Assessment of Community Pharmacists' Knowledge, Attitudes, and Practices Regarding Over-the-Counter Medication Consultations in Karaj, Iran

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Abstract

Background: One of the essential responsibilities of pharmacists is to provide information and advice regarding over-the-counter (OTC) medications. This study investigates the knowledge, attitudes, and practices (KAP) of community pharmacists in Karaj, Iran, concerning OTC medication***s.***

Methods: Data collection was conducted using a researcher-made questionnaire. The questionnaire comprises four sections: Demographic information (13 questions), and questions on knowledge (6 questions), attitudes (7 questions), and practices (3 questions) of community pharmacists in providing pharmaceutical consulting services for OTC medications.

Results: Among the 116 pharmacists who participated in this study, 59.5% were women and 40.5% were men (mean age = 41.4 years). The levels of knowledge and practice among the participants were suboptimal, as only 21 pharmacists (18.1%) achieved satisfactory scores in knowledge, and only 9 pharmacists (7.8%) demonstrated satisfactory practices. Additionally, 71 pharmacists (61.2%) received moderate scores in attitudes. A significant correlation was found between the level of knowledge and participation in training courses on OTC medications. The results also demonstrated that younger pharmacists exhibited better knowledge.

Conclusion: The results revealed that only a small proportion of pharmacists demonstrated satisfactory knowledge and performance regarding OTC medications. Additionally, the present study highlighted a decline in pharmacists' knowledge levels as they transitioned away from the academic environment, underscoring the necessity for improved post-graduate training programs.

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Keywords: Pharmacist; Over-the-Counter Medications; Knowledge; Attitudes; Practices

Introduction

Over-the-counter (OTC) medications, which can be obtained without a physician's prescription, are widely available at pharmacies. These medications are accessible for the self-treatment of certain conditions, with professional consultation from a pharmacist (1). In Iran, pharmacies are the only legally authorized providers of both prescription and OTC medications.

In Iran, the sale of OTC medications in 2003 amounted to approximately $100 million, representing 10% of the total pharmaceutical market. OTC medication sales constitute a significant portion of revenue for community pharmacies, accounting for approximately 5% to 50% of their total sales (2). In recent years, the sales of OTC medications have increased, primarily due to two main factors: The reclassification of certain prescription drugs to the OTC category and the growing preference among patients for self-medication (2, 3). Self-medication refers to the use of drugs to treat an illness or symptom by individuals who are not medically qualified professionals. While it offers advantages like reduced treatment costs and easier access to medication, it also poses risks, including misdiagnosis, incorrect dosage, and potential drug interactions (4).

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According to a World Health Organization (WHO) report (2006), over 50% of prescription or OTC medications consumed worldwide are used incorrectly by individuals. This misuse contributes to increased rates of morbidity and even mortality (5, 6). Conversely, the rising prevalence of OTC medication use among patients may heighten the potential for misuse. Pharmacists play a crucial role in providing patient counseling, and their vigilance and expertise can help mitigate the abuse of OTC medications (7). Pharmacist consultation is essential, particularly when obtaining OTC medications. Patients and consumers often underestimate the potential adverse effects and risks associated with these products. Misuse of a specific medication can culminate in irreversible consequences. The guidance of pharmacists can help prevent medication misuse and ensure safe and effective use (8).

Local studies have reported that the prevalence of self-medication, primarily through the use of OTC medications, among Iranians ranges from 26% to 83% (6). Meanwhile, a study conducted by Mortazavi et al. investigated public awareness regarding OTC medications. This research involved 1,100 patients who sought OTC medications from 200 different pharmacies in Tehran. The findings revealed that 41% of participants lacked adequate information about the dosage and duration of their OTC medications, and only 0.8% were aware of the potential adverse effects of the medications they requested (9). Consequently, the level of patient awareness regarding OTC medications was unsatisfactory, underscoring the need for pharmaceutical counseling by pharmacists. Additionally, Hashemzaei et al. examined the knowledge, attitudes, and practices (KAP) of pharmacy and medical students in Zabol regarding self-medication. The findings revealed that only about 16% of medical students and 35% of pharmacy students possessed sufficient pharmaceutical knowledge (10). In a separate study by Foroughinia et al., the KAP of community pharmacists in Shiraz regarding OTC treatment of diarrhea in children was investigated. This study revealed that approximately 60% of pharmacists had inadequate knowledge of the topic, and only 37.8% of participants provided correct recommendations to patients (11).

In light of the significance of patient education when dispensing OTC medications, this study evaluated the KAP of community pharmacists regarding OTC medications in Karaj, Iran.

Methods

Study Design

This cross-sectional study aimed to evaluate the KAP of community pharmacists in providing pharmaceutical counseling services related to OTC medications in Karaj, Iran. Data were collected using a researcher-made questionnaire from September 2023 to March 2024. The study protocol received approval from the Ethics Committee of Alborz University of Medical Sciences (IR.ABZUMS.REC.1400.301).

In this study, pharmacists present at the pharmacy during the researcher's visit, whether they were students or graduates, were included, provided they consented to participate. If a participant did not complete all the questions in the questionnaire, both the pharmacist and their associated pharmacy were excluded from the study. One of the researchers, a pharmacy student, distributed the questionnaires. Considering the timing of the pharmacy visit, the participants' ages, and the pharmacists' workloads at that time, no time limit was imposed on the participants. However, each participant was required to answer the questions based solely on their knowledge, and to ensure fairness, no one was permitted to use external resources.

Questionnaire

The researcher-made questionnaire contained 29 questions organized into four sections: demographic information (13 questions), level of knowledge (6 questions), attitudes (7 questions), and practices of pharmacists in providing pharmaceutical counseling services for OTC medications (3 questions). The knowledge-related questions were multiple-choice. Some of the attitude-related questions were designed on a Likert scale (as 3 choices), while others were multiple-choice. The knowledge-related questions were formatted as multiple-choice. Some attitude-related questions utilized a Likert scale with three response options, while others were also multiple-choice. The practice-related questions were presented through three case scenarios. The demographic section included questions regarding age, gender, education level, years of work experience, and the frequency and characteristics of daily patient visits for OTC medications.

Validity and Reliability

The content validity index (CVI) and content validity ratio (CVR) for both the structure and content of the questionnaire were evaluated by a panel of at least six clinical pharmacists with substantial experience in OTC therapy. Based on their feedback, necessary adjustments were made to the questionnaire to enhance its validity. In this study, 12 experts responded to the CVI questionnaire. The CVI assessment focuses on three critical domains: Simplicity, clarity, and relevance. Each question is evaluated using four response options, scored on a scale from 1 to 4, to assess these domains. The CVI for each question is calculated using the

following formula:

CVI = (Number of experts selecting scores of 3 and 4) / (Total number of experts) > 79%

The CVI for each question exceeded 79%, indicating that the questions in the questionnaire demonstrate a satisfactory level of content validity.

The CVR questionnaires were completed by six experts. For the CVR evaluation, the experts assessed each item using a three-point scale: "Essential," "Useful but not essential," and "Not necessary." The responses were analyzed using the formula provided below:

CVR = (NE - N/2) / (N/2)

- N: Total number of experts
- NE: Number of experts who selected "Essential"

The minimum acceptable CVR value is 0.99. In this study, the CVR of the research questionnaire was calculated to be 1, demonstrating a high level of content validity for the questionnaire items (12). The Cronbach's alpha method was employed to assess the internal consistency and homogeneity of the questionnaire, resulting in a reliability coefficient of 0.79.

Sampling Method

The sampling method employed was a random multi-stage cluster sampling technique. Initially, pharmacies were stratified into clusters based on municipal areas, with nine municipal areas considered. In the first stage, a subset of clusters was selected through a random sampling process. Subsequently, within each chosen cluster, pharmacies were randomly and logically selected, taking into account the distribution and number of pharmacies in each respective area.

Sample Size

Considering the total number of community pharmacies in Karaj, which is 165 according to the Iran Food and Drug Administration's website, and assuming one pharmacist per pharmacy, a 50% response rate, a 5% margin of error, and a 95% confidence interval, the sample size was calculated to be 116 using the Raosoft sample size calculator (http://www.raosoft.com/samplesize.html).

$$n = \frac{(z^2 * p(1-p))}{d^2}$$

Statistical Analysis

The SPSS software version 24 will be utilized for data analysis. Continuous data will be presented as mean ± standard deviation or as median (interquartile range), depending on the context. The Shapiro-Wilk test will assess the normality of the data distribution. The independent samples t-test and Mann-Whitney U test will be employed to compare normal and non-normal data, respectively. Categorical data will be displayed as counts and percentages and analyzed using the Chi-square test or Fisher's exact test. Logistic regression will be applied to examine the relationships between variables. In all analyses, a P-value of less than 0.05 will be considered statistically significant.

Results

In this study, 116 community pharmacists completed questionnaires. The majority of respondents were women (n = 69, 59.5%). Participants' ages ranged from 23 to 71 years, with a mean age of 41.4 ± 13 years. Their work experience varied from less than one year to 46 years, with a mean of 15.3 ± 11.9 years. The demographic data are presented in Table 1. The response rate was approximately 89%.

Table 1. Demographic data and characteristics of participants and pharmacies

A. Demographic data and characteristics of participants		
Study variables	**Mean ± SD**	
Age (years)	41.4±13	
Work experience (years)	15.3±11.9	
Study variables		**Frequency (%)**
Gender	Male	47 (40.5)
	Female	69 (59.5)
Level of education	Student of pharmacy	14 (12.1)
	Doctor of Pharmacy	100 (86.2)
	Doctor of Philosophy	2 (1.7)
Participation in OTC medications training courses	Yes	67 (57.8)
	No	49 (42.2)

B. Characteristics of pharmacies		
Study variables		Frequency (%)
The average number of patients visiting the pharmacy per day	<30 patients	4 (3.4)
	30-100 patients	44 (37.9)
	100-200 patients	41 (35.3)
	>200 patients	27 (23.3)
The percentage of patients requesting OTC medications	<10 %	7 (6)
	10-30%	28 (24.1)
	31-60%	56 (48.3)
	>60%	25 (21.6)
The percentage of OTC medication requests for individuals under 16 years old.	<10 %	42 (36.2)
	10-30%	60 (51.7)
	31-60%	14 (12.1)
	>60%	0 (0)
The average number of patients requesting consultation for OTC medications per day.	<30 patients	71 (61.2)
	30-60 patients	37 (31.9)
	>60 patients	8 (6.9)
The average number of patients who receive OTC medications without seeking consultation.	<30 patients	42 (36.2)
	30-60 patients	42 (36.2)
	>60 patients	32 (27.6)

As shown in Table 1, 37.9% of pharmacies receive between 30 and 100 visitors per day. Most pharmacies report that 31% to 60% of their visitors request OTC medications. In more than half of the pharmacies, 10% to 30% of OTC medication requests are for individuals under 16. Out of 116 pharmacies surveyed, 71 (61.2%) have fewer than 30 patients requesting consultations for OTC medications.

As shown in Table 2, the most popular OTC medications sold in the pharmacies of Karaj include nonsteroidal anti-inflammatory drugs (NSAIDs), famotidine, cough syrups, and acetaminophen with codeine.

Table 2. Top-selling medications requested as over-the-counter in pharmacies

Question: From the medications listed below, select the three that have the highest daily OTC sales:
NSAIDs, Famotidine, Cough Syrup, Acetaminophen with Codeine, Acetaminophen, Skin and Hair Supplements, Pantoprazole, ORS (Oral Rehydration Salt)

Rank	Medication	Frequency (%)
1	NSAIDs (Nonsteroidal Anti-Inflammatory Drugs)	89 (76)
2	Famotidine	59 (51)
3	Cough Syrup	42 (36)
4	Acetaminophen with Codeine	42 (36)
5	Acetaminophen	37 (32)
6	Antibiotics	34 (29)
7	Skin and Hair Supplements	28 (24)
8	Pantoprazole	7 (6)
9	ORS (Oral Rehydration Salt)	0 (0)

According to Table 3, the leading reasons for OTC medication sales are attributed to four conditions: Pain management, cough relief, sore throat treatment, and indigestion.

Table3. The main reasons for the highest daily OTC medication sales in pharmacies

Question: Select the three main reasons for the highest daily OTC medication sales from the causes listed below: · Cough · Fever · Pain · Diarrhea or Constipation · Indigestion · Sore Throat · Skin and Hair · Sexual Enhancement or Performance Improvement · Other		
Rank	**Cause**	**Frequency (%)**
1	Pain	106 (91)
2	Cough	69 (59)
3	Sore Throat	38 (33)
4	Indigestion	38 (33)
5	Skin and Hair	36 (31)
6	Fever	19 (16)
7	Diarrhea or Constipation	17 (15)
8	Sexual Performance Improvement	11 (9)

Regarding the books used to enhance pharmacists' knowledge in the field of OTC medications, a question was posed. As illustrated in Table 4, the most frequently referenced texts among participants were "Clinical Guide for Rational Prescription and Use of Over-the-Counter Medications," "Pharmacology of Common Prescriptions," and "Principles of Patient Counseling and Education." Additionally, 15% (n = 18) were unfamiliar with books in this field.

Table 4. Most popular books were used to enhance pharmacists' knowledge in the field of OTC medications

Rank	**Book Title***	**Frequency (%)**
1	Clinical Guide for Rational Prescription and Use of OTC Medications	75 (65)
2	Pharmacology of Common Prescriptions	31 (27)
3	Principles of Patient Counseling and Education	29 (25)
4	Common Pharmaceutical Questions	26 (22)
5	Medical, Pharmaceutical, and Nursing Recommendations to Patients	20 (17)
6	Not Familiar with Any Books in This Field	18 (15)
7	Prescription Writing for Common Diseases	14 (12)
8	Comprehensive Guide to Working in a Pharmacy	12 (10)

Comprehensive Guide to Working in a Pharmacy 12 (10)

* As the PDF files of these books are not available, readers of this manuscript who wish to obtain information about these books can search the Persian names of these books on the website https://jph.ir/public (13).

Knowledge Assessment

The knowledge section of the questionnaire comprised one multiple-choice question (question 1) and five four-choice questions (questions 2 to 6) pertaining to the indications, dosages, and administration of OTC medications. The first question in the knowledge section presents 8 correct and 8 incorrect options. The score is calculated by subtracting the number of incorrect responses from the number of correct ones. Questions 2 to 6 each contain one correct option,

which earns a score of one point if selected; otherwise, the score is zero. The highest possible score in the knowledge section is 13. Participants' scores were categorized into three categories: Good (>80%), moderate (60-79%), and poor (<60%). According to the results, 21 participants (18.1%) demonstrated good knowledge, 34 participants (29.3%) exhibited moderate knowledge, and 61 participants (52.6%) displayed poor knowledge (Table 5).

Table 5. Community pharmacists' responses to questions on OTC medication knowledge

Knowledge questions (question 1)	Score	Frequency (%)
1. Which of the following medications are classified as OTC (over-the-counter) by the Food and Drug Administration of Iran?	4-	1 (0.9)
	3-	3 (2.6)
	2-	7 (6)
	1-	3 (2.6)
	0	21 (18.1)
	1	27 (23.3)
	2	25 (21.6)
	3	10 (8.6)
	4	13 (11.2)
	5	5 (4.3)
	6	1 (0.9)
Knowledge questions (questions 2 to 6)		**Correct response (%)**
2. Which definition applies to OTC medications?		60 (51.7)
3. Which option is incorrect regarding the use of ORS (Oral Rehydration Solution) in managing diarrhea?		54 (46.6)
4. Which of the following OTC medications is not used for preventing motion sickness?		58 (50)
5. Which option is correct regarding the dosage of acetaminophen for controlling fever in children?		86 (74.1)
6. For which of the following options cannot an OTC sleep aid be prescribed?		52 (44.8)

Attitude Assessment

As the first question in the attitude section, pharmacists were asked to identify the obstacles they encountered in providing pharmaceutical counseling services. The barriers highlighted by the participants were prioritized accordingly. Significant challenges included heavy workloads in pharmacies, ambiguous pharmaceutical counseling fees, and the public's reluctance to recognize the pharmacist's role as a counselor (Table 6).

Table 6. The barriers to providing pharmaceutical counseling by pharmacists in the field of OTC medications

Rank	Cause	Mean of priorities given by the participants	Rank	Cause	Mean of priorities given by the participants
1	Workloads in pharmacies	5.6	**7**	Lack of sufficient physical space in the pharmacy	8.9
2	Unclear pharmaceutical counseling fees	5.8	**8**	Patients' intolerance to waiting and responding to pharmacist's questions	9.1
3	Public's reluctance to accept the pharmacist's role as a counselor	6.9	**9**	Inadequate coverage of OTC therapy counseling in student education and post-graduation	9.4
4	Patients' reluctance to receive counseling for OTC medications	8.1	**10**	Maintaining confidentiality and creating a private space for the patient	9.5
5	Inadequate OTC therapy education during pharmacy school	8.2	**11**	Lack of an appropriate and quick reference for OTC therapy in Iran	10.3
6	Insufficient pharmacist skills in patient history-taking	8.8	**12**	Lack of pharmacist confidence in providing pharmaceutical counseling	11

In the second question of the attitude section, pharmacists were asked about the benefits of providing counseling to patients. According to Table 7, the primary advantages of pharmacists offering pharmaceutical counseling services encompass enhancing patients' trust and credibility in pharmacists, enhancing the professional standing of pharmacists within the healthcare community, and significantly improving patient health outcomes.

Table 7. The main advantages of pharmacists offering pharmaceutical counseling services in the field of OTC medications

Rank	Advantage	Mean[1]
1	Enhancing patients' trust and credibility in pharmacists	4.6
2	Enhancing the professional standing of pharmacists within the healthcare community	5.1
3	Positively impacting patient health outcomes	5.4
4	Increasing patient awareness on the proper use of OTC medications	5.7
5	Reducing the incidence of adverse drug reactions in OTC users	5.9
6	Increasing patient willingness to obtain other medications from the same pharmacy	6.5
7	Increasing the number of patients visiting the pharmacy	7.0
8	Creating a positive competitive atmosphere compared to other pharmacies	7.5
9	Increasing pharmacist willingness to attend OTC pharmaceutical counseling training classes	7.6

1Mean of priorities given by the participants

As shown in Table 8, the majority of participants (n = 80, 69%) considered their knowledge of OTC medications to be sufficient. They believe that providing facilities for assessing patients' underlying conditions can encourage individuals to seek counseling and enhance the role of pharmacists (n = 85, 73.3%). To assess the participants' attitude levels, the scores from questions 3 to 7 were analyzed. Scores of 0, 1, and 2 were assigned to each "disagree," "neutral," and "agree" responses, respectively, with the highest possible score of 10. Participants' scores were categorized into three levels: Good (scores of 7-10), moderate (scores of 4-6), and poor (scores of 0-3). The results indicated that 37 participants (31.9%) exhibited a good attitude, 71 participants (61.2%) demonstrated a moderate attitude, and 8 participants (6.9%) displayed a poor attitude.

Table 8. Community pharmacists' responses to attitude questions (questions 3-7)

Attitude questions (questions 3-7)	Agree	Neutral	Disagree
In your opinion, do pharmacists possess the necessary knowledge to provide pharmaceutical counseling for OTC therapy?	80 (69%)	28 (24.1%)	8 (6.9%)
What is your opinion on the statement: "After completing educational and skill-based training on providing pharmaceutical counseling for OTC therapy, pharmacists will have the necessary qualifications to offer pharmaceutical advice and guide patients"?	85 (73.3%)	22 (19%)	9 (7.8%)
In my opinion, only pharmacists who have received training and certification in OTC medications can provide pharmaceutical counseling for the provision and prescription of OTC medications.	13 (11.2%)	25 (21.6%)	78 (67.2%)
In my opinion, the knowledge and skills taught during the pharmacy school education are sufficient for providing pharmaceutical counseling in the prescription and provision of OTC medications.	30 (25.9%)	17 (14.7%)	69 (59.5%)
Having the necessary licenses or facilities in pharmacies for evaluating underlying conditions (e.g., blood sugar monitoring, and blood pressure checks) can enhance the pharmacist's role, increase patient satisfaction, and encourage the use of OTC medications.	85 (73.3%)	14 (12.1%)	17 (14.7%)

Practice Assessment

The evaluation of pharmacists' practices is based on three questions. Each correct answer earns one point. A score of 3 indicates good performance, a score of 2 indicates moderate performance and a score of less than 2 indicates poor performance. The results showed that 9 participants (7.8%) demonstrated good performance, 50 participants (43.1%) exhibited moderate performance, and 57 participants (49.1%) displayed poor performance (Table 9).

Table 9. Community pharmacists' responses to practice questions

Questions	Correct response (%)
A 54-year-old male patient visits the pharmacy complaining of a runny nose and congestion, sore throat, and mild headache. His symptoms started 24 hours ago. The patient does not have a fever, generalized pain, or ear pain. He has been taking Metoprolol 50 mg BID for the past three years for mitral valve prolapse, and his blood pressure is well-controlled. What recommendations would you make for him? (Assuming there is no COVID-19 pandemic)	67 (57.8)
A 34-year-old female patient, who has had migraines since the age of 18, has not been taking preventive migraine medication for about a year. She visits the pharmacy complaining of chronic and intermittent headaches (pain intensity score of 5 out of 10) over the past few months and seeks medication for her headaches. Her recent headache symptoms do not resemble migraines, and she describes the pain as a tight band around her head. She experiences some relief with ibuprofen, but according to her history, she has been taking pain relievers for more than 10 days per month for at least 6 months, and the headache returns when she stops taking them. What recommendations do you have for her?	72 (62.1)
A 43-year-old female patient visits the pharmacy complaining of stomach pain, early satiety, bloating, and a heavy feeling in her stomach. According to her history, she obtained Famotidine 20 mg with a BID dosage from the pharmacy one week ago but has not experienced any improvement. She requests stronger medication for her stomach pain. She has not experienced recent weight loss, smokes 10 cigarettes a day, and according to her, she has occasionally had these symptoms for about 2 years, during which time her doctor treated her with Pantoprazole. What recommendations do you have for her?	28 (24.1)

The Correlation between Knowledge and Practices

Due to the ordinal nature of patients' knowledge and practices, the Spearman correlation coefficient was employed to examine the relationship between these two variables. The results from the Spearman correlation test indicate that there is no statistically significant relationship between the levels of knowledge and practices among pharmacists (P = 0.434, r = 0.073)

The Correlation between Knowledge and Demographic Parameters

The relationship between levels of knowledge and gender (P = 0.570), education (P = 0.297), the number of pharmacy visitors (P = 0.653), and the number of visitors requesting OTC medications (P = 0.822) is not statistically significant. However, a statistically significant correlation was identified between levels of knowledge and attendance at training courses (P = 0.037). No significant relationship was found between the levels of knowledge and the number of pharmaceutical counseling requests (P = 0.721). Additionally, a significant inverse relationship was observed between levels of knowledge and both age (P = 0.002) and work experience (P = 0.004), indicating that pharmacists with lower average age and less work experience tend to possess better knowledge.

The Correlation between Practices and Demographic Parameters

The relationship between practice and gender (P = 0.730), education ()(P = 0.485), the number of pharmacy visitors (P = 0.990), and the number of OTC pharmacy visitors (P = 0.095) is not statistically significant. According to the Chi-square test, the relationship between practice and attendance at training courses is also not statistically significant (P=0.837). Based on Fisher's exact test, the relationship between practice and the number of pharmaceutical counseling requests is not statistically significant (P = 0.590). Furthermore, the Kruskal-Wallis test revealed no significant correlation between practice and both age (P = 0.605) and work experience (P = 0.771) of pharmacists.

Discussion

Pharmacists, through their effective presence in pharmacies and their academic knowledge and skills, can manage the use of OTC medications. By establishing proper communication with patients, asking relevant questions, addressing their concerns, providing accurate information about OTC medications, and delivering this information effectively, pharmacists can facilitate improved healthcare management (14).

This study evaluated the KAP of community pharmacists regarding OTC medications. Among the 116 participants, 21 (18.1%) demonstrated good knowledge, 34 (29.3%) exhibited moderate knowledge, and 61 (52.6%) displayed poor knowledge. In the present study, participants' ages ranged from 23 to 71 years, with a mean age of 41.4 ± 13 years. Aligned with these findings, the study conducted by Mehralian et al. in the city of Qazvin found that among 70 community pharmacists, with an average age of 33 years, knowledge regarding OTC medications was unsatisfactory (15).

The results of the present study demonstrate that as age and work experience increase, along with the time elapsed

since university graduation, the level of knowledge among pharmacists declines. This decrease in knowledge is directly related to the correlation between the pharmacists' levels of knowledge and the quality of education they received during their studies and after graduation. The diminished knowledge among more experienced pharmacists in Iran can be attributed to their limited opportunities to participate in continuing education programs, as they are often more focused on managing the economic aspects of their pharmacies. Kopciuch et al.'s study highlighted that younger pharmacists or those with less work experience were more likely to have attended recent training programs, which contributed to their superior knowledge.

Pharmacy workloads, unclear pharmaceutical counseling fees, and the public's reluctance to recognize pharmacists as counselors are the primary barriers to OTC consultations among the participants. This aligns with the findings of Kopciuch et al.'s research, which identified the main barriers as a lack of time for counseling, the absence of legal provisions for implementing pharmaceutical services, and insufficient organizational resources.

A study conducted in Poland from 2017 to 2019 revealed that only 15% of 400 pharmacists participated in refresher courses. In contrast, our study found that 58% of pharmacists had attended training courses on OTC therapy (16).

This study found that most OTC medications dispensed in pharmacies were intended to alleviate symptoms such as pain, cough, sore throat, and indigestion. Regarding the primary causes of self-medication, the results of Bekele et al.'s (2020) study in Ethiopia on 380 students revealed that 79.7% of the participants had engaged in self-medication. The most common reasons for self-medication encompassed fever (80.2%), headache (24.4%), and abdominal pain (23.3%) (17). Additionally, a study conducted by Mortazavi et al. in Tehran found that acetaminophen tablets, cold tablets, and antacid suspensions were in the highest demand, accounting for a total of 43%. Similarly, our current study identified that painkillers, famotidine, and cough syrups are among the best-selling OTC medications in pharmacies throughout Karaj (9).

In 2020, a study conducted by Kumar in India aimed to evaluate the KAP of community pharmacists regarding OTC medications. Among the 54 pharmacists surveyed, over 70% understood the definitions and concepts of both OTC and prescription medications. In the present study, approximately 51.7% of pharmacists accurately defined OTC medications (18).

In the attitude section of the present study, participants were asked about the importance of attending training courses, with 73% of pharmacists emphasizing the significance of such training. However, 67% of pharmacists did not deem it necessary to obtain specific educational certificates related to OTC medications. Conversely, there was a significant correlation between participation in OTC training courses and the level of pharmacists' knowledge. This highlights the importance of conducting training courses to enhance pharmacists' knowledge and performance in patient interactions.

This study demonstrated that the provision of pharmaceutical counseling services by pharmacists yields several benefits, including enhanced patient trust and credibility toward pharmacists, an elevated status of pharmacists within the medical community, and improved patient health outcomes. Collectively, these benefits contribute to a reduction in adverse drug reactions among patients using OTC medications and increase the attention and dedication of time and energy toward proper education, thereby raising community awareness. In accordance with the findings of this study, Lorato's research indicated that the majority of participants emphasized that the dedicated efforts of pharmacists in delivering pharmaceutical care services significantly boost patient trust in pharmacists (19).

In the present study, the performance of pharmacists was evaluated using case-based questions on covering topics such as cold, headaches, and gastrointestinal issues. Only 9 pharmacists (7.8%) achieved good scores in the performance section, while approximately half (49.1%) demonstrated poor performance. The majority of pharmacists' responses to the cold and headache cases were acceptable, with 57.8% and 62.1% selecting the correct options, respectively. However, their performance on the gastrointestinal case was suboptimal, with only 28 pharmacists (24.1%) choosing the correct option. A study conducted by Mehrelian in Qazvin found that pharmacists' performance across all standard criteria required for dispensing OTC medications was markedly deficient (15). Similarly, a study conducted by Zargharzadeh et al. found that 47% of pharmacists demonstrated adequate performance in managing a cough case, whereas only 19% performed adequately in cases of pediatric diarrhea (3).

The commercialization of the pharmacy system in Iran may hinder pharmacists' ability to focus on pharmaceutical services, as they become increasingly preoccupied with financial management and drug supply issues. This situation can result in a decline in the knowledge and practice of community pharmacists in addressing patient health concerns. Additionally, the lack of participation in post-graduate training courses exacerbates this issue.

While similar studies have been conducted in other cities in Iran using various questionnaires, this study was carried

out in Karaj using a questionnaire specifically designed to address the researchers' focal points. Given that geographical location is a significant factor influencing the results of such studies, conducting similar research across various cities can provide a more comprehensive understanding of the country's conditions concerning the topic under investigation.

One limitation of this study is the reluctance of pharmacists to participate, as well as their lack of accuracy in completing the questionnaire. Additionally, due to the limited number of questions, it was not possible to assess all aspects of the participants' KAP. Further studies using diverse questionnaires in various cities are recommended.

Conclusion

The results of this study revealed that the majority of participants demonstrated inadequate knowledge and practices regarding counseling on OTC medications. Nevertheless, most participants expressed a positive attitude toward acquiring knowledge in the field of OTC medications. A significant correlation was found between knowledge levels and both age and work experience, with younger pharmacists and those with less work experience exhibiting superior knowledge.

Conflicts of Interest

The authors have nothing to declare.

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