ASSESSMENT OF COMMUNITY PHARMACISTS' COUNSELING SKILLS ON SELLING ANTIBIOTICS IN CAN THO CITY, VIETNAM: A SIMULATED PATIENT STUDY

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ABSTRACT

Background: *The wide and prolonged use and abuse of antibiotics in livestock and poultry farming, aquaculture, and farming to treat and prevent animal diseases, as well as production purposes, made microorganisms adapt to drugs, facilitate the resistance of many types of antibiotics, and decrease the effectiveness of medicines.* ***Objective:*** *To assess the counseling skills of community pharmacists for antibiotics by using the simulated patient approach.* ***Methods:*** *A cross-sectional study was conducted from June 2021 to June 2022. Data were obtained from a convenience sampling consisting of one pharmacist from each of the 24 participating community pharmacies. To evaluate the pharmacists' counseling skills, a simulated patient role played a standardized headache case requesting self-medication. The interactions of the simulated patient with the pharmacists were audiovisually recorded using a hidden micro-camera. These recordings were analyzed using a questionnaire designed based on the guidelines of the World Health Organization on the rational and safe use of drugs.* ***Results:*** *100% of pharmacy retailers sold medicines at clients' request, 26.7% of the pharmacies and 15.8% of pharmacy counters selling antibiotics for more than 5 days. None of the visited pharmacies asked about past medical history or the history of allergic reactions. The most common advice was to change medicines/use others (n=22, 18.3%). Around 4.2% of pharmacy staff gave instructions for taking the right dose of antibiotics. No simulated patient received information on side effects. The number of pharmacists who gave instructions for the number of drugs used per day (n=40, p<0.05) and for a single dose (n=44, p<0.05) were fewer than the others.* ***Conclusion:*** *This study showed that the pharmacists' counseling skills, guidance provided by the pharmacists to the patient, and training courses for community pharmacists in Vietnam should be enhanced.*

Keywords*: Community Pharmacy Services; Professional Practice; Patient Simulation.*

I. INTRODUCTION

Medicine, particularly antibiotics, has played a vital role in medical therapy; however, improper or arbitrary administration may result in unintended consequences such as increased treatment duration, adverse effects, and even death. Nevertheless, non-compliance with outpatient prescription regulations is happening all over the world, especially in developing countries. Sanchez's research in Spain showed 1,127 prescribing errors occurred out of a total of 42,000 prescriptions; specifically, the most common prescribing error is the single unreadable error (26.2%). Moreover, Pius G. Horumpende et al. at Tanzania demonstrated that 92.3% of retailers dispensed such antibiotics as ampiclox for a cough, azithromycin, and an oral third-generation cephalosporin (cefixime) for dysuria without prescriptions [10].

In Vietnam, the Ministry of Health enacted numerous regulations on the sale and purchase of antibiotics. Its purpose is to advance the supervision of prescribing for outpatient treatment. However, the compliance and implementation of retailers are not good. Post-inspection work is not comprehensive, in addition to the plenty number of pharmacies

in the locality, the human resource structure of management agencies is still defective, which is also one of the mentioned difficulties. According to the study of Nguyen TPT, it was easy to sell non-prescribed antibiotics when required at 100% of pharmacies and drugstores in the examined localities. The proportion of drug sellers' self-prescribed antibiotics for acute respiratory infection in children is relatively high (73.9%). Specifically, drug sellers in other provinces and cities were 4.22 times higher than drug sellers in special central cities (Hanoi and Ho Chi Minh city) selling non-prescribed antibiotics to ARI children; 1.87 times more than at the pharmacy in other cities [2]. This study aimed to assess drug retailers' professional practice skills for antibiotics at retail pharmacies in Can Tho by simulated patients.

II. MATERIALS AND METHODS

2.1. Study subject

2.1.1. Study subjects: the pharmacists at retail pharmacies with GPP standards, operating in Can Tho city.

2.1.2. Time for research: from June 2021 to June 2022.

2.1.3. Research location: 6 urban districts/rural districts of Can Tho city: Ninh Kieu district, Cai Rang district, O Mon district, Binh Thuy district, Phong Dien district, Thoi Lai district.

2.2. Research method

2.2.1. Research design: this study was conducted as a cross-sectional descriptive study.

2.2.2. Sample size determination

Applying sample size formula: $\mathrm{n} = Z^2{}_{(1-\alpha/2)} \dfrac{p(1-p)}{d^2}$

n: sample size; $Z_{1-\alpha/2}$: confidence interval, with the reliability 95% (α =0,05), we have $Z_{1-\alpha/2} = 1,96$; d: desired precision, extracting d = 10% (d = 0,1). p: for pharmacies: The estimated percentage of drug sellers at the pharmacies who gave instructions for the use of medicines to customers buying drugs at the pharmacy. Extracting p=0,412 (Do Van Hao, study at Vinh Phuc province, 2019) [1], and desired precision 10% (d=0,1). Substituting these numbers into a formula for calculating the minimum sample size, we have 94. In case a pharmacy stopped operating during the study period, we would conduct an additional investigation of 20% of the study sample, which was 113, and was rounded to 120 pharmacies/drugstores.

2.2.3. Sampling method

Based on the data of pharmacies (located in urban district)/ pharmacies counters (located in rural district) provided by Can Tho Department of Health, the rate of pharmacies/drugstores that meets GPP standards and operates around Can Tho city is 630/330=1.9~2.0. Thus with a sample size of 120, we chose 80 pharmacies and 40 pharmacy counters to study. Can Tho city has 5 urban districts and 4 rural districts, so to ensure the equivalent number of samples in each urban district/ rural district, we randomly selected 4 urban districts and 2 rural districts. We chose 20 pharmacies/drugstores in each district to conduct the survey. The random sample selection happened conveniently based on the list of pharmacies/drugstores provided by Can Tho Health Department of Health.

Inclusion criteria: pharmacists at the retail pharmacies that meet GPP standard and operates in the Can Tho area.

Exclusion criteria: pharmacists at the retail pharmacies of health facilities, pharmaceutical enterprises, or ones that belong to the regional polyclinic.

2.2.4. Study contents

- The script: a man has a 20-year-old younger brother with middle ear disease. While swimming some days ago, he got water stuck in his ears, and he didn't take any medicine yet. The man required amoxicillin for 3 days to treat his brother's condition. Amoxicillin is chosen in this role-play script as a specific situation because it is one of the most common antibiotic-active ingredients at pharmacies.

- Situation analysis of pharmacists' professional skills through 4 skills:

+ Retail skill: Selling medicines on demand; Medicines have enough information about expiration date; Antibiotics are dispensed for ≥ 5 days; The pharmacist uses promotional bags/wraps.

+ Customer inquiry skill: The pharmacist asks about prescription; The pharmacist asks about medicine user; The pharmacist asks about the patient's symptoms/sickness; The pharmacist asks about the medication that the patient is taking; The pharmacist asks about the patient's past medical history; The pharmacist asks about the patient's allergic reaction; The pharmacist does not have any question.

+ Consulting skill: The pharmacist advises the patient to see a doctor; The pharmacist suggests changing medicines or using new ones; The pharmacist advises the patient to stop using and notify them immediately when having any unusual symptoms; The pharmacist advises the patient to take the right dose of antibiotics; The pharmacist has no advice.

+ Customer instructing skill: The pharmacist instructs for a single dose; The pharmacist gives information about the total days used medicine; The pharmacist gives information about the time of day to take medicine; The pharmacist gives information about the right meal time to take medicines; The pharmacist gives information about side effects.

III. RESULTS

3.1. General information of drug retailers

Table 3.1. Some characteristics of retail pharmacies and pharmacists

Characteristic	Total	Pharmacy	Pharmacy counter	p
	n(%)			
Pharmacy types				
Private business	115 (95.8)	77 (64.2)	38 (31.7)	1.000*
Chain	5 (4.2)	3 (2.5)	2 (1.7)	
Places of business				
On the side of the main road	92 (76.7)	57 (47.5)	35 (29.2)	0.047#
In residential areas/markets	28 (23.3)	23 (19.2)	5 (4.2)	
Work situation				
The number of pharmacists $\geq$ the number of customers	113 (94.2)	75 (62.5)	38 (31.7)	1.000*
The number of pharmacists < The number of customers	7 (5.8)	5 (4.2)	2 (1.7)	
Genders				
Male	27 (22.5)	16 (13.3)	11 (9.2)	0.354#

Characteristic	Total	Pharmacy	Pharmacy counter	p
		n(%)		
Female	93 (77.5)	64 (53.3)	29 (24.2)	
Age (years)				
< 40	80 (66.7)	54 (45.0)	26 (21.7)	0.784#
≥ 40	40 (33.3)	26 (21.7)	14 (11.7)	
The duration of buying drugs (minutes): average time 3.01; SD=1.273				
≤3 (average time 2.86; SD=1.04)	97 (80.8)	66 (55.0)	31 (25.8)	0.512#
>3 (average time 3.30; SD=1.62)	23 (19.2)	14 (11.7)	9 (7.5)	
# Pearson Chi-square Test; * Fisher's Exact Test;				

Result: In a total of 120 surveyed places, it is clear that 95.8% of pharmacies and pharmacy counters worked as a private business, whereas independent pharmacy counters were the most common, with 64.2%. Both pharmacies and pharmacy counters had a number of drug sellers greater than or equal to the number of buyers, with a very large proportion of 94.2%. There was a statistically significant difference in the business location (along the main roads and residential areas/markets; $p<0.05$). The average time to buy drugs was 3.01 (SD = 1.273). This time was 2.86 (SD =1.04) at pharmacies and 3.3 (SD = 1.62) at pharmacy counters). The difference had no statistical significance (t-Test, $p > 0.05$).

3.2. Retail skill

Table 3.2. A result overview of the situation of buying amoxicillin

Result	Total	Pharmacy	Pharmacy counter	p
		n(%)		
Selling medicines at clients' request				
No	0 (0.0)	0 (0.0)	0 (0.0)	-
Yes	120 (100.0)	80 (66.7)	40 (33.3)	
Medicines have enough information about the expiration date				
No	56 (46.7)	38 (31.7)	18 (15.0)	0.796#
Yes	64 (53.3)	42 (35.0)	22 (18.3)	
Antibiotics are dispensed for ≥ 5 days				
No	88 (73.3)	61 (50.8)	27 (22.5)	0.307#
Yes	32 (26.7)	19 (15.8)	13 (10.8)	
Using promotional bags/wraps				
No	106 (88.3)	67 (55.8)	39 (32.5)	0.033*
Yes	14 (11.7)	13 (10.8)	1 (0.8)	
# Pearson Chi-square Test; * Fisher's Exact Test.				

Result: It is clear that the information on amoxicillin's expiration date advised by retail pharmacies was just over half of all survey participants. A majority (73%) of pharmacy counters and pharmacies dispensed antibiotics for more than or equal to 5 days. There was also a difference in whether or not to use promotional bags/wraps between retail pharmacies.

3.3. Customer inquiry skill

Table 3.3. Pharmacists' question content about patients' information

Question contents	Total	Pharmacy	Pharmacy counter	p
	n (%)			
Asking about prescriptions				
	2 (1.7)	2 (1.7)	0 (0.0)	0.552*
Asking about medicine users				
Age	11 (9.2)	4 (3.3)	7 (5.8)	0.041*
Weight	2 (1.7)	0 (0.0)	2 (1.7)	0.109*
Asking about symptoms/illness				
	49 (40.8)	32 (26.7)	17 (14.2)	0.793#
Asking about medicines which the patient is taking				
	3 (2.5)	1 (0.8)	2 (1.7)	0.257*
Asking about past medical history				
	0 (0.0)	0 (0.0)	0 (0.0)	-
Asking about the history of an allergic reaction				
	0 (0.0)	0 (0.0)	0 (0.0)	-
No questions asked				
	67 (55.8)	46 (38.3)	21 (17.5)	0.603#
# Pearson Chi-square Test; * Fisher's Exact Test				

Result: Considering the question contents about patient's information, a high rate of pharmacies and pharmacy counters did not ask their patients any questions 55.8% or about their symptoms 40.8%. No pharmacies or pharmacy counters in the survey asked questions about past medical history or allergic reactions to amoxicillin.

3.4. Consulting skill

Table 3.4. Pharmacist's general advice contents

General contents	Total	Pharmacy	Pharmacy counter	p
	n (%)			
Advice about seeing a doctor get prescription				
	1 (0.8)	0 (0.0)	1 (0.8)	0.333*
Advising to change medicines/ use others				
	22 (18.3)	14 (11.7)	8 (6.7)	0.739#
Advice about a solution to adverse drug reactions after taking medicines				
	0 (0.0)	0 (0.0)	0 (0.0)	-
Instruction for using enough antibiotic dosing				
	5 (4.2)	3 (2.5)	2 (1.7)	1.000*
No advice				
	85 (70.8)	56 (46.7)	29 (24.2)	0.776#
# Pearson Chi-square Test; * Fisher's Exact Test				

Result: A massive number of pharmacists at the pharmacies and pharmacy counters, with 85 people (70.8%) did not give any advice to buyers. Only 14 pharmacies and 8 pharmacy counters advised to change medicines/ use others. Almost no survey participants or only few ones advised about taking the right dose of antibiotics, getting a prescription from a doctor or solving adverse drug reactions after taking medicines.

3.5. Customer instructing skill

Table 3.5. Contents and forms of pharmacists' instructions on how to use medicine

Contents and forms of instruction**	Total	Pharmacy	Pharmacy counter	p
	n (%)			
Instruction for single dose				
No instruction	80 (66.7)	60 (50.0)	20 (16.7)	0.006#
Verbal instruction	40 (33.3)	20 (16.7)	20 (16.7)	
Instruction for the number of drug use per day				
No instruction	76 (63.3)	56 (46.7)	20 (16.7)	0.032#
Verbal instruction	44 (36.7)	24 (20.0)	20 (16.7)	
Instruction for the best time of day to take medicine				
No instruction	85 (70.8)	58 (48.3)	27 (22.5)	0.570#
Verbal instruction	35 (29.2)	22 (18.3)	13 (10.8)	
Instruction for the right meal time to take medicines				
No instruction	117 (97.5)	79 (65.8)	38 (31.7)	0.257*
Verbal instruction	3 (2.5)	1 (0.8)	2 (1.7)	
Information on side effects				
Not provided	120 (100.0)	80 (66.7)	40 (33.3)	-
# Pearson Chi-square Test; * Fisher's Exact Test; ** Each of the contents in the survey was conducted with 4 small contents, including no instruction/ no information, only talking, only writing, both talking and writing; the unobserved contents would be hidden.				

Result: All forms of instructions, from a single dose, the number of drugs used per day, the best time of day using medicine to side effects, almost all retail pharmacies did not advise or inform their clients. In detail, no instruction or information about the right meal time o take medicine, and side effects were recorded for nearly 100% (97.5% and 100%, respectively).

IV. DISCUSSION

4.1. General information of drug retailers

Overall, most types of retail pharmacies located on the side of the main road were considerably 3 times higher than markets/areas (a statistically significant difference with p<0.05). In detail, a tiny fraction of business types were pharmacy chains with 4.2%. This study result is quite similar to the result in Northern Vietnam at the same research time; and the research result of Do TTN and her partners in 2014 [1],[7]. Besides, a higher proportion of female pharmacists than male pharmacists was recorded with 77.5% and 22.5%, respectively.In addition, the difference had no statistical significance (t-Test, $p > 0,05$). With this surveyed time, it is very difficult to ensure the effectiveness of service quality, even to meet minimum requirements. According to calculations and statistics from many multinational studies, in low-middle income countries such as Guatemala, Ethiopia, Uganda, Pakistan, Zambia, Kenya, Sudan, etc. Amoxicillin is the most consumed antibiotic with 26.5% of total sales. It is bought and used as an over-the-counter drug OTC [5].

4.2. Retail skill

After observing sold medication packs, we recorded 14 packages containing advertising information (about 12%), and nearly half of the packs sold (56 products, 46.7%) did not have enough limited information. Besides, nearly three-quarters of pharmacists sold lower-5-day-dosage (drugstores/pharmacy counters: 50.8%/22.5%). These data were higher than those in Tanzania [10]; however, lower than India's [9].

4.3. Customer inquiry skill

Only two (1.7%) of the 120 pharmacists at the drugstores actively required more information about Amoxicillin prescriptions. We determined that pharmacists rarely asked their clients about age (2 drug sellers), weight (3 ones) and medical history (3 ones), accounting for 9.2%, 1.7% and 2.5%, respectively. Likewise, more than half of the survey participants sold medications at the client's request without any extra information (67 turns, 55.8 percent). Compared to a finding reported in Souheil Hallit's research at Lebanon-community pharmacies in 2019, the number of consumers accessing pharmacists' advice remained high 4-20 times [4]. Symptoms were the most basic information drug sellers asked their patients, comprising 40.8% or 49 survey participants.

4.4. Consulting skill

Regarding the patient's symptoms in the script, 22 pharmacists advised them to use alternative medicines, with 5 cases (4.2%) recommending consumers to take amoxicillin accurately. Just one pharmacist (0.8%), a shockingly low number, consulted with the help of a professional for inspection, diagnosis, and prescription. In China, when patients need a clinic for a more thorough checkup, about 9-18% of pharmacists give information on ADRs and attend to medical history, drug allergies, or recommendations [3], which reveals a clear distinction between urban and rural areas.

4.5. Customer instructing skill

The number of pharmacists who gave instructions for the number of drugs used per day and for a single dose was 40 and 45 ($p<0.05$). Only 29.2% of simulated visitors were instructed on the best time of day to take medicine. In detail, no instruction or information about the right time compared to meals to take medicine and side effects were recorded for nearly 100% (97.5% and 100%, respectively). This result was 4-20 times lower than the research at Lebanon-community pharmacies [4].

V. CONCLUSIONS

This research used the methods of customer role-playing, which is extensively used across the world, in numerous fields with varying big and small scales in many socio-economic disciplines. The objectivity of the actual study is higher than that of the online survey or interview model owing to the reproduction of the genuine scenario occurring in pharmacy transactions, interactions, and material communicated between pharmacists and consumers. In the results of the above studies, it is highly worrisome to draw conclusions about the service quality and professional qualifications of the sales team of pharmacists at GPP-certified drug retailers.

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