

ORIGINAL ARTICLE

Attitudes and perceptions of community pharmacists to antibiotic dispensing and microbial resistance. A study in Aseer Region, Kingdom of Saudi Arabia

*Khaled M. Alakhali, PhD

ABSTRACT:

Purpose: The aim of this study was to study and explore the attitudes, perceptions, and dispensing habits of community pharmacist about antibiotic usage and microbial resistance. **Material/Methods:** It is a descriptive study conducted during April 2015 - July 2015 in community pharmacies located in multiple places of Southern region of Saudi Arabia. 120 pharmacists were selected randomly and were invited to participate in the study by structured interview answering the question in the questionnaire. **Results:** The results of the present study included from both the chain pharmacies (n=84) and single pharmacies (n=36). Most of them had a Bachelor of Pharmacy (80.8%) and few had Pharm.D. (19.2%) degree. Attitudes related to the problem of resistance were attributed external responsibility, to patients, to physicians, to other pharmacies. Some attitudes were identified that could lead to antibiotic dispensing without a prescription. These were commercial interest and pressure from the patient. **Conclusions:** To conclude the present study, the community pharmacist had positive attitude towards improving antibiotic use and bacterial resistance. However, we are of opinion that strong regulation coupled with education intervention both to the pharmacist and public would be the way forward to tackle this issue of fight against antimicrobial resistance

Keywords: community pharmacists, antibiotic dispensing, microbial resistance

INTRODUCTION

Indiscriminate use of antibiotics increases the risk of bacterial drug resistance and increase adverse drug reactions and cost load on national health system.^{1,2} Inappropriate use of antibiotics has been attributed both to health care professionals and patients.

The major modifiable factors identified to contribute to inappropriate use of antibiotics are excessive prescribing by physicians, dispensing of antibiotics by community pharmacists as self-medication and the use of left over antibiotics from previous treatments, resulting either from patients' non-compliance or from a larger number of tablets than needed being

*Department of Clinical Pharmacy, College of Pharmacy, King Khalid University, Abha, Kingdom of Saudi Arabia

Correspondence should be addressed to:

Dr. Khaled Mohammad Alakhali
 Department of Clinical Pharmacy
 College of Pharmacy
 King Khalid University
 Abha, Kingdom of Saudi Arabia
 Tel: 00966558649740
 Email: khaled_akhali@yahoo.com

dispensed.^{3,4} Drugs such as antibiotics require prescriptions in many countries, including Saudi Arabia. However; a study in the Eastern province of Saudi Arabia indicated a high rate of antibiotic sales without a prescription which reveals lack of non-adherence to the pharmaceutical law by pharmacists.⁵ Thus any campaign directed towards combating self-medication, improving antibiotic usage, should include community pharmacist who could play a critical role in combating antibiotic resistance as front-line practitioners who can educate patients.⁶ In this context this study was designed to determine community pharmacists' knowledge of and attitudes to microbial resistances and antibiotic use, so that the important educational interventions can be made to address this issue.

MATERIALS & METHODS

Study area and population: This was a descriptive study conducted during April 2015 - July 2015, at community pharmacies located at Southern region of Saudi Arabia. Total of 120 communities were selected randomly. **Questionnaire:** The separate patient data collection form was prepared, which contains basic demographic details such as age, gender, educational qualification and others. Furthermore, the structured questionnaire to evaluate the attitude and practice related to antibiotic usage was prepared by a group of experts and was validated through professional and nonprofessional experts. The interview was conducted by research assistants, and all the study participants were informed about the study procedure and their oral consent were taken. The data were spread onto Microsoft excel sheet and descriptive analysis were done to derive the results. **Analysis:** Microsoft Office Excel 2007 was used for the performing descriptive analysis.

RESULTS:

Antibiotics without prescription represented 15.8%. Male's patients represented (80.8%), while females represented (19.1%) of those who approach for medicines for infectious diseases. The majority (56.6%) of the patients were below 18 years of age and 43.3% were above 18 years are as described in Table 1.

Antibiotics dispensing process, knowledge and perception of antibiotics use and microbial resistance. The pharmacists mentioned that 85.5 % of patients visited them to obtain antibiotics for infectious diseases; most of those patients(96.6%) were educated. Few (15.8%) of the pharmacists said that they prescribed antibiotics without prescription while the majority (84.1%) of them denied dispensing antibiotics without prescription. The most common situations giving rise to this demand for antibiotics are described in the Figure 1.

Most pharmacists (70.8%) were of opinion that they can dispense the antibiotics because they are aware of the indications for which antibiotics are used. On the other hand, 61.6% of the pharmacists believed that self-medication with antibiotics for self-health care is an accepted practice, while about half of the them (42.5%) were of opinion that antibiotics prescribed or dispensed by them to patients will not be used properly. Less than half of the patients (44.2%) of patients complained about side effects of antibiotics prescribed by pharmacists. The main categories of the antibiotics dispensed are as shown in Figure 2.

Although 80.8% of the pharmacists checked whether the patients used any other drug before dispensing antibiotics and 72.5% of them identified drug interaction as another major cause which may lead to development of bacterial resistance. However, 71.6% of the pharmacists gave more than one reason for not checking drug-drug interactions and 12.5% said that patients expressed lack of time and 15.8% indicated that management was not supportive enough, as 70% of them work in chain pharmacies. Factors that lead patients to demand antibiotics without a prescription are indicated in Figure 3. Regarding the cost, 53.3% of pharmacists preferred to dispense antibiotics with moderate price and 29.2% with high price and 17.5% with low price.

Interestingly, 31% of pharmacists were under the impression that if they don't dispense antibiotics some other pharmacies will sell antibiotics without a prescription, which is an unhealthy competitive practice related to commercial benefits. Also, 36% of the pharmacists believe that these antibiotics are not harmful and 29% of them citing the reason that there is no control by Saudi FDA and 4% ascribed that they have the authority to do so.

Table 1. Pharmacist Independent Prescribing views and characteristics of prescribing pharmacist (N=120)

Question	Response	% (n)
Did you dispense antibiotics without prescription?	Yes	15.8 (19)
	No	84.1 (101)
How often do you dispense antibiotics without prescription?	Always	3.3 (4)
	Sometimes	38.3 (46)
	Never	58.3 (70)
Do patients visit you for medicines for infectious diseases?	Yes	85.8(103)
	No	14.1 (17)
Do you think the antibiotics' dispensing by you to patients will be used properly?	Yes	57.5 (69)
	No	42.5 (51)
Did the patients complain about side effects of antibiotics dispensing by you any time?	Yes	44.2 (53)
	No	55.8 (67)
Did you check with patient, whether he / she is taking any other drugs, when you dispensing antibiotics?	Yes	80.8 (97)
	No	19.1 (23)
Did you check drug – drug interactions with the dispensing drug? <u>If NO Give reason</u>	Yes	72.5 (87)
	No	27.5 (33)
	Reasons	
	Busy	0
	Recourses not available	0
	Management Not Supportive	15.8 (19)
	Patients has No time	12.5 (15)
More than one reasons	71.6 (86)	
What is the background of the patient? If educated give the level of education	Educated	96.6 (116)
	Uneducated	3.3 (4)
What do you think about self-medication with antibiotics for self-health care?	Accepted Practice	61.6 (74)
	Not Accepted Practice	29.1 (35)
	Good Practice	9.1 (11)
Do you think you can treat common infectious diseases with antibiotics successfully?	I Can't	5 (6)
	Not Sure	45 (54)
	Yes I can	50 (60)
Indicate the gender of the patients who commonly approach for medicines for infectious diseases	Male	80.8 (97)
	Female	19.1 (23)
	Above 18 years	43.3(52)
	Below 18 years	56.6 (68)
Main Practice setting	Chain Pharmacy	70 (84)
	Single Pharmacy	30 (36)
	Hospital Pharmacy	0
Qualification of Pharmacist	Pharm. D	19.1 (23)
	Bachelor	80.8 (97)
	Master	0
	PhD	0

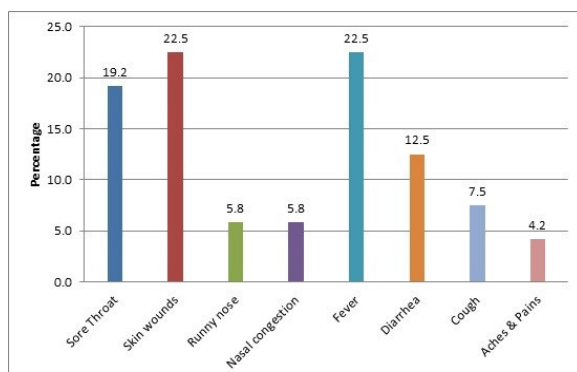


Figure 1. Most common situations giving rise to demand for antibiotics

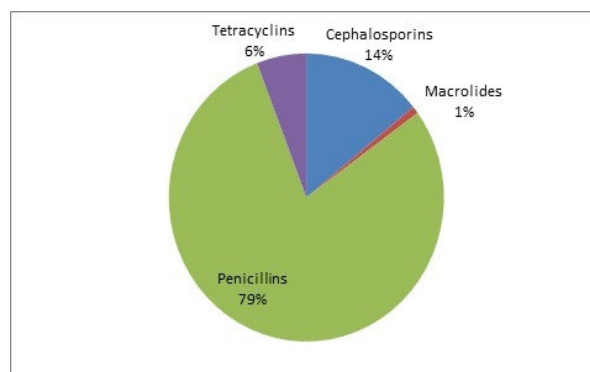


Figure 2. Main categories of antibiotics dispensed by pharmacists

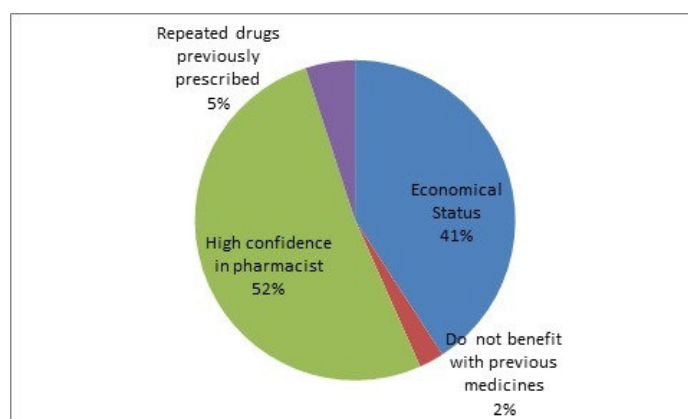


Figure 3. Factors that lead patient to demand for antibiotics without a prescription

DISCUSSION

Our study aimed at exploring community pharmacists' knowledge of and perceptions about antibiotics use and microbial resistance. Although most of the pharmacists had Bachelor of Pharmacy (80.8%) and few had Pharm.D (19.2%) degree they responded to the questionnaire quite rationally from a biomedical point of view which is contrary to another study where drug sellers lack higher education and formal pharmacy training.⁷ Despite that the patients who approach pharmacies for antibiotics in our study were educated, but they had inappropriate knowledge regarding antibiotics' effectiveness. Also, the pharmacists were of the opinion that most patients believed that antibiotics had side effects and often they approached them with these complaints which can prevent them from self-medication and encouraged them to consult the physician. The majority of the pharmacists in this study reported that they don't dispense antibiotics

without prescription in this region, which was in contrast to a previous study which confirmed that pharmacists are still violating the law which has led to a profound malpractice in retail pharmacies around the Saudi Arabia.⁸ However; pharmacists were of opinion that they are aware of what can be treated with antibiotics and which cannot. What we find is probably an example of "practical knowledge", or what has been described by Schön 1983 as knowing-in-action.⁹ Most common situations giving rise to demand for antibiotics by patients were skin wounds and fever. This reflects that patients were of view that antibiotics can be used effectively to cure skin injuries by pouring the powders onto the wounds which is not in agreement with another study.¹⁰ Fever might be caused by bacterial or viral infections, thus pharmacists and practitioners need to avoid unnecessary prescriptions such as recommending antibiotics for patients with fever and cold which are generally caused by viral infections.¹¹ Most of the pharmacists indicated self-

medication with antibiotics for self-health care is an accepted practice in our study. This is supported by an earlier study which revealed a considerable rate of self-medication in the Saudi Population,¹² and also they were of opinion that antibiotics prescribed or dispensed by them to patients will not be used properly. Confirming that unnecessary and irrational self-medication with antibiotics is becoming common in this southern region of Saudi Arabia. This may indicate that public health care system; including community pharmacies are failing their task in enhancing rational use of medicines.¹³ In terms of drug use, penicillin compounds were the mostly type of medication used as was disclosed by respondents and the results are in agreement with a previous study¹⁴ and this is followed by cephalosporins. Possibly; the use of these antibiotics for the disclosed ailments would give benefit to the user, however; if used indiscriminately, resistance will inevitably occur in the future, therefore, it will be crucial to ensure that proper surveillance of antibiotic use is in place and that the data acquired from such surveillance are used to help establish appropriate guidelines and policies for the use of antibiotics.¹⁵ The majority of (72.5%) of respondents identified drug interaction as another major cause which may lead to serious problems including the development of bacterial resistance and that education prepared them to check drug-drug interaction.¹⁶ However, constraints described in this study limited them to perform their professional obligation. This outcome is quite different compared with another study where the pharmacists usually do not verify this information.¹⁷ Factors identified in our study as reported by respondents that contribute to inappropriate prescribing & dispensing included patient demand and satisfaction, economical status, and confidence in pharmacist, these results are in agreement with previous studies.¹⁸⁻²⁰ In developing countries, like Saudi Arabia where consumers do practice self-mediation, the role of community pharmacist becomes influential in deciding the purchase or selection of generic or branded medicines. In this issue our study revealed that most of the pharmacists prefer to dispense generics antibiotics with moderate price rather than expensive branded one which is a good move towards promoting the generic medicines, however, we could not ascertain what is said is practiced or not because community pharmacist in chain pharmacies are normally influenced by marketing of branded manufacturers and the profit margin associated with selling of branded medicine which may prompt them to dispense antibiotics without prescription.²¹

CONCLUSION

Although the community pharmacists were aware of their professional obligation, the indiscriminate use of antibiotics is evident. It might be due to lack of rigorous medication safety programs or lack of national data on treatment of infection at a community level which may directly contribute to the development of antimicrobial resistance. In this context efforts are required to reduce the rate at which antibiotics are dispensed without a prescription and improve the quality of antibiotic-dispensing practices in community pharmacies. Hence, following national antibiotic policy and guidelines along with long-term surveillance programs are needed to improvise the appropriate antibiotic usage in community pharmacies.

REFERENCES

1. Yuksel N, Eberhart G, Bungard TJ. Prescribing by pharmacists in Alberta. *Am J Health-Syst Pharm* 2008; 65(22): 2165-32
2. Shehadeh M, Suaifan G, Darwish RM, Wazaify M, Zaru L, Alja'fari S. Knowledge, attitudes and behavior regarding antibiotics use and misuse among adults in the community of Jordan. A pilot study. *Saudi Pharm J.*2012; 20 (2):125-33.
3. Roque F, Soares S, Breitenfeld L, López-Durán A, Figueiras A, HerdeiroMT. Attitudes of community pharmacists to antibiotic dispensing and microbial resistance: a qualitative study in Portugal. *Int J Clin Pharm.*2013;35(3):417-24.
4. Roque F, Soares S, Breitenfeld L, Gonzalez-Gonzalez C, Figueiras A, HerdeiroMT. Portuguese community pharmacists' attitudes to and knowledge of antibiotic misuse: questionnaire development and reliability. *PLoS One.*2014 ; 9(3):e90470.www.plosone.org.
5. Al-Ghamdi MS. Empirical treatment of uncomplicated urinary tract infection by community pharmacist in the Eastern province of Saudi Arabia. *Saudi Med J.*2001; 22 (12):1105-8.
6. McCoy D, Toussaint K, Gallagher JC. The Pharmacist's Role in Preventing Antibiotic Resistance. *US Pharm.* 2011;36(7):42-49
7. Viberg N, Kalala W, Mujinja P, Tomson G, Lundborg CS. "Practical knowledge" and perceptions of antibiotics and antibiotic resistance among drug sellers in Tanzanian private drugstores. *BMC Infect*

- Dis.2010;10:270. doi:10.1186/1471-2334-10-270.
8. Al-Mohamadi A, Badr A, Bin Mahfouz L, Samargandi D, Al Ahdal A. Dispensing medications without prescription at Saudi community pharmacy: Extent and perception. *Saudi Pharm J*.2013;21(1):13-8.
 9. Schön D. *The Reflective Practitioner - How professionals think in action*. London: Maurice Temple Smith Ltd (1983).
 10. Widayati A, Suryawati S, de Crespigny C, Hiller JE. Knowledge and beliefs about antibiotics among people in Yogyakarta City Indonesia: a cross sectional population-based survey. *Antimicrob Resist Infect Control*.2012;1(1):38
 11. Jha DN. Stop prescribing antibiotics for fever and cold, Indian Medical Association will tell doctors. *The Times of India*.2014 Sep 27. Retrieved from <http://timesofindia.indiatimes.com/>
 12. Alghanim SA. Self-medication practice among patients in a public health care system. *East Mediterr Health J*.2011;17(5):409-16.
 13. Väänänen MH, Pietilä K, Airaksinen M. Self-medication with antibiotics—does it really happen in Europe? *Health Policy*.2006; 77(2):166-71.
 14. Emeka PM, Al-Omar M, Khan TM. Public attitude and justification to purchase antibiotics in the Eastern region Al Ahsa of Saudi Arabia. *Saudi Pharm J*.2014; 22 (6): 550-4.
 15. Moosdeen F. The evolution of resistance to cephalosporins. *ClinInfectDisea*. 1997; 24:487-93.
 16. Al Akshar SA, Shamssain M, Metwaly Z. Pharmacists' perceptions of community pharmacy practice in UAE: An Overview. *IOSR Journal OfPharmacy*.2014; 4 (6): 47-56.
 17. Parmar S. Community Pharmacy Practice in the United States and Kenya: Comparison. *Diabetes in Control.com*. 2008:408. URL: <http://www.diabetesincontrol.com/articles/54-feature/5614->. Posted 18 March 2008. (Accessed 5 January 2015).
 18. Lam TP, Lam KF. What are the non-biomedical reasons which make family doctor over-prescribe antibiotics for upper respiratory tract infection in a mixed private/public Asian setting? *J Clin Pharm Ther*. 2003; 28(3):197-201.
 19. Ilić K, Jakovljević E, Skodrić-Trifunović V. Social-economic factors and irrational antibiotic use as reasons for antibiotic resistance of bacteria causing common childhood infections in primary healthcare. *Eur J Pediatr*. 2012; 171(5):767-77.
 20. Albadr Y, Khan TM. Factors influencing community pharmacist decision to dispense generic or branded medicines; Eastern Province, Alahsa, Saudi Arabia. *Saudi Pharm J*.2014; <http://dx.doi.org/10.1016/j.jsps.2014.07.002>
 21. Al-Arifi MN. Patients' perception, views and satisfaction with pharmacists' role as health care provider in community pharmacy setting at Riyadh, Saudi Arabia. *Saudi Pharm J*.2012; 20(4):323-30.