

## Viewpoints and perception of adverse drug reactions and antibiotics resistance among HCPs regarding antibiotics' self-medication

### Abstract

#### Objective:

The study aimed to evaluate the viewpoints and perception about adverse drug reactions and antibiotics resistance among HCPs about self-medication of antibiotics.

#### Methods:

A cross-sectional study was done using a validated research tool to obtain the required data. Data was obtained using different questions regarding viewpoints and perception of adverse drug reactions and antibiotics resistance from HCPs about antibiotics' self-medication. Descriptive and inferential statistics were applied using the Statistical Package for Social Sciences (SPSS) version 24.0. A  $p$ -value  $< 0.05$  was considered statistically significant.

#### Results:

Different demographic characteristics were studied from the selected cohort of the HCPs. Around 153 (52.9%) of the studied HCPs were the females and 136 (47.1%) were males. The studied HCPs were of different professions, whereby 53 (18.3 %) from medicine, 103 (35.6%) from pharmacy, 13 (4.45%) from dentistry, 98 (33.9%) from nursing, and 22 (7.6%) from others allied professions.

#### Conclusion:

From the obtained results, it was concluded that all of the studied HCPs had varied viewpoints and different levels of perception about adverse drug reactions and antibiotics resistance. Still there is a greater need to strictly adhere with and follow the recommended and concerned guidelines regarding antibiotics usage to avoid any unwanted side effects, adverse drug reactions and antibiotics resistance.

**Keywords:** self-medication, resistance, antibiotics, perception, HCPs,

## Original Research Article

### Introduction

Self-medication is defined as the use of medical products by a user to self-treat well-known illnesses or symptoms, or the recurrent or sustained use of a medication normally prescribed by a physician for chronic or returning diseases without a physician prescription [1]. The major issue with self-medication is the lack of clinical assessment of the disorders by an experienced medical professional, which could result in unnoticed diagnosis and hinder suitable treatments [2,3]. Self-medication is a serious global health issue.

In literature, various studies reported that healthcare practitioners (HCPs) reported that their awareness regarding antibiotic use was not appropriate [4,5]. Another study found that more than 73% of pharmacists self-medicate using antibiotics [6]. However, awareness regarding antibiotics seems to be inconsistent among HCPs. Studies also found that HCPs demonstrated good knowledge regarding antibiotic use, however, there was also a gap between attitude and practice [6,7]. HCPs differ from the general population because of their awareness regarding disease and drugs. In developing countries such as Ethiopia and Nigeria, 68% and 52% of HCPs reportedly practice self-medication, respectively [8,9].

Limited studies are evident regarding the evaluation of knowledge, attitude, perceptions and practices of antibiotics' self-medication among HCPs. Appropriate knowledge and awareness about antibiotics' resistance among HCPs is crucial as they prescribe antibiotics to treat themselves and their patients. In addition, many times it happens where HCPs do use antibiotics for themselves to treat various infections which may not be an appropriate approach. Identifying factors that influence the self-usage practice of antibiotics among HCPs could help to overcome and antibiotics resistance. This study evaluated the viewpoints and perception about adverse drug reactions and antibiotics resistance among HCPs about self-medication of antibiotics.

### Material and Methods

The study was conducted among HCPs using a research tool, and data was collected from those who met the inclusion criteria. The study subjects were screened for inclusion and exclusion criteria. For inclusion criteria, participants above 18 years, non-pregnant women and those who gave consent were included in the study. For exclusion criteria, those who did not meet the inclusion criteria were excluded from the study. A data collection form consisting of 10 questions was specially designed to collect the required information. There were different demographic characteristics observed among the study participant. A pilot study was also conducted to test the relevancy and appropriateness of the data collection form.

All statistical analyses were performed using Statistical Package for Social Sciences (SPSS) statistical software version 24. Descriptive statistics were used to describe demographic characteristics of the studied HCPs. Percentages and frequencies were used for categorical variables, while means and standard deviation were calculated for the continuous variables. Normality distribution was ascertained prior to each analysis and appropriate parametric or non-parametric tests were chosen accordingly.

Results and Discussion

From the obtained results, the females were 153 (52.9%) and males were 136 (47.1%) in the studied population. All of the studied HCPs were from different age groups, i.e. 20-35 years were 165 (57.1%), 36-45 years were 88 (30.4%) and >45 years were 36 (12.5%). Professional degrees of the HCPs included, medicine 53 (18.3%), pharmacy 103 (35.6%), dentistry 13 (4.5%), nursing 98 (33.9%), and others allied HCPs 22 (7.6%). They had different levels of experiences i.e.  $\leq 10$  years 169 (58.5), 11-20 years 96 (33.2%) and >20 years 24 (8.3%). A detailed description of the demographic characteristics is provided in figure 1.

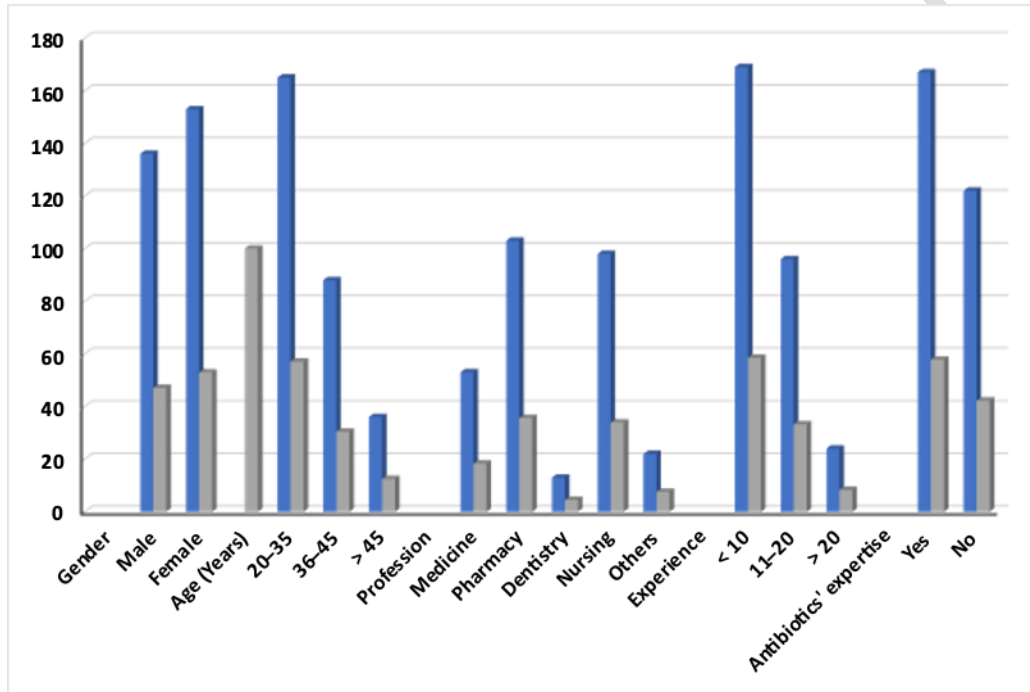


Figure 1: Demographics of the study participants

Table 1 shows Cronbach alpha value, which was obtained to ascertain the reliability of the research tool used among the study participants. The internal consistency was measured by Cronbach's alpha and the value was 0.789.

Table1: Reliability and validity of the research tool

Item	Value
Cronbach alpha	0.789

## Original Research Article

Table 2 shows the awareness of antibiotics adverse drug reaction questions and their obtained results, which were asked from the HCPs to know their viewpoint about antibiotics' adverse drug reaction during self-medication. Data shows their responses about questions regarding awareness and perception of antibiotics' adverse drug reactions among HCPs about self-medication in different diseases.

**Table 2: Awareness of antibiotics' adverse drug reactions**

<b>Qs</b>	<b>N</b>	<b>%</b>	<b>p-Value</b>
<b>Nausea</b>			
Yes	137	47.4	0.364
No	152	52.6	
<b>Vomiting</b>			
Yes	120	41.5	0.651
No	169	58.5	
<b>Diarrhea</b>			
Yes	189	65.4	0.004*
No	100	34.6	
<b>Rashes</b>			
Yes	152	52.6	0.572
No	137	47.4	
<b>Other problems</b>			
Yes	170	58.8	0.147
No	119	41.2	

A statistically non-significant association ( $p=0.364$ ) was observed in the responses of the question regarding nausea as adverse drug reaction of antibiotics when used as self-medication among HCPs. Around 137 (47.4%) of the studied HCPs agreed that they perceive that nausea is a common adverse drug reaction of antibiotics when used as self-medication among HCPs. And around 120 (41.5%) of the HCPs perceived that vomiting is the major adverse reaction of antibiotics when used as self-medication among HCPs.

Around 153 (52.6%) of the HCPs reported that they perceive rashes as a major adverse drug reaction of antibiotics in self-medication and around 137 (47.4%) of them reported that they don't perceive rashes as a major adverse drug reaction of antibiotics in self-medication. There was a statistically non-significant difference ( $p=0.147$ ) observed between both of the group among HCPs.

## Original Research Article

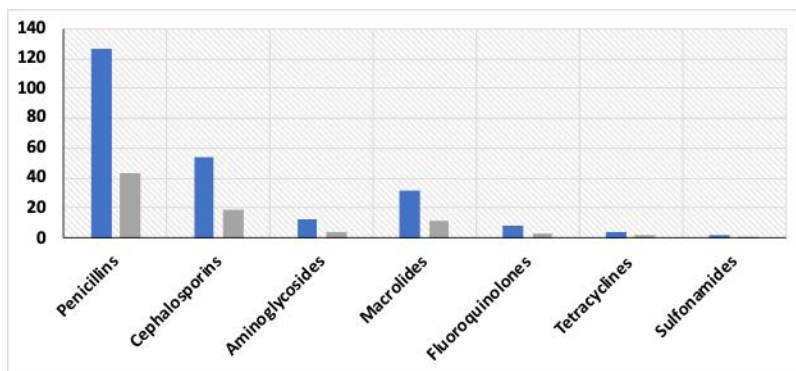


Figure 2 presents viewpoints of the HCPs towards adverse drug reactions of the various classes/groups of the antibiotics. According to the obtained results, around 126 (43.6%) of HCPs believed that penicillins have higher ADRs as compared to the cephalosporins, which 54 (18.7%) of the HCPs believed having ADRs. In addition, around 12 (4.2%) of the studied HCPs also believed that aminoglycosides have ADRs.

In table 2, according to the current study findings regarding perception of antibiotics resistance, statistically non-significant difference ( $p=0.574$ ) was observed between the responses to the questions regarding usage of antibiotics when they are not necessary among the studied cohort of the HCPs.

**Table 3: Perception of antibiotics' resistance**

Qs	N	%	<i>p</i> -Value
<b>Using antibiotics when they are not necessary</b>			
Yes	214	74.0	0.574
No	75	26.0	
<b>Not completing the full course of antibiotics</b>			
Yes	246	85.1	0.612
No	43	14.9	
<b>Using antibiotics without a physician's prescription</b>			
Yes	144	49.8	0.002*
No	145	50.2	
<b>Taking antibiotics before a meal</b>			
Yes	10	3.5	0.788
No	279	96.5	
<b>Using antibiotics for cough &amp; flu</b>			
Yes	63	21.8	0.014*
No	226	78.2	
<b>Taking antibiotics with other drugs</b>			
Yes	30	10.4	0.376
No	259	89.6	

## Original Research Article

---

### Using the same antibiotics of different brands

Yes	34	11.8	0.218
No	255	88.2	

---

The current study findings also reported that statistically significant difference was observed in question of using antibiotics for cough & flu. Around 63 (21.8%) of the studied HCPs agreed that they perceive that these antibiotics can't cause resistance when they are taken in cough and flu. And around 226 (78.2%) of the HCPs perceived that these antibiotics can't cause resistance when they are taken in cough and flu.

It is of greatest significance to know the exact level of awareness and perception of HCPs about antibiotics' adverse drug reactions and their resistance when they are used as self-medication to treat their ailments. However, the obtained results showed that there is also a need to update the current knowledge of HCPs to better understand antibiotics' adverse drug reactions and their resistance when they are self-used among HCPs. Antibiotics' improper usage pattern or their use without prescriptions from a registered HCP could lead to various side effects and a greater level of resistance among the population. Advanced level of awareness about antibiotics usage and perceptions about their side effects and drug interactions could further improve their efficacy and efficiency. In total, appropriate knowledge and precise usage pattern of antibiotics are essential in order to combat numerous infectious diseases. This could further help in improving individuals' overall health-related quality of life [10-14].

The study also revealed that different types of the studied antibiotics were the among the commonly used medicines among HCPs. However, our study finding was opposite to few other studies that reported a higher rate of antibiotics and analgesics usage among their studied population [15]. The reason could be that analgesics for self-medication might be due to their over the counter and frequent availability but it should not be with antibiotics. As antibiotics are not frequently available at pharmacies without prescriptions so their frequent usage chances are less. On the other hand, although all of the antibiotics are susceptible for misuse and resistance but yet they are frequently used in several societies which should be avoided in order to get maximum benefits out of them [16,17].

### Conclusion

This study concluded that all of the studied HCPs had varied viewpoints and different levels of perception about adverse drug reactions and antibiotics resistance. Still there is a greater need to strictly adhere with and follow the recommended and concerned guidelines regarding antibiotics usage to avoid any unwanted side effects, adverse drug reactions and antibiotics resistance.

### Acknowledgment

The publication was supported by the Deanship of Scientific Research at Prince Sattam bin Abdulaziz University, Alkharj, Saudi Arabia.

### References

1. Hamel, M.J.; Odhacha, A.; Roberts, J.M.; Deming, M.S. Malaria control in Bungoma District, Kenya: A survey of home treatment of children with fever, bednet use and attendance at antenatal clinics. *Bull. World Health Organ.* **2001**, *79*, 1014–1023.
2. World Health Organization. Guidelines for the Regulatory Assessment of Medicinal Products for Use in Self-Medication. 2000. Available online: <https://apps.who.int/medicinedocs/pdf/s2218e/s2218e.pdf> (accessed on 20 February 2020).
3. Contopoulos-Ioannidis, D.G.; Koliofoti, I.D.; Koutroumpa, I.C.; Giannakakis, I.A.; Ioannidis, J.P. Pathways for inappropriate dispensing of antibiotics for rhinosinusitis: A randomized trial. *Clin. Infect. Dis.* **2001**, *33*, 76–82.
4. Abbo, L.; Smith, L.; Pereyra, M.; Wyckoff, M.; Hooton, T.M. Nurse Practitioners' Attitudes, Perceptions, and Knowledge About Antimicrobial Stewardship. *J. Nurse Pract.* **2012**, *8*, 370–376.
5. Salsgiver, E.; Bernstein, D.; Simon, M.S.; Eiras, D.P.; Greendyke, W.; Kubin, C.J.; Mehta, M.; Nelson, B.; Loo, A.; Ramos, L.G.; et al. Knowledge, Attitudes, and Practices Regarding Antimicrobial Use and Stewardship Among Prescribers at Acute-Care Hospitals. *Infect. Control Hosp. Epidemiol.* **2018**, *39*, 316–322.
6. Belkina, T.; Al Warafi, A.; Hussein Eltom, E.; Tadjieva, N.; Kubena, A.; Vlcek, J. Antibiotic use and knowledge in the community of Yemen, Saudi Arabia, and Uzbekistan. *J. Infect. Dev. Ctries.* **2014**, *8*, 424–429.
7. Asante, K.P.; Boamah, E.A.; Abdulai, M.A.; Buabeng, K.O.; Mahama, E.; Dzabeng, F.; Gavor, E.; Annan, E.A.; Owusu-Agyei, S.; Gyansa-Lutterodt, M.; et al. Knowledge of antibiotic resistance and antibiotic prescription practices among prescribers in the Brong Ahafo Region of Ghana; a cross-sectional study. *BMC Health Serv. Res.* **2017**, *17*, 422.
8. Sarwar, M.R.; Saqib, A.; Iftikhar, S.; Sadiq, T. Knowledge of community pharmacists about antibiotics, and their perceptions and practices regarding antimicrobial stewardship: A cross-sectional study in Punjab, Pakistan. *Infect. Drug Resist.* **2018**, *11*, 133–145.
9. Sado, E.; Kassahun, E.; Bayisa, G.; Gebre, M.; Tadesse, A.; Mosisa, B. Epidemiology of self-medication with modern medicines among health care professionals in Nekemte town, western Ethiopia. *BMC Res. Notes* **2017**, *10*, 533.
10. Babatunde, O.A.; Fadare, J.O.; Ojo, O.J.; Durowade, K.A.; Atoyebi, O.A.; Ajayi, P.O.; Olaniyan, T. Self-medication among health workers in a tertiary institution in South-West Nigeria. *Pan. Afr. Med. J.* **2016**, *24*, 312.
11. Al-Huwayrini, L.; Al-Furiji, S.; Al-Dhurgham, R.; Al-Shawaf, M.; Al-Muhaiza, M. Knowledge of antibiotics among dentists in Riyadh private clinics. *Saudi Dent. J.* **2013**, *25*, 119–124.
12. Nepal, G.; Bhatta, S. Self-medication with Antibiotics in WHO Southeast Asian Region: A Systematic Review. *Cureus* **2018**, *10*, e2428.
13. Guille, C.; Sen, S. Prescription drug use and self-prescription among training physicians. *Arch. Intern. Med.* **2012**, *172*, 371–372.
14. Yousef, A.-M.M.; Al-Bakri, A.G.; Bustanji, Y.; Wazaify, M. Self-medication patterns in Amman, Jordan. *Pharm. World Sci.* **2008**, *30*, 24–30.
15. Tensaw A. Self-medication practice in Addis Ababa. A prospective study. *Ethiopian J*

## Original Research Article

- Health Sci. 2004;14(1):1–10.
16. Gutema GB, Gadisa DA, Kidanemariam ZA, Berhe DF, Berhe AH, Hadera MG, et al. Self-medication practices among health sciences students: the case of Mekelle University. *J Appl Pharm Sci.* 2011;1(10):183–9.
  17. Davidson S, Schattner P. Doctors' health-seeking behavior. A questionnaire survey. *Med J Am.* 2003;179:302–5.

UNDER PEER REVIEW