Jordan Journal of Pharmaceutical Sciences, Volume 18, No. 3, 2025

The Dispensing of Non-Prescribed Antibiotics to Pediatrics in Community Pharmacies: A Simulated Client Study

Deema Al-Huwaidi[1], Rana K. Abu-Farha[2*], Rama ALkhawaldeh[2], Rajaa Daghash[2], Anan Jarab[1, 3], Tareq L. Mukattash[1]

[1] Department of Clinical Pharmacy, Faculty of Pharmacy, Jordan University of Science and Technology, Irbid, Jordan
[2] Department of Clinical Pharmacy, Faculty of Pharmacy, Applied Science Private University, Amman-Jordan.
[3] Collage of Pharmacy, Al-Ain University, Abu Dhabi, United Arab of Emirates

ABSTRACT

Objective: This study aims to explore the practice of dispensing non-prescribe antibiotics to pediatrics in the community pharmacies in Jordan.

Method: This study was a cross-sectional study, performed between August 2021 and March 2022. Five different clinical case scenarios were simulated including pharyngitis, bronchitis, otitis media, gastroenteritis, and urinary tract infection (UTI). Three levels of demand were used to conceive the pharmacy staff to sell antibiotics.

Results: A total of 207 community pharmacies in Jordan were visited. The majority of pharmacies (n= 163, 78.7%) dispensed antibiotics without a prescription using three levels of demands. Most of the antibiotics dispensed for the pharyngitis case scenarios (95.3%), followed by UTI (89.2%). Among the pharmacists who dispensed antibiotics, 92.0% explained how to take the antibiotic, 41.1% provide the duration of treatment for the dispensed antibiotic, and 27.0% inquired about any type of drug allergy. On the other hand, only 21.3% (n= 44/207) of the pharmacy staff had refused to dispense any type of antibiotics, of those (n= 17/44, 38.6%) recommended consulting a physician, in which health issues were the only reason behind that refusal.

Conclusions: The results of the current study strongly demonstrate that dispensing of non-prescribed antibiotic in pediatric patients is prevalent in Jordan despite the current legislations. The ease of access and the inappropriate overuse of antibiotics confirms the need for stringent enforcement of the existing laws and the establishment of a new regulation regarding the dispensing of antibiotics without a valid prescription in the near future.

Keywords: Antibiotics; non-prescription; simulated client; pharmacists; Jordan.

1. INTRODUCTION

Antibiotics are potent medications designed to either kill bacteria or inhibit their growth [1]. They are among the most frequently prescribed medications in pediatric care and can significantly improve health outcomes in children when the bacteria are susceptible to the administered agent.[2]. Inappropriate use of these agents has led to the emergence of bacterial resistance, which is considered a challenging global health problem in recent years [3].Various studies have linked antibiotic misuse with negative outcomes that can be detrimental to the child, including atopic disease, obesity, irritable bowel syndrome, and a decrease in gut microbiota [4]. Antibiotic resistance is expected to cause more than ten million deaths per year by 2050 [5]. Therefore, immediate interventions must be developed and implemented to protect the child from the risk associated with improper antibacterial usage [6].

Dispensing antibiotics without a medical prescription

[*] ***Corresponding author: Tareq Mukattash***
tlmukattash@just.edu.jo
Received: 04/07/2024 Accepted: 16/10/2024.
DOI: https://doi.org/10.35516/jjps.v18i3.2907

(self-medication) in community pharmacies increases the inappropriate use of antibiotics, particularly in pediatric diseases since the majority of infections are caused by viruses that preclude the need for antibiotics except in some cases [7]. Despite legislation to the contrary, high rates of non-prescribed antibiotics have been observed in Jordan [8]. Several reasons can push this behavior, including a lack of awareness about laws and their prohibition, patient requests with insistence, and the fear of losing customers [7, 9].

Several studies have been performed to assess the practice of dispensing antibiotics without prescription among different populations [10-12]. Some studies were primarily concerned with the patient's perceptions, while others examined the practice from the perspective of the healthcare practitioner, whether in a hospital or a community pharmacy [13].

Previous studies conducted in Jordan found that antibiotics are still being dispensed as self-medication despite national legislation prohibiting this practice [14, 15] . There is limited evidence regarding the self-medication of antibiotics in the pediatric population in Jordan. Therefore, this study aims to evaluate the practice of dispensing non-prescribed antibiotics to pediatrics in community pharmacies in Jordan.

2. METHODS

2.1 Study design and sampling method

This was a cross-sectional simulated client's study that was conducted at different community pharmacies in different cities in Jordan, including Irbid, Amman, and Al-Mafraq, between August 2021 and March 2022. Each pharmacy was visited once by a single hidden investigator who pretended to have a relative pediatric patient with predetermined clinical case scenarios and pre-defined information. There were five predefined clinical case scenarios, but each pharmacy staff member encountered only one of these scenarios. Additional details were provided only in response to requests from pharmacy staff and were considered supplementary information. To be included in the study, pharmacy staff members (pharmacists or pharmacist assistants) had to be registered with the Jordanian Pharmacists Association (JPA). Pharmacists were selected using a convenience sampling method. Any staff member known to the investigator was excluded to enhance internal validity and avoid potential bias. Consequently, eight pharmacies were removed from the study: five in Irbid and three in Amman.

2.2 Clinical scenarios

Five different clinical case scenarios were chosen to be simulated in community pharmacies. These include pharyngitis (sore throat), bronchitis, otitis media, gastroenteritis, and urinary tract infections (UTI). Each scenario was assigned a number to facilitate dealing with the data: pharyngitis was assigned number one, bronchitis number two, otitis media number three, gastroenteritis number four, and urinary tract infection number five. Then these scenarios were distributed almost equally among pharmacies in the study sample. The pharyngitis (sore throat) scenario involved a 7-year-old girl suffering from a sore throat, pain while swallowing, and a fever for the previous 24 hours. While the bronchitis scenario included a 5-year-old boy suffering from a nonproductive cough and fever for the previous 24 hours. The otitis media scenario was for a 5-year-old boy suffering from ear pain and poor sleep for the previous 24 hours. The fourth scenario was gastroenteritis for a 12-month-old girl suffering from diarrhea and fever for the previous 24 hours. Finally, the UTI scenario was for a 7-year-old girl suffering from urgency, frequency, and dysuria for the previous 24 hours.

2.3 Levels of demand

To acquire antibiotics, the investigator followed three levels of demand. Level one of demand is where the investigator simulates the case scenario by asking for something to relieve the symptoms of the current disease. Level two of demand: when no antibiotic was given by the pharmacy staff, the investigator asked for a stronger medication. Level three of demand is a direct request for

antibiotics if the first two levels of demand fail. After leaving the pharmacy, the simulated patient filled out a standardized data collection form with prepared questions regarding the pharmacy. Following that, the antibiotic recommended by the pharmacist or pharmacist assistant was purchased and donated to the healthcare facility in collaboration with the Jordan University of Science and Technology (JUST). Medications other than antibiotics were not purchased due to fund limitations.

The data collection form was developed from previously published study that examined comparable research aims and objectives [14]. The data collection form contains three different parts. The first part consisted of the general information about the pharmacy staff and the pharmacy, including the gender, specialty, working shift, pharmacy area, pharmacy type, and its location. The second part included the clinical scenario's number and the decision of the pharmacy staff to administer antibiotics or not. The third part contains specific details about the predicted clinical case discussion between the pharmacy staff and the researcher. This part was further split into two sections, where the investigator might reroute the discussion and ultimately lead to one of two possible conclusions depending on the response. If the pharmacy staff dispensed an antibiotic, the investigator stated the level of demand (one, two, or three), the type of antibiotic given, if the pharmacy staff provided patient counseling, determined the duration of the treatment, inquired about the potential risk of drug allergies and other symptoms, the use of other medications at the same time, and whether the pharmacy staff recommended referral to a doctor.

The second section of the questionnaire contains information about the reason for the antibiotic dispensing refusal. The response of the pharmacy staff was graded as "administrative issues, health issues, or both." The investigator documented what kind of medicine was given instead of the antibiotic and if there was any advice to consult a doctor. Health issues were used for any reason concerning the health of the child; antibiotics cannot be administered for viral infections, and improper use of antibiotics can lead to the emergence of bacterial resistance. However, an administrative issue would only arise if the pharmacy staff refused to sell antibiotics because it was against the regulation or law (e.g., antibiotics can't be sold as OTC medications without a prescription).

The simulated investigators received extensive training from a senior clinical pharmacist to persuade the pharmacy staff that the clinical case described by the investigators was real. Before conducting the study, the investigators visited several community pharmacies that were excluded from the study. It aims to let the investigator be more flexible with data collection. To reduce the "Hawthorn effect," all visited pharmacies were not informed about the client method until the end of the visit. In all scenarios, the simulated clients pretended to be the child's older sister.

2.4 Ethical Approval

The present study received ethical approval from the Institutional Review Board (IRB) at the Jordan University of Science and Technology (JUST) (Reference number: 16/141/2021). The research protocol was also approved by the Jordanian Pharmacists Association. Deception and incomplete disclosure to study subjects (pharmacy staff) were considered ethically acceptable because this was a minimal-risk study, and it could not have been performed with complete disclosure of the investigator entity. All the collected information was kept anonymous.

2.5 Sample Size Determination

The sample size for this study was determined to ensure comparability with a previous study conducted in Jordan that had similar objectives but focused on adults [14]. Given that the earlier study recruited 202 participants, we aimed to recruit more than 200 participants in this study to maintain consistency and enhance the robustness of the findings.

2.6 Statistical Analysis

All the collected data were coded, entered, and analyzed using the Statistical Package for Social Sciences (SPSS) version 28.0. The descriptive analysis was conducted using

mean and standard deviation (SD) for continuous variables, while frequency and percentages were used for categorical variables. To evaluate the associations between categorical variables, a Pearson Chi-square test and a Fischer exact test were performed. An alpha level of 0.05 was used for all statistical tests and considered statistically significant. All tests were two-tailed.

3. RESULTS

3.1 Socio-Demographic Characteristics

A total of 207 pharmacies were visited from 3 different cities in Jordan; of those (n=97, 46.9%) were in Irbid, (n=87, 42%) were in Amman, and (n=23, 11.1%) were in Al-Mafraq. Five simulated-case scenarios were equally distributed among the pharmacies included in the study. In summary, pharmacists occupied 189 (91.3%) of the visited pharmacies, while pharmacist assistants occupied only 18 (8.7%). Among those recruited, 59.9% (n = 124) were females. Moreover, most of the visited pharmacies were independent (n = 170, 82.1%) and located on the main road (n = 141, 68.1%). For more details about the demographics, refer to Table 1.

Table 1. Socio-demographic characteristics

Variable	Frequency
Gender	
○ Female	124 (59.9)
○ Male	83 (40.1)
Specialty	
○ Pharmacist	189 (91.3)
○ Pharmacist assistant	18 (8.7)
Working shift	
○ Shift A	108 (52.2)
○ Shift B	99 (47.8)
Area of the pharmacy	
○ Irbid	97 (46.9)
○ Amman	87 (42.0)
○ Al-Mafraq	23 (11.1)
Pharmacy location	
○ Main road	141 (68.1)
○ Subside street	66 (31.9)
Pharmacy type	
○ Independent pharmacy	170 (82.1)
○ Chain pharmacy	37 (17.9)

3.2 Antibiotic Dispensing Practice

Antibiotics were dispensed without a medical prescription in 163 pharmacies (78.7%) with different levels of demand. Simulated cases of pharyngitis accounted for the highest percentage of antibiotic dispensing without a medical prescription (n=41, 95.3%), followed by UTI (n= 33, 89.2%), otitis media (n=36, 87.8%), gastroenteritis (n=32,74.4%), while the lowest percentage of antibiotic sales was for the bronchitis case scenario (n=21, 48.8%). The percentage of pharmacies that dispensed antibiotics without a prescription with different levels of demand for the simulated scenarios is summarized in Table 2.

Table 2. Dispensed non-prescribed antibiotics stratified by the level of demand (n= 207)

Level of Demand	Pharyngitis n=43	Bronchitis n=43	Otitis media n=41	Gastroenteritis n=43	UTI n=37	Total n=207	P-value#
Level One	39 (95.1)	9 (42.9)	24 (66.7)	27(84.4)	31 (93.9)	130 (79.8)	<0.001*
Level Two	2 (4.9)	6 (28.6)	8 (22.2)	4 (12.5)	1 (3)	21 (12.9)	
Level Three	0 (0)	6 (28.6)	4 (11.1)	1 (3.1)	1 (3)	12 (7.4)	
Total	41 (95.3)	21 (48.8)	36 (87.8)	32 (74.4)	33 (89.2)	163 (78.7)	

*UTI: Urinary tract infection, #using Fischer Exact test. * Significant at 0.05 significance level.*

Regarding the acquisition of antibiotics based on demand level, of all the pharmacies visited, the majority of antibiotics were dispensed directly after the clinical scenario (demand level one) (n=130, 79.8%); this was followed by level two of demand (n=21,12.9%) and finally level three of demand (n=12, 7.4%). as depicted in **Table 2**.

3.3 Pharmacy staff counseling following antibiotics dispensing

Most pharmacy staff in all clinical scenarios who dispensed antibiotics explained to the simulated patient how to take the antibiotic (n=150, 92%); pharmacy staff explained how to use antibiotics in relation to UTI (n= 33, 100%), bronchitis (n= 20, 95.2%), gastroenteritis (n= 29, 90.6%), pharyngitis (n= 37, 90.2%), and otitis media (n= 31, 86.1.%). The duration of treatment was specified by (n= 67, 41.1%) of the pharmacy staff for all clinical scenarios as the following: UTI (n= 19, 57.6%), bronchitis (n= 10, 47.6%), pharyngitis (n= 16, 39.0%), otitis media (n= 14, 38.9%), and gastroenteritis (n= 8, 25.0%).

Similarly, the majority of pharmacy professionals (n= 98, 60.1%) asked whether the child had symptoms other than those presented in the case simulation. Pharyngitis (n=23, 56.1%), bronchitis (n=13, 61.9%), otitis media (n=22, 61.1%), gastroenteritis (n=19, 59.4%), and UTI (n=21, 63.6%) all showed almost a similar rate. Conversely, the majority of pharmacy staff who dispensed antibiotics didn't inquire about the concomitant use of other drugs in the simulated case scenarios. Only a few numbers (n = 5, 3.1%) had asked about the other drug used by the child, and only 7 pharmacy staff (4.3%) recommended physical consultation for the simulated case scenario. More details are presented in Table 3.

Table 3. Pharmacists counseling following antibiotics dispensing (n= 163)

Simulated clinical scenario	Explain how to take the antibiotic	Give the duration of treatment	Asked about drug allergy	Asked about other symptoms	Asked about concomitant use of other drugs	Recommended consulting a physician
Pharyngitis n=41	37 (90.2)	16 (39.0)	16 (39.0)	23 (56.1)	2 (4.9)	0 (0)
Bronchitis n=21	20 (95.2)	10 (47.6)	6 (28.6)	13 (61.9)	0 (0)	0(0)
Otitis media n=36	31 (86.1)	14 (38.9)	11(30.6)	22 (61.1)	1 (2.8)	3(8.3)
Gastroenteritis n=32	29 (90.6)	8 (25.0)	2 (6.3)	19 (59.4)	2 (6.3)	1 (3.1)
UTI n=33	33 (100.0)	19 (57.6)	9 (27.3)	21 (63.6)	0 (0)	3 (9.1)

UTI: urinary tract infection. Percentages were calculated per case scenario type (per row).

3.4 The dispensed Antibiotics

The most frequently dispensed antibiotic group differs based on the simulated case scenario. Penicillin and penicillinase inhibitors were the most frequently dispensed antibiotics for pharyngitis (n= 18, 43.9%), and otitis media in simulation (n= 16, 44.4%). Antiprotozoal and macrolide drugs were commonly used to treat gastroenteritis (n= 23, 71.9%) and bronchitis (n= 9, 42.9%). However, the most frequently dispensed antibiotic in the UTI scenarios was third-generation cephalosporin (n= 16, 48.5%).

3.5 Antibiotic dispensing refusal

Only 21.3% of pharmacy staff (n= 44) refused to dispense any type of antibiotic despite using three levels of demand. Regarding each clinical scenario, the majority of refusal responses came from bronchitis cases (n=22, 51.2%), whereas the lowest refusal response was associated with the pharyngitis case scenario (n=2, 4.7%). Accordingly, the pharmacy staff who refused to dispense antibiotics offered the main reason for the refusal, which was exclusively (n=44, 100%) related to their concern regarding health issues that the pediatric patient could experience.

3.6 Physician consultation to visit a physician

Among the pharmacy staff who refused to dispense antibiotics, 17 (38.6%) recommended the simulator to visit the physician. For the pharyngitis cases, only one pharmacy staff refused to dispense antibiotics and recommended consulting a physician. While most cases of UTI (n = 3, 75%) and gastroenteritis (n = 8, 72.7%) in the refusal group recommended that the simulator visit the physician. More details are presented in Table 5.

Table 5. Physician consultation to visit a physician (n= 44)

	Pharyngitis n=2	**Bronchitis n=22**	**Otitis media n=5**	**Gastroenteritis n=11**	**UTI n=4**	**Total n=44**
Physician Consultation to visit a physician	1 (50.0%)	2 (9.1%)	3 (60.0%)	8 (72.7%)	3 (75.0%)	17 (38.6%)

4. DISCUSSION

The results of our study revealed that antibiotics could be easily acquired and dispensed in Jordan without a medical prescription. Approximately 78.7% of the community pharmacies dispensed antibiotics without a prescription using the different simulated case scenarios, despite the fact that the law prohibits this practice.

Furthermore, most of the simulated medical conditions in this study were caused by viral infections, and our results showed that most pharmacy staff were more likely to dispense antibiotics inappropriately and were unable to differentiate between bacterial and viral infections. The use of antibiotics for nonbacterial or viral pathogens will encourage the emergence of antibiotic resistance, which is one of the most serious consequences of this practice [16]. This finding is similar to that of a study done in Sana'a, the capital of Yemen, in which 73.3% of the community pharmacies dispensed antibiotics as over-the-counter medications [17, 18]. Moreover, our finding is comparable to that of another study done in Sri Lanka, which reported a high rate of selling antibiotics without a prescription (61%)[17].

According to the current study, the most antibiotics were dispensed in the pharyngitis clinical scenario (95.3%), followed by UTI (89.2%) and otitis media (87.8%). These findings are similar to those of a study conducted in Ethiopia, which also showed that antibiotics were primarily dispensed for pharyngitis and UTIs[19]. Additionally, the findings of a previous study conducted in Jordan, which assessed the percentage of pharmacies

dispensing antibiotics without a medical prescription, revealed comparable results. In that study, antibiotics were dispensed in 97.6% of simulated cases of pharyngitis and 83% of urinary tract infections (UTIs). This further highlights the prevalent practice of dispensing antibiotics without proper oversight for these conditions. [14].

In our study, antibiotics were administered without a prescription at three different levels of demand. Most antibiotics (87.2%) were dispensed without a prescription when the simulator asked for any medication to alleviate her symptoms (first level of demands). Besides, our finding is also comparable with the finding of the study done in Pakistan by Ahmad et al., where 80.3% of antibiotics were dispensed without a prescription when the simulator asked for anything to relieve their symptoms (level one of demand) followed by levels 2 and 3, respectively [20].

In previous similar studies, the actor simulated the disease [20, 21]. While in our study, the actor simulated a sick sister whom the pharmacy staff did not actually meet. This fact alone should have stopped pharmacy staff from dispensing antibiotics without a prescription, but instead, we got offers of antibiotics at the same rate as the "sick actor simulation."

In our study, the majority of pharmacy staff (92%) explained to the simulated patient how to take the dispensed antibiotic. On the other hand, the duration of treatment was explained to the simulated patient in only 41.1% of the cases. A study done in Lebanon showed that 47.5% of pharmacists told the parent of the child the duration of the treatment. After presenting the predetermined clinical case scenarios, more than half of the pharmacists (60.1%) asked if the child had any other symptoms [22].

In addition, only a small percentage of pharmacy staff (3.1% and 27%, respectively) asked about the concurrent use of other medications or other drug allergies to reduce the risk of side effects. Allergy to antibiotics is an important aspect of childhood since the majority of children never undergo antibiotic allergy testing. Epidemiological studies have found that a penicillin allergy, particularly to amoxicillin, is prevalent in children [23]. In our study, penicillin was one of the most commonly dispensed antibiotic groups by community pharmacy staff.

Failure of the pharmacy staff to inquire about the concomitant use of other medications poses a significant risk. Antibiotics may interact with many medications if taken simultaneously. Therefore, the use of antibiotics in conjunction with other medications might result in significant drug-drug interactions that can either potentiate their effect or enhance their toxicity [24]. The results of our study did not match those of a study done in Ethiopia, where none of the pharmacists asked about allergy history or supplied information about possible drug interactions that could result in a high risk [19].

Amoxicillin/clavulanate was the most commonly prescribed antibiotic for presumed cases of otitis media and pharyngitis (44.4% and 43.9%, respectively). Likewise, in a study conducted in Saudi Arabia, penicillin/penicillinase inhibitor (amoxicillin/clavulanate) was the most dispensed antibiotic for pharyngitis and otitis media case simulation [24]. In the current study, macrolides (42.9%) were the most frequently dispensed antibiotic group in the bronchitis case simulation, while in China, cephalosporins (53.7%) were the most frequently dispensed antibiotics for the cough case simulation [25]. Antiprotozoals were dispensed in the majority of gastroenteritis case simulations (71.9%), whereas in India, antiprotozoals and fluoroquinolones were the most commonly dispensed antibiotics for acute gastroenteritis in children [26].

Our study showed that 21.3% (n = 44) of the pharmacy staff refused to dispense any type of antibiotic despite using the three levels of demand. The refusal to provide antibiotics for the simulated case scenarios was solely motivated by health concerns. The recommendation to consult a physician was not always followed; only 38.6%

(n = 17/44) of the pharmacy staff who refused to dispense antibiotics advised the simulated patient to see a doctor. Comparable results had been obtained from a study conducted in northeastern China, where the rationale behind refusing the dispensing of antibiotics without a valid prescription was solely related to health issues (Shi et al.). A study conducted in Italy discovered that 15.4% of pharmacists dispensed non-prescribed antibiotics because many patients couldn't afford a doctor's visit [27].

Antibiotic resistance has been reported in Jordan for most antibiotic classes, including penicillins, cephalosporins, monobactams, tetracyclines, aminoglycosides, fluoroquinolones, and sulfonamides [28]. Bacterial resistance has prompted governments and health regulatory agencies around the world to restrict antibiotic dispensing in community and hospital pharmacies [29]. In Jordan, non-prescription antibiotics are illegal, but regulatory agencies don't enforce the law [30]. Unfortunately, there are no national rules regulating the inappropriate use and distribution of antibiotics, which contributes to antibiotic resistance [30].

This study had several limitations. First, the small sample size may affect the generalizability of the findings. Additionally, the methodology involved applying three levels of demand until an antibiotic was dispensed, which resulted in the simulators receiving antibiotics despite the pharmacy professional's denial. This approach was intended to illustrate the impact of persistence in obtaining an antibiotic when it was not clearly necessary. However, this design choice could lead to biased results and does not accurately reflect real-world scenarios, potentially resulting in an overestimation of how frequently individuals might obtain antibiotics from dispensers. However, our study was directed mostly at pharmacies in three cities in Jordan, and one of these cities involved only a small number of pharmacies. Focusing on the north and the middle cities of Jordan may enhance the bias and not reflect the practice in other areas or countries, thus our findings may not necessarily be generalized to the entire country.

Despite this, we believe that the methodology of this study, using the simulation of clinical cases, is closer to the real-life scenario than methods employed in other studies, such as questionnaires, which are susceptible to misleading responses. In addition, our findings are robust and provide direction for the future.

5. CONCLUSION

The results of the current study strongly demonstrate that the dispensing of non-prescribed antibiotics to pediatric patients is prevalent in Jordan despite the current legislation. Accordingly, applicable interventions must be established and applied to protect the child from the impact associated with inappropriate antibacterial usage. Interventions should include the enforcement of the policy to prevent the over-the-counter sale of antibiotics.

6. Disclosure Statement

The Authors declare that there is no conflict of interest.

7. Funding statement

This research was funded by Jordan University Of Science and Technology.

REFERENCES

1. Etebu E, Arikekpar I. Antibiotics: Classification and mechanisms of action with emphasis on molecular perspectives. *Int J Appl Microbiol Biotechnol Res*. 2016;4:90-101.
2. Rogawski ET, Platts-Mills JA, Seidman JC, John S, Mahfuz M, Ulak M, et al. Use of antibiotics in children younger than two years in eight countries: a prospective cohort study. *Bull World Health Organ*. 2017;95(1):49-61.
3. Bishop C, Yacoob Z, Knobloch MJ, Safdar N. Community pharmacy interventions to improve antibiotic stewardship and implications for pharmacy education: a narrative overview. *Res Social Adm Pharm*. 2019;15(6):627-31.
4. Eck A, Rutten NB, Singendonk MM, Rijkers GT, Savelkoul PH, Meijssen CB, et al. Neonatal microbiota development and the effect of early life antibiotics are determined by two distinct settler types. *PLoS One*. 2020;15(2):e0228133.
5. O'Neill JIM. Antimicrobial resistance: tackling a crisis for the health and wealth of nations. *Rev Antimicrob Resist*. 2014.
6. Gebretekle GB, Serbessa MK. Exploration of over the counter sales of antibiotics in community pharmacies of Addis Ababa, Ethiopia: pharmacy professionals' perspective. *Antimicrobial resistance and infection control*. 2016;5(1):1-7.
7. Zahreddine L, Hallit S, Shakaroun S, Al-Hajje A, Awada S, Lahoud N. Knowledge of pharmacists and parents towards antibiotic use in pediatrics: a cross-sectional study in Lebanon. *Pharm Pract (Granada)*. 2018;16(3):1194.
8. Nusair MB, Al-Azzam S, Alhamad H, Momani MY. The prevalence and patterns of self-medication with antibiotics in Jordan: A community-based study. *Int J Clin Pract*. 2021;75(1):e13665.
9. Hejaz HA. Knowledge and Attitudes towards Antibiotic Usage. *Jordan Journal of Pharmaceutical Sciences*. 2023;16(2):447-.
10. Bin Abdulhak AA, Al Tannir MA, Almansor MA, Almohaya MS, Onazi AS, Marei MA, et al. Non prescribed sale of antibiotics in Riyadh, Saudi Arabia: A Cross Sectional Study. *BMC Public Health*. 2011;11(1):538.
11. Nafisah SB, Nafesa SB, Alamery AH, Alhumaid MA, AlMuhaidib HM, Al-Eidan FAJJoi, et al. *Over-the-counter antibiotics in Saudi Arabia, an urgent call for policy makers*. 2017;10(5):522-6.
12. Dweib M. Community Pharmacists' Knowledge, Attitude, and Practices Towards Dispensing Antibiotics without Prescription (DAwP) in the West Bank, Palestine. *Jordan Journal of Pharmaceutical Sciences*. 2023;16(2):468-.
13. Mason T, Trochez C, Thomas R, Babar M, Hesso I, Kayyali R. Knowledge and awareness of the general public and perception of pharmacists about antibiotic resistance. *BMC Public Health*. 2018;18(1):711.
14. Almaaytah A, Mukattash TL, Hajaj J. Dispensing of non-prescribed antibiotics in Jordan. *Patient Prefer and Adher*. 2015;9:1389-95.
15. Ayyash M, Abu-Farha R, Jaber K, Ateih S, Akour A. Patterns of Antibiotic Use, Knowledge, and Perceptions among Jordanian Population: A Cross-sectional Study. *Jordan Journal of Pharmaceutical Sciences*. 2024;17(1):131-43.
16. Alanis AJ. Resistance to antibiotics: are we in the post-antibiotic era? Arch Med Res. 2005;36(6):697-705.
17. Zawahir S, Lekamwasam S, Aslani P. Antibiotic dispensing practice in community pharmacies: A simulated client study. *Res Social Adm Pharm*. 2019;15(5):584-90.

18. Halboup A, Abdi A, Ahmed M, Al-Qadasi F, Othman GQ. Access to antibiotics without prescription in community pharmacies in Yemen during the political conflict. *Public health*. 2020;183:30-5.
19. Damisie G, Hambisa S, Yimam M. Over the Counter Sale of Antibiotics at Drug Stores Found in Mizan-Aman Town, Southwest Ethiopia: A Cross-Sectional Simulated Client Visit Study. *J Pharm (Cairo).* 2019;2019:3510659.
20. Ahmad T, Khan FU, Ali S, Rahman AU, Ali Khan S. Assessment of without prescription antibiotic dispensing at community pharmacies in Hazara Division, Pakistan: A simulated client's study. *PLoS One*. 2022;17(2):e0263756.
21. Saleem Z, Hassali MA, Godman B, Fatima M, Ahmad Z, Sajid A, et al. Sale of WHO AWaRe groups antibiotics without a prescription in Pakistan: a simulated client study. *Journal of pharmaceutical policy and practice*. 2020;13:26.
22. Hallit S, Zahreddine L, Saleh N, Shakaroun S, Lahoud N. Practice of parents and pharmacists regarding antibiotics use in pediatrics: A 2017 cross-sectional study in Lebanese community pharmacies. *J Eval Clin Pract*. 2020;26(1):181-9.
23. Norton AE, Konvinse K, Phillips EJ, Broyles AD. *Antibiotic Allergy in Pediatrics. Pediatrics*. 2018;141(5).
24. Bin Abdulhak AA, Altannir MA, Almansor MA, Almohaya MS, Onazi AS, Marei MA, et al. Non prescribed sale of antibiotics in Riyadh, Saudi Arabia: a cross sectional study. *BMC Public Health*. 2011;11:538.
25. Zhu Y, Tang X, Yan R, Shao Z, Zhou Y, Deng X, et al. Non-prescription antibiotic use for cough among Chinese children under 5 years of age: a community-based cross-sectional study. *BMJ Open*. 2021;11(12):e051372.
26. Shet A, Sundaresan S, Forsberg BC. Pharmacy-based dispensing of antimicrobial agents without prescription in India: appropriateness and cost burden in the private sector. *Antimicrob Resist Infect Control*. 2015;4:55.
27. Bianco A, Licata F, Trovato A, Napolitano F, Pavia M. Antibiotic-Dispensing Practice in Community Pharmacies: Results of a Cross-Sectional Study in Italy. *Antimicrob Agents Chemother*. 2021;65(6).
28. Battikhi MN. Epidemiological study on Jordanian patients suffering from diarrhoea. *New Microbiol*. 2002;25(4):405-12.
29. Llor C, Cots JM. The sale of antibiotics without prescription in pharmacies in Catalonia, Spain. *Clin Infect Dis*. 2009;48(10):1345-9.

Al Baz M, Law MR, Saadeh R. Antibiotics use among Palestine refugees attending UNRWA primary health care centers in Jordan - A cross-sectional study. *Travel Med Infect Dis*. 2018;22:25-9.

صرف المضادات الحيوية بدون وصفة طبية للأطفال في الصيدليات المجتمعية: دراسة باستخدام العميل المتخفي

ديما الهويدي[1]، رنا أبو فرحة[2]، راما الخوالدة[2]، رجاء دغش[2]، عنان جراب[1،3]، طارق مقطش*[1]

[1]قسم الصيدلة السريرية، كلية الصيدلة، جامعة العلوم والتكنولوجيا الأردنية، إربد، الأردن

[2]قسم الصيدلة السريرية والمداواة، كلية الصيدلة، جامعة العلوم التطبيقية الخاصة، عمّان، الأردن

[3]كلية الصيدلة، جامعة العين، أبو ظبي، الإمارات العربية المتحدة

ملخص

الهدف :تهدف هذه الدراسة إلى استكشاف ممارسة صرف المضادات الحيوية بدون وصفة طبية للأطفال في الصيدليات المجتمعية في الأردن.

المنهجية :كانت هذه الدراسة دراسة مقطعية أُجريت بين أغسطس 2021 ومارس 2022. تم تمثيل خمس حالات سريرية مختلفة شملت: التهاب البلعوم، التهاب الشعب الهوائية، التهاب الأذن الوسطى، التهاب المعدة والأمعاء، وعدوى المسالك البولية. تم استخدام ثلاث مستويات من الطلب لإقناع موظفي الصيدلية ببيع المضادات الحيوية.

النتائج :تم زيارة 207 صيدلية مجتمعية في الأردن. صرفت الغالبية العظمى من الصيدليات (عدد = 163، 78.7٪) المضادات الحيوية بدون وصفة طبية باستخدام مستويات الطلب الثلاثة. تم صرف معظم المضادات الحيوية لحالات التهاب البلعوم (95.3٪)، تلتها حالات عدوى المسالك البولية (89.2٪). من بين الصيادلة الذين صرفوا المضادات الحيوية، قام 92.0٪ بشرح كيفية تناول المضاد الحيوي، و41.1٪ ذكروا مدة العلاج، و27.0٪ سألوا عن وجود أي نوع من الحساسية للأدوية. من ناحية أخرى، رفض فقط 21.3٪ (44 من 207) من موظفي الصيدليات صرف أي نوع من المضادات الحيوية، ومن بين هؤلاء (17 من 44، 38.6٪) أوصوا بمراجعة الطبيب، وكان السبب الوحيد للرفض هو وجود مشكلات صحية.

الاستنتاج :توضح نتائج هذه الدراسة بوضوح أن صرف المضادات الحيوية بدون وصفة طبية للأطفال شائع في الأردن، على الرغم من التشريعات الحالية. تؤكد سهولة الوصول إلى المضادات الحيوية وسوء استخدامها على ضرورة التطبيق الصارم للقوانين الحالية وإنشاء تنظيم جديد بشأن صرف المضادات الحيوية بدون وصفة طبية في المستقبل القريب.

الكلمات الدالة: مضادات حيوية؛ بدون وصفة طبية؛ عميل متخفي؛ صيادلة؛ الأردن.

---

* ***المؤلف المراسل: طارق مقطش***

tlmukattash@just.edu.jo

تاريخ استلام البحث 2024/07/04 وتاريخ قبوله للنشر 2024/10/16.