

Original Research

Evaluating community pharmacy practice in Qatar using simulated patient method: acute gastroenteritis management

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ABSTRACT*

Objective: To evaluate Qatari pharmacists' prescribing, labeling, dispensing and counseling practices in response to acute community-acquired gastroenteritis.

Methods: The simulated patient method was used in this study. Thirty pharmacies in Doha were randomly selected and further randomized into two groups: Face-to-Face (n=15) vs. Telephone-call (n=15) per simulated patient; 2 simulated patients were involved. Prescribing, labeling, dispensing and counseling practices were assessed. Data analysis was performed using Mann-Whitney and chi square tests at alpha=0.05.

Results: Most pharmacists prescribed and dispensed medicines (96%), including antimicrobials (43.9%), antidiarrheals (36%), antiemetics (5.1%) and antipyretics (3%). Counseling practices were poor (62.1% in the face-to-face group vs 70% in the telephone-call group did not counsel simulated patients about the dispensed medicines; p-value=0.50). In more than one-third of the encounters, at least one labeling parameter was missing. The duration of each interaction in minutes was not significantly different between the groups [median (IQR); 3(4.25) in the face-to-face group versus 2(0.25) in the telephone-call group; p-value=0.77]. No significant differences in prescribing or dispensing behaviors were present between groups (p-value>0.05).

Conclusion: Qatar community pharmacists' labeling, dispensing, and counseling practices were below expectation, thus urging the need for continuous professional development.

Keywords: Patient Simulation; Community Pharmacy Services; Pharmacies; Professional Practice; Gastroenteritis; Qatar

INTRODUCTION

As per the World Health Organization (WHO), community pharmacists are the health professionals who are the easiest for the public to reach and visit. They can either dispense prescription medications or sell over-the-counter medications.¹ In many countries, private community pharmacies, as primary care providers, are considered a valuable resource for health advice and medicines in communities.² Under the recent Qatar National Health Strategy (NHS 2011–2016), primary care is a foundation for healthcare delivery for the country.³ It also emphasizes the need for a community pharmacy network that is supported by appropriate policy and process. In addition, the focus is to decrease the reliance on hospitals for filling drug prescriptions, leading to increased efficiency and enhanced access. These could lay the foundation for efficient and accessible healthcare and lead to a strengthened role of community pharmacies in supporting patients. As per the NHS 2011-16, the target outcomes of the strategy are to increase service efficiency and effectiveness, ensure the availability of medicines and increase the utilization of the services by providers.³ However, the quality of the service provided by community pharmacies in developing countries has often been questioned and is often suboptimal.⁴⁻⁶ Kheir and Michael reviewed the challenges and opportunities of pharmacy practice in Qatar.⁷ They reported that the community pharmacists still provide traditional services (i.e., product-oriented services by selling and dispensing medicines). In addition, the community pharmacies are not part of the core health care delivery system. In a national survey by El Hajj et al, 40% of pharmacists in Qatar reported being dissatisfied with their professional roles.⁸

Acute gastroenteritis (AGE) is a 'diarrheal disease of rapid onset, with or without accompanying symptoms and signs, such as nausea, vomiting, fever, or abdominal pain'.⁹ In developed countries, diarrheal diseases are a significant cause of morbidity across all age groups. A high percentage of patients of all ages are affected by viruses.¹⁰ The clinical effects of acute cases range from symptomatic infection to severe dehydration and death. Viral gastroenteritis normally presents with a short prodrome, with vomiting and mild fever, followed by 1-4 days of non-bloody, watery diarrhea. Viral gastroenteritis is generally a self-limiting watery diarrheal illness with no requirement for antibiotics. In this condition, there is a possibility for irrational dispensing by community pharmacists.

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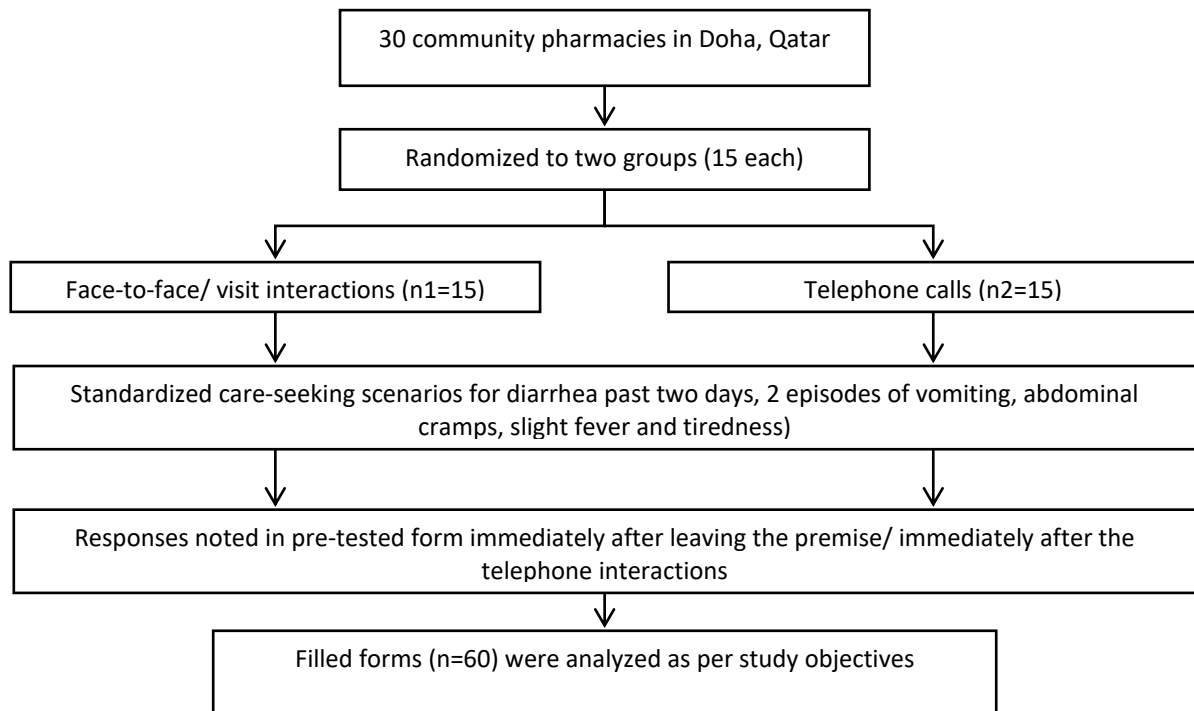


Figure 1. Study flow chart

Hence, the authors chose to use this condition as the simulated disease in this study.

There has been a paucity of data regarding the quality of pharmacy services in the middle-east countries, particularly in Qatar. Thus, it would be interesting to study the shortcomings in professional practice in terms of advice-giving and the rational use and supply of medicines. In Qatar, medicines are prescribed by the medical doctors and dispensed by the pharmacists. In community pharmacy setting, pharmacists dispense prescription items, and recommend and sell the non-prescription products e.g. over-the-counter medicines. In addition to consumers' visits to the pharmacies, it is quite common for the people especially the local people to order medicines or get their prescriptions filled through telephone calls. For the latter condition, usually the medicines will be pick up by the house driver. Pharmacists are expected to contribute effectively to the health care system and contribute to achieving Qatar Vision 2030, which emphasizes human, social, economic and environmental development¹¹, and to QNHS2011-16.³ To achieve the above goals, the barriers to the provision of higher quality care and ways in which these might be overcome must be identified and examined.

In this study, the authors aimed to determine the prescribing practices and the information provided, both verbal and written (labeling), by Qatari community pharmacists to acute gastroenteritis patients.

METHODS

The research proposal was approved by the Qatar University Institutional Review Board (QU-IRB: 167/12).

Study design

In this study, a non-traditional survey method (i.e., the simulated patient method using mystery patient/shopper) was adopted. This method provides a way to document unconscious real behavior and practice from the client's perspective in a first-hand and standardized fashion. This method is also simple and is a method for assessing the community pharmacists' dispensing practices.^{12,13} The simulated patient method, which is also described in literature as the mystery shopper technique, is a method that can be effectively used to study the practice perspectives and professional behaviors. It is a tested and well-accepted method for evaluating community pharmacists' professional behaviors.¹⁴

The simulated patients were final year BSc(Pharm) students from the College of Pharmacy in the Qatar University. They were basically trained to act as patients and pretend to produce a real-life scenario. The simulated patient training included expectations of care, normalizing the AGE experience, introduction and development of scenarios, colloquialisms, researcher-patient balance, dealing with tricky questions/situations, extensive role playing, and data capture tools. Two simulated patients were trained on how to act as an AGE patient and the types of questions to ask via face-to-face interaction/consultation (pharmacy visits) and consultation and request through a telephone call (see Figure 1).

Study subjects

Of the 175 pharmacies in Qatar (on the list of pharmacies obtained from the Supreme Council of Health (SCH)), 30 community pharmacies in Doha, the capital city, were randomly selected. These 30 pharmacies were randomized using IBM SPSS

Table 1. The simulated client scenario

Stage	Activity
I. Entry into pharmacy and presenting symptoms	SC goes into the target pharmacy and greets the pharmacist (get the pharmacist not the staff) and presented the following symptoms: "I am looking for medicines for diarrhea" "I had diarrhea for the last 2 days; went to the toilet 3-4 times a day" "I vomited twice, have cramping at the abdominal site and slight fever; I am feeling tired with body pain and very uncomfortable"
II. Waiting for the response	The SC waits for the response from pharmacist
III. Receiving advice	The SC observe the activities performed by the pharmacist in a sequential manner Any advice (if given) Type of non-pharmacological advice given Details on prescribed medicines What type of medicines? For what purpose? How was the label? Adequate? Quality? If the pharmacists ask the SCs to see a physician, and refuse to treat, it is considered good However, insist to have medicines before seeing a physician. If they prescribe medicines, look for any antibiotic. If none, ask for one. Look for their response. The payment made (in Qatari riyals)
IV. Thanks giving	Before leaving, wish thank you.
V. Documentation of the observations in the data collection form	After leaving, a distance from the pharmacy, maybe in the car, note down all the information

Statistics for Windows, Version 21.0 (Armonk, NY: IBM Corp.) into 2 groups using a simple randomization technique: Group 1 (n=15): face-to-face interaction and Group 2 (n=15): telephone call interaction. For each pharmacy, two encounters were done (i.e. 30 visits for face-to-face interactions and 30 interactions through telephone calls, for a total of 60 encounters).

Study tools development and validation

The following scenarios, questions and dialogue were used by the simulated patients during the data collection process (face-to-face and telephone call) (Table 1). The scenario was developed in consultation with a physician and a pharmacist. In addition, the scenario mimicked the common behavior of the consumers in the country and region, e.g., insisting on a medicine if referral advice is provided, and it is typical for patients to insist on an antibiotic; frequently, a patient will not be satisfied when leaving the pharmacy without a single medicine. Furthermore, it is appropriate to assess the pharmacist's profit-making behavior vs professionalism. The pharmacy authority applies strict regulations on the use of antibiotics; thus, it is also interesting for researchers to assess pharmacists' behavior.

A data collection form was used to document all of the information and data. The data collection form consisted of 'Numbers and categories of medicines dispensed', 'Cost of medications dispensed', 'Brand or generic medicines', 'Labeling standard', 'Counseling standard', 'Symptomatic diagnosis scenario', 'Adherence to therapeutic guidelines', 'Appropriateness of dosage regimen', and 'Refusal or agreeable to dispense ABC'.

Validation of method

The researchers pre-tested the data collection method to assess its content validity by showing it to faculty members in the College of Pharmacy and a general practitioner practicing in Qatar. After making improvements to the pilot test [here, the

researchers used the method (Table 1) on a very small sample size of 3 community pharmacies; these 3 pharmacies were not included in the final study], the method was considered acceptable and was finalized for the main study. The simulated patients were trained 2-3 hours before the pilot study and again after the pilot study. Feedback was obtained from the simulated patients. Problems were rectified, and the necessary improvement/changes were made to the tool and study design.

Outcome measures

The various outcomes measured in the study were 'Background of the community pharmacy: name of pharmacy, location, gender of the pharmacist, type of pharmacy', 'Quality of information and advice provided by the community pharmacists: patient-, disease- and medicine-related', 'Type and quality of medicines prescribed and dispensed: class of medicines, branded vs generic, number of medicines', and 'Cost of medicines: amount of money paid by mystery patient – each medicine and total amount'.

Data collection method

Information gathered through face-to-face interactions was documented in a pre-tested form (tested during pilot study) immediately after leaving the premise, thus ensuring that the activity was not observed by the concerned pharmacy staff. Similarly, the information gathered through telephone interactions was documented in a pre-tested form immediately after the telephone conversations. The labeling data were gathered after picking up the medicines. Data about counseling, if provided through the telephone conversation, were gathered by the simulated patients or, if the medicines were picked up later, by the simulated patients.

Data management and analysis

Descriptive statistics, such as the mean (SD), median (IQR), and frequency (%), were used. The

Item	Intervention		p value*	
	Visit (n=30)	Telephone call (n=30)		
Language (n, %)	English	11 (36.67)	18 (60)	0.070
	Arabic	19 (63.33)	12 (40)	
Type of Pharmacy (n, %)	Chain	16 (53.33)	16 (53.33)	0.597
	Independent	14 (46.66)	14 (46.66)	
Gender of Pharmacist (n, %)	Male	26 (86.67)	20 (66.67)	0.067
	Female	4 (13.33)	10 (33.3)	
Ethnicity of Pharmacist (n, %)	Arab	18 (60)	18 (40)	0.121
	Non-Arab	12 (40)	12 (60)	

* Analysis was carried out using Chi-Square test

normality test was carried out using the Kolmogorov Smirnov test. Student's t-test or the Mann-Whitney test was used for continuous data, and the Chi-square test or Fisher's exact test was used for categorical data at an alpha level of 0.05 to compare between the groups and 2 simulated patients to assess the consistency of practices. The statistical software IBM SPSS Statistics for Windows, Version 21.0 (Armonk, NY: IBM Corp.) was used for data analysis.

Pilot Study

The study design and tool used were tested with 3 pharmacies before the major study to ensure the feasibility of the study, to identify and rectify any possible problems in the study, to estimate the time used for each method, and to test the data collection form and data analysis procedures.

RESULTS

Overall, 30 community pharmacies were visited by 2 simulated patients, for a total of 60 community pharmacy encounters. The demographic details of the respondents are listed in Table 2. There were no significant differences in the study sample's demographics (p-value>0.05).

The labeling included dose frequency (73.3% of medicines in the visit group vs. 75.9% in the Telephone-call group; p-value=0.824), dose (66.7% of medicines in the visit group vs. 79.3% in the Telephone-call group; p-value=0.27) and course duration (34.5% of medicines in the visit group vs. 33.3% in the Telephone-call group; p-value=0.92).

The details are summarized in Table 3.

The findings revealed that none of the pharmacists assessed the past medical history of the simulated patients. No significant differences in prescribing and dispensing behavior were present between the groups (p-value>0.05). Details are tabulated in Table 4.

The most commonly dispensed drug category was 'antibacterials (n=41; 43.16%), followed by antidiarrheals (n=36; 37.89%) and others. The details are presented in Table 5.

Of the total 95 drugs prescribed, the most common one was loperamide (an antimotility drug), accounting for 37.89% (n=36), followed by nitrofurazone (n=21; 22.11%). Details are listed in Table 6.

The median (IQR) time spent by the community pharmacist is listed in Table 7. It was observed that the duration of interaction in minutes was not significantly different between the groups [median (IQR); 2(2.0-5.0) in the visit group vs. 2(1.0-4.0) in the Telephone-call group, p-value=0.77]. It was noticed that in up to 75% of the cases, the cost was less than QAR30.00 (USD 8.24; 1 Qatari Riyal =0.27 USD). A higher number (30%) of the prescriptions charged less than QAR10.00 / USD 2.75, followed by QAR20.00-29.99 / USD 5.5-8.24 (28.3%) and 16.7% were from QAR10.00-19.99/USD 2.75-5.49. The cost per prescription ranged from QAR0 to QAR89/USD 0-24.44 (Table 7).

Labeling Indicators	Visit (n=30) [%]	Telephone Call (n=30) [%]	p-value *
Writing medicine name, drug strength, date of dispensing, expiry date and auxiliary labels.	Yes	0	-
	No	100	
Dosing frequency	Yes	73.3	0.824
	No	26.7	
Dose	Yes	66.7	0.275
	No	33.3	
Course duration	Yes	34.5	0.926
	No	65.5	

* Analysis was carried out using Chi-Square test

Table 4. Counseling practices across community pharmacists (n=30)

Counseling Indicators		Visit (n=30) [%]	Telephone Call (n=30) [%]	p-value *
Name, indication, dosage and route of administration	Yes	37.9	30	0.500
	No	62.1	70	
Explaining time for a medication to show an effect	Yes	0	3.3	0.321
	No	100	96.7	
Explaining how long the patient might be taking the medication regimen	Yes	6.9	0	0.143
	No	93.1	100	
Asking about other allergies and treatments	Yes	0	0	-
	No	100	100	
Discussing benefits, adverse drug reactions, precautions or contraindications	Yes	0	0	-
	No	100	100	

*Analysis was carried out using Chi-Square test

DISCUSSION

Community pharmacy practice is an important role of the pharmacist and an integral part of the healthcare system.^{12,15} Among the Gulf countries in the Middle East, the community pharmacy practice is undergoing changes, and pharmacists are expected to perform patient care and related activities with a public health focus.^{16,17} It is also noted that generally, the public relies on community pharmacists.¹⁸ The main reason for general public reliance is the ease of access, the absence of consultation charges and the simple over-the-counter medicines to solve problems for minor ailments that are often self-limiting. This study, however, found a poor community pharmacy practice in terms of dispensing, labeling and counseling.

At times, it can be important to promote self-medication, but only for minor ailments. There has been an argument about responsible self-medication.^{19,20} According to the WHO, 'it is the practice whereby individuals treat their ailments and conditions with medicines which are approved and available without prescription, and which are safe and effective when used as directed'.¹⁹ According to the WHO, responsible self-medication and medicines with proven safety, quality and efficacy should be used. The medicines that should be used are those specified for disorders that are self-recognizable and for some chronic or recurrent conditions (following an initial medical diagnosis).¹⁹ However, if used without care, self-medication can be a huge threat to the healthcare system and can lead to adverse drug reactions, with one of the most common being self-medication with analgesics, which can lead to kidney toxicity.

In Qatar, the patients seem to have known about the role of community pharmacists in self-medication and were willing to use their services.²¹ It is interesting to note that none of the community pharmacists in Qatar are Qataris or graduates produced by the Qatar University College of Pharmacy. They are expatriates with different backgrounds and knowledge and skill levels and are mainly from developing countries, where pharmacy practices is not well established. Thus, there is a need for scrutiny and the continued evaluation of

practicing pharmacists, although there is a one-time registration requirement for expatriate pharmacists to practice in Qatar.

Because the simulated patient method provides actual responses by a respondent and considers behavioral aspects and real-life scenarios, we chose this method. This methodology has also been used by other researchers and has been documented in the literature.^{22,23} Puspitasari et al evaluated the published research in 1993-2007 and reported that among all of the research methods, simulated-patient was a more reliable method for evaluating counseling practice in pharmacies.²⁴ In addition to these advantages, this method has numerous other advantages, such as the ability to evaluate actual practice without observation bias, the possibility of having standardized cases for easy comparison, and adaptability to a range of study questions, settings, and sizes.²⁵

The finding of our study reveals poor dispensing practices (e.g., inappropriate medicines, improper labeling) among community pharmacists. A similar study, in Malaysia, used the simulated patient method to show a poor dispensing practice and adherence to guidelines by the community pharmacists.²⁶ One study from India applied simulated patient method (pediatric diarrhea) and assessed the dispensing practices of private pharmacies. The authors found that pharmacists used prescription drugs indiscriminately while refraining from essential medicine such as oral rehydration salts.¹² Another simulated patient study from Nigeria documented that only 15% of the community pharmacists managed acute diarrhea in

Table 5. Therapeutic category of dispensed drugs (n=95)

Therapeutic category	n	%
Antibacterial	41	43.16
Antidiarrheal	36	37.89
Antiemetic	4	4.21
Antidehydration	4	4.21
Adsorbent	3	3.16
Analgesic	2	2.11
Antibacterial/amebicidal combination	1	1.05
Vitamin	1	1.05
Antiemetic/pain killer combination	1	1.05
H2 blocker	1	1.05
Antimuscarinic agent	1	1.05

Individual drugs	n	%
Loperamide	36	37.89
Nitrofuraxazide	21	22.11
Metronidazole	12	12.63
Diloxanide+metronidazole	4	4.21
Oral rehydration salt	4	4.21
Domperidone	3	3.16
Nitrofuraxide	2	2.11
Activated charcoal	2	2.11
Tinidazole	2	2.11
Furazolidone	1	1.05
Multivitamins	1	1.05
Pectin+ light coal	1	1.05
Metoclopramide	1	1.05
Metoclopramide + antipyretic agent	1	1.05
Diclofenac	1	1.05
Ibuprofen	1	1.05
Mebaverine	1	1.05
Ranitidine	1	1.05

pediatrics, as per the WHO guidelines.²⁷ In general, the scenario of community pharmacies in the developing world reflects poor professional practice and ethical standards.²⁸⁻³⁰

Labeling the dispensed medicines is an important responsibility of pharmacists and is often the first source of drug information for the patients. In our study, not even a single community pharmacist mentioned the name, drug strength, date of dispensing, expiration date or auxiliary labels during the dispensing process. Similarly, the duration for which the medicine should be used was mentioned only in one third of the cases. It is important for community pharmacists to do the labeling. Improper labeling can also be a cause of medication errors and can lead to the incorrect medication, dose or timing. The Institute for Safe Medication Practices standards (ISMP), a US-based nonprofit organization aiming to educate the healthcare community and consumers about safe medicine practices, also provides guidelines for designing labels for the dispensed medications in a community pharmacy.³¹ One study from Saudi Arabia reported a good adherence level of labeling guidelines in Riyadh hospitals as per the ISMP.³²

Patient counseling is an important responsibility of community pharmacists that occurs prior to dispensing medications. According to the American Society of Health-System Pharmacists (ASHP) guidelines, the pharmacist should provide comprehensive information on both the medications and health condition to the patients.³³ Conversely, our research found poor counseling practices by the community pharmacists. It was observed that only one-third of the pharmacists emphasized the name, indication, dosage and route of administration. Poor patient counseling can definitely contribute to non-

compliance and therapy failure. While counseling, it is important to note the possible side effects, methods for prevention and early diagnosis. However, in our study, the simulated patients received no information on side effects or allergies.

According to Barr *et al.*³⁴, the treatment of AGE in adults should focus on preventing and treating dehydration. Oral rehydration therapy is the chosen treatment for dehydration. In patients with bloody diarrhea, antimotility agents should not be given, but in patients with watery diarrhea, loperamide/simethicone may improve their symptoms. Probiotic use is preferred to shorten the duration of illnesses. Antibiotics are not recommended for adults with acute diarrhea of unknown pathology. Our findings noted the exorbitant use of the antimotility drug loperamide. Loperamide is an antimotility drug that is used in cases of acute diarrhea, and it carries significant side-effects. Additionally, upon long-term use, it can lead to dependence. Moreover, in the case of diarrhea with an infectious origin (e.g., dysentery with blood and (or) mucus), there is a possibility that the infecting organism to be retained in the gastrointestinal tract and could lead to systemic infections. We also found a high use of antibiotics. The use of antibiotics in acute gastroenteritis with viral diarrhea (as in most cases of diarrhea) is thus highly irrational. Our findings on the inappropriate dispensing of antibiotics of community pharmacists is in agreement with other findings; one study from Egypt found the improper dispensing of antibiotics by community pharmacists³⁵, and similar findings were reported in Lebanon³⁶, the Ivory coast³⁷ and many other countries around the world.

The time spent by the community pharmacist with patients is very important because the effectiveness of counseling improves with adequate time spent and because reinforcement and feedback require time. Time can be a potential barrier to patient counseling.³⁸ In our study, the community pharmacists took approximately 2-3 minutes to provide counseling, which is very short, in our opinion. It has been documented in the literature that the time taken by the pharmacists during correct counseling is much longer than this.³⁹

Strengths and limitations of the study

In general, the simulated patient method is easy and effective for studying behavior and real practices; it reduces observation bias. In middle-eastern pharmacy settings, few studies have used this method. In this study, each pharmacy was visited and tested twice by the simulated patients, and this step could confirm and validate the behavior and practices of pharmacists.

Item	Type of intervention		p-value*
	Visit (n=30)	Telephone call (n=30)	
Duration of interaction in minutes (Median, IQR)	2.0 (2.0-5.0)	2.0 (1.0-4.0)	0.770
Number of medicines (Median, IQR)	1 (1-2)	1 (1-2)	0.831
Total cost per prescription in Qatari Riyals** (Median, IQR)	20.00 (7.00-37.00)	19.25 (7.00-28.50)	0.536

Note: * Analysis was carried out using Mann-Whitney test. ** 1 Qatari Riyal =USD 0.27

The sample size is small, and Qatar is a small country; therefore, the findings might not be able to be generalized to other countries. We did not determine whether the simulated patients visited and interacted with the same pharmacist, but we attempted to reduce this potential bias by requesting that the simulated patients visit the pharmacy at the same time of day, e.g., morning or afternoon. In addition, the results may have reflected a specific scenario because the simulated patients insisted on a particular medication. Thus, it may be difficult to extrapolate the findings to the entire pharmacy practice of community pharmacists in Qatar.

Implication for practice

The findings of the study recommend the need for a minimum standard of practice (policy and practice) and mandatory continuing education programs for community pharmacists. More research is also needed in this area to obtain more in-depth information on the dispensing practices of community pharmacists.

CONCLUSIONS

This study explored the regular dispensing practice of community pharmacists in Qatar. The findings revealed a suboptimal dispensing practice that involved less time spent with the patients and the overuse of antidiarrheals and antimicrobials. The patients were also provided with limited information on the usage of medications and their safe use. The overall practice was below expectation.

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CONFLICT OF INTEREST

The authors declare that there are no conflicts of interests.

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References

1. WHO. The role of the pharmacist in the health care system. Report of a WHO Consultative Group New Delhi, India, 13-16 December 1988. World Health Organization, 1994. Available at: <http://apps.who.int/medicinedocs/pdf/h2995e/h2995e.pdf> (accessed 29 March 2016).
2. Laliberté MC, Perreault S, Damestoy N, Lalonde L. Ideal and actual involvement of community pharmacists in health promotion and prevention: a cross-sectional study in Quebec, Canada. *BMC Public Health*. 2012;12:192. doi: [10.1186/1471-2458-12-192](https://doi.org/10.1186/1471-2458-12-192)
3. National Health Strategy 2011-2016. 2014 General Secretariat, Supreme Council of Health. Available at <http://www.nhsq.info/app/media/1541> (accessed 29 March 2016).
4. Nga do TT, Chuc NT, Hoa NP, Hoa NQ, Nguyen NT, Loan HT, Toan TK, Phuc HD, Horby P, Van Yen N, Van Kinh N, Wertheim HF. Antibiotic sales in rural and urban pharmacies in northern Vietnam: an observational study. *BMC Pharmacol Toxicol*. 2014;15:6. doi: [10.1186/2050-6511-15-6](https://doi.org/10.1186/2050-6511-15-6)
5. Kotwani A, Wattal C, Joshi PC, Holloway K. Irrational use of antibiotics and role of the pharmacist: an insight from a qualitative study in New Delhi, India. *J Clin Pharm Ther*. 2012;37(3):308-312. doi: [10.1111/j.1365-2710.2011.01293.x](https://doi.org/10.1111/j.1365-2710.2011.01293.x)
6. Gastelurrutia MA, Larrañaga B, Garay A, Echeveste Fde A, Fernandez-Llimos F. Impact of a program to reduce the dispensing of antibiotics without a prescription in Spain. *Pharm Pract (Granada)*. 2013;11(4):185-190.
7. Kheir N, Fahey M. Pharmacy practice in Qatar: challenges and opportunities. *South Med Rev*. 2011;4(2):92-96. doi: [10.5655/smr.v4i2.1007](https://doi.org/10.5655/smr.v4i2.1007)
8. El Hajj MS, Salem S, Mansoor H. Public's attitudes towards community pharmacy in Qatar: a pilot study. *Patient Prefer Adherence*. 2011;5:405-422. doi: [10.2147/PPA.S22117](https://doi.org/10.2147/PPA.S22117)
9. Viral gastroenteritis. Medline Plus. US National Library of Medicine. Available at: <https://www.nlm.nih.gov/medlineplus/ency/article/000252.htm> (accessed 28 October 2015).
10. Tablang MVF, Wu GY. Viral gastroenteritis. Available at: <http://emedicine.medscape.com/article/176515-overview> (accessed 28 October 2015).
11. Qatar National Vision http://www.qu.edu.qa/pharmacy/components/upcoming_events_material/Qatar_National_Vision_2030.pdf (accessed 28 March 2016).
12. Diwan V, Sabde YD, Byström E, De Costa A. Treatment of pediatric diarrhea: a simulated client study at private pharmacies of Ujjain, Madhya Pradesh, India. *J Infect Dev Ctries*. 2015;9(5):505-511. doi: [10.3855/jidc.5694](https://doi.org/10.3855/jidc.5694)
13. da Rocha CE, Bispo ML, dos Santos AC, Mesquita AR, Brito GC, de Lyra DP Jr. Assessment of community pharmacists' counseling practices with simulated patients who have minor illness: a pilot study. *Simul Healthc*. 2015;10(4):227-238. doi: [10.1097/SIH.0000000000000100](https://doi.org/10.1097/SIH.0000000000000100)
14. Watson MC, Skelton JR, Bond CM, Croft P, Wiskin CM, Grimshaw JM, Mollison J. Simulated patients in the community pharmacy setting. Using simulated patients to measure practice in the community pharmacy setting. *Pharm World Sci*. 2004;26(1):32-37.
15. Teinilä T, Halmepuro-Jaatinen S, Yrityks K, Manni K, Airaksinen M. Adapting the US Institute for Safe Medication Practices' medication safety self-assessment tool for community pharmacies in Finland. *Int J Pharm Pract*. 2012;20(1):15-24. doi: [10.1111/j.2042-7174.2011.00158.x](https://doi.org/10.1111/j.2042-7174.2011.00158.x)
16. Dameh M. Pharmacy in the United Arab Emirates. *South Med Rev*. 2009;2(1):15-18.

17. Kheir N, Zaidan M, Younes H, El Hajj M, Wilbur K, Jewesson PJ. Pharmacy education and practice in 13 middle eastern countries. *Am J Pharm Educ.* 2008;72(6):133.
18. Bashedi IA, Qunaibi EA, Hamadi SA, Abu-Gharbieh E, Saleh S, AbuRuz S, Mohamoud M, Bulatova NR. Patient perspectives of the role of the community pharmacist in the Middle East: Jordan, United Arab Emirates and Iraq. *Pharmacol Pharm.* 2014;5: 588-599. doi: [10.4236/pp.2014.56069](https://doi.org/10.4236/pp.2014.56069)
19. WHO. The role of the pharmacist in self-care and self-medication, 1998 report of the 4th WHO consultative group on the role of the pharmacist. The Hague: WHO; 1998
20. Dayani G, de Mattos GL, Modolon AG, Cristina TS. Responsible self-medication: review of the process of pharmaceutical attendance. *Braz J Pharm Sci.* 2004;45(4):625-633. doi: [10.1590/S1984-82502009000400004](https://doi.org/10.1590/S1984-82502009000400004)
21. Wilbur K, Salam SE, Mohammadi E. Patient perceptions of pharmacist roles in guiding self-medication of over-the-counter therapy in Qatar. *Patient Prefer Adherence.* 2010;4:87-93.
22. Huntington D, Schuler SR. The simulated client method: evaluating client-provider interactions in family planning clinics. *Stud Fam Plann.* 1993;24(3):187-193.
23. How to study medicines use in communities. World Health Organization, 2004, WHO/EDM/PAR/2004.2. Available at: http://whqlibdoc.who.int/hq/2004/WHO_EDM_PAR_2004.2.pdf (accessed 28 October 2015).
24. Puspitasari HP, Aslani P, Krass I. A review of counseling practices on prescription medicines in community pharmacies. *Res Social Adm Pharm.* 2009;5(3):197-210. doi: [10.1016/j.sapharm.2008.08.006](https://doi.org/10.1016/j.sapharm.2008.08.006)
25. Madden JM, Quick JD, Ross-Degnan D, Kaffle KK. Undercover Careseekers: simulated clients in the study of health provider behavior in developing countries. International Conferences on Improving Use of medicines. Available at: http://archives.who.int/icium/icium1997/posters/1b4_text.html (accessed 18 March 2016).
26. Alabid AH, Ibrahim MI, Hassali MA. Antibiotics dispensing for URTIs by community pharmacists (CPs) and general medical practitioners in Penang, Malaysia: A comparative study using simulated patients (SPs). *J Clin Diagn Res.* 2014;8(1):119-123. doi: [10.7860/JCDR/2014/6199.3923](https://doi.org/10.7860/JCDR/2014/6199.3923)
27. Ogbo PU, Aina BA, Aderemi-Williams R. Management of acute diarrhea in children by community pharmacists in Lagos, Nigeria. *Pharm Pract (Granada).* 2014;12(1):376
28. Brata C, Gudka S, Schneider CR, Clifford RM. A review of the provision of appropriate advice by pharmacy staff for self-medication in developing countries. *Res Social Adm Pharm.* 2015;11(2):136-153. doi: [10.1016/j.sapharm.2014.07.003](https://doi.org/10.1016/j.sapharm.2014.07.003)
29. Smith F. Private local pharmacies in low- and middle-income countries: a review of interventions to enhance their role in public health. *Trop Med Int Health.* 2009;14(3):362-372. doi: [10.1111/j.1365-3156.2009.02232.x](https://doi.org/10.1111/j.1365-3156.2009.02232.x)
30. Smith F. The quality of private pharmacy services in low and middle-income countries: a systematic review. *Pharm World Sci.* 2009;31(3):351-361. doi: [10.1007/s11096-009-9294-z](https://doi.org/10.1007/s11096-009-9294-z)
31. Institute for Safe Medication Practices. Principles of designing a medication label for community and mail order pharmacy prescription packages. Available at: <http://www.ismp.org/tools/guidelines/labelFormats/comments/printerVersion.pdf> (accessed 29 March 2016).
32. Alkhani S, Ahmed Y, Bin-Sabbar N, Almogirah H, Alturki A, Albanyan H, Adam M, Saleem F, Aljadhey H, Hassali MA, Vaida AJ. Current practices for labeling medications in hospitals in Riyadh, Saudi Arabia. *Saudi Pharm J.* 2013;21(4):345-349. doi: [10.1016/j.jsps.2012.12.002](https://doi.org/10.1016/j.jsps.2012.12.002)
33. American Society of Health-System Pharmacists. ASHP guidelines on pharmacist-conducted patient education and counseling. *Am J Health Syst Pharm.* 1997;54(4):431-434.
34. Barr W, Smith A. Acute diarrhea in adults. *Am Fam Physician.* 2014;89(3):180-189.
35. Sabry NA, Farid SF, Dawoud DM. Antibiotic dispensing in Egyptian community pharmacies: an observational study. *Res Social Adm Pharm.* 2014;10(1):168-184. doi: [10.1016/j.sapharm.2013.03.004](https://doi.org/10.1016/j.sapharm.2013.03.004)
36. Farah R, Lahoud N, Salameh P, Saleh N. Antibiotic dispensation by Lebanese pharmacists: a comparison of higher and lower socio-economic levels. *J Infect Public Health.* 2015;8(1):37-46. doi: [10.1016/j.jiph.2014.07.003](https://doi.org/10.1016/j.jiph.2014.07.003)
37. Hounsa A, De Mol P. Antibiotics dispensed upon the recommendation of staff in private dispensaries in Abidjan in the Ivory Coast. *J Pharm Belg.* 2009;(3):99-104.
38. Albekairy AM. Pharmacists' perceived barriers to patient counseling. *J Appl Pharm Sci.* 2014;4(1):70-73. doi: [10.7324/JAPS.2014.40112](https://doi.org/10.7324/JAPS.2014.40112)
39. Oh Y, McCombs JS, Cheng RA, Johnson KA. Pharmacist time requirements for counseling in an outpatient pharmacy. *Am J Health Syst Pharm.* 2002;59(23):2346-2355.