics without prescription (DAwP): A cross-sectional survey in Makkah Province, Saudi Arabia. *International Journal of Infectious Diseases*, 47, 95–100.
4. McNulty, C. A., Nichols, T., French, D. P., Joshi, P., & Butler, C. C. (2013). Expectations for consultations and antibiotics for respiratory tract infection in primary care: the RTI clinical iceberg. *British Journal of General Practice*, 63(612), e429–e436.
5. Ventola, C. L. (2015). The antibiotic resistance crisis: part 1: causes and threats. *P & T: A Peer-Reviewed Journal for Formulary Management*, 40(4), 277–283.
6. World Health Organization. (2019). *Community pharmacists: Key players in promoting responsible antibiotic use*. Retrieved from https://www.who.int/
7. World Health Organization. (2023). *Antimicrobial resistance: Global health implications*. Retrieved from https://www.who.int/