Pharmacy Practice

Pharmacy Practice is a free full-text peer-reviewed journal with a scope on pharmacy practice. Pharmacy Practice is published quarterly. **Pharmacy Practice does not charge any publication fee to the authors**. The current and future absence of any article processing charges (APCs) is signed in the MoU with the Center for Pharmacy Practice Innovation (CPPI) at Virginia Commonwealth University (VCU) School of Pharmacy**. Pharmacy Practice** is the consequence of the efforts of a number of colleagues from different Universities who belief in collaborative publishing: no one pays, no one receives. **Pharmacy Practice** is funded through the corporate responsibility funds of Centro de Investigaciones y Publicaciones Farmaceuticas.

Although focusing on the practice of pharmacy, **Pharmacy Practice** covers a wide range of pharmacy activities, among them and not being comprehensive, clinical pharmacy, pharmaceutical care, social pharmacy, pharmacy education, process and outcome research, health promotion and education, health informatics, pharmacoepidemiology, etc.

Having a international scope is a major goal for **Pharmacy Practice**. See the list of authors since 2007.

Pharmacy Practice is being indexed and abstracted at PubMed, PubMed Central, Embase, Scopus, Ebsco EJS, Directory of Open Access Journals, Open J-gate, Scielo, Dialnet, IBECS, REDIB, Latindex, Redalyc.

For more information on **Pharmacy Practice** publication delay and peer-review process, click here and the ditorial Pharm Pract (Granada) 2019;17(1):1502. And for information about requirements for manuscripts, click here.

Pharmacy Practice is a peer-reviewed journal. To make this process work properly, is necessary to count with a wide pool of prestigious peer-reviewers, experts in different areas in journal's scope.

Pharmacy Practice has created a peer-reviewer selection process based on searching in PubMed for articles closely related to the manuscript to evaluate (see a description of this reviewers' selection process). We aim ensuring the expertise of reviewer in the specific topic. Working as a peer-reviewer in Pharmacy Practice has not any of remuneration. See the List of Reviewers who have collaborated in Pharmacy Practice.

Make a Submission

Browse

eColections

Pharm Pract (Granada) editorial policy

Residencies

Simulated Patient Technique

Medication Adherence

Information

For Readers

For Authors

For Librarians

Open Journal Systems

Current Issue

ATOM 1.0

RSS 2.0

RSS 1.0

Published by: CIPF
Marina Playa, esc 9 – 6B
18697 Granada – SPAIN

Publisher Headquarters:
CIPF
Rua das Regateiras, 55
36800 Redondela - SPAIN

eISSN: 1886-3655 (Electronic)
ISSN: 1885-642X (Print)

Editorial & Advisory Boards

Pharmacy Practice Editorial Board

Daniel Sabater Hernández
University of Technology, Sydney (Australia)

Cassyano J. Correr
Federal University of Parana (Brazil)

—

Advisory Board

Make a Submission

Browse

eColections

Pharm Pract (Granada) editorial policy

Residencies

Simulated Patient Technique

Medication Adherence

Information

For Readers

For Authors

For Librarians

Open Journal Systems

Current Issue

ATOM 1.0

RSS 2.0

RSS 1.0

Pharmacy Practice | e-ISSN: 1886-3655 - p-ISSN: 1885-642X

Published by: CIPF
Marina Playa, esc 9 – 6B
18697 Granada – SPAIN

Publisher Headquarters:
CIPF
Rua das Regateiras, 55
36800 Redondela - SPAIN

eISSN: 1886-3655 (Electronic)
ISSN: 1885-642X (Print)

Published: 2019-06-18

Original Research

CPPI Practice Forum

Make a Submission

Browse

eColections

Pharm Pract (Granada) editorial policy

Residencies

Simulated Patient Technique

Medication Adherence

Information

For Readers

For Authors

For Librarians

Open Journal Systems

Current Issue

ATOM 1.0

RSS 2.0

RSS 1.0

Pharmacy Practice | e-ISSN: 1886-3655 - p-ISSN: 1885-642X

Published by: CIPF
Marina Playa, esc 9 – 6B
18697 Granada – SPAIN

Publisher Headquarters:
CIPF
Rua das Regateiras, 55
36800 Redondela - SPAIN

eISSN: 1886-3655 (Electronic)
ISSN: 1885-642X (Print)

https://doi.org/10.18549/PharmPract.2019.2.1452

Original Research

The provision of advice by pharmacy staff in eastern Indonesian community pharmacies

Cecilia BRATA, Carl R. SCHNEIDER, Brahmaputra MARJADI, Rhonda M. CLIFFORD.

Received (first version): 16-Jan-2019 Accepted: 12-May-2019 Published online: 3-Jun-2019

Abstract

Background: Indonesian community pharmacies hold a strategic position from which to promote the rational use of medicines by providing appropriate advice for patients requesting self-medication. To date, published studies related to the provision of advice in Indonesian community pharmacies are limited and have been conducted only in more developed western Indonesia. No studies have been undertaken in eastern Indonesia, which is less developed than and culturally different from the western region.

Objectives: This paper aims to: (1) describe the types and amount of advice provided by pharmacy staff for three scenarios in a patient simulation study and for two scenarios in pharmacy staff interviews; and (2) ascertain the frequency of appropriate advice given in response to the scenarios.

Methods: A patient simulation study was conducted at community pharmacies in an eastern Indonesian provincial capital. Four weeks after completing a patient simulation study, structured interviews with pharmacy staff were conducted. Two cough scenarios and one diarrhoea scenario were developed for the patient simulation study. Meanwhile, two scenarios (an ACE inhibitor-induced cough and a common cough and cold) were developed for pharmacy staff interviews. The types and amount of advice provided by pharmacy staff were recorded on paper and assessed for its appropriateness. The determination of appropriate advice was based on the literature and by consensus of two Indonesian experts.

Results: In patient simulation, the most common type of advice provided in all scenarios was product recommendations. In interviews, medical referrals and recommending cough and cold medicine were the most common types of advice provided for ACE inhibitor-induced cough and common cough and cold scenarios respectively. Appropriate advice was provided in less than 0.5% in the patient simulation study, but two-third of participants in the interviews responded to the scenarios appropriately.

Conclusions: Pharmacy staff did not provide appropriate advice in practice, although they may have adequate knowledge. A contributing factor was insufficient information gathered in patient encounters. Optimising information-gathering practice by pharmacy staff is needed.

Keywords

Community Pharmacy Services; Counseling; Self Medication; Professional Practice; Pharmacies; Pharmacists; Patient Simulation; Surveys and Questionnaires; Indonesia

INTRODUCTION

The irrational use of medicines, i.e., the situation where "medically inappropriate, ineffective, and economically inefficient use of medicine occurs in health care facilities" , is a worldwide problem.[1] Rational use is defined by the World Health Organization (WHO) as when "patients receive medications appropriate to their clinical needs, in doses that meet their own individual requirements, for an adequate period of time, and at the lowest cost to them and their community".[2] The irrational use of medicines can occur at any stage of medicine use cycle, starting from the stage of diagnosis, prescribing, dispensing, and patient adherence.[3] The irrational use of medicines increases health care costs, decreases the quality of drug treatment, and increases the likelihood of adverse drug reactions; it is also regarded as the primary cause of antibiotic resistance worldwide.[4] Inappropriate self-medication practice is a significant contributory factor to the irrational use of medicines.[4]

Self-medication is defined by the WHO as "the selection and use of medicines by individuals to treat self-recognized illnesses or symptoms".[5] Self-medication is prevalent in developing countries, and community pharmacies are important sources of medicines for patients who self-medicate.[6,8-10] Studies have shown that community pharmacists' interventions (such as by providing quality consultation) can improve patient outcomes, prevent harms, and encourage rational use of medicines for self-medication practice.[11-14] In Indonesia, 2013 data show that 91% of Indonesians practised self-medication, and almost 80% of Indonesians obtained medicines from community pharmacies or other private medicine sellers such as corner shops and market stalls.[15,16] While these other private medicine sellers have a role in the distribution of medicines for self-medication in Indonesia, community pharmacies are formally registered by the Health Department and therefore more controlled. Thus, in the short term, from a public health perspective, it is easier to intervene and improve the provision of quality consultation by community pharmacy staff to patients with self-medication requests than other private medicine sellers for the benefit of the health care for the public.[17]

Self-medication consultations in community pharmacies consist of two sequential stages: patient assessment; and the provision of advice.[18-20] The patient assessment stage

Cecilia BRATA. Centre of Medicine Information and Pharmaceutical Care, University of Surabaya, Surabaya (Indonesia). cecilia.brata@gmail.com
Carl R. SCHNEIDER. Faculty of Pharmacy, University of Sydney. Sydney, NSW (Australia). carl.schneider@sydney.edu.au
Brahmaputra MARJADI. School of Medicine, University of Western Sydney. Sydney, NSW (Australia). B.Marjadi@westernsydney.edu.au
Rhonda M. CLIFFORD. School of Medicine and Pharmacology, University of Western Australia. Perth, WA (Australia). rhonda.clifford@uwa.edu.au

includes information-gathering and analysis of the information gathered. Based on the patient assessment, the pharmacist then needs to provide appropriate advice to the patient. The advice provided may be: a referral for medical assessment; recommendations of appropriate medicine(s), including associated medicine information; recommendations of non-pharmacological treatment(s); or other advice relevant to patients' needs.

We have reported the process of information-gathering and its related factors in the same setting, i.e., community pharmacies in an eastern Indonesian capital city.[21] Our results suggested that the information gathered was not sufficient to provide appropriate advice, and that pharmacist involvement was associated with higher amount of information gathered. This article addresses the next step in self-medication consultations in community pharmacies, which is the advice-provision by pharmacy staff. The objectives of this article are to:

1. Describe the types and amount of advice provided by pharmacy staff for three scenarios (related to cough and diarrhoea) in a patient simulation study and for two scenarios (related to cough) in pharmacy staff interviews.
2. Ascertain the frequency of appropriate advice given in response to the self-medication request scenarios

METHODS

The present study was conducted in conjunction with our previously published study.[21] This study was conducted in all community pharmacies (based on the registry of the local Department of Health and lists from pharmaceutical wholesalers) in a provincial capital of Eastern Indonesia (population around 400.000 people). This site was particularly chosen because it can be considered representing the situation of Eastern Indonesia (i.e., less-developed area of the country and has lower health care resources compared to the western part).[22]

This study uses a combination of patient simulation and structured, face-to-face interviews with pharmacy staff using self-medication scenarios. Covert patient simulation was used in order to minimise Hawthorne effect (i.e., an improvement in the performance resulting from awareness that they are being studied). Although no consent was obtained in the patient simulation study, there is no risk to an individual pharmacy since only pooled data were presented. Ethics approval was obtained from the Human Research Ethics Committee of the University of Western Australia and the provincial chapter of the Indonesian Pharmacists Association.

Patient simulation

Two scenarios (one symptom-based and one product-based) related to angiotensin-converting enzyme (ACE) inhibitor-induced cough and one scenario related to a symptom-based request for childhood diarrhoea were used. These cough and diarrhoea scenarios were chosen because they are common symptoms with which patients often practise self-medication and present to pharmacies for treatment.[23] The scenarios were developed by the first author (CB) based on the relevant literature, were reviewed by pharmacy academics and practitioners in Indonesia and Australia, and were pilotted in 5 to 10 pharmacies before use.[19,24,25] Details of the scenarios have been described in a previous publication and represented in Table 1.[21]

Table 1. Scenarios in patient simulation study

Patient simulation scenarios	Appropriate advice*
Symptom and product-based requests for Ace inhibitor-induced cough On entering the pharmacy, one of the simulated patients said: "What is a good cough medicine that you recommend?" (for symptom based requests) or "I want to buy Woods merah#" (for product based requests) ***Only upon questioning, this information was provided:*** The patient is the one who has cough. He/she has been coughing for 4 weeks. The cough is dry, irritating and occurs constantly. There are no accompanying symptoms. The patient has tried Bisolvon syrup two weeks ago, but did not work. The patient was diagnosed with hypertension 2 months ago and routinely consumes captopril 25 mg three times a day. The patient does not have any medical condition other than hypertension and did not routinely consume any medicines, supplements, or herbal medicines other than captopril. The patient does not smoke and is not a passive smoker. The patient exercises regularly and follows healthy diet. The Blood pressure is controlled (~130/80) and the patient does not have any allergies.	Medical referral without recommending medicines.[19,31,34]
Symptom based requests for simple acute childhood diarrhoea On entering the pharmacy, one of the simulated patients said: "My child has diarrhoea, what do you recommend?" ***Only upon questioning, this information was provided:*** The patient is 4 year old, weight ± 20 kg, height: ± 1 metre. The patient has acute onset of simple diarrhoea. The diarrhoea started about 6 hours ago. The patient has gone to the toilet three times. The consistency of the stool was mushy, softer than usual. The patient is generally well, still can play around. The patient is not restless, not irritable, not lethargic, and still has normal drinking habit. The patient has no accompanying symptoms and has not taken any medicines for diarrhoea. The patient has no other medical conditions and does not routinely take any other medications, supplements or herbal. The patient does not have any allergies.	Recommending oral rehydration salts and zinc.[25,69] Providing antibiotics or antidiarrhoeals for this scenario was considered inappropriate.[25]
#Woods merah is one of the Indonesian brand names of cough medicines that containes Dextromethorphan HBr and Doxylamine. *Appropriate advice was determined based on the literature and by consensus of two Indonesian senior lecturers in pharmacy practice	

Six simulated patients were trained by one researcher (CB) and visited each pharmacy in pairs. One simulated patient acted out the scenarios and the other observed the encounter; both independently completed a data collection form at the end of the encounter, out of sight of pharmacy staff. A Kappa statistic was calculated to measure inter-rater reliability between the two simulated patients in each pair. Any discrepancies were discussed between the simulated patient pairs until a consensus was reached for each encounter. The professional background of staff in the patient simulation study was not recorded because the identity of the staff could not be ascertained without jeopardising the simulation. Thus, whether our simulated patients encountered the same or different staff during the visits could not be ascertained.

The types and amount of advice provided by pharmacy staff were analysed descriptively. The types of advice provided were categorised as medical referral, product recommendation, medicine information, non-pharmacological advice, and other advice. The advice provided by pharmacy staff was then assessed for its appropriateness as stated in Table 1.

Interviews

Face-to-face, structured interviews were conducted four weeks after the completion of the patient simulation study. First, consenting pharmacy managers were interviewed regarding the characteristics of their pharmacy. The managers were then asked to indicate their staff whose job descriptions included serving patients requesting self-medication and for permission to interview these staff. A researcher (CB) then approached all eligible staff members and offered them to voluntarily participate in an interview. The eligible staff included those who were observed in the patient simulation study; however, since their details were not recorded during patient simulation visits, any overlapping staff between the two studies could not be ascertained.

Consenting participants were asked about their demographic characteristics and asked to describe the advice they would provide for two hypothetical cough scenarios (Table 1). The first scenario was an ACE inhibitor-induced cough adapted from the scenario used in the patient simulation study. The second hypothetical scenario was a common cough and cold, adopted from Blenkinsopp *et al*. (Table 1).[19] For each scenario, complete information related to patient identity, sign and symptoms, medical history, and current medication used were provided to the participants. For practical reason (i.e., to limit the length of interview), we only used scenarios related to cough; one scenario (the ACE inhibitor scenario) would need a medical referral and the other (the common cough and cold) would need a product recommendation or non-pharmacological advice. All scenarios were validated by Indonesian and Australian pharmacy academics and practitioners, and were pilotted before use. Details of the development, validation, and piloting of the questionnaire have been described previously.[21]

All participants were interviewed individually in a private place in the pharmacy. The interviewer (CB) read the scenarios as stated in Table 1 and recorded participants' answers on the questionnaire sheet. Description of the two cough scenarios was also provided in a piece of paper to all participants.

Descriptive statistics were used to summarise data related to pharmacy and pharmacy staff characteristics. Quantitative content analysis was used to analyse the types of advice provided by participants in the two hypothetical scenarios.[20,21,26,27] A categorisation matrix was firstly created using both deductive and inductive techniques as described by Elo and Kyngas.[28] The matrix was developed deductively based on literature; and then re-modified using an inductive technique after preliminary reading of all data.[19,29] Next, two coders independently coded the data for correspondence with the modified categorisation matrix. Frequencies were calculated for each code and the Kappa statistic was calculated to assess the inter-rater reliability between the coders.

The advice provided by pharmacy staff for these scenarios was assessed for appropriateness. The determination of appropriate advice was based on the literature (Table 2), and by consensus of two Indonesian senior lecturers in pharmacy practice.

RESULTS

Study participants

Patient simulation; The total population of the pharmacies visited was 78 pharmacies for the two cough scenarios and increased to 81 pharmacies for the diarrhoea scenario. Differences in the total population of pharmacies were due to the opening of 3 new pharmacies. Data collection was conducted at 2 different times. The first round of data

Table 2. Scenarios in structured interview study

Structured interview hypothetical scenarios	Appropriate advice*
ACE inhibitor-induced cough scenario A woman, aged about 60 years old, comes into this pharmacy and asks you for a recommendation for her cough. The woman says that she has experienced non-productive cough constantly over the last 4 weeks. She has tried Bisolvon elixir for her cough but it did not help. The woman tells you that she was diagnosed with hypertension 2 months ago. Her daily medication is captopril 25mg, three times a day, which she has taken for 2 months. What would you advise this woman?	Medical referral without recommending medicines.[19,31,34]
Common cough and cold scenario A young man, aged 25, asks if you can recommend something for his cough. He sounds as if he has a cold and looks a bit pale. He has been coughing for about 2-3 days. His cough is productive and the sputum is clear. He has a blocked nose and a mild sore throat. He has no pain on breathing, no shortness of breath, and no fever. He has not tried any medicines for his symptoms. He is not routinely taking any supplement, herbal, or any other medications. What would you advise this man?	Recommending appropriate products (i.e., cough and cold preparation) and/or non-pharmacological advice (e.g., fluid intake, resting).[19,70,71]

#Woods merah is one of the Indonesian brand names of cough medicines that containes Dextromethorphan HBr and Doxylamine.
*Appropriate advice was determined based on the literature and by consensus of two Indonesian senior lecturers in pharmacy practice.

Table 3. Pharmacy and pharmacy staff characteristics

Pharmacy characteristics	**n=69 (%)**	
Pharmacy type		
Attached to doctor's clinic	50	(72%)
Not attached to doctor's clinic	19	(28%)
Pharmacy ownership		
Pharmacist	7	(10%)
Non-pharmacist	60	(87%)
Other (i.e., joint business of pharmacist and non-pharmacist)	2	(3%)
Estimated total patients served per day*	4595	
Estimated total patients served for self-medication per day*	2975	
Average pharmacy opening hours per week (hours)	90	SD 31
Total number of staff employed in the 69 pharmacies surveyed	352	
Total number of pharmacists	75	
Total number of pharmacy technicians	86	
Total number of staff without formal education in pharmacy	191	
Total staff working hours per week (hours)		
Pharmacists	1270	
Pharmacy technicians	3542	
Other staff without formal education in pharmacy	8973	
Pharmacy staff characteristics	**n=173 (%)**	
Professional background		
Pharmacists[$]	42	(24%)
Pharmacy technicians^	32	(19%)
Staff without formal educational backgrounds in pharmacy	99	(57%)
Age (years; mean)	30	SD 7.8
Gender: female	140	(81%)
Working experience (years; median, IQR[#])	3	IQR=1.5–7
Ever attended training on self-medication after graduation from the highest education qualification		
Yes	19	(11%)
No	154	(89%)

* calculated from 67 pharmacies; there were missing data from 2 pharmacies for these questions
[$] A pharmacist in Indonesia is a person who has a bachelor degree in pharmacy and holds a pharmacist registration training certificate.
^ A pharmacy technician in Indonesia is a person who has graduated from pharmacy assistant school or has a three year diploma in pharmacy or a person who has a bachelor degree in pharmacy without holding a pharmacist registration training certificate.
# IQR = Interquartile range.

collection using two cough scenarios was conducted in June 2011 to August 2011. The second round of data collection using the diarrhoea scenario was conducted in May 2012. Data were collected from 76/78 pharmacies for the symptom-based request for cough; 69/78 pharmacies for the product-based requests for cough; and 80/81 pharmacies for the childhood diarrhoea scenario. In total, 12 visits for the three scenarios were not performed because the pharmacies were closed when visited or the simulated patients were known to the pharmacy staff on duty, which prohibited the simulation.

Pharmacy staff interviews: The interview was conducted four weeks after completing patient simulation study (around June 2012). Sixty nine out of the 81 pharmacies agreed to participate, with 173/237 eligible pharmacy staff consenting to be interviewed. Reasons for refusal were not asked to avoid a perceived coercion to participate.

Reliability

Patient simulation: The Kappa statistic for the simulated patient pairs ranged from 0.88 to 1, with each item having a p-value <0.0005, indicating very good reliability.[30]

Pharmacy staff interviews: The Kappa statistics between the two coders for the ACE inhibitor-induced cough scenario and the common cough and cold scenario were 0.85, p<0.0005 and 0.97, p<0.0005 respectively, indicating very good reliability.[30]

Pharmacy and pharmacy staff characteristics

Characteristics of the participating pharmacies and pharmacy staff are presented in Table 3. Most of the pharmacies (87%) were owned by non-pharmacists and staffing was dominated by staff who did not have any educational background in pharmacy. About 65% of patients coming to pharmacy were served for self-medication per day. The majority (57%) of participants who served patients with self-medication requests, however, were staff without formal education in pharmacy. Pharmacists and pharmacy technicians were only accounted for 24% and 19% of the interviewees respectively. Almost 90% of the participants interviewed never attended any training on self-medication after graduating from school.

Types and amount of advice provided

Patient simulation: The types and amount of advice provided by pharmacy staff when responding to the scenarios are presented in Table 4. In the symptom-based request scenario for ACE inhibitor-induced cough, the majority of pharmacy staff (75/76, 99%) recommended medicines, of which 55/75 (73%) were antitussive. Medicine information, however, was provided in only 17/76 encounters (22%), while direct medical referral was provided in only 1/76 (1%) encounters.

Table 4. The types and amount of advice provided from patient simulation study

The types of advice provided	Symptom-based requests for ACE inhibitor-induced cough (n=76)		Product-based requests for ACE inhibitor-induced cough (n=69)		Symptom-based requests for a simple, acute childhood diarrhoea (n=80)	
Medical referral	5	(7%)*	0	(0%)	15	(19%)[$]
Product recommendation	75	(99%)	64	(93%)^	65	(81%)
Medicine information	17	(22%)	0	(0%)	46	(58%)
• The purpose of treatment	1	(1%)	0	(0%)	0	(0%)
• How to use the medicine(s)	13	(17%)	0	(0%)	29	(36%)
• Duration of treatment	0	(0%)	0	(0%)	2	(3)%
• The purpose of treatment and how to use the medicine(s)	3	(4%)	0	(0%)	3	(4%)
• How to use the medicine(s) and duration of treatment	0	(0%)	0	(0%)	10	(13%)
• The purpose of treatment, how to use the medicine(s), and duration of treatment	0	(0%)	0	(0%)	2	(3%)
• Possible side effects	0	(0%)	0	(0%)	0	(0%)
Non-pharmacological advice	1	(1%)	0	(0%)	5	(6%)
Other						
• The product requested was not available and no advice was provided.	0	(0%)	5	(7%)	0	(0%)

*Total includes one encounter with medical referral only and four where medical referral was recommended as a follow up (i.e., if symptom persisted after using the medication recommended).
[$] In all 15 encounters, medical referral was the only advice provided.
^ The percentage of pharmacy staff selling the requested product.

In the product-based request scenario for ACE inhibitor-induced cough, 64/69 encounters (93%) resulted in supplying the requested product, while in the remaining 5/69 encounters (7%) the product requested was not available. None of pharmacy staff recommended medical referral, provided medicine information, or gave non-pharmacological advice.

In the childhood diarrhoea scenario, staff in 65/80 encounters (81%) recommended medicines, with 46/65 (71%) providing some form of medicine information. Direct medical referral was recommended in 15/80 encounters (19%). Non-pharmacological advice related to fluid intake was provided in only 5/80 encounters (6%).

Pharmacy staff interviews: The types and amount of advice provided for the two hypothetical scenarios in cough are presented in Table 5. In the ACE inhibitor-induced cough scenario, the majority of pharmacy staff (138/173, 80%) recommended direct medical referral. In the common cough and cold scenario, the majority of pharmacy staff (154/173, 89%) recommended products.

The provision of appropriate advice

Patient simulation: Only one pharmacy staff member across all scenarios provided appropriate advice: 1/76 (1%) and 0/69 respectively in symptom- and product-based requests for ACE inhibitor-induced cough scenarios, and 0/80 in the childhood diarrhoea scenario (Table 6). None of the products supplied in the childhood diarrhoea scenario were appropriate. Antibiotics and antidiarrhoeals were the most common types of products recommended in this scenario, in 45% and 36% of the 80 encounters, respectively. Oral rehydration salts and zinc were recommended in 5% and 15% of the 80 encounters respectively, but these products were supplied with either antibiotics or antidiarrhoeals; and therefore the overall advice was determined inappropriate.

Table 5. The types and amount of advice provided for the two hypothetical scenarios from interview data.

The types of advice recommended by pharmacy staff interviewed	ACE inhibitor-induced cough scenario (n=173)		Common cough and cold scenario (n=173)	
Medical referral				
• Medical referral	138	(80%)	16	(9%)
• Medical referral as a follow up (i.e., if symptom(s) persists or worsens after trying the recommended product or after going for laboratory check-up)	6	(3%)	36	(21%)
Product recommendation	29	(17%)	154	(89%)
Medicine information (i.e., how to use the medicines)	1	(1%)	0	(0%)
Non-pharmacological advice	4	(2%)	11	(6%)
Other:				
• Advising to stop ACE inhibitor if the patient has normal blood pressure.	1	(1%)	N/A	
• Advising the patient to have laboratory check-up (i.e., blood check, sputum check, or chest x-ray).	3	(2%)	2	(1%)
• Did not know what advice to be provided; and therefore will call the pharmacist or technician to handle the patient.	9	(5%)	4	(2%)

N/A = Not applicable

Table 6. The proportion of pharmacy staff who provided appropriate advice

Scenarios	Patient simulation study	Pharmacy staff interviews
ACE inhibitor-induced cough		
Symptom-based requests	1 of 76 encounters (1%)	132 of 173 interviewees (76%)
Product-based requests	0 of 69 encounters (0%)	N/A
Childhood diarrhoea	0 of 80 encounters (0%)	N/A
Common cough and cold	N/A	118 of 173 interviewees (68%)

N/A = Not applicable

Pharmacy staff interviews: Appropriate advice was provided by 132/173 (76%) interviewees in the ACE inhibitor-induced cough scenario and 118/173 (68%) interviewees in the common cough and cold scenario (Table 6). Of the 138 participants who recommended medical referral in the ACE inhibitor-induced cough scenario (Table 5), there were 6 participants who also recommended product or laboratory check and therefore were considered inappropriate; resulting in 132 participants recommended appropriate advice. Meanwhile, of the 154 participants who recommended products in the common cough and cold scenario (Table 4), 120 participants recommended an appropriate product, while 34 recommended antibiotics or oral steroids that were considered inappropriate. Two of these 120 participants recommended direct medical referral in addition to recommending product(s), which was considered inappropriate. As a result, a total of 118/173 interviewees (68%) recommended appropriate advice.

DISCUSSION

Our patient simulation study, using the three scenarios described, alarmingly indicates that appropriate advice is rarely provided by pharmacy staff. In the ACE inhibitor-induced cough scenarios, a medical referral was necessary to enable the ACE inhibitor to be changed to an alternative antihypertensive agents.[31,32] Almost all pharmacy staff encountered by the simulated patients did not provide medical referral and recommended inappropriate products. This indicates a failure to adequately identify adverse drug reactions (ADR) and provide correct advice to resolve the ADR. Low awareness and failure to recognise a cough as a side effect of ACE inhibitor by health care professionals has also been reported in the past literature.[33-36] Such inappropriate advice could lead to more problems such as ineffective cough products being used by patients, or delaying medical treatment of the underlying condition.[33,34] In the simulated acute simple childhood diarrhoea scenario, inappropriate products such as antibiotics and antidiarrhoeals were commonly recommended. This finding is similar to those of other studies in developing countries.[37-41] The use of unnecessary medicines in this diarrhoea scenario not only increases the cost of treatment but also exposes patients to the possibility of experiencing adverse drug reactions.[42,43] Moreover, inappropriate use of antibiotics increases the risk of bacterial resistance which is related to an increase in morbidity, mortality, and health care costs.[44]

One of the factors that may cause inappropriate advice being provided by pharmacy staff in the simulation study is probably related to inadequate information-gathering, as reported in our previous study.[21] In the symptom-based request for cough scenario, only information related to the nature of cough was asked by the majority of pharmacy staff; the key information which is current medication used, was not asked.[21] In the product-based request for cough scenario, almost all pharmacy staff did not ask any questions.[21] Therefore, inappropriate advice was provided for the two cough scenarios, as stated in the results of this article. In the diarrhoea scenario, the majority of pharmacy staff only asked about patient identity and only a third asked about information related to signs and symptoms.[21] Incomplete information gathered seems to be an important factor causing inappropriate advice provided in this diarrhoea scenario, although other factors, such as product advertising, prescribing practices of local doctors, drug company sales information, knowledge of pharmacy staff and business interests may also be the reasons of inappropriate advice in the diarrhoea scenario.[38,42]

Our finding that the most common type of advice provided in the three simulated scenarios used was product recommendation is similar to findings from other patient simulation studies in developing countries.[41,45-47] Although pharmacy staff often recommended products, they did not provide comprehensive medicine information, as required by the practice guideline set out by the Indonesian Pharmacy Service Standard.[48] This guideline requires pharmacy staff to provide patients requesting self-medication with information on: the name of medicine(s); the purpose of treatment; how to use the medicine(s); duration of treatment; and possible side effects.[48] The failure of pharmacy staff to provide sufficient medicine information may cause patients to use medicines inappropriately, especially because patients' understanding of medicines and medical treatment is highly variable, and there are deficiencies in patients' knowledge regarding medicine use.[49-52] Since medicine information may improve patient knowledge and help patients use medicines appropriately, it is important to ensure that pharmacy staff provide sufficient medicine information in their daily practice.[53-55]

In contrast with the results of the patient simulation study, the majority of staff from the same pharmacies claimed to provide appropriate advice during the interview study. This finding of more appropriate advice being reported in interviews than actually provided in patient simulations mirrors the findings of past studies.[42,46] An important factor that causes this difference in this setting might be due to pharmacy staff incompletely gathering patient information in the patient simulation study, whereas complete patient information was provided in the questionnaire.[21] Since the amount of information gathered correlates positively with the provision of appropriate advice, pharmacy staff as well as the Indonesian professionals, regulatory, and educating bodies need to improve the quality of information-gathering practice when handling self-medication requests.[56,57] The leaders in the pharmacy (involving the

Indonesian Pharmacists Association, the Indonesian Pharmacy Assistants Association, the Ministry of Health, and the Association of Indonesian Pharmacy Higher Education) should focus on identifying, developing and implementing sustainable intervention strategies to improve the quality of information-gathering practice.

In addition to inadequate information gathering, there could be other factors that may influence the provision of quality self-medication services. The lack of involvement of trained staff in the provision of self-medication services as found in our study (Table 3) might be one of the factors contributing to the suboptimal advice provided. Data from our interviews showed that the majority (57%) of staff who provided services for self-medication requests in this site were staff without formal education in pharmacy (Table 3). This probably happened because pharmacy owners did not employ enough pharmacists and/or pharmacy technicians and therefore they rarely involved in the provision of self-medication services albeit their pharmacy education. The lack of involvement of pharmacists in the provision of self-medication services has been reported in other studies.[58-60] Theoretically, the rare involvement of trained staff in services for self-medication may put a higher risk of patients using medicines inappropriately. Furthermore, the literature has also reported other factors that may influence the provision of quality self-medication, including: lack of sufficient time to counsel patients with minor queries because the pharmacists were busy with the prescription, lack of adequate skills and knowledge to provide self-medication counseling, lack of support from the pharmacists professional body, lack of implementation of existing legislation, negative attitudes of pharmacy staff (focusing on short-term profit rather than patients), and lack of remuneration for minor queries.[60-64]

Our findings of sub-optimal practices in self-medication consultations at community pharmacies are of concern because pharmacies are important sources of medicines for Indonesians who self-medicate.[16] Community pharmacies are highly accessible by the community and pharmacy staff are in a strategic position from which to advise patients on their medications.[65] There is a clear need for further research to be conducted to determine the cause(s) of the problem of inappropriate provision of advice by community pharmacy staff, as there could be other contextual factors that influence the provision of advice that have not been identified. Literature from other developing countries has shown that the reasons for the poor quality of health services are often complex and multi-factorial.[66,67] There are many contextual factors, such as the health care system and socio-cultural differences that can influence the current practice.[66,68] Successful strategies for practice improvement would need to take such factors into consideration.

Limitations

As both our patient simulation and pharmacy staff interview studies were confined to only a few scenarios, our findings may not be generalisable to advice provision for all self-medication requests. Future research involving a wider range of scenarios would enable a more comprehensive assessment of the ability of pharmacy staff in handling self-medication requests. Furthermore, we were unable to identify whether the staff who were observed in patient simulation were subsequently interviewed. It is possible that the staff who volunteered for interviews were more confident in their ability to answer the scenarios and therefore provided more appropriate advice. This selection bias may partly explain discrepancy of the findings between patient simulations and interviews.

In the interviews, 12/81 pharmacies and 64/237 eligible participants did not participate. Thus, there was possibility of non-participants not sharing the same response to the hypothetical scenarios provided (i.e., non-response bias). However, from personal observation there was no difference in the characteristics of the pharmacies and pharmacy staff that declined participating. In addition, this study also could not establish to what extent good knowledge enables pharmacy staff to provide appropriate advice. For example, in the ACE inhibitor-induced cough scenario, it was unclear whether medical referral was recommended because pharmacy staff knew that the cough was caused by the ACE inhibitor or because pharmacy staff was afraid to recommend products of which they had limited knowledge. There is a need for a further research in this setting on the level of knowledge of pharmacy staff relating to minor ailments.

CONCLUSIONS

A majority of pharmacy staff in this eastern Indonesian setting provided appropriate advice to self-medicating patients in interviews but not to simulated patients. This could imply that pharmacy staff did not translate their knowledge to practice. Insufficient information-gathering was identified as a contributing factor to inappropriate advice. Therefore, improving information-gathering practice by pharmacy staff is required. The leaders in the Indonesian pharmacies need to develop and implement strategies to improve the practice of pharmacy staff, particularly information-gathering when providing self-medication services.

ACKNOWLEDGEMENTS

We thank our participants for taking part in this study. We also thank the local Indonesian Pharmacy Association and the local Department of Health for providing approval and access for data collection.

CONFLICT OF INTEREST

The authors declare that they have no competing interests.

FUNDING

This project was funded by the Australian Department of Foreign Affairs and Trade award scholarships.

References

1. World Health Organization. Session Guide- Problems of irrational drug use. 2000; http://archives.who.int/PRDUC2004/RDUCD/Session_Guides/problems_or_irrational_drug_use.htm (accessed Mar 3, 2019).
2. World Health Organization. Promoting rational use of medicines: core components. 2002; http://apps.who.int/medicinedocs/pdf/h3011e/h3011e.pdf (accessed Jan 1, 2019).
3. Ofori-Asenso R, Adom AA. Irrational use of medicines-A summary of key concepts. Pharmacy. 2016;4(4):35. https://doi.org/10.3390/pharmacy4040035
4. World Health Organization. Managing for Rational Medicine Use. 2012; http://apps.who.int/medicinedocs/documents/s19604en/s19604en.pdf (accessed Jan 4, 2019).
5. World Health Organization. The role of the pharmacist in self care and self medication. 1998; http://apps.who.int/medicinedocs/pdf/whozip32e/whozip32e.pdf (accessed Jan 4, 2019).
6. Hassali MA SA, Al-Qazaz H, Tambyappa J, Palaian S, Hariraj V. Self-medication practices among adult population attending community pharmacies in Malaysia: an exploratory study. Int J Clin Pharm. 2011;33(5):794-799. https://doi.org/10.1007/s11096-011-9539-5
7. Awad AI, Eltayeb IB, Capps PA. Self medication practices in Khartoum State, Sudan. Eur J Clin Pharmacol. 2006;62(4):317-324. https://doi.org/10.1007/s00228-006-0107-1
8. Sawalha A. A descriptive study of self medication practices among Palestinian medical and nonmedical university students. Res Social Adm Pharm. 2008;4(2):164-172. https://doi.org/10.1016/j.sapharm.2007.04.004
9. Agbor MA, Azodo C. Self-medication for oral health problems in Cameroon. Int Dent J. 2011;61(4):204-209. https://doi.org/10.1111/j.1875-595X.2011.00058.x
10. Sihavong A, Lundborg C, Syhakhang L, Akkhavong K, Tomson G, Wahlstrom R. Antimicrobial self medication for reproductive tract infections in two province in Lao People's Democratic Republic. Sex Transm Infect. 2006;82(2):182-186. https://doi.org/10.1136/sti.2005.016352
11. Hoffmann W, Herzog B, Muhlig S, Kayser H, Fabian R, Thomsen M, Cramer M, Fiss T, Gresselmeyer D, Janhsen K. Pharmaceutical care for migraine and headache patients: a community-based, randomized intervention. Ann Pharmacother. 2008;42(12):1804-1813. https://doi.org/10.1345/aph.1K635
12. Krishnan HS, Schaefer M. Evaluation of the impact of pharmacist's advice giving on the outcomes of self-medication in patients suffering from dyspepsia. Pharm World Sci. 2000;22(3):102-108.
13. Williams KA, Emmerton LM, Taylor R, Werner J, Benrimoj SI. Non-prescription medicines and Australian community pharmacy interventions: rates and clinical significance. Int J Pharm Pract. 2011;19(3):156-165. https://doi.org/10.1111/j.2042-7174.2010.00091.x
14. Westerlund LT, Marklund BR, Handl WH, Thunberg ME, Allebeck P. Nonprescription drug-related problems and pharmacy interventions. Ann Pharmacother. 2001;35(11):1343-1349. https://doi.org/10.1345/aph.1A065
15. Badan Pusat Statistik. Statistical yearbook of Indonesia 2014. 2014; http://www.bps.go.id/website/pdf_publikasi/watermark%20_Statistik_Indonesia_2014.pdf (accessed Jan 4, 2019).
16. Kementrian Kesehatan Republik Indonesia. Riset Kesehatan Dasar 2013. 2013; http://www.depkes.go.id/resources/download/general/Hasil%20Riskesdas%202013.pdf (accessed Jan 4, 2019).
17. Chee G, Borowitz M, Barraclough A. Private Sector Health Care in Indonesia. 2009; http://pdf.usaid.gov/pdf_docs/Pnadq842.pdf (accessed Jan 4, 2019).
18. Brata C, Schneider CR, Everett A, Fisher C, Clifford RM. A review of the information-gathering process for the provision of medicines for self-medication via community pharmacies in developing countries. Res Social Adm Pharm. 2013;9(4):370-383. https://doi.org/10.1016/j.sapharm.2012.08.001
19. Blenkinsopp A, Paxton P, Blenkinsopp J. Symptoms in the Pharmacy A Guide to the Management of Common Illness. 6th ed. West Sussex: Wiley-Blackwell; 2009.
20. Brown L, Issets B. Patient assessment and consultation. In: Berardi RR, Ferreri SP, Hume AL, Kroon LA, Newton GD, Popovich NG, Remington TL, Rollins CJ, Shimp LA, Tietze KJ, et al., eds. Handbook of nonprescription drugs: An interactive approach to self care. Washington DC: American Pharmacists Association; 2009:21-25.
21. Brata C, Marjadi B, Schneider CR, Murray K, Clifford RM. Information-gathering for self-medication via Eastern Indonesian community pharmacies: a cross-sectional study. BMC Health Serv Res. 2015;15:8. https://doi.org/10.1186/s12913-014-0670-6
22. Rosmeli, Nurhayani. [Comparative study of regional inequality between the western region of Indonesia and Eastern Indonesia]. Mankeu. 2014;3(1):374-463.
23. Hermawati D. Pengaruh edukasi terhadap tingkat pengetahuan dan rasionalitas pengunjung obat swamedikasi di dua apotek kecamatan Cimaggis, Depok. [Bachelor of Pharmacy Thesis]. Jakarta, Universitas Indonesia; 2012.
24. Tietze KJ . Cough. In: Berardi RR FS, Hume AL, Kroon LA, Newton GD, Popovich NG, Remington TL, Rollins CJ, Shimp LA, Tietze KJ, ed. Handbook of Nonprescription Drugs: An Interactive Approach to Self Care. 16th ed. Washington DC: American Pharmacists Association; 2009:203-212.
25. World Health Organization. The Treatment of Diarrhoea : A manual for physicians and other senior health workers. 2005; http://apps.who.int/iris/bitstream/handle/10665/43209/9241593180.pdf;jsessionid=4B4D653604F2804DDC1D6F001A333E13?sequence=1 (accessed Jan 4, 2019).
26. Berg BL, Lune H. Qualitative research methods for the social sciences. Boston: Pearson; 2012.
27. Kondracki NL, Wellman NS, Amundson DR. Content analysis: review of the methods and their application in nutrition education. J Nutr Educ Behav 2002;34(4):224-230. https://doi.org/10.1016/S1499-4046(06)60097-3

28. Elo S, Kyngas H. The qualitative content analysis process. J Adv Nurs. 2008;62(1):107-115. https://doi.org/10.1111/j.1365-2648.2007.04569.x
29. Berardi RR, Ferreri SP, Hume AL, et al. Handbook of nonprescription drugs: An interactive approach to self care. 16th ed. Washington DC: American Pharmacists Association; 2009.
30. Altman DG. Practical statistics for medical research. 1st ed. London: Chapman and Hall; 1991.
31. Dicpinigaitis PV. Angiotensin-converting enzyme inhibitor-induced cough : ACCP evidence-based clinical practice guidelines. Chest. 2006;129(1 Suppl):169S-173S. https://doi.org/10.1378/chest.129.1_suppl.169S
32. Sebastian JL, McKinney WP, Kaufman J, Young MJ. Angiotensin-Converting Enzyme Inhibitors and cough: prevalence in an outpatient medical clinic population. Chest. 1991;99(1):36-39. https://doi.org/10.1378/chest.99.1.36
33. Kosamu T, Mwanza K, Mbayo E, Gondwe K, Besa C. An unrecognised adverse drug reaction of enalapril led to suspicion of pulmonary tuberculosis infection. Med J Zambia. 2012;31(2):71-72.
34. Vegter S, de Jong-van den Berg LTW. Misdiagnosis and mistreatment of a common side-effect – angiotensinconverting enzyme inhibitor-induced cough. Br J Clin Pharmacol. 2010;69(2):200-203. https://doi.org/10.1111/j.1365-2125.2009.03571.x
35. Vegter S, de Boer P, van Dijk KW, Visser S, de Jong-van den Berg LT. The effects of antitussive treatment of ACE inhibitor-induced cough on therapy compliance: a prescription sequence symmetry analysis. Drug Saf. 2013;36(6):435-439. https://doi.org/10.1007/s40264-013-0024-z
36. Lombardi C, Crivellaro M, Dama A, Senna G, Gargioni S, Passalacqua G. Are physicians aware of the side effects of angiotensin-converting enzyme inhibitor?: a questionnaire survey in different medical categories. Chest. 2005;128(2):976-979. https://doi.org/10.1378/chest.128.2.976
37. Saengcharoen W, Lerkiatbundit S. Practice and attitudes regarding the management of childhood diarrhoea among pharmacies in Thailand. Int J Pharm Pract. 2010;18(6):323-331. https://doi.org/10.1111/j.2042-7174.2010.00066.x
38. Ross-Degnan D, Soumerai SB, Goel PK, Bates J, Makhulo J, Dondi N, Sutoto, Adi D, Ferraz-Tabor L, Hogan R. The impact of face to face educational outreach on diarrhoea treatment in pharmacies. Health Policy Plan. 1996;11(3):308-318. https://doi.org/10.1093/heapol/11.3.308
39. Zamora Gutiérrez AD, Aguilar Liendo AM, Cordero Valdivia D. Attitudes of Bolivian pharmacists in dealing with diarrhea cases. Bull Pan Am Health Organ. 1995;29(4):322-327.
40. Wachter DA, Joshi MP, Rimal B. Antibiotic dispensing by drug retailers in Kathmandu, Nepal. Trop Med Int Health. 1999;4(11):782-788. https://doi.org/10.1046/j.1365-3156.1999.00476.x
41. Duong DV, Le TV, Binns CW. Diarrhoea management by pharmacy staff in retail pharmacies in Hanoi, Vietnam. Int J Pharm Pract. 1997;5(2):97-100. https://doi.org/10.1111/j.2042-7174.1997.tb00892.x
42. Aktekin M, Erozgen C, Donmez L. Pharmacy approach to a case of acute diarrhoea with dehydration in Antalya, Turkey. Public Health. 1998;112(5):323-326. https://doi.org/10.1038/sj.ph.1900478
43. Ogbo PU, Aina BA, Aderemi-Williams RI. Management of acute diarrhea in children by community pharmacists in Lagos, Nigeria. Pharm Pract (Granada). 2014;12(1):376. https://doi.org/10.4321/s1886-36552014000100002
44. Smith RD, Coast J. Antimicrobial resistance: a global response. Bull World Health Organ. 2002;80(2):126-133.
45. Chalker J, Chuc NT, Falkenberg T, Do NT, Tomson G. STD management by private pharmacies in Hanoi: practice and knowledge of drug sellers. Sex Transm Infect. 2000;76(4):299-302. https://doi.org/10.1136/sti.76.4.299
46. Larsson M, Binh NT, Tomson G, Chuc NT, Falkenberg T. Private pharmacy staff in Hanoi dispensing steroids-theory and practice. Pharm Pract (Granada). 2006;4(2):60-67.
47. Chuc NTK, Larsson M, Falkenberg T, Do NT, Binh NT, Tomson GB. Management of childhood acute respiratory infections at private pharmacies in Vietnam. Ann Pharmacother. 2001;35(10):1283-1288. https://doi.org/10.1345/aph.10313
48. Kementrian Kesehatan Republik Indonesia. Petunjuk Teknik Pelaksanaan Standar Pelayanan Kefarmasian di Apotek. KEPMENKES 1027/MENKES/SK/2004. In. Jakarta: Kementrian Kesehatan Republik Indonesia; 2008.
49. Ambwani S, Mathur AK. Rational drug use. Health Administrator 2006;19(1):5-7.
50. Davidow LW. Self-care and nonprescription pharmacotherapy In: Berardi RR FS, Hume AL, Kroon La, Newton GD, Popovich NG, Remington TL, Rollins CJ, Shimp LA, Tietze KJ, ed. Handbook of nonprescription drugs: An interactive approach to self care. 16th ed. Washington DC: American Pharmacists Association; 2009:13-14.
51. Hornsby LB, Whitley HP, Hester EK, Thompson M, Donaldson A. Survey of patient knowledge related to Acetaminophen recognition, dosing, and toxicity. J Am Pharm Assoc (2003). 2010;50(4):485-489. https://doi.org/10.1331/JAPhA.2010.08175
52. Cham E, Hall L, Ernst AA, Weiss SJ. Awareness and use of over-the-counter pain medications: A survey of emergency department patients. South Med J. 2002;95(5):529-535.
53. Jayasutha J, Saipavan, Roshini KV. Assessment of impact of patient counseling on knowledge, attitude and practices in asthma patients. Global J Pharmacol. 2014;8(4):486-489. https://doi.org/10.5829/idosi.gjp.2014.8.4.84156
54. Ponnusankar S, Surulivelrajan M, Anandamoorthy N, Suresh B. Assessment of impact of medication counseling on patients' medication knowledge and compliance in an outpatient clinic in South India. Patient Educ Couns. 2004;54(1):55-60. https://doi.org/10.1016/S0738-3991(03)00193-9
55. Alkatheri AM, Albekairy AM. Does the patients' educational level and previous counseling affect their medication knowledge? Ann Thorac Med. 2013;8(2):105-108. https://doi.org/10.4103/1817-1737.109823
56. Schneider CR EA, Geelhoed E, Kendall PA, Murray K, Garnett P, Salama M, Clifford RM. Provision of primary care to patients with chronic cough in the community pharmacy setting. Ann Pharmacother. 2011;45(3):402-408. https://doi.org/10.1345/aph.1P514

57. Watson MC, Bond CM, Grimshaw JM, Johnston M. Factors predicting the guideline compliant supply (or nonsupply) of non-prescription medicines in the community pharmacy setting. Qual Saf Health Care. 2006;15(1):53-57. https://doi.org/10.1136/qshc.2005.014720
58. Zurmatias R. Pharmaceutical Services in Community Pharmacy in East Jakarta [Master Thesis]. Thailand, Chulalongkorn University; 2007.
59. Purwanti A, Harianto, Supardi S. [An overview of the implementation of pharmaceutical service standards in DKI Jakarta pharmacies in 2003].Majalah Ilmu Kefarmasian. 2004;1(2):102-115.
60. Kroeger A, Ochoa H, Arana B, Diaz A, Rizzo N, Flores W. Inadequate drug advice in the pharmacies of Guatemala and Mexico: the scale of the problem and explanatory factors. Ann Trop Med Parasitol. 2001;95(6):605-616. https://doi.org/10.1080/00034980120092543
61. Brata C, Fisher C, Marjadi B, Schneider CR, Clifford RM. Factors contributing to the provision of self-medication consultations in eastern Indonesian community pharmacies: a qualitative study. BMC Health Serv Res. 2016;16:179. https://doi.org/10.1186/s12913-016-1425-3
62. Thang DX. An investigation of non-prescription medicine supply in community pharmacies in Hanoi, Vietnam. Nottingham, University of Nottingham; 2013.
63. Perraudin C, Brion F, Bourdon O, Pelletier-Fleury N. The future of pharmaceutical care in France: a survey of final-year pharmacy students' opinion. BMC Clin Pharmacol. 2011;11:6. https://doi.org/10.1186/1472-6904-11-6
64. Shearer B, Ng S, Dunford D, Kuo IF. Training needs of Mannitoba pharmacists to increase application of assessment and prescribing for minor ailments into practice: a qualitative and quantitative survey. Pharmacy (Basel). 2018;6(3):82.
65. Goel P, Ross-Degnan D, Berman P, Soumerai S. Retail pharmacies in developing countries: a behavior and intervention framework. Soc Sci Med. 1996;42(8):1155-1161. https://doi.org/10.1016/0277-9536(95)00388-6
66. Ross-Degnan D, Laing R, Santoso B, Ofori-Adjei D, Lamoureux C, Hogerzeil H. Improving pharmaceutical use in primary care in developing countries: A critical review of experience and lack of experience. Paper presented at: International conference on improving use of medicines.1997; Chiang Mai, Thailand.
67. Marjadi B. Challenges in developing infection control programmes for Indonesia. Aust Infect Control 2001;6(1):22-25. https://doi.org/10.1071/HI01022
68. Smith F. Community pharmacy in Ghana: enhancing the contribution to primary health care. Health Policy Plan. 2004;19(4):234-241. https://doi.org/10.1093/heapol/czh028
69. Departemen Kesehatan Republik Indonesia. [Health worker pocket book: Cross Diarrhea]. Jakarta: Departemen Kesehatan RI; 2011.
70. Simasek M, Blandino DA. Treatment of the Common Cold. Am Fam Physician. 2007;75(4):515-520.
71. Covington TR, Henkin R, Miller S, Sassetti M, Wright W. Treating the common cold : An expert panel consensus recommendation for primary care clinicians. Am J Nurse Pract. 2004;8(11):77-88.