Original Research

Assessment of diarrhea treatment and counseling in community pharmacies in Baghdad, Iraq: A simulated patient study

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Abstract

Background: Because community pharmacists are the most accessible healthcare professionals, they are often involved in managing minor ailments within the community setting.

Objective: This study evaluated the community pharmacists' history taking practice, medicine dispensing and advice in response to acute diarrhea.

Methods: Authors conducted a simulated-patient study in 75 community pharmacies in Baghdad, Iraq from February to May 2015. The female simulated-patient complained of acute diarrhea that had lasted for one day and requested for medicine to treat her condition. After exiting each pharmacy, she then assessed the practices of the community pharmacists through the use of a specially designed checklist adopted with modifications from relevant guidelines. For history taking, a maximum total of eight was the highest obtainable score. Data collected was quantitatively analyzed and Mann-Whitney, Chi-square or Fishers exact tests were used at an alpha level of 0.05.

Results: All of the 75 pharmacies visited were managed by professionally qualified pharmacists. The most common questions asked during history taking were number of diarrheal episodes (n=62; 82.7%); duration of symptoms (n=59; 78.7%) and presence of other diseases and if any drug had been taken (n=58; 77.3%). Female pharmacists had a higher total mean score (6.45, SD=1.33) for history taking when compared to their male counterparts (4.34, SD=2.13); p <0.001. Medicine combination of diphenoxylate HCl 2.5mg + atropine sulphate 0.025mg (n=34; 27.9%) was most frequently dispensed while the least was oral rehydration salt (n=1; 0.8%). Around 20% (n=15) of pharmacists dispensed antimicrobial agents. Over half (n=46; 61.3%) of pharmacists indicated the frequency of use on the medicine packet. Conversely, less than half (n=33; 44.0%) gave any advice on food and fluid intake.

Conclusions: Majority of the community pharmacists asked at least four questions while taking patient history and was very likely to recommend antidiarrheal medicines as first line treatment options. The authors recommend the development of a minimum standard of practice as well as enhanced training for Iraqi community pharmacists.

Keywords

Diarrhea; Counseling; Nonprescription Drugs; Community Pharmacy Services; Pharmacies; Professional Practice; Patient Simulation; Iraq

INTRODUCTION

Community pharmacists are the most accessible health professionals.[1] They provide primary healthcare services to communities, and are important sources of advice, medication and treatment for minor ailments both in high and low-to middle income countries.[1,2] They can be a valuable resource for health advice.[2] Minor ailments are 'common or self-limiting or uncomplicated conditions which can be diagnosed and managed without medical intervention'.[3,4] In the UK, 18% of general practice workload is estimated to relates minor ailments, with a financial burden of GBP 2 billion annually.[5] Currently, minor ailment services exist in many regions and countries such as UK[6], Canada[7], Australia[8], and New Zealand.[9] Quality of pharmacy services represents optimum patient care to meet patient's needs. There must be a minimum standard of practice in community pharmacy setting. The

International Pharmaceutical Federation (FIP) has recommended set of areas and domains e.g. supply of non-prescription medicines for self-care, and interaction with patients as minimum requirements for practice.[10] It is important to ensure that the right patient receives the appropriate medicine in the correct dose and form.[11]

In a country like Iraq, the instability across the country (followed the war of 2003) plus funding shortfalls have affected the quality of healthcare service delivery.[12] Further, physicians in Baghdad were being killed at a rate of 47.6 per 1,000 professionals; with nearly 5,400 physicians were leaving the country annually[12] and the healthcare system is undergoing a major crisis.[13] The medical brain drain has impacted health care delivery. In Iraq the health infrastructure is not fully restored even after much rebuilding in the recent past.[14] There are plans for a realignment of the health care system with the primary health case as the foundation. As of April 2011, 20,066 pharmacists were registered in the Syndicate of Iraqi Pharmacists (SIP), a professional organization whose purview encompasses 18 provinces, or governorates.[15] Thus, the role of other healthcare professionals e.g. community pharmacists for managing health like minor ailments in poor resource settings become very important. There is a need to avoid burdening the focal health system.

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Most of community pharmacies in Iraq are located within the big cities. The total number of community pharmacies in Baghdad (8465), Babylon (1227), Ninawa (1143), and Najaf (1044) exceeds the number of pharmacies in all other Iraqi cities combined[15] and as on 2013 Baghdad had a total of 6220 pharmacists.[16]

There is evidence to suggest that members of the Iraqi public frequently use community pharmacies to access healthcare services.[17,18] A study by Ibrahim et al.[17] found that 70% of respondents visited community pharmacies once or more per month, and over half of them rated community pharmacists as their first contact in case of any drug-related problem. In another study, Seston et al. who explored the attitude and beliefs of community pharmacists in managing acute diarrhea in adults witnessed ambiguity in the treatment of acute diarrhea in community pharmacy, particularly in relation to attitudes to oral rehydration and anti-motility drugs.[19] Many of the pharmacists dispensed antimotility more than oral rehydration salt (ORS) even though the recommendation is to treat with ORS. There is insufficient data on how community pharmacists in Iraq manage common medical conditions. Thus, this study aimed at evaluating the practices of Iraqi community pharmacists when managing symptoms of acute diarrhea in adults, with specific focus on their patient's history taking, medication dispensing, and advice giving practices.

METHODS

Study design

A cross-sectional survey using the simulated-patient (SP) method (or mystery patient/shopper) was used in this study. This method is simple and provides real behavior and practice from the client's perspective.[1,18,20] This research approach is also simple but robust method for assessing the community pharmacists' dispensing practices. A standardized scenario of acute diarrhea is defined as an episode of diarrhea lasting 14 days or less[21,22] and scoring system was used in each pharmacy.

Ethical approval was obtained from the Ministry of Health and Syndicate of Iraqi Pharmacists (Approval No: 881). Due to the nature of the study, the study participants were not informed about the study priori. The information obtained was recorded, kept and reported anonymously. The findings were presented as aggregate.

The study targeted community pharmacists. It was conducted in 75 community pharmacies located in Baghdad, the capital of Iraq from February to May 2015. The total number of community pharmacies in Baghdad is 8465 and it has 6220 pharmacists. Due to the safety and security factors, and accessibility to different locations, only 75 pharmacies were able to be selected conveniently within the specified study period.

Data collection

The data collection checklist was developed by the principal researcher from the American College of Gastroenterology Clinical Guidelines and the World Health Organization (WHO) manual for diarrhea treatment[22,23], and consisted of two parts. Part one contained eight items required when taking a complete patient history from a patient with diarrhea. Questions asked in this section include duration of the diarrhea and number of episodes daily, whether vomiting or blood was present and pre-illness practices (please explain what "pre-illness practices" and "presence of diseases and drug taken" mean). Answers to these questions could be either "yes" or "no". The second part of the checklist contained five open ended questions, and collected information about dispensed medicines and their costs, written instructions provided, and any other advice given by the pharmacist.

A middle-age female pharmacist posed as the simulated patient, and visited the selected community pharmacies during the day time. She complained of suddenly occurring diarrhea that had lasted for one day, accompanied by abdominal cramps. She then requested for any antidiarrheal medicine. Immediately after each visit (outside the visited pharmacy), she used the evaluation checklist to assess the pharmacist's practices. She filled the checklist form alone. All the visits were performed by the same person.

Data analysis

Quantitative analysis was done for the collected data. The qualitative information was analyzed using content analysis approach. Mean and standard deviation were used to present continuous variables, whereas frequencies and percentages were used for discrete/categorical variables. Cost of dispensed medicines was reported in US dollars, using an exchange rate of 1 USD equal to 1.164 Iraqi Dinar (IQD). For the history taking items, a score of "zero" was assigned to the option "No", and "1" to the "Yes" option for each of the eight questions. Thus, higher scores denoted better history taking practices, and the maximum total score any pharmacist could attain for history taking was eight. Comparisons of continuous variables (history taking scores) between groups were done using the independent Mann-Whitney test. For categorical variables like gender and type of pharmacy, differences between groups were compared using Chi-square or Fishers exact tests as appropriate. SPSS (SPSS Inc., Chicago, Illinois) software version 17 was used for all data analyses. Alpha values of less than 0.05 were considered statistically significant.

RESULTS

All of the 75 pharmacies visited were managed by pharmacists, and more than half (n=42, 56.0%) of the pharmacists in-charge of the outlets were male. Majority of visited pharmacies (n=60, 80.0%) operated on a part-time basis (working hours from 4 to 9 pm); while the rest operated as full-time pharmacies (working hours from 10 am to 9 pm).

All pharmacists asked the SP at least one question about their diarrhea history before dispensing medicine(s). The most frequent questions asked during history taking were number of episodes of watery stool (n=62; 82.7%) and duration of diarrhea (n=59; 78.7%). While, presence of fever or other problems (n=35; 46.7%) and whether blood was present in stool (n=32; 42.7%) were the least asked (Table 1). When the total score obtained from history taking was compared with regards to the attending

Table 1. Diarrhea history taking practices of the community pharmacists			
Items of history taken	**Male n (%)**	**Female n (%)**	**p-value (Chi-square)**
1. Duration of diarrhea			0.004
Yes	28 (37.3)	31 (41.3)	
No	14 (18.7)	2 (2.7) [a]	
2. Number of watery stool/day			0.021
Yes	31 (41.3)	31 (41.3)	
No	11 (14.3)	2 (2.7) a	
3. Presence of blood in the stool			0.000
Yes	8 (10.7)	24 (32.0)	
No	34 (45.3)	9 (12.0)	
4. Presence and number of vomiting			0.404
Yes	27 (36.0)	23 (30.7)	
No	15 (20.0)	10 (13.3)	
5. Presence of fever, cough, or other problems			
Yes	8 (10.7)	27 (36.0)	0.000
No	34 (45.3)	6 (8.0)	
6. Pre-illness practice			0.253
Yes	25 (33.3)	23 (30.7)	
No	17 (22.7)	10 (13.3)	
7. Amount of fluid taken			0.535
Yes	30 (40.0)	23 (30.7)	
No	12 (16.0)	10 (13.3)	
8. Presence of diseases and drug taken			0.002
Yes	27 (36.0)	31 (41.3)	
No	15 (20.0)	2 (2.7) [a]	
[a] Fisher's Exact Test.			

pharmacist's gender; female pharmacists got a higher mean score (6.45; SD=1.33) than male pharmacists (4.34; SD=2.13), and this difference was statistically significant (Mann-Whitney test, $p<0.001$). This gender variability in history taking practices can also be seen in table one, where Chi-square/Fishers' Exact tests showed that significant differences ($p<0.05$) existed between male and female pharmacists with regards to most of the items used to assess history taking practices. On the other hand, there were no significant differences in the history taking practices and total scores between the two types of pharmacies (part-time and fulltime) visited during the study.

Because the SP requested medication, a wide variety of medicines were dispensed for her. All 75 pharmacies dispensed at least one medicine (Table 2). There were a total of 122 items/medicines dispensed by the 75 community pharmacists (around 2 medicines per pharmacy, range: 1-3 medicines). Around half (n=34; 45%) of the pharmacists dispensed 2 medicines. Commonly dispensed medicines included the tablet/capsule dosage forms. The pharmacists dispensed antidiarrheal, antimotility, antispasmodic, antimicrobial, antipyretic, antiemetic, and mineral supplement. Costs of these medications ranged from $0.20 to $1.38. Most pharmacists (n=34; 45%) dispensed antidiarrheal, followed by antimotility (n=25; 33%) and the least was mineral supplement (n=1; 1.3%). The dispensed medicines were diphenoxylate HCl 2.5mg + atropine sulphate 0.025mg (n=34; 27.9%), loperamide 2mg (n=25; 20.5%), hyoscine-N-butylbromide 10mg (n=18; 14.8%), metronidazole 200mg (n=10; 8.2%), furazolidone 50mg (n=5; 4.1%), acetaminophen (18.0%; n=22), domperidone 10mg (n=7; 5.7%), and oral rehydration salt (n=1; 0.8%). Around 20% (n=15) of pharmacists dispensed antimicrobial agents.

With regards to the actual dispensing practices of the pharmacists, more than two thirds (n=46; 61.3%) of them

provided written information on the packets of the medicines they dispensed about frequency of usage and dose to be taken. Less than half (n=33; 44.0%) provided information on food and fluid intake. In addition, only thirteen pharmacists (17.3%) asked the SP to go for a laboratory test, and only two (2.7%) advised the SP to consult a physician.

DISCUSSION

According to Barr and Smith[24], diarrheal illnesses account for 2.5 million deaths per year worldwide. In a countries at war and in crisis, inadequate access to clean drinking water, poor hygiene and sanitation are among the major drivers of the increased prevalence of diarrhea in these areas.[25,26] Because pharmacists can be seen and consulted without appointments, they are a good source of primary healthcare services especially in poor resource setting countries.[1] Thus, community pharmacists can play a useful role in the prevention and treatment of diarrhea and its often encountered complication-dehydration.[27] In this study, the SP method was used to study client-provider interaction and assess the quality of care delivered by the pharmacists.

Normally acute diarrhea is caused by virus (i.e. viral gastroenteritis) and is self-limited. In most cases, laboratory screenings are not necessary.[28] Riaz et al. recommended to carefully select patients for initially laboratory work up for stool culture based on their clinical presentation.[29]

To take a complete patient history from patients presenting with acute diarrhea, a wide range of questions need to be asked.[22,23] These would usually include onset of symptoms and duration, presence of other illnesses or symptoms, severity and frequency of diarrhea, in addition to the type of stool (e.g. watery, bloody, purulent or mucus-filled). Patients should also be investigated for fever, vomiting, dehydration, urine output dizziness and thirst. However, in

Table 2. Medicines dispensed to the simulated patient			
Medicines (Generic name)	**Pharmacological use**	**Pharmacies n (%)**	**Medicines dispensed n (%)**
Diphenoxylate HCL 2.5 + Atropine Sulphate 0.025mg	Antidiarrheal	20 (26.8)	20 (16.5)
Loperamide 2mg + Paracetamol	Antimotility + Antipyretic	9 (12.0)	18 (14.9)
Loperamide 2mg	Antimotility	7 (9.3)	7 (5.8)
(Diphenoxylate HCL 2.5 + Atropine Sulphate 0.025mg) + Hyoscine-N-ButylBromide 10mg	Antidiarrheal + Antispasmodic	6 (8.0)	12 (9.9)
(Diphenoxylate HCL 2.5 + Atropine Sulphate 0.025mg) + Paracetamol	Antidiarrheal + Antipyretic	5 (6.7)	10 (8.2)
Metronidazole 200mg	Antimicrobial	4 (5.3)	4 (3.3)
Loperamide 2mg + Hyoscine-N-ButylBromide 10mg	Antimotility + Antispasmodic	4 (5.3)	8 (6.6)
Furazolidone 50mg	Antimicrobial	3 (4.0)	3 (2.4)
Loperamide 2mg + Domperidone 10mg	Antimotility + Antidopaminergic/Antiemetic	2 (2.7)	4 (3.3)
Metronidazole 200mg + Domperidone 10mg	Antimicrobial + Antidopaminergic/Antiemetic	2 (2.7)	4 (3.3)
Metronidazole 200mg + Hyoscine-N-ButylBromide 10mg	Antimicrobial + Antispasmodic	2 (2.7)	4 (3.3)
Furazolidone 50mg + Paracetamol	Antimicrobial + Antipyretic	2 (2.7)	4 (3.3)
Loperamide 2mg + Hyoscine-N-ButylBromide 10mg + Paracetamol	Antimotility + Antispasmodic +Antipyretic	2 (2.7)	6 (4.6)
Hyoscine-N-ButylBromide 10mg	Antispasmodic	1 (1.3)	1 (0.9)
Oral rehydration salt	Mineral supplement	1 (1.3)	1 (0.9)
(Diphenoxylate HCL 2.5 + Atropine Sulphate 0.025mg) + Domperidone 10mg	Antidiarrheal + Antidopaminergic/Antiemetic	1 (1.3)	2 (1.6)
Metronidazole 200mg + Paracetamol	Antimicrobial + Antipyretic	1 (1.3)	2 (1.6)
Metronidazole 200mg + Paracetamol+ Hyoscine-N-ButylBromide 10mg	Antimicrobial + Antipyretic + Antispasmodic	1 (1.3)	3 (2.4)
Loperamide 2mg + Paracetamol + Domperidone 10mg	Antimotility + Antipyretic + Antidopaminergic/Antiemetic	1 (1.3)	3 (2.4)
(Diphenoxylate HCL 2.5 + Atropine Sulphate 0.025mg) + Domperidone 10mg + Hyoscine-N-ButylBromide 10mg	Antidiarrheal + Antidopaminergic/Antiemetic + Antispasmodic	1 (1.3)	3 (2.4)
(Diphenoxylate HCL 2.5 + Atropine Sulphate 0.025mg) + Hyoscine-N-ButylBromide 10mg + Paracetamol	Antidiarrheal + Antispasmodic + Antipyretic	1 (1.3)	3 (2.4)
	Total	75 (100)	122 (100)

most cases of non-severe illnesses, it is not necessary to determine the exact cause of diarrhea.[30] Most of the questions asked during history taking by the pharmacists in this study covered at least half of the items on the study checklist, suggesting that the practice among the community pharmacists in this study were somewhat satisfactory. Most of the pharmacists asked patients about the eight items in history taking. Female pharmacists in this study also had better total history taking scores than their male counterparts. While there is some evidence that feminine characteristics such as communication and empathy are beneficial in patient care[31], other studies have also reported no differences between the genders in thinking and clinical reasoning when supplying medication.[32] As recommended in the best practice, most frequent questions asked during the history taking were number of watery stool; duration of diarrhea, presence of diseases and drug taken, amount of fluid taken, presence and number of vomiting, and pre-illness practice.

In this study, more than two thirds of the pharmacists provided written information about frequency of usage and dose to be taken, less than half provided information on food and fluid intake, and less than one-fifth asked the SP to go for a laboratory test, and only two advised the SP to consult a physician. Patients were recommended to avoid dairy products. It is noted that acute diarrhea do not seek medical attention, as most patients are able to manage their illness[33] The overall quality of counselling is below

expectation and similar to some studies. In a recent study in Germany and Qatar, where the authors reported poor quality counselling for acute diarrhea.[34,35] The German study showed that information about dosage was the most commonly provided, while the least common information given was about side effects. Good advice is helpful for the patients but there is a need for improvement among community pharmacists in Germany.[34] The study in Qatar also highlighted the fact that the counselling practices were below expectation. A study in Turkey, noted that all pharmacy care providers, pharmacists and pharmacy technicians provided consultation to the SP in the study but made little enquiry about the medical history and background characteristics of the patients.[36]

For mild to moderate diarrheal cases, treatment options for patients may include antisecretory or antimotility agents like loperamide.[21] In this study, loperamide alone or in combination was the most dispensed medicine. They were also provided with loperamide or loperamide-simethicone combination. The antisecretory drug bismuth subsalicylate is a safe alternative in patients with fever and inflammatory diarrhea. But, this was not the condition experienced by the SP in this study. While, et al. discovered probiotics and other medicines alone or in combination to be commonly recommended by pharmacists and pharmacy technicians.[36] According to Leemans, there is no evidence to support the prescribing of probiotics for adults with acute diarrhea.[37] In another study in Trinidad, they used hypothetical case

presentation to the community pharmacists.[38] They found that the pharmacists prefer antimotility agents as a first choice therapy alone or with ORS for adults, followed by cotrimoxazole. Interestingly however, antibiotics (alone or in combination) were not widely recommended treatment options in this study, as they were dispensed in only around 20% of cases. This is contrast to the study by Ibrahim *et al.* that have shown that antibiotics are often widely used (44%) in the management of diarrhea.[35] Although it should be noted that antibiotic therapy is usually not required for most patients with diarrhea, because the illness is usually self-limiting.[33] For people in resource-poor countries who have diarrhea, oral rehydration salts are widely known to be a useful first line and cost effective measure to treat and/ prevent dehydration.[24,29] Only one pharmacist in our study recommended and dispensed a pack of oral rehydration salt to the SP. This is not surprising as other study has also reported similarly low rates of ORS use in the management of adult diarrhea.[35]

This study has few limitations that include small sample size and the fact that only community pharmacies in one Iraqi city were visited, thus limiting the generalizability of the results. It may be useful for future studies to have larger sample sizes and randomly select community pharmacies across the entire country. Future research may also try to assess and explain whether female pharmacists provide better quality care than male pharmacists, by using more robust methods. A likely reason why the female pharmacists in this study seemed to do better at history taking from the SP, may be due to bias by accidently introduced by using a female SP for this scenario. Especially in this country, where Islam is predominant, there are cultural or religious norms that govern interactions between men and women. These norms would very likely have come in to play, especially in this diarrhea scenario, as diarrhea is associated with some degree of embarrassment. Therefore, while the female pharmacists would easily relate with the SP (as she was a female like them), male pharmacists may not have been so comfortable with her, and would have found it difficult to appropriately question her.

The study findings suggest the need for improving community pharmacy practice standards attainable through continuing pharmacy education programs. Findings of this research also suggest the need for more in-depth researches in order to quantify the exact dispensing practice among community pharmacies.

CONCLUSIONS

Findings from this study suggest that majority of the community pharmacists asked at least four questions while taking patient history and were very likely to recommend antidiarrheal medicines like loperamide and diphenoxylate as first line treatment options. Even though less than half of them provided the SP any advice on food and water intake, and antibiotic dispensing was fairly low. It can thus be inferred that their patient history taking and health advice providing skills can still be improved upon. Consequently, we recommend the development of a minimum standard of practice as well as enhanced training (e.g. mandatory continuing education programs) on the proper management of minor ailments like diarrhea for Iraqi community pharmacists.

CONFLICT OF INTEREST

None to declare.

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