ASIAN JOURNAL OF PHARMACEUTICAL AND CLINICAL RESEARCH

INNOVARE ACADEMIC SCIENCES
Knowledge to Innovation

Vol 18, Issue 3, 2025

Online - 2455-3891
Print - 0974-2441

Research Article

ASSESSMENT OF KNOWLEDGE, ATTITUDES, AND PRACTICES REGARDING ANTIBIOTIC USE AND RESISTANCE AMONG COMMUNITY PHARMACISTS IN SANA'A (YEMEN)

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Received: 6 January 2025, Revised and Accepted: 18 February 2025

ABSTRACT

Objectives: This study aims to assess pharmacists' knowledge, attitudes, and practices regarding over-the-counter antimicrobial use and antimicrobial resistance.

Methods: We conducted a cross-sectional descriptive study using a self-administered questionnaire for pharmacists in Sana'a city, Yemen.

Results: An arithmetic mean of 2.5 and a standard deviation of 1.25 rated the level of knowledge among community pharmacists in Sana'a, Yemen, concerning antibiotic use and resistance as low. We rated the attitudes toward antibiotic use and resistance among community pharmacists in Sana'a, Yemen, at a medium level, with an arithmetic mean of 3.18 and a standard deviation of 1.25. In addition, we rated the rate of practices concerning antibiotic use and resistance among community pharmacists in Sana'a (Yemen) as medium, with an arithmetic mean of 2.7 and a standard deviation of 1.08. We observed no notable differences in age, educational level, or years of experience among community pharmacists; however, we identified a significant difference in gender at a level of 0.003. There is no significant correlation between the age, educational level, years of experience, gender, and knowledge variables of community pharmacists. There exists a notable correlation between gender and attitude, alongside a weak inverse correlation between gender and practice variables.

Conclusion: Community pharmacists in Sana'a, Yemen, rated their knowledge, attitudes, and practices regarding antibiotic use and resistance poorly, with an arithmetic mean of 2.5 and a standard deviation of 1.25. Community pharmacists in Sana'a, Yemen, assessed their attitudes toward antibiotic use and resistance as moderate, with a mean score of 3.18 and a standard deviation of 1.25. Ultimately, at the 0.05 significance level, there is no statistically significant correlation between the average responses of community pharmacists regarding the research variables (age, educational level, years of experience, gender) and their association with knowledge variables. We observe a statistically significant correlation between the gender variable and attitude, with a significance level of 0.005. A weak inverse correlation exists between gender and practice variables. A statistically significant correlation exists between knowledge and practice.

Keywords: Knowledge, Attitude, Practice, Community Pharmacist, Antibiotic, Resistance.

 DOI: http://dx.doi.org/10.22159/ajpcr.2025v18i3.53629. Journal homepage: https://innovareacademics.in/journals/index.php/ajpcr

INTRODUCTION

We now widely acknowledge that antibiotic resistance and irresponsible antibiotic usage pose a hazard. Antibacterial resistance, a growing hazard, has intensified despite recent global concerns and warnings about it [1]. In 2014, the World Health Organization (WHO) claimed that antibiotic-resistant bacteria had expanded and are now causing diseases all over the world and that only 33 out of the 133 countries surveyed had an action plan in place to combat the problem. Misuse of antibiotics has a number of detrimental effects, including raising treatment costs, accelerating the incidence of antibiotic resistance, which results in treatment failures, and increasing death rates [3-5]. Unfortunately, in Yemen, there are no publicly declared data on the impact of antibiotic resistance on healthcare and public health; however, according to estimates, there are 23,000 and 25,000 people who pass away each year in the US and the EU due to germs that are resistant to several drugs, respectively [2,3]. In Asia, these figures have more than tripled, resulting in 96,000 fatalities annually. By 2050, predictions indicate that drug-resistant diseases will account for 10 million annual deaths worldwide [4]. A variety of circumstances, including the overuse of antibiotics, their availability without a prescription, and the lack of sufficient public understanding of such treatments, contribute to antibiotic overuse and irrational usage [5-7]. In Yemen, antibiotic overuse, including use for unwarranted ailments, is a significant issue. 93% of patients in a WHO multicounty study from 2015 said that they bought their antibiotics from a drugstore [8]. The community pharmacist serves as the patient's first and last point of contact with the medical team before sending them to a doctor or administering their prescriptions [9]. This would suggest that community pharmacists play a crucial part in avoiding or spreading such a problem [10]. Before opening a pharmacy in Yemen, you must have a current pharmacist license and an acting pharmacist on duty at the pharmacy before you may open one. However, in practice, assistants who lack a license and adequate training perform the majority of the services and responsibilities normally performed by pharmacists. The issue extends beyond simple pharmaceutical administration and includes patient prescriptions as well [7,11]. In addition, in rare circumstances, particularly in rural areas, assistants may work unsupervised by a licensed pharmacist. Antibiotics are also considered prescription drugs under Yemeni law. One can easily purchase antibiotics from community pharmacies with or without a prescription due to the low compliance and poor enforcement of this law, as well as the absence of any active governmental policy to monitor and regulate antibiotic dispensing in community pharmacies [12,13]. Resistance refers to a bacteria's ability to withstand the antagonistic effects of an antibacterial agent during reproduction prevention or bacteria. Antibiotic resistance often develops in bacteria due to unnecessary and inappropriate

use of antibiotics. Through the intense use of antibiotics, resistant microorganisms have emerged over the years, and problems have started to be experienced in the treatment of these infections with these resistant microorganisms. Today, while efforts are being made to develop new drugs, the rapid development of resistance to these drugs is causing difficulties in treatment. The development of resistance to antibiotics is a major public health problem all over the world [16-18].

METHODS

This study aims to evaluate community pharmacists' knowledge, attitude, and practices (KAP) regarding antibiotic use and antibiotic resistance. Each dimension of the research is assessed using a self-administered questionnaire. Furthermore, it analyzes the correlation of factors in the KAP model to examine their relationships.

Study design

Using a self-administered questionnaire, this study is a cross-sectional and descriptive study. This includes participants as well as must be a pharmacist who graduated with a pharmacy degree at the undergraduate level (BSc in Pharm, B.Pharm, or PharmD). We exclude other pharmacy workers such as assistant pharmacists, pharmacy technicians, or owners who have not graduated with a pharmacy degree.

Population

This study's population consists of community pharmacists working in Sanaa city, Yemen.

Sample size

The sample size is 323 participants at 95% confidence interval, population proportion of 0.5, the margin of error is 5% or 0.5, and the population size is 2000. According to statistical calculation, the minimal sample size is 323 participants. Random sampling was used to select the participants.

For clarification, the following formula was used:

$$n' = \frac{n}{1 + \frac{z^2 \times \hat{p}(1-\hat{p})}{\varepsilon^2 N}}$$

Questionnaire design

The first draft of the questionnaire contains 38 questions. We divided it into four sections to evaluate the pharmacists' understanding, mindset, and approach to antimicrobial use and resistance.

Statistical methods

The Statistic Package for the Social Science software version 24 was used for analysis.

Descriptive analysis

Descriptive statistical analysis such as mean, standard division (SD), and Chi-square test was used to describe demographics in relation to KAP of participants.

Difference analysis

T-test and analysis of variance (ANOVA) test were used to find differences between the averages of the research sample responses with demographic variables.

Correlation analysis

Spearman's correlation coefficient statistic was used to determine the relationships between KAP and practice knowledge.

RESULTS

Table 1 presents that the majority of the respondents in this study (67%) were young pharmacists in their early years of their career (21–30 years) as most of them recently graduated. While 28.2% were within the age bracket of 31 and 40 years, 3.6% of the respondents were between the ages of 41 and 50 years. The majority of the respondents were males (76.5%), with women taking a minority status in the community pharmacy circles (23.5%). The majority of pharmacists working have a bachelor's degree (61.6%). In addition, most of the surveyed population had greater percentage of experience of 5–9 years, following by pharmacists 1–4 years of experience, and 18.9% of the population had over 10 years of experience as CPs as they have not recently graduated.

Years of professional experience

The participants exhibited limited knowledge regarding antibiotic and antimicrobial resistance (AMR), as evidenced by an arithmetic mean of 2.5 and a standard deviation of 1.25. Paragraph No. 3 ranked first, as indicated by the statement "Antibiotics can be used to alleviate pain," with a mean of 3.45 and a standard deviation of 1.33, reflecting a high degree of agreement. Conversely, Paragraph No. 9 came in last, represented by "Antibiotic resistance is due to", with a mean of 1.57 and a standard deviation of 0.95, indicating a high degree of agreement (Table 2).

Table 3 presents the participants' attitudes toward antibiotic use, AMR, and antimicrobial stewardship, indicating a medium level with an arithmetic mean of 3.18 and a standard deviation of 1.25. With a mean score of 3.9 and a standard deviation of 1.89, Paragraph No. 6 ranked first, addressing the question of how to reduce AMR, indicating a high degree of consensus. In contrast, Paragraph No. 3 ranked last, focusing on the perception of antimicrobial stewardship, with a mean score of 2.6 and a standard deviation of 0.958, reflecting a medium degree of consensus.

Table 4 demonstrates that participants exhibited a moderate level of antibiotic use practices, as indicated by an arithmetic mean of 2.7 and a standard deviation of 1.08. The first paragraph, "in your opinion, which factor has the greatest influence on increasing the incidence of bacterial resistance," received the highest ranking with a mean of 5.65 and a standard deviation of 0.5, indicating a significant degree of consensus. On the other hand, Paragraph No. 2, which asked about the number of antibiotics prescribed only, garnered the lowest ranking, with an arithmetic mean of 1.46 and a standard deviation of 0.499. To a certain degree, the practice was satisfactory, indicating a level of safety in its implementation.

As shown in Table 5, we used the t-test to assess the statistical significance of the gender-specific differences in the means of the research sample's responses. In Table 5, the statistical analysis indicates that the value of T is highly significant, the participants with knowledge of resistance show no differences with significant value (0.231). There

Table 1: Participants' demographic characteristic

Variable	Types	Frequency (n)	Column, n%
Gender	Male	247	76.5
	Female	76	23.5
Age	≤20 years	4	1.2
	21–30 years	226	67
	31–40 years	95	28.2
	41–50 years	12	3.6
	Mean±SD	29.19±5.4	
Level of education	Diploma in pharmacy	102	31.6
	Bachelor in pharmacy	199	61.6
	Master in pharmacy	22	6.8
Years of professional experience	<5 years	154	47.7
	From 5 to 9 years	108	33.4
	From 10 to 14 years	32	9.9
	From 15 to 19 years	16	5
	From 20 to 25 years	13	4

Table 2: Mean and standard deviations of knowledge

S. No.	Items	Mean	Standard deviation	Rank	Level
1	Antibiotics help treat common cold, cough, and flu	2.94	1.35	2	Medium
2	Microorganisms can develop resistance to antibiotics, whereas human bodies cannot develop resistance toward antibiotics	2.30	1.1	7	Low
3	Antibiotics can be used to alleviate pain	3.45	1.33	1	High
4	Antibiotics can cause secondary infections after killing normal flora	2.67	1.14	5	Medium
5	Antimicrobial resistance is perceived as	2.74	1.6	4	Medium
6	Wrong choice of antibiotics may lead a pathogen to lose its sensitivity toward a specific antibiotic	2.17	1.3	8	Low
7	Antibiotics can be used as prophylaxis	2.64	1.3	6	Medium
8	The aim of antibiotic use for	1.77	1.08	9	Low
9	Antibiotic resistance is due to	1.57	0.95	10	Low
10	An antibiotic will always be effective in the treatment of same infection in the future	2.76	1.3	3	Medium
	Mean	2.5	1.25		Low

Table 3: Means and standard deviations of attitude

S.no	Items	Mean	Standard Deviation	Rank	Level
1	I make efforts to prevent or reduce the transmission of infections within the community (health campaigns, social media)	3.39	0.98	3	Medium
2	I dispense antibiotics for duration longer than prescribed by the physician if patient wishes so	3.02	1.53	4	Medium
3	Antimicrobial stewardship is perceived as	2.6	0.958	6	Medium
4	Do you agree with the policy of not dispensing antibiotics without prescription	3.40	1.205	2	High
5	Regarding antimicrobial stewardship, do you expect its use to be regulated when it is dispensed	2.8	0.951	5	Medium
6	How can antimicrobial resistance be reduced	3.9	1.89	1	High
	Mean	3.18	1.25		Medium

Table 4: Mean and standard deviations of practice

S. No.	Items	Mean	Standard Deviation	Rank	Level
1	Number of antibiotics you dispense per day is	3.20	1.107	3	Medium
2	How many antibiotics have been dispensed prescription only	1.46	0.499	12	Low
3	In your opinion, which factor has the greatest influence on increasing the incidence of bacterial resistance	5.65	0.5	1	High
4	The patient must terminate his/her treatment with the antibiotic once he/she feels better	3.05	1.15	4	Medium
5	If a patient asks you to dispense an antibiotic without a prescription, you	2.16	0.952	9	High
6	Before I dispense an antibiotic, I seek additional clinical information such as drug interactions, ADRs, allergy	2.39	1.35	7	Low
7	In case you were unsure about the appropriateness of the antibiotic in the patient's case, you communicate with prescribers	2.87	1.39	5	Medium
8	I check if antibiotic prescriptions are prescribed in accordance with local guidelines before dispensing	2.32	1.31	8	Low
9	I educate patients about the appropriate use of antibiotics and resistance-related issues	1.94	1.29	10	Low
10	If a patient you to dispense one blister of the antibiotic course, you	1.78	0.936	11	Medium
11	What is your advice for an adult patient suffering from a sore throat, runny nose, and cough	3.25	1.249	2	Medium
12	Which antibiotic group do you prescribe the most	2.40	1.24	6	Low
	Mean	2.7	1.08		Medium

were a little differences between males and females regarding the tool as a whole KAP with P=0.003.

We used the ANOVA test to assess the statistical significance of age-related differences in mean responses among the research sample. The F value is not statistically significant. This indicates that there are no discernible differences between the average responses of the participants in the research sample. Nevertheless, it appears that the respondents differ in their attitude and behavior alone. Regarding knowledge, there are no distinctions as shown in Table 6.

Regarding the variation in education level, Table 7 presents these findings. The value of (F) is not statistically significant. This indicates that there are no differences between the participants' average responses in the research sample. Nevertheless, it seems that the responders vary solely in terms of their practice. Regarding knowledge and attitude, there are no distinctions.

Table 8 presents the results of the ANOVA test, which determined the significance of statistical differences among the average responses of the research sample due to variations in years of experience. The value of (F) is not statistically significant, as the significance probability (0.117) exceeds the level of significance (0.05). This indicates that there are no differences between the average responses of the research sample participants. Nonetheless, differences among the respondents are evident only in their attitudes. There are no distinctions between knowledge and practice.

Table 9 makes it clear that there is no correlation between demographic variables and knowledge. As for attitude, there is a correlation with gender, but it is weak, with a value of r=0.158. Regarding practice,

Table 5: T-test result

The gender variable	Mean	Standard deviation		T value	Sig. value	Decision
Knowledge of participants toward antibiotics and antimicrobial resistance						
Male	247	2.6247	0.43404	1.201	0.231	There are no differences
Female	76	2.6927	0.42216			
Attitudes of participants in regard to antibiotic use, antimicrobial resistance and antimicrobial stewardship						
Male	247	1.9334	0.24291	3.052	0.002	There are differences
Female	76	2.0299	0.23491			
Practices of participants in regard to antibiotic use						
Male	247	2.1107	0.25281	2.160	0.032	There are differences
Female	76	2.1806	0.22555			
The tool as a whole Knowledge, Attitudes, and Practices						
Male	247	2.2229	0.19633	2.972	0.003	There are differences
Female	76	2.3010	0.21297			

Table 6: ANOVA test result

The gender variable	n	Sum of squares	Df	Mean square	F value	Sig. value	Decision
Knowledge of participants toward antibiotics and antimicrobial resistance	Between groups	5.632	33	0.171	0.908	0.617	There are no differences
	Within groups	54.347	289	0.188			
	Total	59.979	322				
Attitudes of participants regarding antibiotic use, antimicrobial resistance, and antimicrobial stewardship	Between groups	3.322	33	0.101	1.832	0.005	There are differences
	Within groups	15.874	289	0.055			
	Total	19.196	322				
Practices of participants in regard to antibiotic use	Between groups	3.063	33	0.093	1.601	0.023	There are differences
	Within groups	16.758	289	0.058			
	Total	19.822	322				
The tool as a whole	Between groups	1.490	33	0.045	1.110	0.317	There are no differences
	Within groups	11.749	289	0.041			
	Total	13.239	322				

Table 7: ANOVA test result

The gender variable	n	Sum of squares	df	Mean square	F value	Sig. value	Decision
Knowledge of participants toward antibiotics and antimicrobial resistance	Between groups	232	2	116	0.620	0.539	There are no differences
	Within groups	59.747	320	187			
	Total	59.979	322				
Attitudes of participants regard of antibiotic use, antimicrobial resistance and antimicrobial stewardship	Between groups	0.287	2	144	2.432	0.089	There are no differences
	Within groups	18.908	320	0.059			
	Total	19.196	322				
Practices of participants in regard of antibiotic use	Between groups	0.829	2	414	6.984	0.001	There are differences
	Within groups	18.993	320	0.059			
	Total	19.822	322				
The tool as a whole	Between groups	0.191	2	0.096	2.347	0.097	There are no differences
	Within groups	13.047	320	0.041			
	Total	13.239	322				

Table 8: ANOVA test result

The gender variable	n	Sum of squares	df	Mean square	F value	Sig. value	Decision
Knowledge of participants toward antibiotics and antimicrobial resistance	Between groups	0.349	4	0.087	0.465	0.761	There are no differences
	Within groups	59.630	318	188			
	Total	59.979	322				
Attitudes of participants regarding antibiotic use, antimicrobial resistance, and antimicrobial stewardship	Between groups	0.952	4	0.238	4.150	0.003	There are differences
	Within groups	18.243	318	057			
	Total	19.196	322				
Practices of participants in regard to antibiotic use	Between groups	0.337	4	0.084	1.377	0.242	There are no differences
	Within groups	19.484	318	0.061			
	Total	19.822	322				
The tool as a whole	Between groups	0.303	4	0.076	1.860	0.117	There are no differences
	Within groups	12.936	318	0.041			
	Total	13.239	322				

Table 9: Spearman's correlation coefficient result

Research variable	Correlation coefficient	Sig. (2-tailed)
Knowledge of participants toward antibiotics and antimicrobial resistance		
Gender	0.054	0.330
Age	0.019	0.728
Level of education	−0.117	0.36
Years of experience	−0.037	0.509
Attitudes of participants in regard to antibiotic use, antimicrobial resistance, and antimicrobial stewardship		
Gender	0.158	0.005
Age	0.084	0.133
Level of education	0.03	0.585
Years of experience	−0.042	0.453
Practices of participants in regard to antibiotic use		
Gender	0.023	0.683
Age	−0.112	0.044
Level of education	−0.040	0.457
Years of experience	0.127	0.023

Table 10: Spearman's correlation coefficient result

Research variable	Correlation coefficient	Sig. (2-tailed)
Knowledge-attitude	0.297	0.001

Table 11: Spearman's correlation coefficient result

Research variable	Correlation coefficient	Sig. (2-tailed)
Attitude-practice	−0.039	0.490

Table 12: Spearman's correlation coefficient result

Research variable	Correlation coefficient	Sig. (2-tailed)
Knowledge-practice	0.092	0.098

there is a correlation with age, but it is inverse, meaning that the higher the age, the safer the practice. Additionally, there is a weak direct correlation with years of experience, with a value of r=0.127.

Table 10 indicates a correlation between knowledge and attitude. A weak direct correlation is statistically significant, with a 0.001 significance value.

Table 11 indicates that there is no correlation between attitude and practice, as the significance value exceeds 0.05.

Table 12 it is clear that there is no correlation between knowledge and practice. The significance value exceeded 0.05.

DISCUSSION

Research indicates that pharmacists dispense non-prescription antibiotics due to customer pressure, insufficient education, and inadequate legal enforcement [13]. The study reveals a notable trend of patients seeking antibiotics directly from pharmacies without prescriptions, as well as pharmacists providing advice and dispensing these medications as indicated by the participants. A study in Egypt, a lower middle-income country, found that non-prescription antibiotics made up 27% of the antibiotics dispensed [13]. In Pakistan, a low-middle-income country, a study found that 50% of non-medical university students self-medicated with antibiotics [19]. Self-medication occurs beyond low-income countries; research from Northern and Western Europe indicates self-medication rates between 0.1% and 0.9%, whereas Southern and Eastern Europe

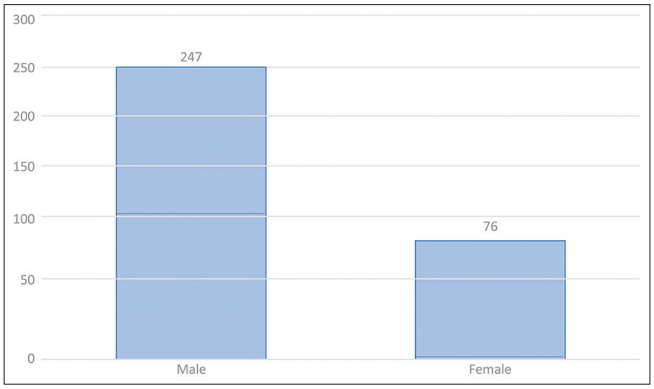

Fig. 1: Illustrate the sample distribution by gender

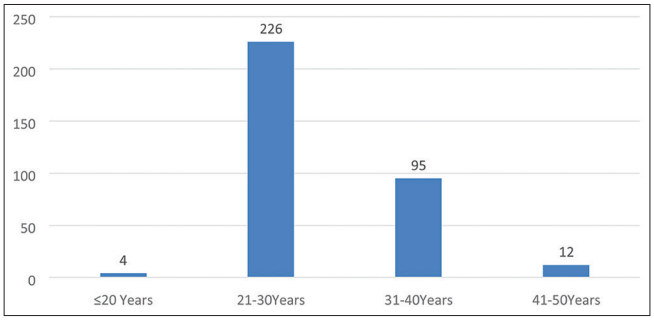

Fig. 2: Illustrate the sample distribution by age

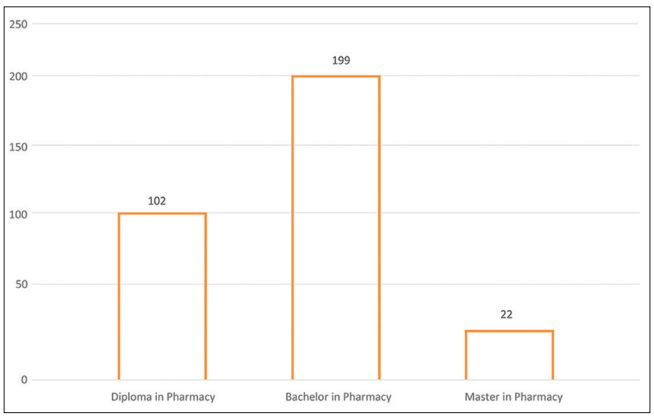

Fig. 3: Illustrate the sample distribution by educational level

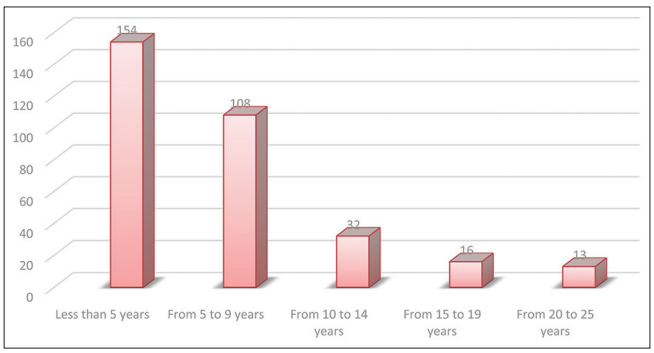

Fig. 4: Illustrate the sample distribution by experience

exhibit significantly higher rates, ranging from 0.7% to 20% [20]. Numerous studies conducted globally have indicated that low income and lack of health insurance are significant factors contributing to

self-medication. A Spanish study found no correlation between this misconduct and factors such as age, gender, or years of professional experience [21] which aligns with our findings. Our study revealed that, despite observable trends in the dispensing of antibiotics without prescriptions, over half of the participants provided education to patients regarding the appropriate use of antibiotics, issues related to resistance, and recommended symptomatic treatment with over-the-counter medications for those with runny noses and coughs. The study revealed that pharmacists actively seek additional clinical information and investigate drug interactions, a finding that contradicts the findings of [21], who reported that only a small percentage of pharmacists (5.3–17.3%) conducted such inquiries. Implementing good pharmaceutical practice is critical because it significantly reduces the risks associated with side effects and adverse effects.

In Pakistan, a study [22] revealed that 32% of pharmacists would consult with prescribers when uncertain about the appropriateness of antibiotic prescriptions, a finding that aligns with the current study's findings of 41.8% of participants in the same situation. Having said that some of the participants do not refer to physicians because of poor physician responsiveness, this might reflect the importance of emphasizing interprofessional relations among healthcare teams, probably starting from university curriculum. Pharmacists and other healthcare professionals should collaborate in multidisciplinary teams to reduce irrational and inappropriate use of antimicrobials and thus AMR. Based on these results, the most common antibiotics given were beta-lactams and beta-lactams with beta-lactamase inhibitors. This is similar to what [23] found, who said that amoxicillin/clavulanate was the most common antibiotic given in Yemen. Results were in agreement with reports from Saudi Arabia [11,24] and Egypt [13], where the most widely dispensed antibiotics were penicillin's and cephalosporins, followed by fluoroquinolones. Furthermore, in Europe, penicillins were the most frequently used antibiotics for self-medication [20]. The low side effects of these antibiotics likely encourage pharmacists to recommend them. Furthermore, the widespread prescription of these antibiotics leads to widespread familiarity among the population, potentially prompting individuals to recommend them to their family and friends.

The study indicated that the majority of participants held a positive attitude toward the implementation of policies restricting antibiotic dispensing to prescription-only status. Furthermore, implementing antimicrobial stewardship is essential for improving antibiotic use regulation. Furthermore, over 50% of participants indicated a willingness to engage in efforts aimed at preventing or reducing the transmission of infections within the community through health campaigns and social media. These align with the findings of [22]. Over 80% of pharmacists concurred that antimicrobial stewardship is crucial for enhancing patient care, while 39.8% indicated a commitment to preventing or reducing the transmission of infections within the community. The general lack of awareness regarding the seriousness of AMR is evident, likely due to the absence of mandatory continuous education programs. These programs would ensure that pharmacists remain informed about the latest developments in microbial resistance and strategies for addressing them [25]. The findings also advocate for stronger regulations that prohibit the prescription of antibiotics without a valid prescription, which would ultimately enhance AMR control. Furthermore, antimicrobial stewardship implementation would contribute to mitigating the development and dissemination of AMR.

CONCLUSION

Community pharmacists in Sana'a, Yemen, rated their KAP regarding antibiotic use and resistance poorly, with an arithmetic mean of 2.5 and a standard deviation of 1.25. Community pharmacists in Sana'a, Yemen, assessed their attitudes toward antibiotic use and resistance as moderate, with a mean score of 3.18 and a standard deviation of 1.25. In addition, community pharmacists in Sana'a, Yemen, rated their practices related to antibiotic use and resistance as medium, with an arithmetic mean of 2.7 and a standard deviation of 1.08. Furthermore, the average responses of community pharmacists across the research variables (age, educational level, and years of experience) showed no statistically significant differences at the 0.05 level of significance. Statistically significant differences exist within the gender variable, with a significance level of 0.003. Ultimately, at the 0.05 significance level, there is no statistically significant correlation between the average responses of community pharmacists regarding the research variables (age, educational level, years of experience, gender) and their association with knowledge variables. We observe a statistically significant correlation between the gender variable and attitude, with a significance level of 0.005. A weak inverse correlation exists between gender and practice variables. A statistically significant correlation exists between knowledge and practice.

ETHICS APPROVALS

This study was conducted according to the guidelines of the Declaration of Helsinki and approved by the Intuitional Review Board in the Ethics Committee of the Faculty of Medicine and Health Science, Thamar University, Yemen (Research code: REC-43-2022).

CONSENT TO PARTICIPATE

Informed consent was obtained from all individual participants included in the study.

CONSENT TO PUBLISH

Patients signed informed consent regarding publishing their data in the journal.

DATA AVAILABILITY

All data included in the manuscript are available upon request.

ACKNOWLEDGMENT

Our gratitude goes out to every one of the study participants.

AUTHOR CONTRIBUTIONS

The data analysis, drafting or revising of the paper, final approval of the publication version, and accountability for all areas of the work were all contributed by all authors.

CONFLICT OF INTEREST

The authors of this study do not report any conflict of interest.

FUNDING

The authors of this study declare that no funding for this study.

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