

Empirical treatment of uncomplicated urinary tract infection by community pharmacist in the Eastern province of Saudi Arabia

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ABSTRACT

Objectives: It is a well known phenomenon in the Kingdom of Saudi Arabia that prescription drugs are dispensed over the counter in the community pharmacies. The aim of this study is to document the attitude of community pharmacists to fulfill the concept of pharmaceutical care and to evaluate how they manage a case of acute uncomplicated lower urinary tract infection.

Method: Eighty-eight community pharmacists in the Eastern province of Saudi Arabia were presented with a patient claiming urinary tract infection and seeking medical treatment.

Results: Only one attendant pharmacist refused to dispense medications without prescription. Fifteen others (17%) dispensed urinary antiseptic only and 72 (82%) gave antibacterial agents. Fluoroquinolones were the most commonly dispensed (69%) as first choice and 87% as an alternative) followed by co-trimoxazole, penicillins, cephalosporins and tetracyclines. The number of drugs dispensed ranged from a single agent at 52 (59%), 2 drugs at 31 (35%) and 3 drugs at 4 (4.5%) pharmacies. The

average cost was Saudi Riyal (SR) 45.8 (\$12.2) for first choice drugs and SR 31.5 (\$ 8.4) for the alternatives.

Conclusion: The heavy dispensing of fluoroquinolones over the counter could eventually lead to increased resistance of the pathogenic bacteria to these drugs. However, despite the lack of pharmacist's adherence to the pharmaceutical law, this study does not indicate that they had abused their patients. It is rather demonstrating the urgent needs for successful implementation of the pharmaceutical law taking into consideration better integration between governmental health providers and the private retail pharmacies. In addition, it supports calls to educate pharmacists to perform basic clinical assessment in the community pharmacy, as a vital tool to effectively manage their patients' health status. The Ministry of health should credit such educational activity for the renewal of pharmacist's license in the Kingdom.

Keywords: Fluoroquinolones, pharmaceutical care, over the counter drugs.

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Health care is a multidisciplinary service in which pharmacists play a major role, such as, drug preparation, maintaining supplies, providing information and appropriate use of drugs. However, in the recent years the pharmacy profession has become under tremendous pressure from the

development of new technology in drug industry and dissemination of information in the media. In the developed countries, this has led to the birth of the new concept "pharmaceutical care" in which pharmacist's awareness of social and ethical responsibilities, with respect to drug and patients has

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increased.^{1,2} The ability of pharmacists to perform basic physical assessment in the community pharmacy was considered to be a vital tool to implement this new concept and effectively manage patients' health status.³ In the Kingdom of Saudi Arabia, community pharmacists enjoy excellent relationships and confidences of their patients⁴ that tend to seek direct medical advice from them. Although, it is against the pharmaceutical law to dispense prescription drugs over the counter (OTC) in the Kingdom of Saudi Arabia, pharmacists do not adhere to this.^{5,6} This paper is aimed to evaluate how community pharmacists manage a case of acute uncomplicated lower urinary tract infection and to document the attitude of pharmacists toward their patients to fulfill the concept of pharmaceutical care.

Methods. Eighty-eight private pharmacies in 3 major cities in the Eastern province of Saudi Arabia were included in this study. The attendant pharmacist in each pharmacy was presented with a case of a 35-year-old male patient complaining of increased frequency of micturition associated with dysuria, foul smelling and turbid urine all suggestive of uncomplicated lower urinary tract infection (UTI). The patient asked for treatment, and after receiving the first choice drugs he asked if there was a 2nd alternative to reduce cost. After listening to the pharmacist's instructions, the patient requested information regarding the possible cause and the selected drug. The audit criteria of the attitude of the pharmacist is recorded in Table 1. This verbal investigation was carried-out without the observation of the pharmacist in order to maintain normal behavior and also to prevent him from alerting other pharmacists in the community.

Results. Out of the eighty-eight pharmacies included in this study only one attendant pharmacist refused to discuss the case or dispense medications without prescription. Pharmacists in the remaining 87 pharmacies asked the patient questions regarding hematuria, renal colic and association with sexual intercourse before dispensing any drug. Fifteen (17%) pharmacists concluded that the case does not need more than coli-urinal (urinary antiseptic in combination with natural diuretic) and were reluctant to dispense antibacterial drugs without prescription or urine analysis. The pharmacists at the remaining 72 (82%) pharmacies gave antibacterial agents without prescription. The number of drugs dispensed ranged from a single agent at 52 (59%), 2 drugs at 31 (35%) and 3 drugs at 4 (4.5%) pharmacies. None of the pharmacists combined 2 antibacterial agents. One antibacterial agent and urinary antiseptic were dispensed at 31(35%) pharmacies while in 4 others an anti-spasmodic drug was also added.

Table 1 - Audit criteria for spontaneous pharmacist attitude towards patients with UTI in the Eastern province of Saudi Arabia.

<p>History taking</p> <ul style="list-style-type: none"> Hematuria, renal colic and micturition urgency Duration Previous medication Relation of dysuria with sexual activity <p>Ethics</p> <ul style="list-style-type: none"> Adherence to the pharmaceutical law n of drugs dispensed Average cost <p>Antibacterial dispensed</p> <ul style="list-style-type: none"> First choice Second choice <p>Educating patients</p> <ul style="list-style-type: none"> Uses of the dispensed drugs Reason for selection and possible cause
UTI=urinary tract infection, n=number

Table 2 - Group of antibacterial agents dispensed empirically by community pharmacist for uncomplicated UTIs.

Drug	First Choice		Second Choice	
	n	%	n	%
Fluoroquinolones	50	(69)	59	(87)
Co-trimoxazole	9	(13)	3	(4)
Penicillins	8	(11)	3	(4)
Cephalosporins	3	(4)	1	(2)
Tetracyclins	2	(3)	2	(3)
Total	72	(100)	68	(100)

n=number, UTI=urinary tract infection

Fluoroquinolones were the most commonly dispensed (69% as first choice and 87% as an alternative) followed by co-trimoxazole, penicillins, cephalosporins and tetracycline drugs (Table 2). Of the fluoroquinolones, norfloxacin and ciprofloxacin were the most dispensed as first or 2nd choice antibacterial agents (Table 3). The spread of resistance of gram negative organisms which are the main pathogens for UTI to older type of antibacterial agents, as well as the easy use of fluoroquinolones (twice daily) which contribute to better patient compliance, were the main reasons given by pharmacists to explain their selection. The average

Table 3 - Type of fluoroquinolones dispensed empirically by community pharmacist for uncomplicated urinary tract infections.

Drug	First Choice		Second Choice	
	n	%	n	%
Norfloxacin	35	(49)	34	(50)
Ciprofloxacin	12	(17)	23	(34)
Ofloxacin	2	(3)	1	(1.5)
Pefloxacin	1	(1)	1	(1.5)
Total	50	(70)	59	(87)
<i>Total n of antibiotics dispensed</i>	72		68	
n=number				

cost was SR 45.8 (\$12.2) for first choice drugs and SR 31.5 (\$ 8.4) for the alternatives. This was almost achieved by changing the brand of the selected drugs rather than major changes in generics.

Discussion. Dispensing of drugs without prescription is a well-documented phenomenon in the Kingdom of Saudi Arabia.^{4,5} More than 35% of the drugs dispensed over the counter are prescription drugs of which large proportions are antibiotics. In addition, many factors were identified to contribute to this phenomenon including lack of means to enforce implementation of pharmacy regulations, lack of professionalism, commercial pressure on community pharmacists and lack of public awareness.⁶ Eight years later, this study has shown that the attendant pharmacists in 82% of the investigated pharmacies dispensed antibacterial agents without prescription despite the improvement of professionalism and public awareness. The lack of integration between private and governmental health services is the possible driving force behind this phenomenon. In addition, the reduced cost and time saved by patients by not attending a clinic or hospital have contributed to the increased patients' satisfaction in the community pharmacist, especially in view of the high fees of private physicians. In this study, the pharmacists excluded complicated urinary tract or sexually transmitted infections and treated this patient for uncomplicated UTI. The microbiology of uncomplicated UTI is very predictable with the vast majority of cases attributed to *Escherichia coli*.^{7,8} The recommended first-line empirical therapy trimethoprim (or co-trimoxazole) in communities with resistance rates of uropathogens to trimethoprim $\leq 10\%$ -20%, otherwise fluoroquinolones should be given.⁹ Quinolones were also found to be highly active against the common

urinary pathogens in Nigerian patients.¹⁰ Furthermore, empirical treatment was reported to be the least costly strategy per episode of uncomplicated UTI.¹¹ However, in this study, fluoroquinolones were the most empirically dispensed antibacterial agent by the community pharmacists. This selection could be justified by the well-documented increased rate of bacterial resistance to co-trimoxazole (49%), ampicillin (36%), amoxicillin (36%) and tetracycline (52%) in the Eastern province of Saudi Arabia as was previously reported.¹² The risk of spread of resistance to fluoroquinolones due to their dispensing over the counter should not be undermined. Indeed, increasing rate of resistance to these valuable drugs were recently reported in the Netherlands¹³ and Spain.¹⁴ On the other hand, cross-resistance among different type of fluoroquinolones is well documented^{15,16} Furthermore, it was reported that exposure to increasing concentrations of norfloxacin could induce the development of resistance to various antimicrobial agents including other fluoroquinolones and aminoglycosides.¹⁷ One advantage the community pharmacist has, while selecting drugs, is the ability to consider patients' social economic background. In this study pharmacists reduced the average cost by nearly 31% just by changing the brand rather than generic names of their preferred choice. The average number of drugs dispensed by community pharmacists was a single agent at 52 (59%), 2 drugs at 31 (35%) indicating that they did not abuse patients. Indeed, this number remained less than the average number of drugs (2.1 ± 0.95) prescribed for patients by ambulatory care physicians in the Kingdom of Saudi Arabia.¹⁸ Although, the nationality, level of education and experience of the pharmacists could have influenced the choice of antibiotics, inquiries of such information at the time of the study would have alerted the pharmacists and biased their choice.

In conclusion, the heavy dispensing of fluoroquinolones over the counter could eventually lead to increased resistance of the pathogenic bacteria to these valuable drugs. Furthermore, these results demonstrated the urgent needs for successful implementation of the pharmaceutical law taking into consideration integration between governmental health providers and the private retail pharmacies as a possible approach of enforcement. However, despite the lack of pharmacists adherence to the pharmaceutical law, the type and number of drugs dispensed as well as prices do not indicate abuse of the patients. Therefore, for the time being, one supports the calls to educate pharmacist to perform basic physical and clinical assessment in the community pharmacy as a vital tool to effectively manage their patients' health status.³ The Ministry of Health should credit such educational activity for the renewal of pharmacist's license in the Kingdom of Saudi Arabia.

References

1. Van Veldhuizen-Scott MK, Widmer LB, Stacey SA, Popovich NG. Developing and implementing a pharmaceutical care model in an ambulatory care setting for patients with diabetes. *Diabetes Educ* 1995; 21: 117-123.
2. Foppe Van Mil JW, Tromp DF, McElnay JC, de Jong-van den Berg LT, Vos R. Development of pharmaceutical care in the Netherlands: Pharmacy's contemporary focus on the patient. *J Am Pharm Assoc* 1999; 39: 395-401.
3. Pauley T, Marcrom R, Randolph R. Physical assessment in the community pharmacy. *Am Pharm* 1995; 35: 40-49.
4. Alkhwajah AM, Eferakeya AE. The role of Pharmacists in patients' education on medication. *Public Health* 1992; 106: 231-237.
5. Al-Freihi H, Ballal SG, Jaccarini A, Young MS, Abdul-Cader Z, El-Mouzan M. Potential for drug misuse in the eastern of Saudi Arabia. *Annals of Saudi Medicine* 1987; 7: 301-305.
6. Bawazir SA. Prescribing pattern at community pharmacist in Saudi Arabia. *International Pharmacy Journal* 1992; 6: 222-223.
7. Brown PD. Antibiotic selection for Urinary tract infection: New microbiologic considerations. *Current Infectious Disease Report* 1999; 1: 384-388.
8. Olafsson M, Kristinsson KG, Sigurdsson JA. Urinary tract infections, antibiotic resistance and sale of antimicrobial drugs an observational study of uncomplicated urinary tract infection in Icelandic women. *Scand J Prim Health Care* 2000; 18: 35-38.
9. Naber KG. Treatment options for acute uncomplicated urinary cystitis in adults. *J Antimicrob Chemother* 2000; 46 Suppl 1: 23-27.
10. Kadiri S, Ajayi SO, Toki RA. Quinolones for short-term treatment of uncomplicated urinary tract infection. *East Afr Med J* 1999; 76: 587-589.
11. Fenwick EA, Briggs AH, Hawke CI. Management of urinary tract infection in general practice: a cost-effectiveness analysis. *Br J Gen Pract* 2000; 50: 635-639.
12. Al-Ghamdi MS, El-Morsy F, Al-Mustafa ZH. Patterns of resistance to antibiotics at King Fahad Hospital of the University. *Journal of Family and Community Medicine* 1999; 6: 43-49.
13. Goettsch W, vanPelt W, Nagelkerke N, Hendrix MG, Buiting AG, Petit PL, et al. Increasing resistance to fluoroquinolones in *Escherichia coli* from urinary tract infections in the Netherlands. *J Antimicrob Chemother* 2000; 46: 223-228.
14. Serrano FJ, Munoz RM, Vidal SS, Moran FG, Garcia CB, Aznar AB. Epidemiological aspects of ciprofloxacin-resistance *Escherichia coli* in a general hospital. *Rev Esp Quimioter* 2000; 13: 44-50.
15. Farias WV, Sader HS, Leme IL, Pignatari AC. Sensitivity pattern of 117 clinical isolates of *Staphylococcus aureus* from 12 hospitals. *Rev Assoc Med Bras* 1997; 43: 199-204.
16. Hoogkamp-Korstanje JA. In-vitro activities of ciprofloxacin, levofloxacin, lomefloxacin, ofloxacin, pefloxacin, sparfloxacin and trovafloxacin against gram-positive and gram-negative pathogens from respiratory tract infections. *J Antimicrob Chemother* 1997; 40: 427-431.
17. Deshmukh SR, Nagoba BS, Wadher BJ, Tumane P. Norfloxacin induced resistance to fluoroquinolones & structurally unrelated antimicrobial agents in coagulase negative staphylococci. *Indian J Med Res* 1997; 106: 461-464.
18. Bawazir SA. Prescribing pattern of ambulatory care physicians in Saudi Arabia. *Annals of Saudi Medicine* 1993; 13: 172-177.