



International Journal of Obstetrics and Gynaecological Nursing

E-ISSN: 2664-2301
P-ISSN: 2664-2298
Impact Factor (RJIF): 5.59
www.gynaecologicalnursing.com
IJOGN 2025; 7(2): 165-167
Received: 05-07-2025
Accepted: 10-08-2025

Ph. Saif Aldeen Alrefaeay
Sumer Pharmacy - Sumer
Medical Complex, Salah Al-
Din, Iraq

Ridha Hasan Karam
Sumer Pharmacy - Sumer
Medical Complex, Salah Al-
Din, Iraq

Evaluation of community pharmacists' clinical practice in the management of urinary tract infections in Iraq

Ph. Saif Aldeen Alrefaeay and Ridha Hasan Karam

DOI: <https://www.doi.org/10.33545/26642298.2025.v7.i2c.227>

Abstract

Background: Urinary tract infection (UTI) is one of the most common infections encountered in community pharmacies. Pharmacists often serve as the first point of contact for women presenting with UTI symptoms, making their knowledge and practice critical for ensuring appropriate management and preventing antimicrobial resistance.

Objective: To assess the knowledge, attitudes, and practice of community pharmacists in Iraq regarding the management of uncomplicated UTI.

Methods: A cross-sectional survey was conducted among pharmacists across Iraq using an online structured questionnaire. The survey collected data on demographics, knowledge, red-flag identification, antibiotic selection, practice behaviours, and attitudes. A total of 81 pharmacists participated.

Results: Most respondents were female (59.3%), and the majority were younger than 25 years (59.3%). Nitrofurantoin was correctly selected as first-line therapy by 50.6% of pharmacists, while ciprofloxacin was the most commonly dispensed antibiotic in practice (56.8%). Knowledge of red-flag symptoms varied, with flank pain (59.3%) and persistent vomiting (37%) being most recognized. Most pharmacists routinely asked about pregnancy (86.4%), prior UTI history (91.4%), and antibiotic allergy (98.8%). A total of 81.5% supported implementing a standardized UTI management guideline for pharmacists.

Conclusion: Pharmacists in Iraq demonstrate acceptable knowledge regarding UTI management; however, gaps in antibiotic selection and red-flag recognition remain. Educational programs and national practice protocols are recommended.

Keywords: UTI, community pharmacy, pharmacist practice, Iraq, nitrofurantoin, antimicrobial stewardship

Introduction

Urinary tract infection (UTI) is one of the most common bacterial infections affecting women worldwide and represents a major driver of antibiotic use in community settings. Community pharmacists often encounter patients seeking advice and empirical treatment for urinary symptoms, making their knowledge and clinical judgement essential for ensuring proper care and preventing complications. International guidelines recommend nitrofurantoin as the first-line therapy for uncomplicated UTI; however, inappropriate antibiotic use, including fluoroquinolone overprescription, remains a global concern.

In Iraq, community pharmacists play a frontline role in primary care, yet little is known about their clinical decision-making regarding UTI management. This study aims to evaluate the knowledge, attitudes, and practice patterns of Iraqi pharmacists in the management of uncomplicated UTI.

Methods

Study design

A descriptive cross-sectional study was conducted among community and hospital pharmacists in Iraq.

Participants

Pharmacists of any gender, age, and years of experience were eligible.

Corresponding Author:
Ph. Saif Aldeen Alrefaeay
Sumer Pharmacy - Sumer
Medical Complex, Salah Al-
Din, Iraq

Data collection

A structured online questionnaire was distributed using Google Forms. The questionnaire included four domains: demographics, knowledge, practice, and attitudes.

Sample size

A total of 81 complete responses were collected.

Statistical analysis

Data were analyzed using descriptive statistics (frequencies and percentages). Chi-square testing can be added upon request for Scopus submission.

Results

A total of 81 pharmacists participated in the study. Most were female (59.3%) and younger than 25 years (59.3%). Regarding experience, 39.5% had less than one year, and 44.4% had 1-3 years of experience. The majority worked in community pharmacies (80.2%).

Knowledge

The most recognized UTI symptom was dysuria (85.2%). Flank pain (33.3%), fever (27.2%), urinary frequency (22.2%), and malodorous urine (19.8%) were less frequently selected. For red-flags, severe flank pain was selected by 59.

Antibiotic Knowledge

Nitrofurantoin was correctly identified as first-line therapy by 50.6% of pharmacists. However, ciprofloxacin was the most commonly dispensed antibiotic (56.8%).

Additionally, 91.4% correctly stated that cranberry cannot be used as monotherapy.

Practice

Most pharmacists routinely asked about pregnancy status (86.4%), prior UTI history (91.4%), and antibiotic allergy (98.8%).

In a case scenario with isolated lower abdominal pain, 66.7% asked further questions, 25.9% requested urinalysis, and only 1.2% dispensed treatment directly.

Attitudes

A total of 81.5% supported implementing a standardized UTI management guideline for pharmacists. Nearly half (45.7%) stated they need additional training.

Table 1: Demographic Characteristics of the Participating Pharmacists (n = 81)

| Variable | Category | n | % |
|---------------------|--------------------|----|------|
| Gender | Male | 33 | 40.7 |
| | Female | 48 | 59.3 |
| Age group | < 25 years | 48 | 59.3 |
| | 25-29 years | 27 | 33.3 |
| | 30-34 years | 3 | 3.7 |
| | ≥ 40 years | 2 | 2.5 |
| | < 1 year | 32 | 39.5 |
| Years of experience | 1-3 years | 36 | 44.4 |
| | 4-6 years | 5 | 6.2 |
| | ≥ 7 years | 4 | 4.9 |
| | Community pharmacy | 65 | 80.2 |
| Work setting | Hospital pharmacy | 6 | 7.4 |
| | Other | 10 | 12.4 |

Note: Percentages are rounded to one decimal place.

Discussion

This study assessed the knowledge and practice of pharmacists in Iraq regarding the management of uncomplicated UTI. Findings indicate acceptable general knowledge; however, there are significant gaps in first-line antibiotic selection, as more than half of pharmacists still dispense ciprofloxacin despite international recommendations favoring nitrofurantoin.

Red-flag recognition varied, suggesting the need for improved training in triage and referral. The high rate of correct counselling and routine questioning about pregnancy and allergy is encouraging and demonstrates good professional practice.

The strong interest in additional training and support for implementing a national protocol highlights an opportunity for improving UTI management in community pharmacy practice in Iraq.

Table 2: Knowledge of UTI among Pharmacists

| Knowledge Item | Response | n | % |
|-----------------------------------|-------------------------|----|------|
| Most recognized symptom | Dysuria (burning urine) | 69 | 85.2 |
| | Flank pain | 27 | 33.3 |
| | Fever | 22 | 27.2 |
| | Urinary frequency | 18 | 22.2 |
| | Malodorous urine | 16 | 19.8 |
| Identifying red-flag symptoms | Hematuria | 12 | 14.8 |
| | Severe flank pain | 48 | 59.3 |
| | Persistent vomiting | 30 | 37.0 |
| | Recurrent infections | 27 | 33.3 |
| First-line antibiotic (knowledge) | Fever ≥ 38 °C | 25 | 30.9 |
| | Nitrofurantoin | 41 | 50.6 |
| | Ciprofloxacin | 14 | 17.3 |
| | Amoxicillin | 7 | 8.6 |
| | Ceftriaxone | 4 | 4.9 |
| Duration of nitrofurantoin | Cranberry (incorrect) | 15 | 18.5 |
| | 5 days | 46 | 56.8 |
| | 7 days | 27 | 33.3 |
| Cranberry as monotherapy | 2-3 days | 8 | 9.9 |
| | Correct (No) | 74 | 91.4 |
| | Incorrect (Yes) | 7 | 8.6 |

Table 3: Pharmacists' Practice in Managing UTI

| Practice Behavior | Response | n | % |
|------------------------------------|--------------------|----|------|
| Asking about pregnancy | Always | 70 | 86.4 |
| | Often | 7 | 8.6 |
| | Sometimes | 3 | 3.7 |
| | Never | 1 | 1.2 |
| Asking about previous UTI | Yes | 74 | 91.4 |
| Asking about antibiotic allergy | Yes | 80 | 98.8 |
| Most commonly dispensed antibiotic | Ciprofloxacin | 46 | 56.8 |
| | Nitrofurantoin | 24 | 29.6 |
| | TMP-SMX | 5 | 6.2 |
| | Fosfomycin | 3 | 3.7 |
| | Herbal/Cranberry | 3 | 3.7 |
| Scenario: lower abdominal pain | Ask more questions | 54 | 66.7 |
| | Request urinalysis | 21 | 25.9 |
| | Refer to physician | 5 | 6.2 |
| | Dispense treatment | 1 | 1.2 |
| Providing counseling | Always | 72 | 88.9 |
| | Sometimes | 7 | 8.6 |
| | Never | 2 | 2.5 |

Table 4: Attitudes toward UTI Management

| Attitude Statement | Response | n | % |
|--|----------------|----|------|
| Ability of pharmacists to diagnose UTI | Yes | 42 | 51.9 |
| | To some extent | 37 | 45.7 |
| | No | 2 | 2.5 |
| Need for additional training | Yes | 37 | 45.7 |
| | Maybe | 34 | 42.0 |
| | No | 10 | 12.3 |
| Support for national UTI protocol | Yes | 66 | 81.5 |
| | No | 14 | 17.3 |
| | Not sure | 1 | 1.2 |

Conclusion

Pharmacists in Iraq demonstrate good engagement in managing uncomplicated UTI; however, notable gaps remain in antibiotic selection and red-flag evaluation. Developing national pharmacy protocols and providing targeted training programs are strongly recommended to support appropriate UTI management and reduce antimicrobial resistance.

Acknowledgement

Not available

Author's Contribution

Not available

Conflict of Interest

Not available

Financial Support

Not available

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How to Cite This Article

Ph. Alrefaey SA, Karam RH. Evaluation of community pharmacists' clinical practice in the management of urinary tract infections in Iraq. *International Journal of Obstetrics and Gynaecological Nursing*. 2025; 7(2): 165-167.

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