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Assessing Quality of Self-Medication Services in Pharmacies in Bandung, West Java, Indonesia using a Mystery Customer Approach

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ABSTRACT

Several reports have shown that there has been a global increase in the practice of self-medication. Although it offers various benefits, it can also have negative effects on the patients. The quality of self-medication services provided by pharmacists has been reported to be a key factor affecting the outcome of this practice. Therefore, this study aims to evaluate the quality of self-medication services in Bandung, West Java, Indonesia as well as its influential factors using a mystery customer approach. The mystery customers acted as patients seeking self-medication drugs at 232 pharmacies selected through stratified random sampling. The quality of the services provided was measured based on four subdomains, including patient assessment, the accuracy of drug selection, the drug information provided, and lifestyle modification counseling. The result showed that patient assessment regarding signs and symptoms was only performed by 42.82% of pharmacies in Bandung. Furthermore, 14.44% assessed pharmacological and nonpharmacological therapy before the visit, and only 10.56% evaluated specific medical conditions. Although the percentage of patient assessments performed was low, the accuracy of drug selection was relatively high at 85.34%. The most commonly provided information was the instruction on medication consumption (59.09%), while the least was on side effects (5.17%). The results also showed that information on lifestyle modification was only delivered by 10.34% of pharmacies. The quality of self-medication services varied based on the type of pharmacy and service provider. State-owned pharmacies had a higher overall score for quality compared to the retail and private standalone ($p<0.05$). Based on the service providers, pharmacists had a higher score compared to technicians and other personnel ($p<0.05$). These results emphasize the critical role of pharmacists in providing quality self-medication services to ensure rational and safe treatment for patients.

Keywords: self-medication, mystery customer, patient assessment, drug selection, drug information.

INTRODUCTION

Self-medication is a practice that has been increasing globally, and the Indonesian Central Statistics Agency showed that it was found among 84.23% of the population in 2021 (Indonesian Central Statistic Agency, 2022). Furthermore, this practice is common in a wide range of communities, including students and vulnerable populations, such as the elderly and those with comorbid (Parmar *et al*., 2015). Self-medication is an affordable and accessible solution for many communities. It saves time and is often used to treat minor ailments, such as fever, pain, dizziness, cough, common cold, stomach ulcers, intestinal worms, diarrhea, and skin diseases (Sinulingga, 2020; Kifle *et al*., 2021; Noone & Blanchette, 2018).

Although this practice provides several benefits, it also has various negative impacts, including side effects, hospitalization, and allergic responses. Previous studies have reported the high prevalence of hospitalization related to

self-medication. A study in France stated that among 3027 patients admitted to the emergency department in 11 hospitals, 84.4% practiced self-medication. Furthermore, 9.78% had a history of adverse drug reactions, of which 1.72% were related to this practice (Asseray *et al*., 2013). Another study showed that 22.8% of 2218 reports of adverse medication reactions occurred due to the administration of medicines without a doctor's prescription. Serious adverse effects were also observed after the self-administration of ibuprofen, aspirin, and paracetamol (Durrieu *et al*., 2017).

Pharmacists play a critical role in self-medication services, and advice provided by them is one of the factors considered by patients during the selection of drugs. A previous study stated that 89% of patients required counseling by this health personnel (Selvaraj *et al*., 2014; Candradewi & Kristina, 2017). However, implementing self-medication is challenging for pharmacists, particularly in maintaining the safety and efficacy of the medications used. Treatment failure related to this practice is often caused by the patient's reluctance to seek advice. Several studies showed that 32.9% of patients felt a lack of confidentiality while seeking advice, 25.3% believe pharmacists were impatient, and 14.2% did not trust the information provided (Suleiman, 2013). Another factor affecting the outcome of self-medication is pharmacists' competency and clinical ability to provide services to the patient (Brata *et al*., 2015). Therefore, this study aims to assess the quality of self-medication services as well as to determine the factors affecting its quality in Bandung, West Java, Indonesia using a mystery customer approach.

MATERIALS AND METHODS

Study design, Period, and Ethical Approval

This study was carried out in Bandung, from October to December 2021 using a cross-sectional design. The pharmacies used were not notified of the evaluation process to ensure that the results were interpretable and valid. Furthermore, informed consent was obtained from Bandung Public Health Department, which served as a regulator and major stakeholder. Based on WHO-CIOMS 2016 in terms of protecting participants' data and identity, the results of this study were presented as a general report to the stakeholder without specifying the identity of the pharmacies. This study was approved by the Research Ethical Committee of Poltekkes Kemenkes Bandung, Ministry of Health, with reference no. 27/KEPK/EC/VI/2021. Approval was also obtained from the local government (Bandung Public Health Department) with decree no. PP.06.02/126.31-Dinkes/VIII/2021.

Population and sample size determination

The population in this study consisted of pharmacists, pharmacy technicians, and staff working at pharmacies in Bandung. In 2021, the number of pharmacies according to Bandung Public Health Department was approximately 500, with 54, 120, 78, 95, and 165 being located in the west, south, north, central, and east areas, respectively. Therefore, the sample size used for this study was 230 (95% CI, 5% margin of error), and the stratified random sampling method was used to select the samples based on location.

Data collection

Data was collected from mystery customers who acted as patients and visited a pharmacy to seek self-medication. A total of 40 mystery customers were selected among the 3rd-grade undergraduate students of Pharmacy department, Poltekkes Kemenkes Bandung, who had taken the "Pharmacy Communication" course and had been trained on the roles to be portrayed. During the simulation, the patients did not initiate discussions with staff, created a tense atmosphere, and ask for more information. Furthermore, the mystery customers were advised to answer questions politely, briefly, and to the point, with payment in cash. Mystery customers filled out the study instrument after leaving the pharmacy. The cases simulated in this study included cough/common cold, diarrhea/constipation, pain/fever, and gastritis. Information regarding the identity of the mystery customers, as well as pharmacies and staff obtained, was kept confidential throughout and after the study.

Assessment Checklist

The assessment instrument was developed and modified based on Indonesian guidelines on OTC medication and several studies using AS METHOD strategy in providing self-medication services. The AS METHOD has also been recommended in European pharmacy literature as a method of evaluation that helps pharmacists to enhance their capacity to provide the right self-care advice.

Table I. Checklist for self-medication services

Self-medication services	Discussed	Not Discussed	Maximum Score
Patient Assessment			**9**
Sign and symptom			
For whom medication ordered	1	0	
Onset of sign/symptoms	1	0	
Duration of sign/symptoms	1	0	
Efforts to treat sign and symptom			
Pharmacological	1	0	
Non pharmacological	1	0	
Specific medical condition			
Pregnancy	1	0	
Drug allergy	1	0	
Consumption of other drugs	1	0	
Other illness	1	0	
Rational medication selection[a]	**1**	**0**	**1**
Drug information			**5**
Instruction	1	0	
Dosage	1	0	
Duration of treatment	1	0	
Precaution	1	0	
Side effects	1	0	
Lifestyle modification counseling	**1**	**0**	**1**

[a]rationale of medication selection was assessed by the principal investigator after mystery customer purchased the product

Furthermore, the quality of self-medication services was measured based on four subdomains, namely 1) patient assessment (for whom the medication was ordered, onset and duration of signs/symptoms, pharmacological and non-pharmacological treatment efforts, as well as specific medical conditions, such as pregnancy, allergy, consumption of drugs, and other illness), 2) the accuracy of drug selection, 3) the drug information provided to mystery customer (instruction, dosage, duration of treatment, precaution, and side effects), and 4) lifestyle modification counseling.

The data source for pharmacy ownership classification was obtained from Bandung Public Health Department. Meanwhile, information on service providers was gathered through mystery customers' observation by noting the label used or making direct inquiries after self-medication services. The mystery customers filled out a form based on the scoring system outlined (Table I) using the Guttman scale. The only exception was the evaluation of "rational medication selection", which was assessed by a principal investigator. The maximum score for patient assessment, drug information, rational medication selection, and lifestyle medication was 9.00, 1.00, 5.00, and 1.00, respectively.

Data analysis

Data collected were sorted, cleaned, and coded using univariate and bivariate analyses. Furthermore, the univariate analysis was carried out using descriptive statistics and cross-tabulation. The data were presented as frequency, percentage, mean, and standard deviation. During the bivariate analysis, the scores were converted into numeric data using the successive interval method. Pearson/Spearman correlation test was also performed in this study to determine the correlation of associated factors with a 95% confidence interval using a p-value of <0.05 as a cutoff point. The Pearson correlation test was carried out on normal and homogenous data series, while Spearman evaluation was provided as a non-parametric alternative.

Table II. Demographic of Pharmacies Characteristic

Characteristic	n	%
Type of Pharmacy (Ownership)		
State-owned corporation retail pharmacy	23	(9.91)
Private corporation retail pharmacy	56	(24.14)
Private standalone pharmacy	153	(65.95)
Location		
West Bandung	23	(9.91)
South Bandung	53	(22.84)
North Bandung	36	(15.52)
Central Bandung	44	(18.97)
East Bandung	76	(32.76)
Time of visit		
Morning	120	(51.72)
Evening	112	(48.28)
Case		
Gastritis	46	(19.83)
Pain/Fever	67	(28.88)
Diarrhea/Constipation	62	(26.72)
Cough/Common cold	57	(24.57)
Service provider		
Pharmacist	49	(21.12)
Pharmacy technician	95	(40.95)
Others	88	(37.93)
Total	**232**	**100**

RESULTS AND DISCUSSION

Self-medication is a common practice in Indonesia that was often used to treat minor illnesses, including fever, mild pain, gastritis, diarrhea, constipation, and common cold. It has also been reported to provide several benefits to patients and the healthcare system. Furthermore, this practice provided easy access to treatment in countries with inadequate health systems, specifically where postponing therapy can be detrimental to the patient or reduce the efficacy of treatment, such as in asthma and contraceptive pills. Easy access to medication can support the treatment of chronic disease as well as assist patients in managing minor health problems independently (Onsori *et al*., 2020; Ruiz, 2010). In this study, mystery customers were assigned to play the role of patients who requested self-medication services at 232 pharmacies in Bandung from October-November 2021 with predetermined cases.

Baseline characteristic of pharmacies visited by mystery customers (Table II). Self-medication was commonly practiced in communities for various reasons, including previous prescriptions, the high cost of medical consultation, prolonged duration of treatment, and inadequate medical service facilities (Onsori, *et al*., 2020). Despite its general safety, studies have shown that this practice can pose potential risks, such as inaccurate self-diagnosis by the patient, masking serious symptoms that required further medical treatment, drug side effects, and failure to identify contraindications. Other risks included drug interactions, inappropriate routes or methods of drug use, risk of dependence or abuse, medication mishandling, and selection error. Another issue with the practice is the difficulty of monitoring therapeutic outcomes, such as compliance in following pharmacist advice. At the community level, inappropriate self-medication can increase the incidence of drug-induced hospitalization, thereby increasing the economic burden and public health risk (Ruiz, 2010; Richardson *et al*., 2014).

Only 42.82% of pharmacies in Bandung assessed signs and symptoms, while 14.44% evaluated pharmacological and nonpharmacological therapy before visit (Table III).

Table III. Self-medication services received by mystery customer.

Self-medication services	n	(%)
Patient Assessment		
Patient was asked about sign and symptom		
For whom medication ordered	125	(53.88)
Onset of sign/symptoms	91	(39.22)
Duration of sign/symptoms	82	(35.34)
Mean	**99.3**	**(42.82)**
Patient was asked about efforts to treat sign and symptom		
Pharmacological	52	(22.41)
Non pharmacological	15	(6.47)
Mean	**33.5**	**(14.44)**
Patient was asked about specific medical condition		
Pregnancy	2	(0.86)
Drug allergy	12	(5.17)
Consumption of other drugs	36	(15.52)
Other illness	48	(20.69)
Mean	**24.5**	**(10.56)**
Rational medication selection	**198**	**(85.34)**
Drug information		
Instruction	137	(59.05)
Dosage	85	(36.64)
Duration of treatment	58	(25.00
Precaution	25	(10.78)
Side effects	12	(5.17)
Mean	**63.4**	**(27.33)**
Lifestyle modification counseling	**24**	**(10.34)**

Furthermore, only 10.56% assessed specific medical conditions, with pregnancy and drug allergy being the least evaluated at 0.86% and 5.17%, respectively. Patient assessment was an essential aspect of self-medication services provided by pharmacists. This was because the information related to the patient's condition can influence the pharmacists' drug selection, thereby ensuring the rational use of drugs. Assessment related to pharmacological and non-pharmacological efforts to manage symptoms before visits had not been extensively practiced in Bandung. This process was important to prevent drug duplication as well as provide the basic information for the selection of medication. Extracting information related to patients' clinical conditions, such as pregnancy, allergies, and other diseases, was important to ensure that the drug selected was appropriate and safe. Although some over-the-counter medications were safe for consumption, the use of certain self-medication drugs required special attention during usage. Furthermore, several studies have shown the risk of allergies related to the use of NSAIDs (Wöhrl, 2018), as well as the side effects of common cold drugs and analgesics for pregnant women (Erebara *et al*., 2008). The FDA classified pseudoephedrine in common cold preparations as category C, indicating it must only be usedwhen the therapeutic benefits outweighed the risks (Głowacka & Wiela-Hojeńska, 2021). It is important to have information on a patient's previous drug usage to avoid potential interactions. Several studies have shown that self-medication drugs and pharmaceuticals, such as NSAIDs and antacids, posed a significant risk of drug interactions, leading to loss of therapeutic effect, toxicity, and other related issues (Panda *et al*., 2016; Vacher *et al*., 2020).

These results are consistent with other self-medication studies carried out in eastern Indonesia. Furthermore, this study evaluated two approaches for assessing information on the practice of the patients, namely mystery customer observation and interviews. Based on the observation, pharmacists often asked only 1-2 questions concerning the symptoms of the patient.

Table IV. Self-medication services received by mystery customers based on cases simulated.

Self-medication services	Gastritis (n=46)		Pain/Fever (n=67)		Diarrhea/ Constipation (n=62)		Cough/Common Cold (n=57)	
	N	(%)	n	(%)	n	(%)	n	(%)
Patient Assessment								
Patient was asked about sign and symptom								
For whom medication ordered	20	(43.48)	31	(46.27)	43	(69.35)	31	(54.39)
Onset of sign/symptoms	10	(21.74)	28	(41.79)	37	(59.68)	16	(28.07)
Duration of sign/symptoms	11	(23.91)	22	(32.84)	35	(56.45)	14	(24.56)
Patient was asked about efforts to treat sign and symptom								
Pharmacological	9	(19.57)	17	(25.37)	18	(29.03)	8	(14.04)
Nonpharmacological	3	(6.52)	3	(4.48)	7	(11.29)	2	(3.51)
Patient was asked about specific medical condition								
Pregnancy	0	(0.00)	0	(0.00)	2	(3.23)	0	(0.00)
Drug allergy	1	(2.17)	3	(4.48)	5	(8.06)	3	(5.26)
Consumption of other drugs	11	(23.91)	8	(11.94)	11	(17.74)	6	(10.53)
Other illness	13	(28.26)	12	(17.91)	7	(11.29)	16	(28.07)
Rational medication selection	39	(84.78)	62	(92.54)	46	(74.19)	51	(89.47)
Drug information								
Instruction	27	(58.70)	36	(53.73)	45	(72.58)	29	(50.88)
Dosage	16	(34.8)	22	(32.84)	29	(46.77)	18	(31.58)
Duration of treatment	10	(21.74)	19	(28.36)	23	(37.10)	6	(10.53)
Precaution	4	(8.70)	5	(7.46)	9	(14.52)	7	(12.28)
Side effects	2	(4.35)	4	(5.97)	5	(8.06)	1	(1.75)
Lifestyle modification counseling	9	(19.57)	1	(1.49)	12	(19.35)	2	(3.51)

This score was lower compared to the value reported during the interview, namely 5 questions (Brata *et al*., 2015). Drug use was a complex process that integrated various treatment processes, such as prescribing, ordering treatment (either through prescription or self-medication), dispensing, administering, and monitoring drug effects. Assessment of patient information was one of the key elements in the medication use system. Furthermore, evaluation of demographic data (age, weight) and clinical aspects (history of drug use, laboratory results) can help pharmacists to determine the right type of treatment, dose, and route of administration. Proper patient information has been reported to reduce the incidence of Adverse Drug Events (ADE). Although the percentage of assessments performed by pharmacies in Bandung was low, the accuracy of drug selection was relatively high (85.34%). The most prevalent information provided to patients was instruction on the consumption of medication (59.09%), while the least delivered was on side effects (5.17%). The results also showed that information on lifestyle modification was only provided by 10.34% of pharmacies.

The distribution of self-medication services based on the cases simulated by the mystery customers (Table IV). Furthermore, some of the simulated cases included cough/common cold, diarrhea/constipation, pain/fever, and gastritis. The selection of these medical conditions was based on the wide variety of self-medication drugs available in pharmacies and the wide usage in the community. The results showed that the accuracy of drug selection ranged from 74.19% to 92.54%.

Cough/common cold symptoms can cause discomfort in some patients, hence, medicines were often used to alleviate them (as symptomatic treatment) (Noone & Blanchette, 2018). The accuracy of the drug selection in self-medication for this illness was 89.47%. The inaccuracies experienced included the administration of steroids (methylprednisolone and dexamethasone) as well as combination preparations containing pseudo-ephedrine and loratadine for rhinitis allergy.

Furthermore, anti-inflammatory steroids were often used to treat a variety of airway symptoms, particularly chronic inflammatory airway diseases (Sethi & Singhal, 2008). Although these drugs were clinically effective in reducing airway inflammation, their usage in self-medication was considered inappropriate. This was because local regulation had shown that steroid, pseudoephedrine, and loratadine combination were categorized as ethical drugs.

In pain/fever cases, most of the pharmacies recommended paracetamol for treatment, and Zeid, *et al*. (2020) stated that approximately 68% of patients self-medicated for pain, fever, and headaches. These findings showed the prevalent use of self-medication for the management of these illnesses. NSAIDs, such as paracetamol, ibuprofen, diclofenac, and mefenamic acid, were accessible without a prescription at pharmacies. This result is consistent with findings from previous studies in Brazil (Barros *et al*., 2019), Saudi Arabia (Makeen *et al*., 2019), and India (Kumari *et al*., 2019). Aside from paracetamol, diclofenac and mefenamic acid were two analgesics that were often recommended to patients due to their higher potency. However, these drugs have a higher risk of side effects compared to paracetamol (Wongrakpanich *et al*., 2018).

Gastritis was a common mild disease with a variety of self-medication therapy options (Mehuys *et al*., 2009), such as antacids, H_2 antagonists (ranitidine and famotidine), and proton pump inhibitors (omeprazole). The result of this study showed that the accuracy of drug selection for gastritis was 84.78%, and most of the mystery customers received antacid recommendations. A small number of mystery customers were advised to use omeprazole and lansoprazole. Although both drugs belong to the group of proton pump inhibitor drugs, lansoprazole was not classified as self-medication medicine, indicating that a prescription was needed for its usage.

In diarrhea cases, the percentage of patient assessment and drug information received by the mystery customer was higher compared to other cases. However, the accuracy of the drug selection was the least compared with diarrhea/constipation and pain/fever having 74.19% and 92.54%, respectively. This inaccuracy was observed during the dispense of loperamide to mystery customers as an antidiarrheal agent by several pharmacies in Bandung. Several studies have demonstrated the effectiveness and safety profile of this drug in acute diarrhea. In some countries, such as the USA, the Netherlands, and the United Kingdom, loperamide was also classified as an over-the-counter (OTC) medication and was recommended for the treatment of non-complicated cases (Wingate *et al*., 2001). Despite its published efficacy and safety profile, it was still categorized as an ethical medication in Indonesia. This indicated that the drug can only be accessed by patients with a prescription and was not available as a self-medication product. At the recommended dose, loperamide has no notable adverse effects, but a higher dosage can lead to serious health problems, including cardiac rhythm disorder and death. The high number of loperamide abuse as an opioid derivative in the United States has caused the FDA to tighten regulations regarding its usage (Food and Drug Administration, 2019). This indicated that pharmacists have a significant role in ensuring the safety and rational drug use in the community. Safer self-medication options in diarrhea cases include adsorbents (ex: carbon, attapulgite, kaolin, and pectin), traditional preparations (ex: guava leaves extract), and oral rehydration. These various preparations belong to the group of over-the-counter products that are recommended for the first treatment of non-complicated acute cases. Meanwhile, complicated diarrhea required medical attention and more complex therapy regimen.

Drug information was another crucial component in self-medication services, which can lower the incidence of drug therapy problems as well as ensure rational treatment. It was also reported to improve patient therapy outcomes and satisfaction with the services provided (Veiga *et al*., 2021). These findings showed that inadequate drug information was provided by pharmacists in Bandung. The most prevalent information provided to mystery customers was the instruction to administer the medicine (59.05%), while the least was on adverse effects (5.17%). Based on the case simulated by the mystery customer, instructions on the administration of medicine were higher in diarrhea, constipation, and gastritis compared to other cases. It was important to give education on the use of adsorbents and antacids for the treatment of gastrointestinal problems due to the potential drug interaction (Anbhuselvam *et al*., 2019). Patients receiving bisacodyl should be informed about the time of drug administration to achieve optimal effect. Others using antacids must also be instructed to chew the tablet or shake the liquid preparation before administration to obtain the best effect (Shon *et al*., 2021).

Table V. Self-medication services received by mystery customer based on service provider

Self-medication services	Pharmacist (n=49)		Pharmacy Technician (n=95)		Others (n=88)	
	n	(%)	n	(%)	N	(%)
Patient Assessment						
Patient was asked about sign and symptom						
For whom medication ordered	33	(67.35)	54	(56.84)	38	(43.18)
Onset of sign/symptoms	35	(71.43)	33	(34.74)	23	(26.14)
Duration of sign/symptoms	31	(63.27)	31	(32.63)	20	(22.73)
Patient was asked about efforts to treat sign and symptom						
Pharmacological	20	(40.82)	15	(15.79)	17	(19.32)
Non pharmacological	5	(10.20)	8	(8.42)	2	(2.27)
Patient was asked about specific medical condition						
Pregnancy	-	-	1	(1.05)	1	(1.14)
Drug allergy	5	(10.20)	5	(5.26)	2	(2.27)
Consumption of other drugs	11	(22.45)	13	(13.68)	12	(13.64)
Other illness	13	(26.53)	18	(18.95)	17	(19.32)
Rational medication selection	38	(77.55)	85	(89.47)	75	(85.23)
Drug information						
Instruction	36	(73.47)	55	(57.89)	46	(52.27)
Dosage	30	(61.22)	28	(29.47)	27	(30.68)
Duration of treatment	21	(42.86)	22	(23.16)	15	(17.05)
Precaution	8	(16.33)	10	(10.53)	7	(7.95)
Side effects	4	(8.16)	4	(4.21)	4	(4.55)
Lifestyle modification counselling	9	(18.37)	11	(11.58)	4	(4.55)

This study also found that information regarding lifestyle modification and non-pharmacological treatment was more prevalent in diarrhea, constipation, and gastritis cases, compared to common cold or pain/fever. This finding is consistent with the etiology and risk factors of these diseases. Unhealthy lifestyles, such as consuming unhygienic food, has been reported to cause gastrointestinal problems like diarrhea, constipation, and gastritis. Therefore, lifestyle modification and non-pharmacological therapy should be provided by pharmacists due to their importance. The results showed that the etiology of pain, fever, and common cold were more focused on physical abnormalities or infection that occurred abruptly, rather than lifestyle factors.

Distribution of self-medication services received by mystery customer based on the provider (Table V). The overall percentage of services provided by pharmacists were higher compared to pharmacy technician and others. Furthermore, patient assessment regarding signs and symptoms of the illness, the efforts made before visit, and the specific conditions were explored more frequently by pharmacists They also provided more information on the use of drugs, dosage, duration of treatment, precaution, and side effects.

Statistical analysis was carried out to analyze the correlation between variables affecting the quality of self-medication. The results showed that the rationality of drug selection was not affected by the type of pharmacy, time of visit, and the cases simulated ($p>0.05$), as shown in Table 6. Meanwhile, the quality of patient assessment was influenced by the type of pharmacy and service provider ($p<0.05$). State-owned pharmacies had a higher overall score of self-medication service compared to private retail and standalone due to the use of higher and better pharmaceutical standards. The higher score can be observed as the output of their drug cycle management and implementation of Standard Operating Procedure (SOP) in state-owned pharmacies. However, further studies are needed to determine the correlation between organizational management and pharmaceutical service outputs.

The quality of drug information delivered to mystery customers was also affected by the service provider ($p<0.05$). Pharmacists had a higher score for self-medication service compared to pharmacy technicians and other personnel.

Table V. Self-medication services received by mystery customer based on service provider

Self-medication services	Pharmacist (n=49)		Pharmacy Technician (n=95)		Others (n=88)	
	n	(%)	n	(%)	N	(%)
Patient Assessment						
Patient was asked about sign and symptom						
For whom medication ordered	33	(67.35)	54	(56.84)	38	(43.18)
Onset of sign/symptoms	35	(71.43)	33	(34.74)	23	(26.14)
Duration of sign/symptoms	31	(63.27)	31	(32.63)	20	(22.73)
Patient was asked about efforts to treat sign and symptom						
Pharmacological	20	(40.82)	15	(15.79)	17	(19.32)
Non pharmacological	5	(10.20)	8	(8.42)	2	(2.27)
Patient was asked about specific medical condition						
Pregnancy	-	-	1	(1.05)	1	(1.14)
Drug allergy	5	(10.20)	5	(5.26)	2	(2.27)
Consumption of other drugs	11	(22.45)	13	(13.68)	12	(13.64)
Other illness	13	(26.53)	18	(18.95)	17	(19.32)
Rational medication selection	38	(77.55)	85	(89.47)	75	(85.23)
Drug information						
Instruction	36	(73.47)	55	(57.89)	46	(52.27)
Dosage	30	(61.22)	28	(29.47)	27	(30.68)
Duration of treatment	21	(42.86)	22	(23.16)	15	(17.05)
Precaution	8	(16.33)	10	(10.53)	7	(7.95)
Side effects	4	(8.16)	4	(4.21)	4	(4.55)
Lifestyle modification counselling	9	(18.37)	11	(11.58)	4	(4.55)

Among the four subdomains, they also assessed more information regarding patient conditions ($p<0.05$) and provided more comprehensive drug information ($p<0.05$). This finding is in line with other studies, that pharmacists played an important role in improving the quality of pharmaceutical services (Hanggara, *et al*., 2017) and customer satisfaction (Itsnayain *et al*., 2021). Although the work experience of the service providers was not investigated in this study, previous reports demonstrated that it influenced the quality of services provided. Furthermore, pharmacists and technicians with broader and longer work experience provided more positive impact (Brata *et al*., 2016).

The quality of self-medication services can be influenced by the interaction between pharmacists and patients. The ability to gather information related to patients' problems as well as their willingness and trust to provide the information needed was very crucial. Previous studies showed that patients' trust in pharmacists was lower compared to doctors. Another factor affecting the quality of self-medication services was the professionalism of pharmacists, such as competency and implementation of SOPs. At the organizational level, staff training and facilities provided for counseling also supported the outcome of the services provided. Educational systems, continuing professional education, and government policies are external influential factors (Brata *et al*., 2016).

Pharmacists played an important role in achieving a safe and rational self-medication practice. Several studies showed that the major barrier in this practice was the lack of confidence in their clinical ability, and the fear of taking on additional responsibilities and accountability (Rutter, 2015). This study emphasized the importance of the role of pharmacists in self-medication services to ensure rational and safe treatment for patients.

CONCLUSION

The quality of self-medication services in Bandung varied based on the type of pharmacy and service provider. Furthermore, state-owned pharmacies provided higher and better self-medication services compared to private retail and standalone. Based on the service provider, pharmacists outperformed pharmacy technicians

and other personnel. They also played an important role in self-medication services to ensure rational and safe treatment for patients.

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AUTHORS' CONTRIBUTIONS

All authors had equally contributed with this study work.

CONFLICTS OF INTEREST

All authors have none to declare.

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