Practice skills and compliance of private pharmacies with regulations on the prescription drug: a multi-method study in Vietnam

Thuy Nguyen Thi Phuong[1,#,*], *Binh Thanh* Nguyen[1,#], *Thang Do* Xuan[1], *Trung Quang* Vo[2], *Trung Duc* Nguyen[3], *Thuan Nguyen* Van[4], *Susi Ari* Kristina[5]

[1]Hanoi University of Pharmacy, Hanoi 100000, Vietnam
[2]Faculty of Pharmacy, Pham Ngoc Thach University of Medicine, Ho Chi Minh City 700000, Vietnam.
[3]Faculty of Pharmacy, 108 Military Central Hospital, Hanoi 100000, Vietnam.
[4]Faculty of Pharmacy, Military Hospital 175, Ho Chi Minh City 700000, Vietnam.
[5]Faculty of Pharmacy, Universitas Gadjah Mada, Yogyakarta 55281, Indonesia.

Abstract. Professional practice of pharmacists plays a crucial role in the reinforcement of drug retailers' services to achieve optimal health care provision to customers. To evaluate the professional skills and compliance of retail pharmacy staff with selling prescription drugs by surveying patients' knowledge of drugs and role-playing the customer buying antibiotics without a prescription. A cross-sectional study was conducted with two kinds of surveys at 480 drug retail establishments using the cluster sample technique among 12 provinces/cities in Vietnam. Clients were interviewed to assess their knowledge about drugs. Moreover, the method of acting as a client was used in two common scenarios in order to evaluate the implementation of professional regulations and professional practice skills of drug sellers: a child acute respiratory infection (ARI) case and an amoxicillin case without a prescription. The data were presented as frequency and percentage. The basic tests were used to compare the ratios and means between the two groups. The total number of interviewed customers was 2389 while the figure for role-playing was 960 cases. When customers buy medications with a prescription, 100% of those were fully aware of the dosage of the drugs they purchased, which was higher than the scenario of buying without a prescription (93.1%). In role-play scenarios, the rate of drug sellers asking patients to explore information was higher in the ARI children case than in the amoxicillin case. Besides, 100% of customers were consulted on treatment in both cases, and the rate of advising was at a low rate in both scenarios 3.8% in the amoxicillin case compared to 15.4% in the ARI case. Drug sellers did not respond well to requirements in professional practice and were influenced by economic concerns in business.

1 INTRODUCTION

Common factors used to assess a drug retailer's service are the quality of drug supply, drug use counseling, and optimal health care provided to customers by pharmacists. In which, the pharmacist's professional practice plays a crucial role and requires numerous abilities such as obtaining information from the patient, listening to the patient, giving advice, guiding drug use, and suggesting proper treatment or solutions at drug retail establishments. As a result, the National Pharmaceutical Association in Australia launched two processes named "WHAT-STOP-GO" and "CARER" in the operation of selling drugs to customers buying prescription and over-the-counter drugs for pharmacists and pharmacy staff in order to ensure the implementation of drug selling and safe and rational drug use [1]. According to Good Pharmacy Practices (GPP) regulations issued by the Ministry of Health in Vietnam, one of the main activities of a drug retailer, aside from the procurement of medications and quality control, is to sell drugs including the provision of drugs with counseling and guidance on safe and effective drug use for patients [2].

Results of a systematic review conducted by Rosalline Miller in 2011 on the practice of pharmacists in drug retailers in low- and middle-income Asian countries found that the practice of asking, giving advice or consulting skills was still at a low rate in drug sellers during the process of buying and selling drugs to patients or clients [3]. A study conducted at 128 pharmacies (2010) in Penang, Malaysia, using a role-playing setting involving the purchase of medicine to treat colds and flu found that the percentage of drug sellers who provided advice about dosage and warnings were low, reaching 25.0% and 7.7% respectively in the pharmacist in charge, compared to 5.3% and 0.0% in the rest of the pharmacy personnel. Many other important pieces of information and advice were not mentioned by drug sellers [4]. Furthermore, many low- and middle-income countries had violations of legislation prohibiting the sale of prescription drugs without a doctor's prescription, notably antibiotics [3, 5]. Worldwide, the estimated percentage of antibiotic delivery without a prescription at drug shops would be

# These authors are the co-first authors and contributed equally to this work.
* Correspondence:
Email: thuy_ntp@hup.edu.vn

62.1%. The five nations with the highest proportion of antibiotics administered without a prescription in the survey were India, Indonesia, Vietnam, Syria, and Ethiopia [6]. This has been contributing to the worsening of antibiotic resistance, a critical issue that jeopardizes global health security.

Various studies in Vietnam demonstrated that drug sellers continued to have many limitations while dispensing antibiotics without a prescription at drug retailers. A recent study showed that most of the information obtained before deciding to dispense antibiotics was just to ask customers about symptoms and whether they saw a doctor, with rates ranging from 4.5% to 36.0%. Furthermore, drug allergy history was the information that drug sellers questioned at a relatively low percentage, ranging from 0% to 59.4% [6]. Another one conducted in Thanh Hoa province by Nguyen Van Quan using the role-playing method of customers on the case of purchasing antibiotics without a prescription and in insufficient doses found that only 6.5% of drug sellers questioned the prescription drugs, 28.0% of drug sellers had questions about the causes and symptoms of disease, and 34.0% of drug sellers did not raise any questions. The overall percentage of drug suppliers that provide guidance is 68.0%. Notably, just 13.0% of medication retailers advised customers to take full-dose antibiotics [7]. In 2010, Do Thi Quynh Nga and colleagues discovered that 80.0% of antibiotics were sold without a prescription in urban regions compared to 91.0% in rural areas, and awareness of drug vendors and clients regarding antibiotics was particularly inadequate in rural areas [8].

From 2007 to 2013, a number of published studies first revealed the existence of flaws in the professional practice of drug sellers in pharmacies both before and after the implementation of GPP. However, from 2013 to the present, the assessment of drug sellers' compliance in selling prescription pharmaceuticals has received insufficient attention. As a result, this review must be redone, particularly during the period of enhancing GPP implementation. Therefore, the purpose of this study was to assess the professional skills and compliance of retail pharmacy staff with selling prescription drugs using two methods: assessing the patient's knowledge of the purchased drug and role-playing the customer in the situation of buying antibiotics without a prescription.

2 MATERIALS AND METHODS

2.1 Study design

The cross-sectional study was conducted in 12 provinces/cities across the country, with the deliberate sampling approach used in five provinces/cities under the central government: Hanoi, Hai Phong, Da Nang, Ho Chi Minh City, and Can Tho. The other seven provinces/cities are chosen at random from a list of provinces/cities in six economic zones according to Decree 92/2006/ND-CP. Finally, the study selected 480 drug retail establishments using the cluster sample technique, including 220 drug dispensaries (located in rural regions, professionally responsible by pharmacists with a secondary diploma in pharmacy) and 260 drugstores (placed in urban areas, professionally responsible by the pharmacist who owns a Bachelor of Pharmacy). Researchers conducted two kinds of surveys at each retail establishment: interviewing clients buying drugs and playing the role of clients buying drugs.

2.2 Sampling and data collection

The study chose 5 clients who purchased medications from each drug dispensary /drugstore to interview. Customers were interviewed directly after purchasing medications based on a series of questions that included information about the circumstance of purchasing drugs, kinds of purchased drugs, the customer's understanding of the drug, and background information. During the interview, the surveyor used his phone to take images to support the collection of information about medications. The survey consisted of 35 questions, including 22 about general information about purchased drugs, 5 on customers' understanding of purchased medicines, and 8 about information about clients. A customer was considered to know how to take the medicine if he or she knew the dosage per use, the number of times used in a day, the time of taking the medication, how to administrate drug, and typical warnings and precautions.

Parallel to the survey of customers, the study employed the method of acting as a client in two common scenarios in the community in order to evaluate the implementation of professional regulations in selling prescription drugs and professional practice skills or drug sellers. Investigators were chosen and instructed how to play the role of a customer buying drugs. Following that, they acted at the drugstore model with the record by camera and audio to know how to fill out the questionnaires. Following that, each investigator practiced the play role at three different drug retail establishments. The sample size did not contain these drug dispensaries /drugstores. After being fully trained, the investigators conducted surveys of the drug retail establishments in sample size. These drug retail establishments owners were unaware of the investigator's role. The investigator just gave information as a guide to the scenario and accepted any medicine selection and quantity recommendations made by the drug seller. Within 15 minutes of purchasing pharmaceuticals at the drug retail establishment, the investigator recorded information about the drugs, questions, advice, and the content of drug usage instructions for pharmacy customers and stored it on the information collecting sheet. All phone conversations were recorded, to store information and deleted after the questionnaire was completed. The purchased pharmaceutical bag was prominently labeled with information about the trial site and the name of the drug seller. Each drug retail establishment had two investigators who are involved in the following two scenarios:

Scenario 1. A 4-year-old child had an acute respiratory infection (ARI), and the drug seller received preliminary information concerning the child's cough.

After examining the research and referring to the scenario in the research conducted in Vietnam by the author group of designer Chuc [9], the scenario was constructed. ARI was a common disease that affected many young children in the community in many places with different socioeconomic conditions. The scenario included the following details: 4-year-old child weighing approximately 17kg, coughing for 2 days, cough frequency 2-3 times/hour, no sputum, runny nose with clear nasal fluid but no stuffy nose, no sore throat, no vomiting, slight heat, mild fever of approximately 38 degrees, slight fatigue, no history of illness/allergies, and have not taken any medication, normal breathing rate, no other abnormalities. The typical client in the child ARI case was a female between the ages of 27 and 35.

Scenario 2. Make an offer to purchase a 500mg tablet of amoxicillin. This was one of the most commonly found antibiotic active components in drug retail establishments. The customer bought antibiotics because he or she had symptoms of cough with a sore throat, mild temperature of about 38oC, thick green sputum, no runny nose; had experienced this before and found amoxicillin to be useful; no history of illness or other health problems.

2.3 Data analysis

Collected data was checked, cleaned, and encrypted and some drug-related information was looked up. The data was entered into Epi data 3.1, and SPSS 20.0 software and Excel Microsoft Office 2013 were used to analyze quantitative data. Categorical variables were presented as frequency and percentage. The chi-square test and Fisher's exact test were used to compare the ratios between the two groups. Besides, the Independent T-test and ANOVA test were applied to compare the mean between two groups of subjects if the variable was normally distributed. If the variable was not normally distributed, the Mann-Whitney test and the Kruskal-Wallis test were used.

2.4 Ethics consideration

The research protocol was approved by the Council of the Ministry of Health and the provincial/municipal Department of Health. The data was encrypted, kept secret and was only used for research purposes.

3 RESULTS

There were 11 questionnaires that missed a lot of information for the survey of drug customers. The total number of votes cast for analysis was 2389. The number of surveys completed and assessed for the role of the customer was 480 cases for amoxicillin and 480 cases for pediatric ARI scenarios.

The majority of drug clients surveyed are female (62.9%), with the age range 35 to 55 having the highest prevalence (45.6%). The bulk of clients (51.6%) were laborers or self-employed or had a high school diploma (29.2%). Moreover, 83.8% of customers bought pharmaceuticals two or more times, and the percentage of customers who bought drugs without a prescription was exceptionally high, accounting for 87.9%.

When customers buy medications with a prescription, 100% of those were fully aware of the dosage of the drugs they purchased, which was higher than the scenario of buying without a prescription (93.1%) and there was a significant statistical different ($p<0.05$). Administration awareness had a similar trend with 95.3% of consumers buying pharmaceuticals with a prescription compared to 81.5% without a prescription. Moreover, 79.6% of customers were aware of the side effects of pharmaceuticals purchased. However, customers' knowledge of drug side effects was very poor in both scenarios of buying pharmaceuticals with and without a prescription, with 4.8%.

Table 1. Characteristics of surveyed customers (N=2389)

Gender		***Professional***	
Male	887 (37.1)	Businessman	1233 (51.6)
Female	1502 (62.9)	Office Workers	690 (28.8)
Age group		Retired or Housewife	331 (13.9)
8-34	930 (38.9)	Working in the healthcare field	61 (2.6)
35-55	1089 (45.6)	Other	62 (2.6)
> 55	357 (15.0)	Missing value	12 (0.5)
Missing value	13 (0.5)	***Type of buying drugs***	
Qualification		With a prescription	288 (12.1)
Lower secondary education or below	582 (24.4)	Without a prescription and with prescription drug	601 (25.1)
High School	697 (29.2)	Without a prescription and prescription drug	1500 (62.8)
Associate degree	571 (23.9)	***Frequency of buying drugs at the establishment***	
≥ Bachelor's degree or above	521 (21.8)	First time	372 (15.6)
Missing value	18 (0.7)	Second time or more	2002 (83.8)
		Missing value	15 (0.6)

Table 2. Knowledge of customers about drugs in the survey

Characteristics	With a prescription (n=288)	Without a prescription (n= 2101)	p-value	Total (N=2389)
Dosage	288 (100)	1956 (93.1)	0.017	2255 (93.9)
Administration	285 (95.3)	1713 (81.5)	0.027	1998 (83.3)
Indication	240 (83.3)	1663 (79.1)	0.111	1003 (79.6)
Adverse reactions	21 (7.3)	95 (4.5)	0.179	116 (4.8)

Table 3. Professional practice skills of drug sellers in the Amoxicillin case

Characteristics	*Drugstores (n=260)*	*Drug dispensaries (n=220)*	*P-value*	*Total (N=480)*
Questioning skill				
Have an asking	89 (34.2)	56 (25.5)	0.037	145 (30.2)
Number of questions, mean (SD)	*0.60 (1.17)*	*0.34 (0.73)*	0.018	*0.48 (1.0)*
Min-Max	0-9	0-5	-	0-9
Content of questions				
Have you seen a doctor/ Have you had a prescription?	-	-	-	-
Subjects taking drugs	36 (13.8)	20 (9.1)	0.106	56 (11.7)
Cough (frequency/time/duration)	15 (5.8)	5 (2.3)	0.05	20 (4.2)
Cough nature (sputum/dryness)	5 (1.9)	2 (0.9)	0.35	7 (1.5)
Nose (runny/stuffy nose)	3 (1.2)	-	0.11	3 (0.6)
Throat/pain when swallowing	9 (3.5)	7 (3.2)	0.86	16 (3.3)
Fever	3 (1.2)	-	0.11	3 (0.6)
Risky signs (wheezing, fatigue/weakness, vomiting/chest indrawing)	-	-	-	-
History of allergies	1 (0.4)	-	0.357	1 (0.2)
Medicines/remedies used	1 (0.4)	-	0.357	1 (0.2)
Medical history/related comorbidities	1 (0.4)	-	0.192	1 (0.2)
The type of medicine you want to buy / dosage form for child	47 (18.1)	25 (11.4)	*0.041*	72 (15.0)
The need to take antibiotics	-	-	-	-
Customer's desired number of days of taking medication	-	-	-	-
Reasons to buy medicine	4 (1.53)	4 (1.81)	0.372	7.3 (1.52)
Consulting skills				
Have a consultation	*49 (18.8)*	*46 (20.9)*	0.572	*95 (19.8)*
Content of consultation				
Go to the doctor	-	-	-	-
Written instructions	-	-	-	-
When have to change medicine	*4 (1.6)*	*4 (1.8)*	0.832	*8 (1.7)*
Dosage per time	44 (16.9)	40 (18.2)	0.718	84 (17.5)
Number of times used per day	39 (15.0)	38 (17.3)	0.499	77 (16.0)
When taking medicine	24 (9.2)	22 (10.0)	0.775	46 (9.6)
When taking medicine compared to meals	24 (9.2)	23 (10.4)	0.775	47 (9.8)
Total days of medication	21 (8.1)	18 (8.2)	0.967	39 (8.1)
Effects of drugs	-	-	-	-
Side effects of drugs	-	-	-	-
Should use enough antibiotic treatment time (if any)	*3 (1.2)*	*1 (0.5)*	0.394	*4 (0.9)*
Advice skill				
Have advice	13 *(5.0)*	5 *(2.3)*	0.117	18 *(3.8)*
Content of advice				
Signs that you need to see a doctor	-	-	-	-
Nose and throat hygiene	-	-	-	-
Keep nose and throat warm	*2 (0.8)*	*1 (0.5)*	0.652	*3 (0.6)*
Diet	*2 (0.8)*	-	0.188	*2 (0.4)*
Other advice	*9 (3.6)*	*2 (0.9)*	0.07	*11 (2.3)*
Dispense results				
Only amoxicillin	250 *(96.2)*	207 *(94.1)*		457 (95.2*)*
Amoxicillin and other drugs	7 *(2.7)*	3 *(1.4)*		10 *(2.1)*
Other antibiotics	3 *(1.2)*	10 (4.5)		13 *(2.7)*

*SD: standard deviation

In the circumstance of asking for buying amoxicillin, only 30.2% of drug sellers asked clients before selling pharmaceuticals; there was a statistically significant difference in this rate between drugstores (34.2%) and drug dispensaries (25.5%) (p=0.037). Furthermore, the average number of questions asked by the drug sellers at the pharmacy was larger (0.60 vs. 0.34), and the difference was statistically significant (p=0.018). When

it comes to the content of the question, no drug retail establishment asked for a prescription and only 11.7% of pharma sellers requested information about subjects taking the drug when customers requested to acquire amoxicillin. The most asked information was cough and painful throat when swallowing with 4.2% and 3.3%, respectively. Meanwhile, only 0.6% of information on fever and runny nose/stuffy nose was extracted. With only three sellers asking, information about the patient's history was also underutilized. However, the information that sellers were interested in was the form of drug they want to buy/the form that children can use, which accounts for 15% of the total.

There were no drug sellers persuading customers to see a doctor when they wanted to get amoxicillin for personal use. Regarding the content of drug usage counseling, 80.2% of drug sellers did not provide it and none of them provided written directions for use. When selling amoxicillin, use guidance for customers was relatively limited. The one-time dose and number of times per day with the highest counseled content were only 17.5% and 16.0%, respectively. The frequency per day and the total number of days of taking drugs were lower, at 9.6% and 8.1% in turn. It is noticeable that there was no pharmacist giving information about the drug's effects and side effects. There is no statistically significant difference between the pharmacy and the pharmacy in the counsel content.

Drug sellers advised on warning indicators or non-drug measures in 3.8% of cases. Only 0.6% of them advised keeping the nose and throat warm/avoiding colds, while 0.4% of them advised a balanced diet. However, there was no guidance on when to see a doctor or how to keep your nose and throat clean. Overall, Amoxicillin was offered on-demand by 95.2% of drug sellers, sold with other medications by 2.7%, and replaced by other antibiotics by 2.7%.

Table 4. Professional practice skills of drug sellers in the children ARI case

	Drugstores (n=260)	***Drug dispensaries (n=220)***	***P-value***	***Total (N=480)***
Questioning skill				
Have an asking	253 (97.3)	216 (98.2)	0.524	*469* (97.7)
Number of questions, mean (SD)	4.3 (1.8)	*4.0 (*1.8)	0.041	*4.1 (*1.8)
Min-Max	0-8	0-8		0-8
Content of questions				
Have you seen a doctor/ Have you had a prescription?	2 *(0.8)*	6 *(1.2)*	0.095	8 ***(1.7)***
Subjects taking drugs	235 (90.4)	195 (88.6)	0.532	430 (89.6)
Cough (frequency/time/duration)	180 (69.5)	136 (61.8)	0.08	316 (66.0)
Cough nature (sputum/dryness)	155 (59.6)	88 (40.0)	<0.001	243 (50.6)
Nose (runny/stuffy nose)	159 (61.2)	129 (58.6)	0.57	288 (60.0)
Throat/pain when swallowing	27 (10.4)	9 (4.1)	<0.001	30 (6.2)
Fever	125 (48.1)	94 (42.7)	0.27	219 (45.6)
Risky signs (wheezing, fatigue/weakness, vomiting/chest indrawing)	2 (0.8)	3 (1.4)	0.52	5 (1.0)
History of allergies	4 (1.5)	4 (1.8)	0.811	8 (1.7)
Medicines/remedies used	17 (6.5)	20 (9.1)	0.308	37 (7.7)
Medical history/related comorbidities	1 (0.4)	7 (3.2)	0.017	8 (1.7)
The type of medicine you want to buy / dosage form for child	73 (28.1)	54 (24.5)	0.382	127 (16.5)
The need to take antibiotics	7 (2.7)	9 (4.1)	0.395	16 (3.3)
Customer's desired number of days of taking medication	20 (7.7)	25 (11.4)	0.169	45 (9.4)
Reasons to buy medicine	-	-	-	-
Consulting skills				
Have a consultation	219 (84.2)	188 (85.5)	0.799	407 (84.8)
Content of consultation				
Written instructions	47 (18.1)	41 (18.6)	0.875	*88 (18.3)*
Go to the doctor	3 (1.3)	4 (2.0)	0.548	7 (1.6)
When have to change medicine	-	-	-	-
Dosage per time	180 (69.2)	179 (81.4)	0.002	359 (74.8)
Number of times used per day	200 (76.9)	172 (78.2)	0.742	372 (77.5)
When taking medicine	180 (69.2)	153 (69.5)	0.941	333 (69.4)
When taking medicine compared to meals	113 (43.5)	108 (49.1)	0.218	221 (46.0)
Total days of medication	70 (26.9)	64 (29.1)	0.598	*134 (27.9)*
Effects of drugs	20 (7.7)	8 (3.6)	0.059	28 (5.8)
Side effects of drugs	6 (2.3)	5 (2.3)	0.98	*11 (2.3)*

Should use enough antibiotic treatment time (if any)	9 (8.7)	6 (7.1)	0.687	15 (7.9)
Advice skill				
Have advice	35 (13.5)	39 (17.9)	0.197	74 (15.4)
Content of advice				
Signs that you need to see a doctor	5 (2.1)	3 (1.4)	0.622	8 (1.8)
Nose and throat hygiene	10 (4.1)	12 (5.8)	0.409	22 (4.9)
Keep nose and throat warm	6 (2.5)	7 (3.4)	0.561	13 (2.9)
Diet	14 (5.8)	23 (11.1)	0.057	37 (8.2)
Other advice	46 (19.0)	37 (18.2)	0.823	83 (18.7)
Dispense results				
Total product sold	888	796		1684
Drugs	623 (70.2)	619 (77.8)		1242 *(73.8)*
Dietary supplements	45 (5.1)	37 (4.6)		82 *(4.8)*
Unidentified Drugs	220 (24.7)	140 (17.6)		360 *(21.4)*
Number of products, mean (SD)	*3.42 (1.67)*	*3.62 (1.59)*	*0.333*	*3.51 (1.64)*
Number of establishments selling prescription drugs without a prescription	*189 (72.7)*	*188 (85.5)*	0.001	*377 (78.5)*
Number of establishments selling antibiotics without a prescription	*154 (59.9)*	*160 (71.2)*	0.032	*314 (65.8)*
Number of establishments selling corticoids without a prescription (n=359)	*49 (26.8)*	*73 (41.5)*	0.004	*122 (34.0)*

*SD: standard deviation

In the case of ARI in children, 97.7% of drug suppliers asked consumers before deciding to offer medications. In which, the mean number of questions was 4.1 (SD=1.8). Notably, drug sellers at the drugstores asked more inquiries (4.3 ± 1.8) than at the drug dispensaries (4.0 ± 1.8), and the difference was statistically significant (p=0.041). The percentage of drug sellers inquiring about taking their children to see a doctor was relatively low, accounting for only 1.7 %. 89.6% of drug sellers asked for information about children. Cough features were the most frequently considered (66%), followed by nasal symptoms (60%), and the form of dry cough/sputum (50.6%). The percentage of drug sellers in the drugstores who inquired about the type of dry cough or phlegm cough (59.6%) was greater than in the drug dispensaries (40.0%), and the difference was statistically significant (p<0.001). Fever, on the other hand, was noted by only 45.6% of drug vendors. Only 1.7% of medicine sellers asked for essential information about the patient's history of allergies and comorbidities. The percentage of drugs and measures employed was 7.7%. Furthermore, drug sellers primarily inquired about the requirement for dosage form (syrup or tablet) for children (16.5%), the number of days to take the drug that consumers wanted to purchase (9.4%), and whether the child required antibiotics (3.3%).

There were 407 drug shops providing counsel when selling medications, accounting for 84.8% of the total. Only 18.3% of ARI medicine sellers had written medication instructions. The counseled information with the largest proportion of drug sellers was the dosage of drugs (74.8%) and the number of times used in a day (77.5%), followed by the content of instructions on when to take the drug during the day (69.4%) and when to take the medicine in relation to the meal (46.0%). The least discussed aspect of counseling was drug side effects (2.3%). Notably, 7.9% of medicine vendors recommended that when providing antibiotics to young children, the entire course of treatment must be completed.

A total of 74/480 (15.4%) drug sellers actively provided advice. Diet was the most frequently advised content (8.2%). Furthermore, only 1.6% of drug vendors suggest that children should visit a doctor, while 1.8% of them advised watching for signals that children should see a doctor.

In final, the average number of products consulted and sold was 3.51 ±1.64. On average, sellers sold more products at the drugstore than at the drug dispensaries, but the difference is not statistically significant. Dietary supplements in the form of syrup or oral solution account for 4.8% of the total 1684 goods, while 21.4% of the total medications cannot be identified since they are retailed in vials/opened from blister packs without any information. Notably, sellers at drug dispensaries sold the majority of prescription medications (85.5%), antibiotics (71.2%), and corticosteroids (41.5%). The difference was statistically significant (p<0.05) when compared to the pharmacy.

4 DISCUSSION

The study assessed drug sellers' professional practice skills by playing a role as clients to buy pharmaceuticals without a doctor's prescription. The method of acting as a consumer was applied correctly and delivered valuable data while maintaining objectivity and consistency among drug retail establishments in the examined areas. According to the findings of the study, drug sellers' abilities in the case of purchasing amoxicillin antibiotics and ARI for children were still quite limited.

The first and most important talent in medication sales is questioning ability, which is critical in collecting and assessing the patient's health situation and making

proper decisions. According to the findings, 69.8% of drug sellers had no questions before providing the antibiotic amoxicillin to suit the needs of clients. This finding was consistent with findings from Thai and Egyptian studies that used a role-playing scenario in which participants were asked to acquire a prescription medicine [10]. It is probable that this is a common antibiotic that has been randomly asked by many customers to buy, and when the drug sellers believe that it is unnecessary to inquire further about the reason for purchase. In the case of amoxicillin, drug dealers at drugstores performed information extraction activities better (34.2%) than at drug dispensaries (25.5%). Notably, the content asking about the type of drug that customers wanted to buy had the highest rate (15.0%). Moreover, only 1 drug seller mentioned the patient's allergic history before selling amoxicillin, which was lower when compared with similar studies in Saudi Arabia (7.3%) [11], Ethiopia (4.8%) [10].

The circumstance of buying cough medicine for small children is a regular situation at drug retail establishments because people in Vietnam do not have the habit of taking their children to visit a doctor when they have mild respiratory symptoms. In contrast to the case when requesting specific drugs, 97.7% of drug sellers actively asked inquiries to gain more information about the patient before making treatment decisions in this situation. This finding was higher than that of Nguyen TK Chuc [9] and studies in Saudi Arabia [12] và Spain [13]. Besides, 10.4% of drug sellers did not inquire about the child's age, and 63.3% did not ask about the child's weight. This is the most basic information about drug users but they have not been researched by drug sellers before deciding on drug doses for children. However, when compared to studies in Saudi Arabia and Indonesia [11, 14], our study's rate was still higher. Risk factors are crucial markers for drug sellers to determine the degree of common cold respiratory infection with pneumonia, but only 1.7% of drug sellers were interested in exploiting, which was significantly lower than Chuc's prior research did (11%) [9]. This demonstrated that medication sellers were not cautious in their information exploit before selling drugs for customers with common diseases/symptoms.

Eighty-two percent of drug sellers sold amoxicillin with no verbal or written instructions for use. This figure was higher than those found in Ethiopia and Arabia [11, 15]. In the ARI case, 77% of drug sellers instructed drug usage content such as dose and number of times per day. Only 27.9% of drug sellers advised the total number of days spent taking the medicine, and only 5.8% of them gave information about the drug's effect. These rates were all lower than those seen in similar research conducted in Ethiopia [15].

When drug dealers' treatment decisions for ARIs were reviewed, antibiotic misuse (65.2%) with mild respiratory infections and corticosteroid abuse (34.0%) were found. The percentage of drug sellers utilizing corticosteroids for children was significantly greater than the earlier study by Chuc, which found a corticoid rate of only 1% [9]. Such poor treatment choices raise the risk of adverse events and antibiotic resistance. When treating children in drug dispensaries, the percentage of drug dealers selling corticosteroids and antibiotics without a prescription was greater than in drugstores, and the difference was statistically significant. According to previous research findings, drug sellers in rural areas had a limitation of knowledge of antibiotic use than in urban areas [8].

Clients' lack of awareness about the purchased medicines demonstrated a number of weaknesses in the professional practice skills of drug sellers. The percentage of consumers who knew the dose and time of use was higher with prescriptions than the percentage of customers purchasing drugs without a prescription, and the difference was statistically significant. This can be explained by the fact that the consumer who had a prescription was instructed by the doctor to administrate drug properly. Moreover, this was most likely due to the fact that when instructing drug use, drug sellers frequently guided the dose and time of taking the medicine, while the content of adverse effects was rarely addressed.

As a result, it is critical to conduct communication and education for people in order to improve their awareness of safe and effective drug usage. Before making treatment or medication recommendations for both individual drug purchases and symptomatic conditions, drug sellers must exploit adequate information. When selling pharmaceuticals, drug sellers must pay attention to primary patient health, as well as rigorously adhere to legal rules in practice at drug retail establishments in accordance with GPP standards. It is vital to take steps to increase patient knowledge, and accountability and professional ethics of drug sellers, particularly through counseling on safe and effective drug use.

5 CONCLUSION

According to the findings of the research, drug sellers did not respond well to requirements in professional practice, made improper treatment decisions, overuse antibiotics and corticosteroids, and were influenced by economic concerns in business. As a result, the principles of GPP practice had ineffective in improving and overcoming the existence of professional problems in the practice of drug sale; therefore, stronger measures to handle violations were required, as well as strengthening education and improving professional skills for the drug sellers.

ABBREVIATION

GPP: Good Pharmacy Practices; ARI: acute respiratory infection; SD: standard deviation.

ACKNOWLEDGMENTS

This analysis is supported by the participants during the study design and data collection.

AUTHORS CONTRIBUTIONS AND DETAILS

All authors critically reviewed, revised the manuscript, and gave the final approval of the version to be published.

FUNDING AND COMPETING INTERESTS

The authors declare that they have no competing interests in this analysis. This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors. The authors have no other conflict of interest to declare.

REFERENCES

1. Pharmaceutical Society of Australia, *The Pharmacy Guild, 2013*. 2013.
2. G. P. Mohanta, et al., *Achieving good pharmacy practice in community pharmacies in India.* American journal of health-system pharmacy, 2001. **58**(9): p. 809-810.
3. Rosalind Miller and Catherine Goodman, *Performance of retail pharmacies in low-and middle-income Asian settings: a systematic review.* Health policy and planning, 2016. **31**(7): p. 940-953.
4. Chin Fen Neoh, et al., *Nature and adequacy of information on dispensed medications delivered to patients in community pharmacies: a pilot study from Penang, Malaysia.* Journal of Pharmaceutical Health Services Research, 2011. **2**(1): p. 41-46.
5. Felicity Smith, *The quality of private pharmacy services in low and middle-income countries: a systematic review.* Pharmacy world & science, 2009. **31**(3): p. 351-361.
6. N. T. P. Thúy, et al., *Cung cấp kháng sinh không có đơn tại các cơ sở bán lẻ thuốc trên thế giới: Tổng quan hệ thống và phân tích gộp.* Nghiên cứu dược và thông tin thuốc, 2019: p. 2-10.
7. Quân Nguyễn Văn, *Đánh giá kỹ năng thực hành của nhân viên nhà thuốc đạt nguyên tắc, tiêu chuẩn GPP trên địa bàn tỉnh Thanh Hóa giai đoạn 2012 - 2014.* Tạp chí Dược học, 2015. **2**.
8. Nguyen Thi Kim Chuc, et al., *Antibiotic sales in rural and urban pharmacies in northern Vietnam: an observational study.* BMC Pharmacology and Toxicology, 2014. **15**(1): p. 1-10.
9. Nguyen T. K. Chuc, et al., *Management of childhood acute respiratory infections at private pharmacies in Vietnam.* Annals of Pharmacotherapy, 2001. **35**(10): p. 1283-1288.
10. Abdullah I. Abdelaziz, et al., *Quality of community pharmacy practice in antibiotic self-medication encounters: a simulated patient study in upper Egypt.* Antibiotics, 2019. **8**(2): p. 35.
11. Sinaa Alaqeel and Norah O. Abanmy, *Counselling practices in community pharmacies in Riyadh, Saudi Arabia: a cross-sectional study.* BMC health services research, 2015. **15**(1): p. 1-9.
12. Aref A. Bin Abdulhak, et al., *Non prescribed sale of antibiotics in Riyadh, Saudi Arabia: a cross sectional study.* BMC public health, 2011. **11**(1): p. 1-5.
13. Carl Llor and Josep Maria Cots, *The sale of antibiotics without prescription in pharmacies in Catalonia, Spain.* Clinical Infectious Diseases, 2009. **48**(10): p. 1345-1349.
14. Nazanin Foroutan and Fatemeh Dabaghzadeh, *Evaluating the practice of Iranian community pharmacists regarding oral contraceptive pills using simulated patients.* Pharmacy Practice (Granada), 2016. **14**(4).
15. Wubante Demilew Nigussie and Wondemagegn Mulu Lingerew, *Quality of labeling on dispensed medicines and associated factors among public health care facilities in Bahir dar city, Northwest Ethiopia.* Int. J. Pharma Sci. Res, 2014. **1**: p. 47-55.